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# A Selected List of U.S. Readings on Development

Prepared for the United Nations Conference on the  
Application of Science and Technology for the  
Benefit of the Less Developed Areas

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## FOREWORD

This selected list of U.S. readings on aspects of science and technology relating to economic and social development has been prepared by the University of Pittsburgh under contract with the Agency for International Development.

Early in the preparations for the United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas, U.S. representatives suggested that a display of scientific and technical literature would be a valuable adjunct to the Conference. This suggestion was warmly received by the United Nations Secretariat for the Conference and endorsed by the Scientific Advisory Panel. Some 15 countries and 3 United Nations agencies are furnishing books and articles for Conference display. Most of these materials will be donated at the close of the Conference to the Dag Hammarskjold Memorial Library of the United Nations in New York.

This list is, first, a catalog of U.S. items displayed at the Conference. Second, and most important, it should be a reference work of continuing value in itself. Third, it is a companion volume to the 12 volumes of U.S. papers prepared in connection with the Conference. These papers, not yet published at the time the list was compiled, are a significant addition to American coverage of development problems. The authors' citations in these papers also provide many helpful additional references, particularly in technical fields.

A comprehensive bibliography on the vast subject matter of the Conference was clearly impossible within the time available. A more modest goal, a selected reading list, was attainable only by choosing a competent organization and according its personnel broad discretion in selection. The approach employed by the University of Pittsburgh is explained in the Introduction. Obviously, the inclusion of certain works and the omission of others reflect the University's own decisions. No U.S. Government endorsement of the views expressed in listed works should be inferred, nor has there been a governmental evaluation of the relative merits of listed and unlisted works.

## PREFACE

The preparation of a list of selected U.S. readings on the application of science and technology to the problems of the less-developed nations will serve many useful purposes.

This volume is a representative sample of current American research papers, academic studies, and operational reports on major areas of science and technology. The items in this collection were selected because of their potential utility to the developing nations. It covers a wide range of subjects such as the regional planning experience of the Tennessee Valley Authority and Puerto Rico, the production and marketing policies of our great industrial enterprises, and the role of our universities in concerting research and education in the service of human welfare.

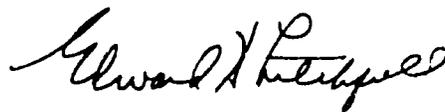
This reading list emphasizes the deep American concern with the individual. The great emphasis on science and technology in this country has not precluded consideration of human needs. Each of the subject chapters, whether agriculture, industry, or communication, includes many readings that focus on the human aspects of the subject. All of the subjects illustrate how science and technology can be applied for man's welfare.

This is an example of the interdisciplinary and interprofessional collaboration which we are fostering at the University of Pittsburgh. In no field is this approach more relevant and more necessary than in international development, which covers so many areas of human knowledge.

Under the leadership of Prof. Saul M. Katz, faculty, staff, and students in a great variety of fields cooperated, first, in a wide ranging but rapid review of U.S. literature relevant to problems of development abroad, and then in annotating and producing a selected reading list in a period of 8 or 9 weeks so that it would be ready for the U.N. Science Conference.

Problems of development are problems for the whole world. We hope that this bibliography will encourage other countries to prepare similar works so that all who are interested may have the benefit of ongoing research and scholarship from all countries.

Science and technology are not, and should not be confined to national boundaries.



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## INTRODUCTION

All nations, but notably the new and less developed ones, strive for economic and social development. The application of science and technology to the problems involved can help them achieve this goal.

The principal objective guiding the preparation of this bibliography was the preparation of a selected annotated list of U.S. readings, not to exceed 1,200 titles, which would be useful to the less developed countries in applying science and technology to the manifold problems involved in the process of development.

The need for such readings is especially acute for the educated nonspecialist involved in development, such as the government official and the national leader. The specialist in a given scientific field usually has his own source of relevant readings from which he can select what he needs. He also has a good idea whom he might contact for information on a particular subject. It is the nonspecialist who needs help, the individual who is engaged in formulating or implementing development programs and who must make decisions in respect to specific technical fields other than the one in which he is an expert.

The fact that 14,000 new book titles and 4,000 new editions of old titles, as well as the many thousands of periodical and journal articles, were published in the United States in 1961 alone, clearly indicates the need for a selected annotated bibliography. A key question is how to prepare such a list. What is meant by development and what kinds of materials should be included in the application of science and technology to the problems of development? How should the readings be selected from the great volume of written material? What are the most feasible methods for preparing such a list so that it may be most useful? These and similar problems beset the preparation of a selected bibliography. This introduction indicates how the authors attempted to deal with these questions. It should help the prospective user by giving him a better idea of the strengths and weaknesses of this selected reading list.

### I. Development and Sciences

The first problem that had to be met was determining what fields should be included in the bibliography. This raised two fundamental questions: What is meant by development, and what aspects of science and technology must be applied for attaining it? These questions cannot be adequately discussed in the brief space allotted here. They are dealt with, in one way or another, in many of the listed readings. However, definitions of the working premises are necessary. Let us start with development.

Associated with the goal of development is a plethora of terms to designate its absence. Such countries and areas are generally called less developed, underdeveloped, undeveloped, poor, low income, traditional, or unindustrialized. Each term has its own denotations, connotations, and confusions. Yet common to all of them is the concept that people of a particular area are, on an average, less well off than in some other country or area used as a standard.

This characteristic of being relatively less well off than some other country is usually expressed in economic terms and is a basic part of the meaning of development. However, expressing development solely in economic terms is often taken to mean that the most significant dimension of development is economic. This is misleading. In reality, development involves a complex of mutually related economic, social, and political changes. It is a continuing process of change in a whole society. Economic changes sometimes seem more evident and often lend themselves more readily to quantification, but they are only one aspect of a total process of change.

It follows that the application of science and technology to the problems of development demands a wide range of knowledge. Such application asks for an acquaintance with many specialized fields of knowledge as well as an understanding of the nature of the development process itself and how it may be directed and accelerated. It is necessary, therefore, to select readings from the great variety of subjects included under the broad aegis of science and technology.

## II. Criteria for Selection

Next, it was necessary to determine on what basis to select the appropriate readings. To deal with this problem and with some way of limiting the total number of such readings, six main criteria were laid down.

1. *Readings should be clearly relevant to and significant in the context of the stated objective.* In other words, only readings directly pertinent to the modernization processes and problems of the less developed countries per se, or concerned with clearly relevant U.S. experience, would be included.

2. *Readings should be limited to U.S. literature.* In practice this meant limiting titles to works done by American authors and authors of other nationalities closely associated with American institutions. In general, work published by U.N. agencies is excluded.

3. *Readings should be of interest to and capable of being understood by educated, nonspecialized persons involved in development activities.* This meant that the readings, in general, should not be too highly specialized or narrowly focused, and should avoid materials primarily concerned with technical methodology or expressed in highly technical language. Exception was made only when strict adherence would result in the exclusion of an important work. To make the most efficient use of limited space, it was decided that

country or case studies should be included only when they indicated approaches or solutions of particular interest to a number of the developing areas.

4. *Readings listed for each subject should provide points of entry to the topics in that field.* It was felt that the titles selected should assure the broadest coverage of topics and subtopics possible and represent as many contrasting views as possible. This would provide a sample of the various fields and an introduction to several topics so that a reader might be assisted in locating and following up topics of his particular concern. The number of citations from individual authors or institutions who published many articles was limited, even though all the readings might be important, in order to save space.

5. *Readings should be readily available.* This meant limiting selections to published materials such as books, monographs, periodical articles, and Government reports.

6. *References should be reasonably current.* The period of currency varies from topic to topic, although in most cases nothing has been included that was published prior to 1950.

### III. The Method of Preparation

The third problem was to decide how to cover the many aspects of science and technology involved in development and do it in a systematic and uniform manner. It was clear that four major operations would be necessary.

*First, collection.* This involved library search and collection of appropriate materials both by a central staff of librarians and by consultants and their research assistants competent in the various subject fields, for identification and indexing of generally relevant materials.

*Second, screening.* This meant that consultants and their research assistants culled the general collections and lists for specific materials most appropriate in terms of the guiding criteria. The number of titles initially recommended by the consultants far exceeded the maximum of 1,200 items which could be accommodated.

*Third, annotation.* A uniform format for annotations was established. They were to be descriptive, indicate the relevancy of the material if this was not clear from the title, and be held between 20 and 100 words.

*Fourth, review.* This had to insure consistency with criteria and adequacy of coverage, and at the same time reconcile the views of the subject matter specialist and the needs of the overall list. The review was in three stages. In the first stage, all references and annotations were reviewed by the consultants, who proposed what should be included on the list and established a scale of priorities. In the second stage, the list proposed by the consultants was reviewed with the assistance of a small committee of persons experienced in the problems of develop-

ment. Copies of this list were circulated for consideration. In the final stage, the revised lists were discussed again with the consultants, reviewed, checked, edited, and a manuscript prepared.

#### IV. Use of the List

The fourth major question was how to organize the wide range of subject matter so that the reading list would be readily usable. To meet this need, it seemed advisable to organize the chapters along traditional subject divisions and customary associations.

Appendix A was included to indicate the relation of the selected reading list to the various conference sessions described in *United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas*.<sup>1</sup>

A more difficult problem was deciding to which chapters readings on particular topics should be assigned. Individual topics in an area as complex as societal change are interrelated, difficult to define clearly, and often not fully separable. For example, education is relevant to all fields, and readings on education, depending on the focus, can be put in any of the chapters. Furthermore, individual books or articles may concern several different subject categories. Thus readings on community development may be fully relevant to agriculture and to education as well as to social welfare. No matter what the organization, these problems are always present. Two principles were used to deal with the problem of assignment—customary association of topics, and specificity.

It seemed advisable to assign readings on particular topics or subtopics to chapters containing customarily associated materials. For example, a nonspecialist concerned with obtaining an improved understanding of urban problems can reasonably be expected to look for readings on urban problems, not on other topics such as location economics, modern mass construction techniques, or social ecology, although these are all quite relevant. Hence, readings on the latter topics, when they concerned urban areas, were put in the section on urban problems.

The principle of specificity involved the questions of how many groupings to make and how specific they should be. The more specific the grouping, presumably, the easier it would be to locate the reference. After some experimentation, it was decided to group the references in each chapter into a number of sections. References that did not fall into the specific topics or that seemed to apply to a number of these "natural" topics were customarily grouped in a more general section.

#### V. Follow-up Reading

In exploring a topic, the user of this bibliography will face the problem of

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<sup>1</sup> *Revised Information Bulletin*. New York: United Nations. Feb. 1962, E/CONF.39/INF.1/Rev. 1.

locating further readings. Following are four suggestions for those who desire follow-up readings on particular topics.

First, as noted earlier, there is considerable overlap in subject matter between different sections. To deal with this problem without unduly lengthening the bibliography by duplication, readings that might fit under two or more subjects were assigned to only one of the subject categories. This means that the reader concerned with a particular topic will need to examine a number of subject categories for relevant material. Some assistance in this can be obtained by noting the major relevant subtopics in each of the subject categories. The reader should also take cognizance of related topics as he inspects the readings in a particular section, and investigate the other subject sections for further readings on that topic or related topics.

Second, textbooks and specialized bibliographies included in each section list further relevant readings. For example, in Section X (Bibliographies and Handbooks) of Chapter 9 (Industry) one citation is a 170 page annotated bibliography of U.S. readings on specific industries published in 1962 by the U.S. Agency for International Development. Most of the other books and articles in each section also have references to other works on particular topics and suggest related topics that should be investigated. Additional readings may be found in periodicals that are frequently cited in the bibliography. It is also safe to assume that nearly all the authors represented have published other works on the same or related subjects. The generation of a highly specialized bibliography by this method is practical, inexpensive, and time-saving.

Third, the various tools and techniques of bibliographical research, such as periodical indexes, subject abstracts, booklists, and library catalogs, can be very helpful. Rather than attempt to recapitulate the field of bibliographic research here, it is recommended that the interested person attempt to obtain assistance from persons versed in the subject and from professional librarians. A useful source of summaries and excerpts of current material is the *Development Research Review*, published quarterly by the Agency for International Development and distributed to U.S. A.I.D. missions and representatives.

Finally, another method, of varying utility, may be to contact individuals and publishing and distributing organizations especially concerned with the particular subject field. This bibliography will help identify such persons and organizations.

## VI. Procuring References

The user of this bibliography may face problems of procurement when seeking to purchase a particular reference. Several methods may be available, depending on whether it is a book, periodical article, or Government publication, and whether or not it is "in print."

All of the documents included in this list have been published. As long as they are "in print", i.e., stocks are available, they may be purchased from the

publisher or the publisher's local representative or correspondent. The publisher's name is always given in the citation unless the item was published by the author. A useful list of U.S. book publishers and their addresses may be found in the *American Book Trade Directory*, published by R. K. Bowker.

Similarly, journals or other periodicals may be obtained from the issuing organization so long as they are available in stock. *Ulrich's Periodical Directory* is a useful source of information on the publishers of periodicals.

The best general source for U.S. Government documents is the Superintendent of Documents, U.S. Government Printing Office, Washington 25 DC. In many cases, documents may be obtained directly from the issuing Government department. These are indicated in the citations.

However, many of the readings are published in limited quantities for a relatively small audience and often go "out of print" quickly; i.e., they are no longer available from the publisher. When a book or periodical is unavailable from the publisher, there are two major methods of acquisition.

One method, tending to be expensive and often time consuming, is through the secondhand book or magazine market, a service provided by many bookstores or dealers. Most libraries can provide a list of such dealers to be contacted.

Another method, particularly appropriate if a copy of the reference is needed immediately, is to arrange, subject to copyright limitations, for the duplication of the necessary pages or even a book in its entirety. Duplicating devices and sources change rapidly so that suggestions given here could be out of date in a relatively brief time. However, a particularly useful source in this connection is University Microfilms, Inc., 313 North First Street, Ann Arbor, Mich. This company makes facsimiles of "out of print" titles. Information about this service and other services and processes, as well as a copy of the book to be duplicated and information on copyrights, may often be obtained from libraries.

## VII. Opportunity Costs

The limitation on the number of citations to 1,200 faced the authors with what the economist calls "opportunity costs." For each reading included, other important and useful titles had to be excluded and the selection of each title necessarily came down to an individual decision. This decision was based on the selection criteria noted earlier.

In many cases the decisions to leave out material were painful. Some particularly useful items were not yet in published form. Other titles which would have considerably improved representation for one topic could be included only at the expense of eliminating another topic.

The number of readings in each of the subject chapters was not set in advance. It was the result of the selection of the topics and subtopics, judgments on the importance of particular problems for the less developed nations, and the availability of material that fitted the selection criteria.

Any bibliography such as this is timebound. Research and writing in the United States and in other countries produce a steady flow of new materials worthy of inclusion in any list and render some of the included readings obsolete.

Despite this limitation, it is hoped that this current bibliography will be helpful to those involved in development who seek general and relatively sophisticated materials relating to the possibilities, processes, and procedures of development. It is further hoped that its use will contribute to a better understanding of and facilitate cooperation in the application of science and technology to the modernization process.

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## Chapter I.

# THE DEVELOPMENT PROCESS AND ITS SETTING

### I. General Approaches and Strategies

1. ADELMAN, IRMA *Theories of Economic Growth and Development*. Stanford, Calif., Stanford University Press, 1961. 164 pp.

Begins with a review of some of the more important historical growth theories and then applies these to current problems. Concludes with a neo-Keynesian model that emphasizes labor and the entrepreneur.

2. CONFERENCE ON ECONOMIC DEVELOPMENT, UNIVERSITY OF TEXAS, 1958. *Economic Growth Rationale, Problems, Cases*, edited by Eastin Nelson. Austin, Tex., University of Texas Press, 1960. 288 pp

Proceedings of the Conference on Economic Development sponsored by the Department of Economics and the Institute of Latin American Studies at the University of Texas in 1958. Ten principal papers with commentaries deal with problems of growth under three divisions: rationale of economic development; problems arising from rapid economic development; four case studies in economic development.

3. HIRSCHMAN, ALBERT O. *The Strategy of Economic Development*. New Haven, Conn., Yale University Press, 1958. 217 pp.

An attempt to show why the theories of development which assume balanced demand or balanced supply are not relevant as a basis for understanding and planning further development in the less developed countries. Suggests alternatively that the theory should be formulated in terms of shortages or excesses of "social overhead capital" supplemented by directly productive activities. These two types of investments also create "backward" and "forward" linkages which tend to strengthen the momentum of current investment. In addition, such topics as inflation, exports, population pressures, role of the government, and role of the firm are discussed.

5. HOSELITZ, BERTHOLD FRANK (editor) *Theories of Economic Growth*. Glencoe, Ill., Free Press, 1960. 344 pp

Descriptively and comparatively reviews, largely in historical sequence, the assumptions and implications of the major western schools of growth theory. Articles are devoted to theories of (1) mercantilists and physiocrats; (2) Adam Smith and Ricardo, (3) English classical school; (4) John Stuart Mill, (5) neoclassical economists; (6) contemporary theorists; (7) "stages" theorists.

6. INDIANA UNIVERSITY. DEPARTMENT OF GOVERNMENT *Toward the Comparative Study of Public Administration*, edited by William A. Siffin. Bloomington, Ind., 1957. 331 pp.

The lead article presents "a conceptual framework for the dynamic comparative analysis of political-administrative systems." This study sets up the models of the agrarian and industrial societies and their implications for governmental and administrative attitudes, values, and procedures. Six subsequent case studies illustrate the conceptual model in a variety of countries

7. KUZNETS, SIMON SMITH. "Quantitative aspects of the economic growth of nations," *Economic Development and Cultural Change*. Oct. 1956, v. 5, no. 1—Jan. 1962, v. 10, no. 2.

A series of seven articles examining various factors which have been associated with growth in per capita income of nations. Critically discusses the major concepts of quantitative measurement in economics, and looks at the growth of capital and accompanying changes in factor proportions, and income distribution and consumption of types of final goods. Numerous tables and international comparisons.

8. ——. *Six Lectures on Economic Growth*. Glencoe, Ill., Free Press, 1960. 122 pp.

Brings together a series of lectures, covering topics such as the meaning and measurement of growth, conditions necessary for growth, capital formation, trade, the problem of size, and future problems. A number of helpful tables are included.

9. LILINSTEIN, HARVY. *Economic Backwardness and Economic Growth Studies in the Theory of Economic Development*. New York, Wiley, 1957. 295 pp.

After introducing the nature of the problem, the author analyzes the state of economic backwardness, thus developing the thesis that these characteristics are part of a pattern that is self-reinforcing. Such a thesis allows the technique of quasi-equilibrium to be used as the method for determining or laying the preconditions for takeoff. In an appendix, the nature and magnitude of the variables previously considered are displayed.

10. MIKLSFLL, RAYMOND F. "Economic doctrines reflected in U.N. reports," *American Economic Review*. May 1954, v. 44, no. 2, pp. 570-582.

Analyzes vast literature of the United Nations to pick out doctrines and philosophies. These are revealed in both implicit assumptions and explicit use of facts. Problems discussed include theories of development, growth and stability, unemployment, and equilibrium. U.N. reports deal with problems arising from the fact that traditional economic theory may fail or may result in dissatisfaction in many developing complexes.

11. MILLIKAN, MAX F., and BLACKMER, DONALD L. M. (editors) *The Emerging Nations: Their Growth and United States Policy*. Boston, Mass., Little, Brown, 1961. 171 pp.

A group study of the nature and dynamics of societies in transition, emphasizing the many-sided nature of the process and the range of differences among societies with varying histories, cultures, resources, geography. Attempts to isolate certain common features of the transitional process and strategic factors susceptible to external influences. The second part deals with implications for United States policy.

12. NATIONAL BUREAU OF ECONOMIC RESEARCH. *The Comparative Study of Economic Growth and Structure, Suggestions on Research, Objectives and Organization*. New York, 1959. 201 pp.

Systematic comparison of the course of economic growth and of the economic structure of different countries at varying stages of their development is needed if we are to understand the process of economic growth. The study recommends a limitation of the comparative study to measurable phenomena. The relative value of three approaches to comparative studies is discussed: national accounting, input output technique, and formal economic models.

13. OHLIN, GORAN. "Balanced economic growth in history," *American Economic Review*. May 1959, v. 49, no. 2, pp. 338-353.

Discusses questions arising from the balanced growth approach to development, an approach that emphasizes the limiting role of markets in development. Places stress on complementary factors in development and on how markets have developed, and questions the idea of an initial big push.

14. ROSENSTEIN-RODAN, PAUL N. "Notes on the theory of the 'Big Push,'" *Economic Development for Latin America*. Proceedings of a conference held by the International Economic Association, edited by Howard S. Ellis. New York, St. Martin's Press, 1961. pp. 57-81.

Outlines a theory of economic growth, as distinct from equilibrium economic analysis, based on the assertion that economies do not simply change incrementally as they grow but, because of indivisibilities in the production function and resultant "pecuniary external economies," there is a minimum level of resources which must be devoted to a development program if it is to have any chance of success.

15. ROSTOW, WALT WHITMAN. *The Stages of Economic Growth: A Non-Communist Manifesto*. New York, Cambridge University Press, 1960. 178 pp.

A theory of economic growth comprising a five-stages-of-growth interpretation of modern economic history and a 'dynamic theory of production,' combining these with themes from other social forces for an open-ended, nondeterministic theory of alternatives and modern history.

16. SPEIGEL, HENRY WILLIAM. "Theories of economic development. history and classification," *Journal of the History of Ideas*. Oct. 1955, v. 16, no. 4, pp. 518-539.

The author "takes stock" of the various attempts to describe, classify, and analyze the process of economic development. He reviews each of eight categories in the course of the article. Primary emphasis, however, is placed on the fifth category, "Change generated by external factors."

## II. Capital Formation

17. ECKAUS, RICHARD S., and LEFEBER, LOUIS. "Capital formation: a theoretical and empirical analysis," *Review of Economics and Statistics*. May 1962, v. 44, no. 2, pp. 113-122.

Presents a model for intertemporal choice in production, containing elements faced in economic planning and analysis of capital accumulation. High level of aggregation used—consumer and capital goods on output side, and labor and capital on input side.

18. ELLIS, HOWARD S. "Accelerated investment as a force in economic development," *Quarterly Journal of Economics*. Nov. 1958, v. 72, no. 4, pp. 485-495.

Critique of the "big-push" of state intervention theory of economic development. Examines savings and the role of propensity to consume in underdeveloped countries. Examines policy implications of this type of theory, and points out the general weaknesses. Identifies other factors in economic progress which might be of greater importance than this theory.

19. FLEMING, MARCUS. "Rejoinder to Professor Nurkse," *Economic Journal*. Sept. 1, 1956, v. 66, no. 263, pp. 537-539.

Reexamines the doctrine of balanced growth with emphasis on the bearing of factor-supply conditions on the validity of the doctrine as well as on the assumptions introduced earlier by the author.

20. HIGGINS, BENJAMIN H., and MALENBAUM, WILFRED. "Financing economic development," *International Conciliation*. Mar. 1955, no. 502, pp. 273-339.

One article discusses the mobilization of domestic resources and traditional external sources of development capital; another emphasizes the role that new or proposed sources of foreign public funds can play in light of existing political and economic realities.

21. NURSE, RAGNAR. *Problems of Capital Formation in Underdeveloped Countries*. New York, Oxford University Press, 1953. 163 pp.

Defines capital formation as the diversion of part of society's currently available resources into saving, i.e., the increasing of the stock of capital goods so that consumable output in the future is expanded. The author examines the relationships between the parameters of an underdeveloped area and its desire to provide more for itself in the future.

22. ROZENTAL, ALEK. A. "Internal financing of economic development: the role of the hybrid investment trust," *American Journal of Economics and Sociology*. July 1958, v. 17, no. 4, pp. 353-366.

Presents the thesis that the low values of the output-capital ratio and the saving-income ratio in many of the underdeveloped countries are due, *inter alia*, to the imperfect organization of the capital markets. Suggests financial reform of institutions and instruments to change the pattern of disposition of savings and to channel a larger portion of savings into investments that tend to facilitate growth over time. This reform, by making saving and investment more rewarding, should increase the saving-income ratio. The investment trust development corporation is examined as the principal instrument conducive to this purpose.

23. STRASSMANN, W. PAUL. "Economic growth and income distribution," *Quarterly Journal of Economics*. Aug. 1956, v. 70, no. 3, pp. 425-440.

Discusses the importance of income equality and social homogeneity as factors conducive to high productivity and the use of capital equipment.

24. UNIVERSITIES—NATIONAL BUREAU COMMITTEE FOR ECONOMIC RESEARCH. *Capital Formation and Economic Growth*. Princeton, N.J., Princeton University Press, 1955. 677 pp.

Twelve essays dealing with the problem of the relation between economic development and capital accumulation from the point of view of both advanced and underdeveloped nations. Presents an array of differing viewpoints and studies the main factors affecting economic growth with emphasis on capital formation.

### III. Fiscal and Monetary Policy

25. ADLER, JOHN H. "The fiscal and monetary implementation of development programs," *American Economic Review*. May 1952, v. 42, no. 2, pp. 584-611.

Indicates that most discussions of development have centered around macro economic considerations, which are inadequate because they make certain rigid assumptions about investment. Points to dangers in using currently mature economies as models for development of emerging nations. Fiscal and monetary policies are key tools in the development process.

26. BERNSTEIN, EDWARD M., and PATEL, I. G. "Inflation in relation to economic development," *International Monetary Fund Staff Papers*. Nov. 1952, v. 2, no. 3, pp. 363-398.

Discusses new methods that can be used to encourage enterprise and investment. The problem of the availability of savings and the low level of investment is the core of the analysis. Inflation resulting from the expansion of bank credit is examined, in relation to how it is initiated and its effects, such as on price wage spirals, on saving and investment. Economic costs also are described.

27. BLOOMFIELD, ARTHUR I. "Monetary policy in underdeveloped countries," *Public Policy; A Yearbook of the Graduate School of Public Administration, Harvard University*. 1956, v. 7, pp. 232-274.

Broad survey of the role and problems of monetary policy in underdeveloped countries, review of recent experience, and suggestions of measures to be taken by the central bank to promote economic development and stability.

28. GOODE, RICHARD. "Taxation of saving and consumption in underdeveloped countries," *National Tax Journal*. Dec. 1961, v. 14, no. 4, pp. 305-322.

Beginning with the assumption that an increased saving-investment rate is a condition for economic progress in less developed countries, the author

analyzes how tax policy can be effected to achieve this objective. Taxes are given a primary role as a technique for inducing savings, and they constitute the government's main source of revenue. Various types of taxes are reviewed and analyzed especially in relation to their selectivity, progressivity, and coverage. Other topics that are discussed include expenditure taxes, indirect taxes, and tax administration.

29. GURLEY, JOHN G., and SHAW, E. S. "Financial aspects of economic development," *American Economic Review* Sept. 1955, v. 45, no. 4, pp. 515-538.

Reviews financial aspects of income generation, spending, saving, investment, and the accumulation of wealth. Discusses the role of financial institutions and intermediaries in transmitting loanable funds between spending units. Suggests that traditional theories of income, money, and interest have given inadequate attention to the reciprocal relations between real development and financial development.

30. MUGGRAVE, RICHARD ABEL. *Theory of Public Finance: A Study in Public Economy*. New York, McGraw-Hill, 1959. 6:8 pp.

Theoretical approach to normative and positive aspects of public finance. Examines welfare implications of public finance. Treats the traditional positive problems of the relative effects of different tax and expenditure systems on work effort, saving, relative prices and outputs, investment, and the distribution of income. Also discusses growth problems and the theory of debt policy.

31. PAAUW, DOUGLAS S. *Financing Economic Development The Indonesia Case*. Glencoe, Ill., Free Press, 1960. 474 pp.

Examines Indonesian economic development during the 1950's, with particular attention to capital requirements, sources of savings, and likelihood of success of current and proposed monetary and fiscal policies. Discusses capital requirements, the capital-output ratio, population growth, and capital formation in public and private sectors along with the role and shortcomings of financial intermediary institutions. Deficit financing is found to produce little increase in realized investment while resultant inflation reduces consumption and endangers stability and development. The desire for and rational use of various kinds of foreign assistance are discussed.

32. PATTERSON, GARDNER. "Impact of deficit financing in underdeveloped countries; sometimes neglected aspects," *Journal of Finance*. May 1957, v. 12, no. 2, pp. 178-189.

Discusses two main questions: what are the limits on deficit financing in putting unemployed factors of production to work; and is deficit financing an effective way to exercise savings. Although deficit financing may offer many benefits, there are some shortcomings associated with the fact that those using it often overestimate the volume and nature of unemployed resources and the possible net increases in production, as well as the costs of inflation.

33. SCHATZ, SAYRE P. "Inflation in underdeveloped areas: a theoretical analysis," *American Economic Review*. Sept. 1957, v. 47, no. 5, pp. 571-593.

Examines distinctive characteristics and causes of inflation in underdeveloped regions. Calls for a model different from that for advanced economy because of prevalence of two spheres in underdeveloped areas—the market and the subsistence spheres. Examines changes in expenditures and changes in production as basic causes of inflation.

34. SMITH, WARREN L. "Monetary-fiscal policy and economic growth," *Quarterly Journal of Economics*. Feb. 1957, v. 71, no. 1, pp. 36-55.

Growth requirements are that inflation and unemployment be avoided. With this as a rallying point, the author attempts to relate the rates of monetary and fiscal policy in keeping long-run growth tendencies consistent with their requirements. The model developed is linear and allows requirements to be expressed in simple functions of key parameters. The effects of government expenditure on capacity, anticyclical monetary and fiscal policies, as well as the relations between the rate of interest and the capital coefficient, are examined.

#### IV. International Trade and Payments

35. BALASSA, BELA A. *The Theory of Economic Integration*. Homewood, Ill., Irwin, 1961. 304 pp.

Attention is directed to an analysis of the basic theoretical problems confronted in the integration of independent nations. One point of focus is the relation between integration and growth. Although the volume does not deal directly with the specific problems of an emerging nation, it is valuable in its presentation of regional problems and problems of blocs, and problems of integration that arise as nations mature.

36. CHENG, HANG SHENG. "Statistical estimates of elasticities and propensities in international trade: a survey of published studies," *International Monetary Fund Staff Papers* 1959/1960, v. 7, pp. 107-158.

A compilation of 42 articles and books dealing with elasticities and propensities for the period 1927 to 1957. Part I is an index, according to country or area, Part II is a description which sets forth the purpose and scope of the study, the variables and the methods used in the statistical estimation, the tests of significance used and the conclusions drawn by the original author. Useful to economists and others interested in knowing, for instance, the magnitude of the income elasticity of demand for imports by a certain country, or the price elasticity of its demand for the import of a certain commodity.

37. HABEELER, GOTTFRIED. *International Trade and Economic Development*. Cairo, Egypt, National Bank of Egypt, 1959. 36 pp.

Discusses the positive and negative contributions of foreign trade to underdeveloped countries. Considers the arguments in favor of protection and free trade and the relationship of the underdeveloped and developed countries and refutes the Singer-Prebisch argument that the long-run terms of trade for primary-producing countries are deteriorating. Concludes that growth of advanced countries helps underdeveloped countries, that a 20- to 30-percent (but no higher) infant industry protection in underdeveloped countries is desirable, and that education and social overhead should be developed rapidly.

38. KINDLLBERGER, CHARLES P. "The terms of trade and economic development," *Review of Economics and Statistics*. Feb. 1958, v. 40, no. 1, part 2, supplement, pp. 72-90.

Dismissing dogmatic generalizations on terms of trade between manufacturing nations and primary producers, the author contends that the developed nations are nevertheless in favorable positions. On the basis of data drawn from industrial European exports and imports, he compares the trends in the terms of trade between manufactures and primary products, noting that trends vary according to the stages of development of a nation, and that hence, there is little uniformity between the two types of commodities. On the basis of evidence which he produces, he suggests that internal adjustments and adaptations in developing countries are as important as external schemes of stabilization.

39. LETICHE, JOHN M. *Balance of Payments and Economic Growth*. New York, Harper & Bros., 1959. 378 pp.

Presents a restatement of classical trade theory in the light of current developments. Starts with a critical review of trade theory and international balancing problems, then moves into a more general theory. The latter portion is concerned with applying this theoretical analysis of payments problems to economic development.

40. MORGAN, THEODORI. "Long-run terms of trade between agriculture and manufacturing," *Economic Development and Cultural Change*. Oct. 1959, v. 8, no. 1, pp. 1-23.

The author submits to analytical scrutiny the thesis that terms of trade between agriculture and manufacturing industry have been shifting to the advantage of the latter. He reviews and comments upon doctrines which imply adverse trends for terms of trade for producers of primary products. He suggests that many of the general barter terms of trade doctrines are less relevant to underdeveloped countries than studies dealing with specific commodities and price systems for individual countries.

41. NURKSE, RAGNAR. *Equilibrium and Growth in the World Economy*. Cambridge, Mass., Harvard University Press, 1961. 380 pp.

Combining economic history and theory, Nurkse reviews the relation between the factors underlying trade expansion in relation to the economic growth of the new nations. Analyzing the economic consequences of three typical patterns of growth, he establishes causal relations between the relative decline of primary commodities exports of emerging nations and the flow of private capital from the industrialized countries, pointing to the need for external aid to fill economic gaps. His pattern of analysis provides the theoretical bases for the adoption, coordination, and implementation of development, trade, and aid policies.

42. REUBENS, EDWIN P. "Commodity trade, export taxes and economic development," *Political Science Quarterly*. Mar. 1956, v. 71, no. 1, pp. 42-70.

Comprehensive examination of the export tax in relation to economic development. Develops the objectives and goals of such a tax, how it works in practice, and evaluates its performance. Principally concerned with the primary-producing country (underdeveloped) heavily dependent upon exports of a few stable products.

43. SHEAHAN, JOHN. "International specialization and the concept of balanced growth," *Quarterly Journal of Economics*. May 1958, v. 72, no. 2, pp. 183-197.

An attempt to determine the basis of balanced growth on its applicability with regard to investment incentives, internal structure of the economy, international trade, and the rate of return on capital. It is felt that for any one nation, the concept of balance may be an impediment to growth. Taken in a global context, however, it could be used for coordinating investment internationally.

44. WALD, HASKELL P. "On the evolving strategy of international monetary cooperation," *Social Research*. Winter 1961, v. 28, no. 4, pp. 481-490.

A brief review of the prevailing international payments machinery and problems, and the practices of technical cooperation in exchange markets and inter-central bank accommodations. Commenting upon the internal flexibilities and rigidities of the system, the author points to the

need for individual government discipline and assertion of their influence in coordinating internal and external payments disequilibria. In spite of the need for circumscription of credit creation governments, a large degree of self-autonomy necessary for growth is retained by individual governments.

45. WALLICH, HENRY C. "Stabilization of proceeds from raw material exports," *Economic Development for Latin America*. Proceedings of a conference held by the International Economic Association, edited by Howard S. Ellis. New York, St. Martin's, 1961. pp. 342-361.

Beginning with the 1920's, the author provides a periodic survey of commodity stabilization as it has been interpreted at different stages of international cooperation. Examines the motivating theory of the various efforts and also the techniques. In addition, the author suggests an alternative program consisting of countercyclical lending and price stabilization.

## V. Political Factors in Development

- ✓ 46. ALMOND, GABRIEL ABRAHAM (editor) *The Politics of the Developing Areas*. Princeton, N J., Princeton University Press, 1960. 591 pp.

Using the structural, functional approach, this work develops a theoretical framework for the comparative study of political systems. The model derived from the empirical and formal analysis of western politics is then used as a framework for the analysis of the political and governmental structures and functions in Southeast Asia, South Asia, Sub-Saharan Africa, the Near East, and Latin America. The final chapter describes the model characteristics of the political systems in the developing areas.

47. APTER, DAVID E. "Nationalism, government, and economic growth," *Economic Development and Cultural Change*. Jan. 1959, v 7, no. 2, pp. 117-136.

The leadership of emerging nations faces an overwhelming dilemma: it must speed up social mobility and tangible benefits of development. The former requires an open political system; the latter, political controls. The author discusses the implications of each, and possible measures to achieve acceptance and participation.

48. DEUTSCH, KARL W. "Social mobilization and political development," *American Political Science Review* Sept. 1961, v. 55, no. 3, pp. 493-514.

Discusses theory of social change as "social mobilization." Proposes an algebraic formula for consideration of the variables involved in change, and gives examples of the application. Analyzes the significant indices of change. Includes a table of results obtained from applying the formula in several countries including such factors as GNP, radio audience, newspapers, literacy, and urban percentages.

49. EMERSON, RUPERT. *From Empire to Nation. The Rise to Self-Assertion of Asian and African Peoples.* Cambridge, Mass., Harvard University Press, 1960. 466 pp.

Details the 20th-century rise of nationalism among non-European peoples as a consequence of the imperial spread of Western European civilization over the world. Discusses essential similarities in the national patterns of non-Western countries as they differ from their sources in the West. Includes observations on major aspects of the developing countries (language, culture, religion, economics, and nation-building) as they relate to national movements. Deals at length with relation of nationalism to democracy and communism.

50. JOHNSON, JOHN J. (editor) *The Role of the Military in Underdeveloped Countries.* Princeton, N J., Princeton University Press, 1962. 427 pp.

The authors of the essays in this volume examine the role of the military in the political and economic development of the emerging nations. This entails a search for the social bases, structure, and goals of armies, and for the reason "why transitional societies apparently find it easier to create modern armies than most other modern structures." The role and characteristics of the armies in a number of areas of the world are analyzed.

- ✓ 51. KAUTSKY, JOHN H. (editor) *Political Change in Underdeveloped Countries: Nationalism and Communism.* New York, Wiley, 1962. 347 pp.

A series of 12 articles by different authors elaborating on the broad generalizations and hypotheses presented in the lead essay, including such topics as factors contributing to and conditioning nationalism; underdeveloped countries; the relationship between intellectuals and organized labor in the process of industrialization; and the attractions and probability of a totalitarianism of intellectuals, specifically of its Communist form, in underdeveloped countries.

- ✓ 52. KERR, CLARK, et al. *Industrialization and Industrial Man.* Cambridge, Mass., Harvard University Press, 1960. 331 pp.

A study of and an approach to understanding industrial relations based on the experience of many countries rather than that of one or a few. Places labor-management-state relations in the context of the imperatives of industrialism, the desires of the controlling elites, and the demands of the particular environment. Suggests several lines of industrial development.

- ✓ 53. PYE, LUCIAN W. *Politics, Personality, and Nation Building. Burma's Search for Identity.* New Haven, Conn., Yale University Press, 1962. 307 pp.

A case study using extensive interviews in depth. Concludes that the hope for transitional peoples resides in their quests for more collective as well as individual identities, although a fusion of traditional and modern modes of acculturation can produce disturbing reactions which reduce effectiveness by threatening identity and resulting in anxiety, which may further paralyze action in a vicious circle of psychological inhibitions. Two solutions are suggested, a combination of which is viewed as essential to success (1) a grand ideological source coming from charismatic leadership, (2) trading a sense of identity through the mastery of professional skills—providing both the individual with an identity and society with the skills needed for modernization.

54. SELZNIK, PHILIP. *The Organizational Weapon: A Study of Bolshevik Strategy and Tactics.* Glencoe, Ill., Free Press, 1960. 350 pp.

The book's two objectives are (1) to analyze the use of organizations and organizational practices as weapons in the struggle for power, and (2) to deepen our understanding of Bolshevik strategy and tactics. The analysis is, therefore, operationally rather than ideologically oriented. Searches out central features of the communist type of political party and uses "models" of "latent structures" to account for the most important attributes of political action.

55. SEMINAR ON LEADERSHIP AND POLITICAL INSTITUTIONS IN INDIA, UNIVERSITY OF CALIFORNIA, Berkeley, 1956. *Leadership and Political Institutions in India*, edited by Richard Leonard Park and Irene Tinker. Princeton, N.J., Princeton University Press, 1959. 486 pp.

A study of political leadership in the Indian effort at modernization and economic development through accelerated development of democratic institutions. Discusses traditions of leadership, personality, political institutions, political parties, influence groups, public administration, rural development, and leadership and change in the villages.

56. SHILS, EDWARD. "The concentration and dispersion of charisma: their bearing on economic policy in underdeveloped countries," *World Politics*. Oct. 1958, v. 11, no. 1, pp. 1-19.

Traditional societies are permeated with charismatic manifestations which attach to new, nationalistic leadership. Economic development is incorporated into the image of a reawakened national spirit and cannot be viewed as autonomous from national and political reformations and purposes. Thus initiative is seen as coming from government; national rather than individual ambition is looked to as the motivating force. Concludes that personal ambition and creative potential in the long run must provide the dynamism.

57. STALEY, EUGENE. *The Future of Underdeveloped Countries* (2d ed) New York, Harper & Bros, 1961. 483 pp.

Asserts that a great transformation is sweeping the underdeveloped countries, and that economic development *per se* is not enough, but it is in matters of how and how much, and under what leadership that development should be considered. Discusses successful development, defines the communist path to development, contrasts it with the democratic path, and concludes with trends in the sixties.

## VI. Role and Function of Government

58. BERGER, MORROE. "Bureaucracy East and West," *Administrative Science Quarterly*. Mar. 1957, v. 1, pp. 518-529.

Raises questions about the adequacy of Western bureaucratic theory. Egyptian documentary, historical, and questionnaire data suggest the need to break old concepts of bureaucratic behavior, attitudes, and professionalism into independent parts.

59. CONFERENCE ON THE STATE AND ECONOMIC GROWTH, New York, 1956. *The State and Economic Growth Papers of a Conference Held on October 11-13, 1956, Under the Auspices of the Committee on Economic Growth*, edited by Hugh G. J. Aitken. New York, Social Science Research Council, 1959. 389 pp.

Thirteen papers on the historical role of the state in the economic growth of different nations, using different types of countries and three sets of polar criteria for comparison. Criteria are expansion of land use, growth factors and materials within an outside country; and autonomous versus government-induced growth. Focuses on whether state effort consisted of efforts to create a favorable milieu for growth, or used specific measures to accomplish specific growth purposes.

60. HEADY, FERREL. "Recent literature on comparative public administration," *Administrative Science Quarterly*. June 1960, v. 5, no. 1, pp. 134-154.

A bibliographic report on comparative administration literature up to 1959, with reference to bibliographic as well as general works and articles. Groups recent literature into four categories: theory, approach, methodology, and model building; Western industrial societies, non-Western, underdeveloped, transitional societies; and individual country materials.

61. MARK, LOUIS, JR. "The favored status of the state entrepreneur in economic development programs," *Economic Development and Cultural Change*. July 1959. v. 7, no. 4, pp. 422-430

Examines a number of factors which affect economic assistance programs in underdeveloped areas. Concludes that such programs contain a built in bias which channels investment funds to government-owned enterprises at the expense of private entrepreneurs.

62. MASON, EDWARD S. "The role of government in economic development," *American Economic Review*. May 1960, v. 50, no. 2, pp. 636-641.

A brief discourse on the extent to which government can shape or is inevitably shaped by society. The degree of backwardness, cultural similarities, and physical size are discussed in relation to their importance as factors which may influence the ultimate shape of the government and society.

63. RIGGS, FRED WARREN. *The Ecology of Public Administration*. New York, Asia Publishing House, 1962. 152 pp.

Theoretical models of comparative analysis of societal patterns and their corresponding administrative forms in the United States, Thailand, and the Philippines. Using a new vocabulary, the author designates the models of modern, traditional, and developing societies as refracted, fused, and prismatic, respectively. The models are replete with illustrative samples, although the author views the framework as presently in experimental form.

64. WALDO, DWIGHT. *Perspectives on Administration*. University, Ala., University of Alabama Press, 1956. 143 pp.

States that the contribution of social sciences to contemporary society is much greater than is generally recognized. Reviews the analogical models on which administrative theory has been based in law, religious organizations, and science. Summarizes the contribution of history, literature, and the social sciences to public administration.

## VII. Personality, Culture, and Mobility

65. BANFIELD, EDWARD C. *The Moral Basis of a Backward Society*. Glencoe, Ill., Free Press, 1958. 204 pp.

A detailed study of the cultural, psychological, and moral conditions of political and social organizations which impede corporate action in a particular culture, using as an example a village in southern Italy. The author's theory is that poverty and backwardness can be explained largely by the inability of the villagers to act together for the common good, an inability which he attributes to an ethos produced by a high death rate, certain land tenure conditions, and the absence of the institution of the extended family.

66. BRAIBANTI, RALPH J. D., and SPENGLER, JOSEPH J. (editors) *Tradition, Values, and Socio-Economic Development*. Durham, N.C., Duke University Press, 1967. 305 pp. (Duke University Commonwealth-Studies Center. Publication No. 13)

Nine essays. (1) J. J. Spengler: the rate and direction of development depend on the emotional and intellectual predispositions of the elites and the masses; (2) R. Braibanti: six questions in which political science research should explore underdeveloped areas; (3) W. E. Moore: types of relationships among rates and variables in the social framework of economic development; (4) B. Hoselitz: four forms of tradition-oriented behavior; (5) M. J. Herscovits: the weight of cultural influences in enhancing or deferring social innovation; (6-7) I. H. Qureshi: social development of Islamic political thought as background to ideological sources in Pakistan; (8) J. D. Montgomery: impact of technical assistance on internal policies of recipients; (9) M. Wade: pragmatic account of social change in French Canada.

67. HAGEN, EVERETT EINAR. *On the Theory of Social Change How Economic Growth Begins*. Homewood, Ill., Dorsey Press, 1962. 557 pp.

The author, convinced that economic theory alone is not sufficient to explain "the whens and whys" of economic growth, uses an interdisciplinary approach to evolve a theory which encompasses social change in general, as well as economic growth in particular. Drawing heavily on the psychology of childhood and personality, he discusses the need for integrated system analysis, and the need to relate "childhood to history" in social theory. Using this approach, the author analyses the transition to economic growth in England, Japan, Colombia, and Indonesia. A special section is concerned with transition in cases of colonialism; namely, Burma and the Sioux Indians in North America.

68. HOLMBERG, A. R. "The research and development approach to the study of change," *Human Organization*. Spring 1958, v. 17, no. 1, pp. 12-17.

A case study of the Cornell Peru Project which suggests that, in the long run, the interventionist or action approach to the dynamics of culture provides considerable payoff in both a more rational policy and a better science.

69. HOSLITZ, BERTHOLD F. (editor) "The agrarian societies in transition," *Annals of the American Academy of Political and Social Science*. May 1956, v. 305, 156 pp.

Nine essays on the social implications of technical change by authorities in the field. Supplemented by regional case studies on Ceylon, Japan, West Africa, Jamaica, and Israel.

70. LERNER, DANIEL. *The Passing of the Traditional Society: Modernizing the Middle East*. Glencoe, Ill., Free Press, 1958. 466 pp.

A study of the factors and processes of modernization in six countries in the Middle East: Egypt, Iran, Jordan, Lebanon, Syria, and Turkey. Characteristics of change are identified as urbanism, literacy, media consumption, and empathic capacity. The extent of modernization is measured by the balanced growth in the indices. The book presents socio-political portraits of the countries and a typology of transition.

71. LEVY, MARION JOSEPH, Jr. *The Structure of Society*. Princeton, N.J., Princeton University Press, 1952. 584 pp.

First of a series of volumes on comparative social analysis. Develops a conceptual scheme and a theoretical system for comparing societies. The author describes three approaches to the study of social science, which are directed to the question, "What concepts can be used and what theories can be derived about any social action, any social system, and any society?"

72. LIPSET, SEYMOUR MENTIN, and BENDIX, REINHARD *Social Mobility in Industrial Society*. Berkeley, Calif, University of California Press, 1959. 309 pp.

Assembles and compares data on social mobility from the United States and a number of western European countries. Rates of mobility are found to be equally high and similarly patterned. General equalitarian beliefs are related to value attached to mobility rather than objective rates. Bases of mobility are then examined more closely in a limited labor market.

73. MCCLELLAND, DAVID CLARENCE. *The Achieving Society*. Princeton, N. J., Van Nostrand, 1961. 512 pp.

An attempt to isolate and quantify certain psychological factors and to demonstrate by quantitative scientific methods that these factors are generally important in economic development and decline. The thesis of the study is that achievement motivation is in part responsible for growth.

74. NASH, MANNING. "Some social and cultural aspects of economic development," *Economic Development and Cultural Change*. 1959, v. 7, no. 2, pp. 137-150.

Presents sets of social and cultural features as an analytical framework for the diagnosis of a society's potential for economic development. The ordering of the society to determine the major sources of stability and liability is classified under the following headings: (1) the pattern of social stratification; (2) the value system; (3) the economic subsystem; and (4) the political subsystem.

75. NIMKOIF, M. F. "Is the joint family an obstacle to industrialization?" *International Journal of Comparative Sociology*. Mar. 1960, v. 1, no. 1, pp. 109-118.

Discusses the joint family as a deterrent to industrialization with emphasis upon the antirelationalistic influence in industry stemming from family sentiment. Suggests that there is a variety of types of industrial society, and that interrelations of industry, government, and family take different forms in different countries.

76. RLDFIELD, ROBERT. *Peasant Society and Culture An Anthropological Approach to Civilization*. Chicago, Ill., University of Chicago Press, 1956. 162 pp.

Notes the recent change of emphasis in anthropology away from isolated communities forming integrated wholes that can be understood as a system of functionally related parts to the study of parts of larger, more complex social systems. Sees the extension of elements of the isolated community concept into study of hierarchies of territorially based groups, more or less independent economic fields of activity, and country-wide networks of relationships. Considers the interrelationships of "great traditions" generated by elites and "little traditions" maintained on a folk level, and suggests the concept of peasant society as an integrated pattern of dominant attitudes of a distinct segment of society which is found in diverse parts of the world and which it is useful to study as a single phenomenon.

## VIII. Technical Change, Innovation, and Entrepreneurship

77. BARNETT, HOMER GARNER. *Innovation The Basis of Cultural Change*. New York, McGraw-Hill, 1953. 462 pp.

Socio-psychological approach to the study of the impact of basic cultural change. Scientifically examines the concept of innovation and the factors which influence its acceptance or rejection. The author's theory is that "any innovation when understood as a mental phenomenon conforms to a limited number of reactive patterns irrespective of contents of ideas embodied in mental reaction." The author's use of selected ethnic groups makes intercultural comparisons possible and provides broad applicability of the findings.

78. BROZEN, YALE. "Determinants of entrepreneurial ability," *Social Research*. Autumn 1954, v. 21, no. 3, pp. 339-364.

Social forces and structure affect both the quantity of entrepreneurial ability and management, and its type and quality. Describes four types: innovating; irritating; Fabian, and drone. Notes effect of other factors such as religion and social structure on the dominance and behavior of entrepreneurial types, discussing pressures, incentive, access to resources, recruitment, and use of foreigners.

79. BRUTON, HENRY J. "Innovations and equilibrium growth," *Economic Journal*. Sept. 1956, v. 66, no. 263, pp. 455-466.

Maintains that invention and innovation are crucial to the growth process. In the long run, it is suggested, a particular pattern as well as a rate of innovation is essential to internal economic consistency. In addition, a method of introducing inventive and innovational activity as an endogenous variable is proposed in concurrence with hypotheses concerning the necessary behavior of the innovations themselves.

80. GERSCHENKRON, ALEXANDER. "Social attitudes, entrepreneurship and economic development," *Explorations in Entrepreneurial History*. Oct. 1953, v. 6, no. 1, pp. 1-20

Briefly presents some general lines of thought that have been pursued, issues some warnings against too ready acceptance of certain abstract models, and illustrates these warnings by reference to some segments of economic history in the 19th century.

81. MACLAURIN, W. RUPERT. "The sequence from invention to innovation and its relation to economic growth," *Quarterly Journal of Economics*. Feb. 1953, v. 67, no. 1, pp. 97-111.

Raises questions and presents some answers to the following characteristics of invention, innovation, and economic growth: the propensity to develop pure science, to invent, to innovate, to finance innovation, and to accept innovations.

82. NELSON, RICHARD R. *Economics of Invention: A Survey of the Literature*. Santa Monica, Calif., Rand Corporation, 1959. 54 pp. (No. P1604)

A selected summary of the literature on the economics of invention. The roles of social demand and increased knowledge as stimulators of inventive effort are examined. The comparative importance of the single inventor and the research team is appraised. The analyses are supported by case studies.

83. PAPANIK, GUSTAV FRITZ. "The development of entrepreneurship," *American Economic Review*. May 1962, v. 52, no. 2, pp. 46-58.

In the discussion of economic development the emphasis has recently shifted to the key role of decision-making innovators. Analyzes the proposition made regarding the entrepreneur and tests hypothesis in the case of Pakistan. Finds a considerable increase in industrial entrepreneurship and analyzes the factors which contributed to that development, such as effective government and some market response plus powerful economic incentives. There is considerable evidence of rapid development of economic entrepreneurship.

84. SOLOW, ROBERT. "Technical change and the aggregate production function," *Review of Economics and Statistics*. Aug. 1959, v. 39, no. 3, pp. 312-320.

Throws light on some of the basic quantitative relationships involved in long-term growth and technical change. Attempts to segregate shifts in aggregate production function from movements along it in order to measure the contribution of technical change. It is demonstrated that gross output per month doubled over 1909-49 in the United States, with 87½ percent of the increase attributed to technical change and the remaining 12½ percent to increased input of capital.

85. *Technology and Social Change*, by Francis R. Allen, et al. New York, Appleton-Century-Crofts, 1957. 529 pp.

Presents an analysis of technology and applied science as constituting a dominant and crucial force in causing change in modern Western society. The overall phenomena and problems of social change are appraised. Part I presents processes and theories of social change; Part II deals with the social effects of selected major inventions, Part III discusses the influence of technology on social institutions; Part IV examines rapid social change and social problems, Part V discusses change, planning, and social control.

86. U.S. NATIONAL SCIENCE FOUNDATION. *Diffusion of Technological Change*. Washington, D C., U.S. Government Printing Office, 1961. 6 pp. (Reviews of Data on Research and Development No. 31)

A survey to determine the speed and determining factors in accepting technical innovations in industry indicates that diffusion of a new technique is a slow process. Rate of diffusion is higher for more profitable innovations and varies among industries.

87. UNIVERSITIES—NATIONAL BUREAU COMMITTEE FOR ECONOMIC RESEARCH. *The Rate and Direction of Inventive Activity: Economic and Social Factors*. Princeton, N.J., Princeton University Press, 1962. 635 pp.

A series of papers concerned with the relation of inventive activity to productivity, with emphasis on the supply of factors which are allocated to inventive effort, the output of inventive effort (inventions themselves), and the input-output relationships.

88. WORLD FEDERATION FOR MENTAL HEALTH. *Cultural Patterns and Technical Change*, edited by Margaret Mead. New York, New American Library, 1955. 352 pp.

Reviews the numerous observations and accounts of the implications of changes brought about by the introduction of modern techniques in non-industrialized countries and countries in the process of industrialization. The survey was intended primarily for individuals immediately concerned with introducing technological change in their particular nation. It has special sections on Burma, Greece, Nigeria, and Palau, as well as a section on mental health implications of technical change. Includes a bibliography on culture change.

## IX. General Texts and Bibliographies

89. AMERICAN UNIVERSITIES FIELD STAFF. *A Select Bibliography: Asia, Africa, Eastern Europe, Latin America*. New York, 1960. 534 pp.

A compilation of approximately 6,000 titles, a large number of which are annotated. In addition to being organized by major geographic areas, it is divided into regional and country sections that in turn are divided by subject. Among the subjects covered in each area are religion, philosophy, history and description, fine arts, language and literature, drama, society, people and institutions, economics, government, politics, and law and international relations.

90. HALD, MARJORIE. *A Selected Bibliography on Economic Development and Foreign Aid*. Santa Monica, Calif., Rand Corporation, 1957. 93 pp.

A selective bibliography of more than 1,500 items on economic and other aspects of growth and development, external assistance, and international cooperation. One section is functional in scope, dealing with the development problems in all areas, including international trade. Another is a bibliography of United States aid policy and practices with 500 titles arranged in regional categories.

91. HIGGINS, BENJAMIN HOWARD. *Economic Development: Principles, Problems, and Policies*. New York, Norton, 1959. 803 pp.

A general survey of the field of economic development, beginning with an introduction to the general problems of underdeveloped areas and moving toward the development of an analytical framework by means of which the specific problems of these low income nations may be analyzed and assessed. Presents a comprehensive review of the leading theories of growth and development along with specialized treatment of specific problems such as fiscal policies, savings, stabilization, investment, capital formation, foreign investment and aid, and population.

92. KINDLEBERGER, CHARLES POOR. *Economic Development*. New York, McGraw-Hill, 1958. 325 pp.

Treats economic problems associated with the economic growth of developing economies. Describes specific and general features of the economic development process, such as capital formation, utilization of the labor force, allocation of productive factors, internal problems of distribution, technology, monetary and fiscal policy, financing, and the market economy.

93. MIER, GERALD M., and BALDWIN, ROBERT E. *Economic Development: Theory, History and Policy*. New York, Wiley, 1957. 588 pp.

A general text covering the standard issues of economic development from the view of economic thought and economic history. A comprehensive and systematic framework is developed by means of which specific economic factors may be analyzed, such as domestic and international policy issues, trade, and factor movement and allocation.

94. OKUN, BERNARD, and RICHARDSON, RICHARD W. (editors) *Studies in Economic Development*. New York, Holt, Rinehart & Winston, 1961. 498 pp.

Economic readings covering a wide scope of subjects, ranging from specific problems such as foreign trade, capital, and investment to general processes such as problems of measurement, conceptual analysis, inflation, and economic policy. Policy-oriented, covering values, institutions, and other non-economic forces. Included are topics and models of growth, strategies for development, characteristics of developing economies, and policies for development.

95. U.S. DEPARTMENT OF STATE BUREAU OF INTELLIGENCE AND RESEARCH. *External Research A List of Recently Completed Studies*. Washington, D.C. (Published irregularly; various pagings)

Listings of research projects by American social scientists dealing with various subjects. It is a report on the status of research, rather than a bibliography of some of the projects which were previously reported in *External Research Research in Progress*, indicating completion and possible availability. Some of the projects are identified by a descriptive

annotation, but the majority are listed without further identification. Useful source of information concerning current research projects pertinent to the development process in the developing nations. The articles are arranged by geographical area.

96. ———. *External Research: Research on Underdevelopment*. Washington, D.C., 1960.

Occasional reports reviewing current writings on development, presenting annotated bibliographies of area studies, discussing the concepts that are currently considered of importance by the major scholars working in the field of economic and social development, and reviewing work in progress at various United States universities and training centers.

## Chapter 2.

### PLANNING AND PROGRAMING

#### I. Pragmatic Planning

97. COLM, GERHARD, and GEIGER, THEODORE. "Country programing as a guide to development," *Development of the Emerging Countries An Agenda for Research* Washington, D C, The Brookings Institution, 1962. pp 45-70.

This essay outlines the planning useful in economic development and suggests problems related to planning and planning techniques on which research is needed. Cautions against plans and programs that have been hastily prepared on the basis of little or no data. Points out limitations of current mathematical methods in planning and programing, and suggests more attention to pragmatic approaches.

98. GALBRAITH, JOHN KENNETH. *Economic Development in Perspective* Cambridge, Mass., Harvard University Press, 1962. 76 pp.

Contrasts the developed and the developing, presents an approach of development planning, and discusses education, development, and the instruments of production in five lectures.

99. LINDLOM, CHARLES E. "Science of 'muddling through,'" *Public Administration Review*. Spring 1959, v. 19, no. 2, pp. 79-88.

Discusses the theoretical background of decision making by successive limited comparisons in contrast to rational-comprehensive decision making, and considers the implications of this on policy and on choice of personnel in decision-making posts.

100. MASON, EDWARD. *Economic Planning in Underdeveloped Areas: Government and Business*. New York, Fordham University Press, 1958. 87 pp. (Millar Lectures Series No. 2)

Analyzes the role of government in effectuating economic development. On theoretical grounds, a major role is indicated. The experience of the

19th-century growth of currently developed countries is examined and found inadequate for developing countries. Status of planning in Southeast Asia indicates a major role will be played by the state, though this should vary according to such specific circumstances as the existence of a stable and competent civil service.

101. MAYNE, ALVIN. *Designing and Administering a Regional Economic Development Plan with Specific Reference to Puerto Rico*. Paris, France, Organization for Economic Cooperation and Development, 1961. 66 pp.

Uses a practical, operational approach which first recognizes that the plan must be implemented to be useful, and thereby emphasizes the role of the decision maker and leadership. Outlines the basic steps in surveying the society and economy as a vital part of designing the plan. Describes the detail required in the plan, the projections needed, and the allocations which must be made. Planning in Puerto Rico is used to give empirical support to the discussion of administering the regional plan. Concludes with an evolution of planning in Puerto Rico since 1940, pointing up those factors which appear related to the growth achieved and listing areas which merit further attention.

102. PAPANEK, GUSTAV FRITZ. "Framing a development program," *International Conciliation*. Mar. 1960, no. 527, pp. 307-372.

Surveys some existing planning practices, analyzes the strengths and weaknesses of present criteria and different strategies, and suggests certain criteria to improve future development plans. Views the problem of conceiving theories as less of a problem than applying them.

103. WALINSKY, LOUIS JOSEPH. *Economic Development in Burma, 1951-1960*. New York, Twentieth Century Fund, 1962. 680 pp.

Based on the author's experience in Burma, the thesis of the book is that implementation and execution of economic development plans are just as important as making them. The problems of program implementation, ranging from the technical aspects to basic planning, are outlined in detail.

## II. Econometric Models

104. ARROW, KENNETH J., et al. "Capital-labor substitution and economic efficiency," *Review of Economics and Statistics*. Aug. 1961, v. 43, no. 3, pp. 225-250.

One of several international comparative studies made at the Stanford Project for Quantitative Research in Economic Develop. The authors suggest, on the basis of empirical evidence from 19 countries and 24 manufacturing industries, a strong relationship between labor productivity and wage rate. Such findings lead the authors to attempt to derive a mathematical function having properties of constant elasticity of substitution between labor and capital. The article is potentially useful to countries formulating developmental plan models, since alternative approaches, like that of Harrod and Domar, do not allow for changes in capital coefficients

105. BRONFENBRENNER, MARTIN. "A simplified Mahalonobis development model," *Economic Development and Cultural Change*. Oct. 1960, v. 9, no. 1, part 1, pp. 45-52.

A note based on Mahalonobis' original two-sector model presented in 1953. The writer gives a simple exposition of the model and suggests the implications concerning the international sector.

106. CHENERY, HOLLIS B. "Development policies and programs; theoretical bases for government policy; instruments, techniques, and problems; based on lectures," *Economic Bulletin for Latin America*. Mar. 1958, v. 3, no. 1, pp. 51-77.

In all part of the world, governments of less developed countries have become increasingly concerned with policies to promote economic growth. The author examines the grounds for government policy toward economic growth and bases his decision of development policy on Tinbergen's lines: the choice of policy must be based on objective criteria, and its implications tested against those of alternative policies. He provides simple numerical illustrations of the use of linear programming methods to achieve this objective.

107. CHRIST, CARL F. "Aggregate econometric models," *American Economic Review*. June 1956, v. 46, no 3, pp 385-408.

A review of Klein and Goldberger's aggregate econometric model of the United States which describes the general nature of such models, compares five such models, examines the main equations, discusses the relative merits of the least squares and limited information methods of estimating parameters, and discusses the predicting ability of these models. Useful to understanding the functions of aggregative econometric models.

108. CONFERENCE ON RESEARCH IN INCOME AND WEALTH. *Long-Range Economic Projection*. Princeton, N.J., Princeton University Press, 1954. 476 pp. (Studies in Income and Wealth, 16)

Contains a series of contributions discussing the relationship between theory and statistical technique in the context of long-term projections of various areas of the United States economy. Problems of projecting the aggregate economy are followed by analyses of population, manpower, and productivity trends. Projection techniques for difficult sectors and specific industries are illustrated with the help of data. Finally, the interrelation between regional and national product projections is discussed. Since the primary purpose of the studies is not to obtain specific statistical estimates but rather to come to grips with some conceptual problems, the volume is useful for development planning and programing.

109. DOMAR, EVSEY D. *Essays in the Theory of Economic Growth*. New York, Oxford University Press, 1957. 272 pp.

Explores the theoretical analysis of growth and development. Covers a series of essays dealing with debt and national income, capital expansion and its effect on the rate of growth and employment, foreign investment and the balance of payments, depreciation, and the Soviet model of growth.

110. FEI, JOHN C. H., and RANIS, GUSTAV. *A Study of Planning Methodology With Special Reference to Pakistan's Second Five-Year Plan*. Karachi, Pakistan, Institute of Development Economics, 1961. 27 pp.

Develops a theory of possible structural variations of types of plans. Assuming a particular level of aggregation of national accounts (that

used by the Pakistan Planning Commission), the authors systematically explore the logical alternative strategies which would result from varying planning choices. As an exploratory document and for purposes of clarity of argument, the authors deal with equations throughout the work, although actual operating assumptions of planners may better be described by a system of inequalities in a simple linear programming approach.

111. FOX, KARL AUGUST. *Econometric Analysis for Public Policy*. Ames, Iowa, Iowa State University Press, 1958. 288 pp.

Describes the general nature of econometric models, compares five different models with respect to the kind of equations they use, examines the main equations of the two Klein-Goldberger models in some detail, discusses the relative merits of the least squares and limited-information methods of estimating economic parameters, discusses the merits and consequences of experimenting with estimates at different forms of each equation before choosing among them, and considers the predicting ability of Klein-Goldberger models.

112. GOLDBERGER, ARTHUR STANLEY. *Impact Multipliers and Dynamic Properties of Klein-Goldberger Model*. Amsterdam, Netherlands, North-Holland Publishing Co., 1959. 138 pp.

This study is a sequel to the study made by the author with L. R. Klein, "An Econometric Model for U.S." The present study systematically explains the estimated model in an investigation of fiscal policy and business cycles. The business cycle characteristics of the Klein-Goldberger model are spelled out.

113. HOOD, WILLIAM C., and KOOPMAN, TJALLING C. (editors) *Studies in Econometric Method*. New York, Wiley, 1953. 323 pp. (Cowles Commission for Research in Economics, Monograph 14)

Contains important contributions to the strategy of econometric model construction with a view to answering questions concerning the effects of public and private decisions. The contributions are concerned with the problem of "statistical inference" stemming from the specification of variables entering the relationships and errors due to exogenous disturbance. This is one of the Cowles Commission monographs expanding and extending the methods of maximum likelihood addressed primarily to the user of statistical methodology for economic policy and prediction.

114. HOUTHAKKER, H. S. "The influence of prices and incomes on household expenditures," *Bulletin of the International Statistical Institute*. 1960, v. 37, no. 2, pp. 1-15. (Reprinted by the Stanford Project for Quantitative Research in Economic Development, No. 7)

Demand and price elasticities are estimated for food, clothing, and rent, and miscellaneous goods from time series analysis of several countries. The article is a continuation of the earlier work of the author on such measurements based on cross-sectional data for 30 countries. These estimates are helpful for projecting demand requirements in plan formulation.

115. KEMENY, JOHN G., et al. "A generalization of the von Neumann model for an expanding economy," *Econometrica*. Apr. 1956, v. 23, no. 2, pp. 115-135.

Von Neumann's model of an expanding economy generalizes the classical economy theory in two directions: by dynamizing the equilibrium system by treating interdependence over time, and by considering linear inequalities rather than linear equations. It is shown mathematically that equilibrium requires that all sectors of the economy are uniformly developing over time and that the economy is growing at a steady rate. By allowing for demand factors in the model, the authors provide a formal apparatus for a theory of dynamic programming analysis.

116. RANIS, GUSTAV, and FEI, JOHN C. H. "A theory of economic development," *American Economic Review*. Sept. 1961, v. 51, no. 4, pp. 533-565.

Analyzes the transition process by which an underdeveloped economy hopes to move from stagnation to self-sustaining growth. Concerned mainly with countries that are labor-surplus and resources-poor. Reviews process by means of which a nation that is basically agricultural and has adverse terms of trade may develop.

117. TOBIN, JAMES. "Dynamic aggregative model of the business cycle and of economic growth," *Journal of Political Economy*. Apr. 1955, v. 63, no. 2, pp. 103-115.

In this aggregative model the production function allows for substitution between capital and labor for monetary effects. The growth mechanism in the model is similar to the accelerator of the Hicksian-type models, but different in that it allows for more than one tenable rate of growth.

### III. Mathematical Techniques

118. ARROW, KENNETH J., et al. *Studies in Linear and Non-Linear Programming*. Stanford, Calif, Stanford University Press, 1958. 230 pp.

Deals with interrelated problems of linear and nonlinear programming with emphasis on the mathematical problems rather than the applications. Covers fundamental existence theorems, the gradient method as a method of successive approximations for solving constrained maximization problems, and the exploitation of special features of specific programming problems to simplify solutions.

119. CHENLRY, HOLIS B, and CLARK, P. G. *Interindustry Economics*. New York, Wiley, 1959. 345 pp.

Combines the input-output approach with elements of linear programming, to offer a flexible set of techniques for analyzing changes in the economic structure. A variety of theoretical models is examined. Theory is consistently related to application with illustrations drawn from actual interindustry research in many countries, including some underdeveloped ones.

120. CONFERENCE ON RESEARCH IN INCOME AND WEALTH. *Input-Output Analysis: An Appraisal*. Princeton, N J., Princeton University Press, 1955. 371 pp.

Proceedings of October 1952 conference which present a systematic and detailed survey of input-output analyses and suggest the implications of input-output methods for economic analyses. Also appraises the usefulness and reliability of such analyses.

121. COWLES COMMISSION FOR RESEARCH IN ECONOMICS. *Activity Analysis in Production and Allocation*, edited by Tjalling C. Koopman. New York, Wiley, 1951. 404 pp.

The volume contains some of the papers presented at a conference on activity analysis held in Chicago in 1949. Activity analysis will provide a more useful way than that provided by traditional theory to summarize

technological choice and production possibilities under a particular set of conditions, and to indicate the kinds of welfare losses which result from using inferior technology or improper resource centralization.

122. DORIMAN, ROBERT. "The nature and significance of input-output," *Review of Economics and Statistics* May 1954, v. 36, no. 2, pp. 121-133

Surveys the accomplishments of input-output and the direction its development is taking, centering the discussion on Leontief's *The Structure of American Economy* and *Studies in the Structure of the American Economy*.

123. DORFMAN, ROBERT, et al. *Linear Programming and Economic Analyses*. New York, McGraw-Hill, 1958 527 pp.

A general, theoretical exposition of the relationship of linear programming to standard economic analysis, which also covers the transportation problem, some theories of nonlinear programming, applications of linear programming to the theory of the firm, problems of efficient programs of capital accumulation, the relation of linear programming to theory of general equilibrium, welfare economics, and game theory

124. HOLLAND, EDWARD P. "Simulation of an economy with development and trade problems," *American Economic Review*. June 1962, v. 52, no. 3, pp. 408-430.

Illustrates how technique of simulation can be used to study problems of economic development and foreign trade policy in an underdeveloped country. Presents graphical and numerical results from a few computer runs and compares these to show how simulation might be used as an aid in formulating a development investment program.

125. HOLT, CHARLES CARTER. "Linear decision rules for economic stabilization and growth," *Quarterly Journal of Economics* Feb. 1962, v. 76, no. 1, pp. 20-45.

Government action aimed at improving the stability and growth of the economy poses difficult decision problems whose solutions by mathematical decision models are considered in the paper with special emphasis on their uncertainty and dynamic aspects. A particular decision analysis based on linear dynamic relations and a quadratic criteria is presented, and is shown to incorporate both "feed-back" and "feed forward."

127. RAUNER, ROBERT M, and STLGER, WILBUR A. "Simulation and long-range planning for resource allocation," *Quarterly Journal of Economics*. May 1962, v. 76, no. 2, pp. 219-245.

The problem of allocating productive resources to attain some predetermined objective has long occupied a central position in economics. In recent years the traditional theory of allocation, expressed in terms of the calculus or marginal analysis, has been supplemented by linear programming and activity analysis, but not every allocation problem yields to solutions by these new techniques. A method of large scale simulation developed by Rand Corporation is considered by the author in this article. This method may hold appreciable promise to planners.

128. SIMON, HERBERT. "Theories of decision making in economics and behavioral science," *American Economic Review*. June 1959, v. 49, no. 3, pp. 253-283

A review of recent work in exploring the areas in which economics has common interests with the other behavioral sciences. Examines some of the developments in the theory of utility and consumer choice, the relationship of managerial motivation to profitmaking and their short- or long range orientation, conflict of goals and the phenomena of bargaining, and a survey of research concerning uncertainty and the formation of expectations. Concludes with a survey of recent developments in the theory of human problem solving and other higher mental processes, and relates these areas to economic decision making.

#### IV. Data Requirements and Measurements

129. ABRAHAM, WILLIAM I. "Investment estimates of underdeveloped countries: an appraisal," *Journal of the American Statistical Association*, Sept. 1958, v. 53, no. 283, pp 669-679.

Estimates of capital formation in the underdeveloped countries are becoming increasingly important. Users of these data are not always sufficiently aware of their shortcomings, with the result that unwarrantable inferences and conclusions are drawn from the figures. An attempt is made to appraise this important body of data by examining the basic methodology and sources on which the estimates are based. Attention is shown to deficiencies and the practical possibilities of improvement through substitution of improved source data, procedures, and concepts.

130. COCHRAN, WILLIAM G. *Sampling Techniques*. New York, Wiley, 1953. 330 pp.

A basic text on sample survey techniques which includes a comprehensive account of sampling theory, though it is not a complete treatise, of sampling for percentages and proportions, estimation of sample size, stratified random sampling, ratio estimates, regression estimates, systematic sampling, types of sampling units and double sampling.

131. CONFERENCE ON RESEARCH IN INCOME AND WEALTH. *Problems in the International Comparison of Economic Accounts*. Princeton, N.J., Princeton University Press 1957. 404 pp.

Six papers covering economic accounts which include proposals to simplify the United Nations system accounts as well as to place more emphasis on input-output, money flows, and balance sheet analysis. The papers also discuss governmental activity in these accounts and comparative purchasing of world currencies, and include a world trade matrix.

132. CRLAMER DANIEL. "Uses of national income estimates in underdeveloped areas," *International Association for Research in Income and Wealth*. Baltimore, Md., Johns Hopkins Press, 1953. pp. 211-223. (Income and Wealth Series III)

Contends that low reproducible capital per head of population is the only universal characteristic of underdeveloped areas, and examines the various uses to which national income statistics may profitably be put in this particular kind of economy, given the accompanying shortcomings of available data. Finds that the uses of national income estimates statistics are generally applicable to developed and underdeveloped economies alike. Where data allow only approximate estimates, the statistics can only show changes in economic well-being over time. At best, national income estimates can provide some data for the analytical test.

133. JASZI, GEORGE. "The measurement of aggregate economic growth," *Review of Economics and Statistics*. Nov. 1961, v. 48, no. 4, pp. 317-332.

Reviews the principal issues that are involved in the definition and measurement of aggregate economic growth. Based largely on United States experience and does not take into account the problems that have arisen in measuring growth in countries characterized by different economic structures.

134. NUTTER, G. WARRLEN. "On measuring economic growth," *Journal of Political Economy*. Feb. 1957, v. 65, no. 1, pp. 51-63.

A treatment of the common measures of growth, with emphasis on the problems of measurement. It is suggested that in comparing economies one must somehow standardize the dimensions in which growth is being measured.

135. OSHIMA, HARRY T. "National income statistics of underdeveloped countries," *Journal of the American Statistical Association*. June 1957, v. 52, no. 278 pp. 162-174.

Reviews the presently available statistical data from the underdeveloped nations, points out the concepts on which these data are based, and their weaknesses and strengths. Contains an appendix which lists several countries and points out significant features of their statistical series.

136. PESEK, BORIS P. "Economic growth and its measurement," *Economic Development and Cultural Change* Apr 1961, v. 9, no 3, pp 295-315.

Discusses the five different methods of calculating growth rates available to economists today: (1) geometric average of the ratios of output during successive time periods, (2) arithmetic mean of the annual rates of growth, (3) geometric mean of percentage changes, (4) calculating the rate of growth by fitting exponential growth curves, (5) fitting an exponential curve to serial data by the Glover technique. Discusses the algebraic restraints on which each of these methods is based and offers two new methods which partially meet objections to restraints of earlier methods. Empirically demonstrates the results of different methods by examining data from a number of countries and suggests conditions under which various methods are to be preferred.

137. RUGGLES, RICHARD, and RUGGLES, NANCY D. *National Income Accounts and Income Analysis* (2d ed) New York, McGraw-Hill, 1956. 452 pp.

Builds up national income concepts from the basic accounts of individual firms, governmental units, and households as an attempt to bridge the gap between micro- and macro-theory. The material is organized around the concepts of national income accounting and the theory of income analysis.

138. STUDENSKI, PAUL. *The Income of Nations*. New York, University Press, 1958. 554 pp.

Presents a discussion of national income from an historical view, with emphasis on theory and methodology. Much attention is given to the development of income concepts in the growth of economic thought, as well as to problems of intertemporal and intercountry comparisons.

139. U.S. BUREAU OF THE CENSUS. *Florenca: A Case Study in Data Processing of Population and Housing Census*. Washington, D C, 1962. 13 parts

A case study developed for a regional workshop for Latin American technicians in data processing of population and housing censuses. Among the topics covered by the case study and discussed in the workshop were: the receipt and control of completed questionnaires, editing and coding; transcription of data of punched cards; quality control plans; programming of sorting and tabulation processes; preparation of tables for

publication, production control, and estimation of production requirements and related costs. Although these materials were specifically designed for the census conditions of Latin American nations, they may serve as examples for other areas of the world.

140. ———. *The Accuracy of Census Statistics With and Without Sampling*. Washington, D C, 1960. 33 pp.

Describes and analyzes the effectiveness of the statistical methods employed by the U.S. Bureau of the Census. Indicates areas where inaccuracies may occur and describes variations in sampling patterns used. Includes charts, graphs, and tables.

141. WHARTON, CLIFTON R., JR. "Processing underdeveloped data from an underdeveloped area," *Journal of the American Statistical Association*. Mar. 1960, v. 55, no. 280, pp. 23-37

Treats the problems of securing useful data in the context of micro-economic research in an underdeveloped area. Essentially a case study based on a sample of farm families in the State of Minas Gerais, Brazil. Points out the difficulties of estimation and imputation encountered in the preparation of a series of indices of agricultural input and output.

## V. Regional Planning

142. CLAPP, GORDON RUFUS. *The TVA: An Approach to the Development of a Region*. Chicago, Ill., University of Chicago Press, 1955. 206 pp.

Presents a general picture of the Tennessee Valley Authority as a successful example of coordinated public and private enterprise in an integrated, comprehensive regional development program.

143. FRIEDMANN, JOHN R. P. *The Spatial Structure of Economic Development in the Tennessee Valley. A Study in Regional Planning*. Chicago, Ill., University of Chicago, Program of Education and Research in Planning, 1955. 187 pp. (Research Paper No. 1)

Deals with the spatial and economic analysis of development changes in the Tennessee Valley region between 1930 and 1950, and the implications of these changes for regional planning. Analyzes some of the strategic variables of economic development, manufacturing employment, other non-farm employment, and population, and studies the joint effects of distributional changes in employment and population on income, welfare, and economic opportunity.

144. GREENHUT, MELVIN L. *Plant Location in Theory and in Practice*. Chapel Hill, N.C., University of North Carolina Press, 1956. 338 pp.

Explores and tests the assumptions that have formed the basis of location theory by examining the transition from the purely competitive approach of the 19th- and early 20th-century theorists to the monopolistically competitive locational framework of today. Emphasizes the integration of theory with practice by including an investigation of actual site selections for the location of small manufacturing non-branch plants.

145. HART, HENRY COWLES. *Administrative Aspects of River Valley Development*. New York, Asia Publishing House, 1962. 112 pp.

A comparative view of the administration of river valley developments in India and the United States. This book is a collection of five lectures

entitled: "The River Valley Authority in India and America," "The Decision to Build," "Participation by the Users of Water and Power," "The Organization for Power Valley Development," and "The River Valleys as Planning Units."

146. ISARD, WALTER, et al. *Methods of Regional Analysis An Introduction to Regional Science*. New York, Wiley, 1960. 784 pp.

A summary and critical evaluation of analysis techniques for projecting population and migration, regional social accounting, flow of goods and money, cyclical and multiplier analysis, industrial location, input-output, industrial complexes, interregional linear programming, and gravity models. Suggests ways for unifying the approach to regional analysis and proposes future research.

147. MOSES, LION M. "The stability of interregional trading patterns and input-output analysis," *American Economic Review*. Dec. 1955, v. 45, no. 5, pp. 803-832.

An input-output analysis of interregional relationships based on trade in commodities and services. Develops the structure and theory of an interregional input-output system and presents statistical and empirical implementation of the model.

148. PHILBRICK, ALLEN K. "Principles of areal functional organization in regional human geography," *Economic Geography*. Oct. 1957, v. 33, no. 4, pp. 299-336.

Defines and classifies units of occupancy and explores their observable combinations in a hierarchy of successively larger areal units of functional organization, formulates principles of areal organization of society based on these relationships.

149. KRUTILLA, JOHN, and ECKSTEIN, OTTO *Multiple Purpose River Development*. Baltimore Md., Johns Hopkins Press, 1958. 301 pp.

An analysis, with case studies of recent American experience, of projected differences in benefits and costs under alternative river development schemes. Criteria of economic efficiency are developed and applied. Also

considers the effect of various policies on regional redistribution of income, and the social or opportunity cost of funds raised by taxation that may be put into public works.

150. SELZNICK, PHILIP *T.V.A and the Grass Roots, a Study in the Sociology of Formal Organization* Berkeley, Calif, University of California Press, 1953. 274 pp.

A sociological study of the Tennessee Valley Authority which uses empirical evidence to construct a theoretical framework of grass-roots organization. Explores the relationship between official doctrine and actual practice. An understanding of the accomplishments of T.V.A. in organizational behavior, methods, and nature of organization are viewed as keys to understanding the role of public enterprise in democratic planning.

151. STEPHENS, BENJAMIN F. "An inter-regional linear programming model," *Journal of Regional Science* Summer 1958, v. 1, no. 1, pp. 60-98.

An improved interregional linear programming model incorporating previously excluded variables. This model permits both location and transportation costs to vary, includes transportation in the productive system as a consumer of factors, and includes the problem of interregional trade in intermediate goods. Discusses economic and mathematical features of the model and examines the pricing problem and the application of the model to empirical analysis.

152. U.S. INTERAGENCY COMMITTEE ON WATER RESOURCES. *Proposed Practices for Economic Analysis of River Basin Projects* (rev. ed) Washington, D.C., 1958. 56 pp.

Formulates principles and procedures for determining benefits and costs of water resources projects and applies these principles to irrigation, flood control, navigation, electric power, and water supply projects.

## VI. Project Evaluation

153. BATOR, FRANCIS M. "On capital productivity, input allocation, and growth," *Quarterly Journal of Economics*. Feb. 1957, v. 71, no. 1, pp. 86-106.

Concerned with allocation theory and its uses in studies of economic growth. The author examines the relation between capital-output ratio, marginal product of capital, and interest rate to innovations by way of income-shares and factor proportions. He examines a frequent misconception about optimal input combinations and the desirability of capital intensive processes in countries where capital is scarce in relation to labor. Concludes with comments on the difficulties with the capital-output ratio; distribution, savings and input allocation, and theories of allocation and growth.

154. BOHR, KENNETH A. "Investment criteria for manufacturing industries in underdeveloped countries," *Review of Economics and Statistics*. May 1954, v. 36, no. 1, pp. 157-166.

Discusses capital requirements, skills, location, and size of plant with reference to foreign investment and the probable degree of success of the project.

155. CHENERY, HOLLIS B. "The application of investment criteria," *Quarterly Journal of Economics*. Feb. 1953, v. 67, no. 1, pp. 76-96.

Bridges the gap between theory and practice in the analysis of investment in underdeveloped areas. The author argues that the standard of perfect competition cannot be used in many sectors of the economy in underdeveloped areas and it becomes necessary to measure social productivity in order to achieve efficient distribution of investment resources. He applies the Social Marginal Productivity test to practical examples, using the balance-of-payments effect and capital intensity measures as criteria. He re-examines the criteria of balance-of-payments effect, capital turnover, social cost, and others in terms of his results. Shows that the whole SMP formula should be used and would be an improvement over the present piecemeal method. If properly applied, it would be an important policy tool for investment planning.

156. ECKKAUS, RICHARD S. "The factor proportions problem in underdeveloped areas," *American Economic Review*. May 1960, v. 50, no. 2, pp. 642-648

Considers problems arising from technology relative to adjusting the proportions in which factors are to be used in an underdeveloped area. Although principles of factor proportions are the same as in developed areas, they are of a different magnitude.

157. ECKSTEIN, OTTO. "Investment criteria for economic development and the theory of intertemporal welfare economics," *Quarterly Journal of Economics*. Feb. 1957, v. 71, no. 1, pp. 56-85.

The author seeks to indicate the kind of criteria that are needed for project selection, given some of the specific market imperfections found in underdeveloped countries and assuming that the capital market performs its functions poorly or not at all. The criteria developed are assumed to be applied by a development planning authority which has some control over the choice of projects to be undertaken.

158. GALENSON, WALTER, and LEIBENSTEIN, HARVEY. "Investment criteria, productivity, and economic development," *Quarterly Journal of Economics*. Aug. 1955, v. 69, no. 3, pp. 343-370.

The criterion of allocating investment on the basis of the marginal productivity of each unit of capital invested is not suitable for contemporary underdeveloped areas because of the invalidity of certain assumptions. When the facts of rapid population growth, political instability, and institutional obstacles to technological change, all of which are generally typical of underdeveloped areas today, are taken into account, it becomes clear that time is the essence of development programs. The process of development must be sufficiently rapid to satisfy the swiftly burgeoning aspirations of people suddenly released from a Malthusian world and endowed with political power.

159. HAYES, SAMUEL PERKINS. *Measuring the Results of Development Projects*. New York, UNESCO, 1959. 100 pp.

Outlines a general evaluation procedure that can be used to measure changes in individuals, in social relationships and institutions, and in social overhead capital resulting from a development project. Sees the evaluation process as consisting of four steps: (1) describing the project

and specifying its goals; (2) deciding what data to use to indicate results; (3) collecting the data before, during, and after; and (4) analyzing and interpreting findings, and reviewing with interested groups. Has appendix on statistical concepts and procedures.

160. KAPLAN, N. "Investment alternatives in Soviet economic theory," *Journal of Political Economy*. Apr. 1952, v. 60, no. 2, pp. 133-144.

Summarizes the proposals made by 11 Soviet economists. Concludes that the literature on investment choice lacks unanimity and official resolution, and the nature of the proposals suggests the possibility of wide disagreement over the future course of Soviet economic development.

161. McLEAN, JOHN G. "How to evaluate new capital investments," *Harvard Business Review*. Nov./Dec. 1958, v. 36, no. 6, pp. 59-69.

Discusses the use of the discounted cash-flow method for management analysis of investment alternatives. Explains the technique and presents a series of examples of its application which seem to have a general applicability to other managers' problems.

162. MASSACHUSETTS INSTITUTE OF TECHNOLOGY. CENTER FOR INTERNATIONAL STUDIES. *Investment Criteria and Economic Growth*. Papers presented at a conference sponsored jointly by the Center for International Studies and the Social Science Research Council, Oct. 15, 16, and 17, 1954. New York, Asia Publishing House, 1961. 161 pp.

Explores the degree to which economic theory can help the development planner faced with choices of investment alternatives. Tinbergen discusses the dangers and weaknesses of general investment criteria, including accounting prices. Rosenstein-Rodan discusses the need for economic programming and the concepts of national planning, of delegation, and of dispersal of decision making, reviews the postwar Italian experience, and proposes some untraditional questions for the economist to ask when recommending investment decisions. Hagen illustrates, by reference to Burma, the importance of non-economic factors, such as elements encouraging emotional stability of family limitation in allocation of resources between sectors. Grossman attempts to deduce the operational planning criteria on which the U.S.S.R. makes investment decisions. Fellner reviews the normative and empirical assumptions of Western and Soviet economies and comments on the other papers.

163. U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT. *Feasibility Studies; Economic and Technical Soundness Analysis. Capital Projects*. Washington, D.C., 1962. 140 pp.

A practical guide which translates general policy criteria stipulated by Congress and the President into technical, administrative, and economic procedures for projects to be sponsored by A.I.D. Written for the prospective recipient of aid, for the A.I.D. official, and for the contractor, the manual elaborates upon the many analyses regarding financial, contractual, locational, commercial, social, and engineering implications underlying the determination that a proposal is technically and economically sound. These matters, plus the form and content of the analysis, are outlined for each project.

## VII. Management Processes

164. APPELBY, PAUL HENSON. *Reexamination of India's Administrative System With Special Reference to Administration of Government's Industrial and Commercial Enterprises*. New Delhi, India, 1956 59 pp.

In terms of the democratic values and aspirations of the country in which social and economic development are the aims, the author inquires into the basic principles and concepts which underlie the social institutions and practices in the social fabric of the community. On this basis, he depicts in general terms the principal organs and functions of the administrative aspects of the governmental process. What is specific to India in this study can be applied on slightly different terms to most other governments involved in the task of developing formal institutions.

165. "A BASIC BIBLIOGRAPHY IN PUBLIC PERSONNEL ADMINISTRATION," *Public Personnel Review*. Oct. 1961, v. 22, no. 4, pp. 232-248.

A selective annotated bibliography which gives brief coverage of the major fields of personnel administration. Includes texts, pamphlets, articles, reviews, and training manuals. The general area of personnel administration is first surveyed, followed by such specific areas as personnel agency management, recruitment and selection, morale and discipline, employee benefits and services, employee relations, separation and retirement, and a listing of bibliographies.

166. BLOOMFIELD, ARTHUR I. "Some problems of central banking in underdeveloped countries," *Journal of Finance*. May 1957, v. 12, no. 2, pp. 190-204.

Points to the increase in central banking and the use of monetary tools in underdeveloped areas in recent years. Most of these central banks are wholly owned by the government and have wide and flexible powers. The rules of central banking in this type of environment are quite different from those in a native environment where money and capital markets are limited and money does not have as important a role

167. BURKHEAD, JESSE. *Government Budgeting*. New York, Wiley, 1956  
498 pp.

Describes budgeting, mostly by national rather than local government, in historical, institutional, and procedural terms. Examines the phases of the budget cycle, classifies budgeting data, and deals with specific budgeting problems.

168. FINAN, WILLIAM E, and DEAN, ALAN L. "Procedures for the preparation and implementation of administrative reform," *International Review of Administrative Sciences*. 1957, v. 23, no. 4, pp. 437-452.

Discusses the process of administrative reform, ranging from basic structural change to minor methods changes, and the specific devices, techniques, systems, and procedures through which national or federal governments can identify, prepare, support, or put into effect improvements in administration or government machinery. Following general discussion of the relevance of administrative reform, numerous specific procedures are discussed in groups according to the agencies to whom they are available, i.e. departments and ministries, chief executives, and non-governmental groups. Based on the experiences of a number of countries.

169. FOUSEK, PETER G. *Foreign Central Banking: The Instruments of Monetary Policy*. New York, Federal Reserve Bank of New York, Nov. 1957.  
116 pp.

Views postwar trends in central banking techniques outside the United States. Discusses discount policies and techniques, open market operations, commercial bank cash reserve requirements, commercial bank liquidity ratios, selective and direct controls, the development of money markets, and outlines many of the measures taken by various countries since the end of World War II.

170. FRIEDMANN, WOLFGANG. "A theory of public industrial enterprises," *Public Enterprise*, edited by A. H. Hanson. Brussels, Belgium, International Institute of Administrative Science, 1955. pp. 11-23.

A comparative study of the position of public enterprise in 14 countries. The three main motives behind its establishment are cited as lack of private capital, socialistic philosophy, and practical dictates. Describes

main types and suggests the public corporation as the best instrument of international development with the control organs international rather than national.

171. HARRIS, JOHN S. "Central supervision of local finance, a comparative study," *Public Finance*. 1957, v. 12, no. 1, pp. 49-63.

Compares central supervision in Canada, Great Britain, and the United States, and concludes that the most comprehensive system has been developed in England. Suggests extension of several techniques which could add to the effectiveness of existing systems.

172. NIGRO, FELIX A. *Public Personnel Administration*. New York, Henry Holt, 1959. 499 pp.

Emphasizes the personnel process via supervision, training, and employee relations. Its perspective is not limited to United States public personnel administration. Discusses the problems of planning and conducting a personnel program, as well as such factors as classification, compensation, recruitment, and rating.

173. PUBLIC ADMINISTRATION SERVICE. *Moderating Government Budget Administration. The Application of Technical Cooperation in Improving Budget Administration in the Governments of Developing Countries*. Washington, D.C., U.S. Agency for International Development, Public Administration Division, 1962. 104 pp.

Identifies key problems in the modernization of the government budget system in developing countries. The role of budgeting in government, the implementation of fiscal policies aimed at economic growth, development planning reforms, and the relationship of a centralized budget agency with other activities are the principal topics treated. An informative chapter is concerned with how technical assistance in budget administration can be a self-sustaining operation.

174. ———. *Modernizing Government Revenue Administration; The Application of Technical Cooperation in Improving Revenue Administration in the Governments of Developing Countries*. Washington, D.C., U.S. Agency for International Development, Public Administration Division, 1961. 92 pp.

Within the framework of the national economy, the process of revenue budgeting is examined as an instrument of social and economic policy, tapping equitably all sources of national wealth. The obstacles to the effective utilization of revenue sources are identified, and the processes involved in the administration of national revenue programs are outlined. Points out the role of external technical assistance in these processes: revising tax structures, coordinating systems of assessment, collection, and enforcement.

175. SHERWOOD, FRANK P. *The Management Approach to Budgeting*. Brussels, Belgium, International Institute of Administrative Sciences, 1954. 65 pp.

Distinguishes between the physical concept of budgeting, in which the budget is a financial and accounting instrument, and the management approach, which views budgeting as a means of executive control. Discusses such matters as organizing for management budgeting, the performance budget, and capital improvement planning.

176. SPENCER, D. L. "Mixed enterprise as a tool of economic development: India's contribution," *American Journal of Economics and Sociology*. Jan. 1955, v. 14, no. 2 pp. 139-158.

Sets forth some of the highlights of India's use of mixed enterprise (a corporation in which a public authority and private interest both own shares), makes assessments, and identifies the unusual aspects.

177. U. S. AGENCY FOR INTERNATIONAL DEVELOPMENT. *Selection of Professional Services Contractors for Capital Projects*. Washington, D.C., U.S. Government Printing Office, 1962. 10 pp.

The development of every capital project requires the application of engineering skills. This pamphlet, designed to acquaint foreign government officials and private business organizations with a procedure, has been successfully used in the past for the selection of consulting engineers and other professional firms.

## VIII Organization and Leadership

178. AMERICAN SOCIETY FOR PUBLIC ADMINISTRATION *Program Formulation and Development*. Bloomington, Ind., Indiana University, Department of Government, Institute of Training for Public Service, 1960. 121 pp.

Papers discussing the development of policy in public service. Covers executive skills required by administrators, decision making, public opinion and support of policy, and evaluation of program effectiveness. Basically a guide for administrators in their attempts to formulate policy.

179. ARGYRIS, CHRIS *Executive Leadership*. New York, Harper & Bros., 1953. 139 pp.

This book describes executive leadership through a case study of a "successful" leader. The study includes actual situations and problems of a real but anonymous company, together with its employers and their responses and attitudes toward company situations and leadership. The book outlines some of the resulting implications for general organization theory.

180. BERNSTEIN, MARVIN H. *The Job of the Federal Executive*. Washington, D.C., Brookings Institution, 1958. 241 pp.

Considers the nature of the executive's role and his job, the differences in the functions of political and career executives, the special characteristics of the environment in which the Federal executive operates, and the problem of obtaining and developing effective Federal executives.

181. CLAUNCH, JOHN MILLER (editor) *Political and Social Problems of Public Administration in Underdeveloped Areas, a Symposium*. Dallas, Tex., Southern Methodist University Press, 1959. 80 pp. (Arnold Foundation Monographs No. 4)

Discusses policy formation and implementation in Communist China, including organizational charts of the government and party structure, administration of technical assistance in Bolivia; social and political aspects of Italian public administration, and social and political problems of public administration in underdeveloped areas in general.

182. DAHL, ROBERT A., and LINDBLOM, CHARLES E. *Politics, Economics and Welfare*. New York, Harper & Bros, 1953. 557 pp.

Explores the prerequisites of rational social action in the area of political economy. Examines goals, ends, or values by which social action in the politico-economic area can be appraised. Proceeds from these factors to the more particular requirements of politico-economic controls and to prerequisite techniques. The discussion considers the contributions of sociology, anthropology, and psychology to the improvement of man's knowledge of the basic processes by which men control each other. The price system, hierarchy, polyarchy, and bargaining are also investigated. Finally brings these diverse factors together and attempts to show how the analysis must be dynamic in order to yield useful conclusions in a changing system.

183. HOSELITZ, BERTHOLD FRANK "Levels of administrative centralization in economic development," *Journal of Public Administration*. Jan./Mar. 1959, v. 5, no. 1, pp. 56-69.

A discussion of different levels of decision making and the problems presented for coordination, especially between planning decisions and implementing-stage decisions with their effects on each other. Decentralization is required in executive control because of unforeseen contingencies. Discussion set in context of liberal (decentralized) versus authoritarian ideal types. Raises alternative of decentralized planning, given heterogeneous societies and the nature of agriculture's extensive space requirements. Distinguishes between planning in depth and in breadth; i.e. overall production planning versus central planning through a small number of key control points used in depth. Recommends decentralized and in-depth planning for land use.

184. KAPP, K. WILLIAM "Economic development, national planning, and public administration", *Kyklos*. 1960, v. 13, no. 2, pp. 172-205.

Article concludes that lack of adequate administration—either qualitatively or quantitatively—will not only retard but may defeat development effort and that this factor is more decisive than lack of capita or technical skills. Qualitative defects in administration also tend to widen the gap between the government and the governed. Analysis confirms view that economic development must be preceded by institutional and social change and that successful analysis of economic growth requires an interdisciplinary effort.

185. LITCHFIELD, EDWARD H. "Notes on a general theory of administration." *Administrative Science Quarterly*. June 1956, v. 1, pp. 3-29.

Presents five major propositions concerning administration in an attempt to aid the establishment of a general theory and focus attention on the variables affecting the administrative process.

186. MARCH, JAMES, and SIMON, HERBERT. *Organizations*. New York. Wiley, 1958. 262 pp.

Authors deal with organizational theory and divide such theory into three broad areas "classical" theory in which organization members are passive instruments, behavioral theory in which members bring to organization certain attitudes, values, and goals; and, finally, rational theory wherein organization members are treated as decision makers and problem solvers. Certain portions of the theories are examined through a model building approach. A separate list of organizational variables is included and indexed.

187. SELZNICK, PHILIP. *Leadership in Administration*. Evanston, Ill., Row, Peterson, 1957. 162 pp.

Explores the meaning of institutional leadership, its limitations and strengths, as it operates within large-scale organization. Views the executive as a joiner of means and ends, but with a broader horizon which encompasses more than the usual concept of efficiency and organization in achieving responsible and creative leadership. Outlines the factors which influence the behavior of individuals within organizations and how they react to changing organizational patterns.

188. SHARTLE, CARROLL LEONARD. *Executive Performance and Leadership*. Englewood Cliffs, N.J., Prentice-Hall, 1956. 302 pp.

First presents a general view of the complex environment of executives and organizations and factors affecting their performance. Then the author examines the formal structure of the organization, the organizational behavior, and the dimensions of organizations, following with a discussion of the individual performance of the executive. Suggests organizational therapy and methods of selecting and training administrators.

189. SILLS, DAVID L. *The Volunteers, Means and Ends in a National Organization*. Glencoe, Ill., Free Press, 1957. 320 pp.

Discusses the relationships of individuals in organizations and their needs, but stresses that organizations are not simply instrumentalities but have certain needs of their own. Explores the control thesis that many of the essential characteristics of organizations reflect both the social character of their membership and the satisfaction which the members derive from the organization.

190. STONE, DONALD CRAWFORD, et al. *National Organization for the Conduct of Economic Development Programs*. Brussels, Belgium, International Institute of Administrative Sciences, 1954. 79 pp.

Shows the necessity of applying sound public administration concepts and systematic effort to organization and management problems arising in development organizations. Specifically delineates the problems and methods involved in planning, execution, coordination, and evaluation common to all successful economic undertakings. Examples from a number of countries, both advanced and less advanced, are cited. The role of the public corporation and its relative advantages over traditional governmental organization is elucidated.

191. THOMPSON, JAMES D., and BATES, FREDERICK L. "Technology, organization, and administration," *Administrative Science Quarterly*, 1957/1958, v. 2, pp. 325-343.

States that elaboration of technology leads to increasing complexity of the enterprise using it, and that the type of technology available for particular purposes sets limits to the types of structures appropriate for organizations. Explores some of the ways which technology, as a variable, may impinge on organization and on administration. Compares the mining enterprise, the manufacturer, the hospital, and the university to advance a number of propositions about the relationships between technology and administrative processes.

192. WATERSTON, ALBERT. *Planning in Yugoslavia, Organization and Implementation*. Washington, D.C., International Bank for Reconstruction and Development, Economic Development Institute, 1962. 109 pp.

One of a series of studies prepared by Waterston and associates dealing with the organizational and administrative aspects of planning and with the design of policies, procedures, and institutional arrangements for implementing development plans. Emphasizes the steps toward decentralism as material resources increase, and stresses the interrelationship between planning and the political and economic systems of that country.

## Chapter 3.

### NATURAL RESOURCES

#### I. Resource Appraisal and Surveys

193. AMERICAN SOCIETY OF PHOTOGRAMMETRY. *Manual of Photographic Interpretation*. Washington, D.C., 1960. 368 pp.

A comprehensive and up-to-date work describing the principles and application of photointerpretation, using hundreds of black-and-white and color photographs.

194. BISHOP, MARGARET S. *Subsurface Mapping*. New York, Wiley, 1960. 198 pp.

Emphasis is placed upon the principles and interpretation of stratigraphic and structural maps drawn on subsurface data. Discusses the practical and theoretical value of recent mapping developments, and includes a brief treatment of the geological implications of geophysical and geochemical maps, in as much as the geological interpretation of many areas now depends upon an integration of both geophysical and geological investigations.

195. CLEMENT, DONALD B. "Progress in cadastral surveys," *Surveying and Mapping*. Mar. 1961, v. 21, no. 1, pp 79-84.

After defining a cadastral survey as one that creates, reestablishes, marks, and defines boundaries of tracts of land, the author discusses the progress made in surveying public lands in the United States.

196. GINSBURG, NORTON SYDNEY. *Atlas of Economic Development*. Chicago, Ill., University of Chicago Press, 1961. 119 pp.

A current analysis of international differences in levels of economic development, using maps for an orderly description of available and significant economic data.

197. GLEASON, STERLING. *Ultraviolet Guide to Minerals*. Princeton, N.J., Van Nostrand, 1960. 244 pp.

Presents information on fluorescent minerals in a manner intended to meet the specific needs of different readers. Describes each of the fluorescent minerals in a way that tells the prospector what to look for, offers hints on locating ore, and points out present and future market prospects.

198. HERNDON, ROBERT E., JR. "Aerospace cartography," *Surveying and Mapping*. Mar. 1961, v. 21, no. 1, pp. 31-43.

A clearly written technical discussion of the cartographic items needed for an advanced navigation system. Also discusses special design problems, collection and evaluation of physical and scientific data, new techniques for compiling maps, and data that pertain to the more distant realm of aerospace.

199. JONES, LYLE F. "Cadastral surveys—the rectangular system surveys and protractors," *Surveying and Mapping*. Dec. 1960, v. 20, no. 4, pp. 459-468.

A discussion of cadastral surveys, rectangular system survey methods, and protractors, with specific emphasis on problems confronted in Alaska by the Bureau of Land Management.

200. PRESTON, LEE E. *Exploration for Nonferrous Metals, an Economic Analysis*. Washington, D.C., Resources for the Future, 1960. 198 pp.

Analyzes the two principal policy alternatives involved in a continued substantial demand for nonferrous metals. To insure continued operation of those firms which actually do add to the stock of raw material of the economy, or to establish alternative means of achieving this end which provide sufficient control over industry operations arising from successful explorations to prevent undesirable levels of output and prices in the product market.

201. RAISZ, ERWIN. "The use of air photos for landform maps," *Annals of the Association of American Geographers* Dec. 1951, v. 41, no. 4, pp. 324-330.

An examination of the methods employed in the development of landform maps from the use of air photos, followed by a discussion of the problems involved and the materials best suited for development of landform maps.

202. ROBINSON, ARTHUR H. *Elements of Cartography* (2d ed) New York, Wiley, 1960. 343 pp

An elementary presentation of principles and methods of cartography containing sections on construction of projections, use of standard symbols, mapping of three dimensional data, drawing and measuring techniques, and map reproductions. In addition, there is a complete appendix of mathematical tables for use in the construction of projections. A text widely used in training cartographic technicians in underdeveloped countries.

203. STALEY, WILLIAM. *Prospecting and Developing a Small Mine*. Moscow, Idaho, Idaho Bureau of Mines and Geology, 1961. 106 pp. (Bulletin No. 20)

A discussion of the problems related to small mine prospecting and development, covering such general features as location of claims, sampling, importance of geologic knowledge, prospecting, treatment of ore, drilling and blasting, support of ground, and mining methods. Topography is explained and illustrated in a special section

204. TRAGER, HERBERT F. "Photogrammetry applied to cadastral surveys," *Surveying and Mapping* Jan-Mar. 1956, v. 16, no. 1, pp. 29-36. (1956 American Congress on Surveying and Mapping, Washington, D.C.)

A report dealing with the application of area-photogrammetric methods of cadastral surveying. Special attention is paid to the "Bergen Reallotment Project" and a thorough evaluation is made of the errors resulting from the work on that subject.

205. U.S. GEOLOGICAL SURVEY. *Topographic Instructions of the Geological Survey*. Washington, D.C., U.S. Government Printing Office, 1961.

A set of 41 pamphlets describing in detail the engineering standards, methods, and procedures used in production of topographic quadrangle maps. Intended primarily for guidance of employees of the U.S. Geological Survey, it provides a useful teaching manual or reference to other individuals and organizations engaged in similar work. The set is being released as completed, and pamphlets prepared to date cover such subjects as Multiplex Plotter Procedures, Kalsh Plotter Procedures, Color-Separation Scribing, Photogrammetric Rectification, ER-55 Plotter Procedures, and Planimetric Map Compilation with Trimetrogon Photographs.

## II. Water Resources

206. ACKERMAN, EDWARD ALGUSTUS, and LOF, GEORGE O. G. *Technology in American Water Development*. Baltimore, Md, Johns Hopkins University Press, 1959. 710 pp.

Reviews (in nontechnical language) the existing technology in the many fields involving water which affected United States water development, past and present. Emerging technology and its potential effects are also presented. This comprehensive treatment of the subjects is not found elsewhere. The relation of technical factors to organization and planning in the water resources field is also considered.

207. AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. *The Future of Arid Lands*, edited by Gilbert G White. Washington, D C., American Association for the Advancement of Science, 1956 453 pp.

A symposium on the variability and utility of water in the development of arid lands, including discussions of better use of present resources, prospects for additional water resources, and the better adaptation of plants and animals to arid conditions.

208. ———. *Water and Agriculture*, edited by Roy D. Hockensmith. Washington, D.C., 1960. 198 pp.

An up-to-date review of the thinking, techniques, and predictions of some American leaders in this field. Restricted to an examination of the United States, but nevertheless, could be of vital concern to foreign officials in search of contemporary American techniques in the broad field of water agriculture.

209. AMERICAN SOCIETY FOR TESTING MATERIALS. COMMITTEE D-19 ON INDUSTRIAL WATER. *Manual on Industrial Water and Industrial Waste Water* (2d ed) Philadelphia, Pa., 1960. 658 pp.

Intended as a brief reference source for three types of users: executives and plant designers; individuals engaged in industrial operations in-

volving the use of water; and analysts, operators of special instruments, engineers, and consultants. The manual has been designed to satisfy the growing need for dependable information about water and problems involved in its use.

210. BABBITT, HAROLD EATON, et al. *Water Supply Engineering* (6th ed) New York, McGraw-Hill, 1962. 672 pp.

A clearly written text on water supply engineering containing an introduction to the subject and a statement of fundamentals and practices. A special chapter, dealing with electricity and its application to water-works practices, is included.

211. DESALINATION RESEARCH CONFERENCE, WOODS HOLE, MASS., 1961. *Desalination Research and the Water Problem*. Washington, D.C., National Academy of Sciences-National Research Council, 1962. 85 pp. (Publication No. 941)

Summarizes the views of the conference on basic research needs for the development of new and better desalination processes. The following are discussed in some detail. structures of liquids, solutions, and other substances, thermodynamic properties, transport phenomena, properties, and theories; membranes; approaches derived from Biology; unconventional desalination ideas.

212. *Design of Water Resources Systems. New Techniques for Relating Economic Objectives, Engineering Analysis, and Government Planning*. Cambridge, Mass., Harvard University Press, 1962. 620 pp.

The results of a basic inquiry into planning complex, multiunit, multi-purpose water-resource systems are presented. A comprehensive study of methodology.

213. HIRSHDEHLER, JACK, et al. *Water Supply. Economics, Technology, and Policy*. Chicago, Ill., University of Chicago Press, 1960. 378 pp.

A contrast of two techniques used in meeting water demands: improvement in the allocation of existing water supplies and the development of additional supplies. Two case studies of crucial water decisions, the

Cannoville project in New York City and the Feather River Project in southern California, point out the authors' view on technical, economic, and legal aspects of water supply decisions.

214. HOUK, IVAN EDGAR *Irrigation Engineering. Vol. I. Agricultural and Hydrological Phases. Vol. II. Projects, Conduits, and Structures.* New York, Wiley, 1951 and 1956. v. 1, 545 pp.; v. 2, 531 pp.

An authoritative application of engineering principles to the development and maintenance of irrigation enterprises. Volume I includes considerations of contemplated irrigation projects, the planning of water supply systems, construction of necessary works for distribution of water, and efficient operation of all features. Volume II emphasizes practical requirements in evaluating the feasibility of irrigation and plans for functioning after construction. Both volumes contain many tables, diagrams, and investigational data useful to practicing engineers and planners. Extensive bibliographies follow each chapter.

215. ISRAELSEN, ORSON WINSO. *Irrigation Principles and Practices* (2d ed) New York, Wiley, 1950. 405 pp.

Interprets basic theoretical irrigation principles into practical terms that are useful to better utilization of irrigation water, with resultant improvement in crop yields.

216. MCKEAN, ROLAND N. *Efficiency in Government Through Systems Analysis, With Emphasis on Water Resources Development.* New York, Wiley, 1958. 336 pp.

Discusses the use of quantitative analysis to achieve greater economy in government and the application of analytical techniques to specific governmental problems of choice, with attention focused on the possibility of increasing economic efficiency in public investments and operations. Some outstanding features of the text include an exploration of the limitation of quantitative analysis, discussion of handling time streams of costs or gains, presentation of revised methods and exhibits for comparing water-resource projects, and illustrations of how quantitative analysis can be used extensively in estimating budget size and composition.

217. MURPHY, FRANCIS C. *Regulating Flood Plain Development*. Chicago, Ill., University of Chicago, Department of Geography, 1958. 204 pp

An analysis of the problem of flood loss. The author outlines the causes and methods of reducing flood loss, the current practices in regulating flood plain developments, and a program of integrated action for flood damage reduction.

218. ROY, HARRY BURGESS, and AYRES, Q. C. *Engineering for Agricultural Drainage*. New York, McGraw-Hill, 1954. 501 pp

A review of recent developments in scientific drainage design as it relates to soil character and behavior, drainage of irrigated land, and moisture control on different soil types. Contains numerous charts, graphs, and figures.

219. SYMPOSIUM ON THE ECONOMICS OF WATERSHED PLANNING, KNOWVILLE, TENN., 1959. *Economics of Watershed Planning*, edited by G. S. Tolley and F. E. Riggs. Ames, Iowa, Iowa State University Press, 1961. 339 pp.

A presentation of the development of watersheds as part of the total picture of resource development. Areas covered include benefits from watershed development, the state of economic, hydrologic, geologic, and engineering data; potential investment opportunities in small watersheds, relationship between water and other property rights, and suggestions for fostering optimum watershed development.

220. THOMAS, HAROLD EDGAR. *The Conservation of Ground Water*. New York, McGraw-Hill, 1951. 327 pp.

A review of basic hydrologic principles and data. The experiences of over 70 areas in ground water development are discussed. Main types of ground water problems are distinguished. The methods which have been or could have been taken in each area to improve the situation are described.

221. TODD, DAVID KEITH. *Ground Water Hydrology*. New York, Wiley, 1959. 336 pp.

A comprehensive account of the fundamentals, techniques, and problems encountered in the field of ground water hydrology. Deals with such problems as locating a ground water supply, constructing a well, determining the amount of water that can be pumped from wells located near to each other or near to streams, dangers of pollution, and control of sea water in coastal wells.

222. U.S. BUREAU OF RECLAMATION. *Design of Small Dams*. Washington, D.C., U.S. Government Printing Office, 1960. 611 pp.

Presents instructions, standards, and procedures for the design of small dams. It is intended that this volume simplify design procedures for small earthfill dams and, at the same time, serve as a guide to safe practices for those concerned with the design of small dams.

223. U.S. DEPARTMENT OF AGRICULTURE. *Water. The Yearbook of Agriculture 1955*. Washington, D.C., U.S. Government Printing Office, 1955. 751 pp.

A practical approach to the explanation of the nature, behavior, and conservation of water in agriculture. Some major subjects covered are the need for water, water and the soil, watersheds, water for irrigation, drainage, water and wildlife, and water for farms and cities.

224. VORHIS, ROBERT CORSON. *Bibliography of Publications Relating to Ground Water*, prepared by the Geological Survey and cooperating agencies, 1946-1955. Washington, D.C., U.S. Government Printing Office, 1957. 203 pp. (U.S. Geological Survey Water Supply Paper 1497)

Primarily a guide to published ground water literature. Includes sources and studies ranging from simple inventories of wells and their yields through general identification and evaluation of ground water areas.

### III. Energy Resources

225. AMERICAN PETROLEUM INSTITUTE. *History of Petroleum Engineering*. New York, 1961. 1241 pp.

A history of the drilling for and production of petroleum hydrocarbons. Essentially the evaluation of American petroleum engineering, but considerable attention is given to the contributions to technology originating in other countries. Diagrams and bibliographies.

226. CLARK, NORMAN JACK. *Elements of Petroleum Reservoirs*. Dallas, Tex., Society of Petroleum Engineers of the American Institute Mining Engineers, 1960. 243 pp.

The many facets of reservoir engineering are described and illustrated beginning with basic petroleum geology, and progressing through discussions of all the physical factors that influence hydrocarbon recovery. Explains how fluids flow through the reservoir rock and how this flow can be altered to produce greater recoveries.

227. DANILS, FARRINGTON, and DUFFIL, JOHN A. (editors) *Solar Energy Research*. Madison, Wis., University of Wisconsin Press, 1955. 290 pp.

Based loosely on the Wisconsin symposium on all phases of the utilization of solar energy, it points the way to needed research in this field. Covers such topics as nature and availability, space heating and domestic uses, solar power, evaporation and distillation, solar furnaces, and photosynthetic and photochemical utilization of solar energy. Charts, diagrams, and bibliography are included.

228. DEUTSCH, MICHAEL J. "Can we afford atomic power for underdeveloped countries?" *Bulletin of the Atomic Scientists*. Jan. 1960, v. 16, no. 1, pp. 23-28.

Gives basic facts relating to the economics of atomic energy developments. Because of the high costs of construction, it is suggested that less developed countries move cautiously toward atomic energy development.

229. EDISON ELECTRIC INSTITUTE. *Rural Electrification in the United States*. New York [1959]. 47 pp.

A carefully documented history of rural electrification from its beginnings before the turn of the century to the present day, with emphasis on the period prior to 1930. Shows how problems of electrification were met by the private sector.

230. EMERICK, ROBERT HENDERSON. *Power Plant Management*. New York, McGraw-Hill, 1955. 339 pp.

Considers problems of powerplant design, administration, and operation. Discusses basic considerations of type, location, cost, safety, and equipment of powerplants, and the basic requirements for their efficient operation, as well as plant personnel training and industrial relations programs.

232. LUMB, RALPH F. (editor). *Management of Nuclear Materials*. Princeton N.J., Van Nostrand, 1960. 516 pp.

A sourcebook for those interested in the special problems involved in the management of nuclear materials characterized by high monetary value because of scarcity and the extensive processing necessary to obtain sufficient purity, high national value because of possible military use, hazardous radioactivity varying in type and quality with the kind of material and kind of processing; and danger of assembling a critical mass which could cause a nuclear reaction. Case studies serve as representative links in the chain of operation from the procurement and processing of uranium to recovery and utilization of plutonium.

233. McCRAE, ARTHUR WHILL, and COLF, FRANK W. *Oil Well Drilling Technology*. Norman, Okla., University of Oklahoma Press, 1959. 492 pp.

Discusses surveys of geological formations likely to produce oil, methods of discovery, drilling tools and techniques, and cementing operations.

235. MOODY, GRAHAM B. (editor) *Petroleum Exploration Handbook*. New York, McGraw-Hill, 1961. (various pagings)

Summarizes and correlates all the activities involved in petroleum exploration, such as the fundamental concepts of exploration, the application of earth sciences, various techniques of petroleum exploration, and the implementation of an exploratory project from the original planning to the drilling and logging of an exploratory well.

236. NATIONAL PLANNING ASSOCIATION. *Reports on Productive Uses of Nuclear Energy*. Washington, D C (various dates, 1955-58)

A series of 11 reports and a summary. (1) E S Mason: energy requirements and economic growth, (2) M. Sapir and S. M. Van Hyning: the outlook for nuclear power in Japan; (3) S. H. Robock: nuclear power and economic development in Brazil; (4) H H Landsberg and G. Perazich: nuclear power and economic development in Israel, (5) N. L. Gold: regional economic development and nuclear power in India; (6) I. M. D. Little and P. N. Rosenstein-Rodin: nuclear power and Italy's energy position, (7) M. D. Kilbridge: the prospect for nuclear power in Pakistan, (8) P. D. Teitelbaum: nuclear energy and the U S. fuel economy 1955-1980, (9) C. J. Dwyer: nuclear energy and world fuel prices; (10) G. Perazich: nuclear process heat in industry; (11) A. Mayne: prospects for nuclear energy in Puerto Rico, (12) NPA Special Policy Committee: summary of findings—policy suggestions for the future.

237. PUERTO RICO. WATER RESOURCES AUTHORITY. *Rural Electrification in Puerto Rico*. San Juan, Puerto Rico, Mar. 1962.

Describes how rural electrification has been responsible for the dramatic rise in the standard of living of rural dwellers in the Commonwealth of Puerto Rico. Includes information concerning the history of rural electrification, methods of financing, cost of construction, the rural home wiring program, and the basic rural appliance program.

238. NETSCHERT, B. C., and SCHURR, S. H. *Atomic Energy Applications With Reference to Underdeveloped Countries*. Baltimore, Md., Johns Hopkins Press, 1957. 129 pp.

An analysis of the various applications of atomic energy in its several forms, this study summarizes (through Jan. 1957) the present status and

future prospects for the applications of atomic energy in the light of known or expected technical and economic developments. Discusses the form of international cooperation necessary for bringing the benefits of atomic energy to underdeveloped countries.

239. SKROTZKI, BERNHARDT G. A. (editor) *Electric System Operation*. New York, McGraw-Hill, 1954. 370 pp.

Includes the fundamental operating theory and practice behind the commercial (profitable) use of electric power transmission. Includes graphs, diagrams, pictures, and tables. Also covers costs to be considered during use and installation of equipment.

240. U.S. ATOMIC ENERGY COMMISSION. DIVISION OF OPERATIONS ANALYSIS AND FORECASTING. *Nuclear Power and Utility Systems*. Washington, D.C., 1962. 38 pp. (TID-15329)

This report, of interest primarily to utility system executives, designers, and engineers, considers various aspects of integrating nuclear power plants into existing conventional utility systems. It deals primarily with the location, financing, and operation of nuclear plants presently operable or under construction, and with some of the characteristics of the utility systems of which these plants are a part. Data are presented in such a manner as to facilitate comparison between the various nuclear power plants discussed and between the utility systems involved.

241. U.S. BUREAU OF MINES *Technology of Lignite Coals*. Washington, D.C., 1954. (Part 1, Bureau of Mines Information Circular 7691; Part 2, Bureau of Mines Information Circular 7692.)

A two-part report which covers the technology of European lignitic coal; statistics on production and costs of North Dakota lignitic coals; their occurrence and properties, mining, preparation, storage, and transportation; and current research to develop more efficient methods of utilizing lignitic coals. Gives information on the char process of using this type of fuel.

242. U.S. RURAL ELECTRIFICATION ADMINISTRATION. *Rural Lines, USA*. Washington, D.C., U.S. Government Printing Office, 1960. 68 pp.

A history of the first 25 years of the Rural Electrification Administration which describes in vivid terms the impact of rural electrification on living standards and farming methods.

243. U.S. SENATE. COMMITTEE ON INTERNAL AND INSULAR AFFAIRS. *Report of the National Fuels and Energy Study Group on an Assessment of Available Information on Energy in the U.S.* Washington, D.C., U.S. Government Printing Office, 1962. 501 pp. (Senate Document No. 159)

A comprehensive, detailed, and authoritative appraisal of the present and future (to 1980) energy requirements of the United States, and of the Nation's ability to meet these requirements from known and probable reserves of energy sources in the U.S. and in the Western Hemisphere. Energy sources considered include petroleum, natural gas, coal, fissionable materials, and hydropower, and requirements are estimated for both normal peacetime and war emergency conditions. In addition, the report reviews existing policies and legislation with respect to their effect upon energy supply and demand, and identifies and evaluates alternative policy concepts which merit consideration. The report is supported and explained by almost 100 tables, graphs, and other exhibits covering all major aspects of energy source production, transportation, and distribution.

244. WINDT, GERALD. *The Prospects of Nuclear Power and Technology.* Princeton, N.J., Van Nostrand, 1957. 348 pp.

Presents the facts of atomic power, shows the broad ramifications of "atoms for peace" as revealed at the 1955 Geneva Conference, and provides the technological background needed to comprehend a totally new concept of industry. Part I gives a picture of actual and projected atomic plants in the United States and abroad, and describes the new problems that they introduce in such realms as finance, insurance, and governmental control. Part II covers in detail the mineral resources available, the nuclear fuel needed, the new metals and materials used in the construction of nuclear reactions, and the design of the various types. This section also points out problems remaining to be solved with regard to fission products, their processing, extraction, and disposal.

245. ZIMMERMAN, ERICH WALTER. *Conservation in the Production of Petroleum.* New Haven, Conn., Yale University Press, 1957. 417 pp.

An analysis of the factors entering into the conservation of oil and gas. Discusses the history of American conservation, oil and gas conservation policy, the role of national and local government, weaknesses and unsolved problems of petroleum conservation, and the future availability of energy.

- 245a. "THE MINING GUIDEBOOK," *Coal Age Magazine* (Complete Issue). July 1962, v. 67, no. 7, 388 pp.

An annual review of recent developments and practices in coal mining and coal preparation, including up-to-date information on new equipment for stripmining, deep mining, and coal preparation.

- 245b. SHIELDS, J. J., et al. *Mechanical Mining in Some Bituminous Coal Mines. Progress Report No. 8: Methods and Equipment Used in Underground Development*. Washington, DC., U.S. Government Printing Office, 1957. (U.S. Bureau of Mines Information Circular 7813)

One of a series of papers published by the U.S. Bureau of Mines in which detailed information on underground mining methods and the use of modern mining equipment is described. Information on the manpower required for each phase of the mining operation is given.

#### IV. Soil and Soil Conservation

246. BLINNETT, HUGH HAMMOND. *Elements of Soil Conservation* (2d ed) New York, McGraw-Hill, 1955 358 pp.

Discusses the major processes of soil erosion, and their effects on the productivity of land and on the society dependent upon that land for food and clothing. Considers in detail various conservation methods designed to slow excessive runoff of water, hold the soil, and generally preserve the fertility of the land. Discusses contour plowing, gully control, windbreaks, proper irrigation, and cover crops.

247. BUCKMAN, HARRY OLIVIER, and BRADY, NELL G. *The Nature and Properties of Soils* (6th ed) New York, Macmillan, 1960. 567 pp.

Develops a "colloidal-biological concept" of soils. Describes the relationships between the four soil elements of minerals, organic matter, soil water, and soil air, and discusses the factors which lead to productive and unproductive soils. Classifies soils and describes the dynamics of soil water and soil organism. Considers macro nutrients—pH factor, lime, nitrogen, phosphorous and potassium—and micro-nutrients, both theoretically and in terms of practical management and fertilization.

248. COOK, RAY LEWIS. *Soil Management for Conservation and Production*. New York, Wiley, 1962. 527 pp.

Discusses the basic principles of soils in the areas of classification, moisture, micro-organisms, structure, chemistry, and fertility, as they relate to problems of crop management. Includes extensive references from recent books, journals, and bulletins.

249. COPELAND, OTIS L. "Watershed management and reservoir life," *American Water Works Association Journal* May 1961, v. 53, no. 5. pp. 569-578.

An examination of the principles and practices of watershed management, covering land use and water yield, the effect of plant cover removal, plant cover restoration and yields, sedimentation, and erosion and reservoir life.

250. DONAHUE, ROY L. *Our Soils and Their Conservation*. Danville, Ill., Interstate Printers and Publishers, 1961. 568 pp.

Presents the basic principles of soil conservation, supports these principles with empirical examples drawn from American experience, and offers a concept of multiple resource use of our soil as a natural resource which emphasizes preventive practices.

251. KOHNKE, HELMUT, and BERTRAND, ANSON R. *Soil Conservation*. New York, McGraw-Hill, 1959. 298 pp.

A concise presentation of the basic nature and cause of soil erosion, the aims of soil conservation, and the principles and methods of saving the soil and maintaining its productivity. Utilization is not limited to any one area and no "pat" solutions are offered, but a basic picture is outlined, allowing the application of the principles to any soil conservation problem.

252. LUTHIN, JAMES N. (editor) *Drainage of Agricultural Lands*. Madison, Wis., American Society of Agronomy, 1957. 620 pp.

Covers the topic of agricultural land drainage, ranging from the physical principles of movement of water through soil to the mechanics of installing drainage systems, with emphasis upon the removal of surplus subsurface water by means of conduits or other water-conveying devices. Includes an extensive list of pertinent references.

253. NATIONAL RESEARCH COUNCIL. COMMITTEE ON SOIL AND WATER CONSERVATION OF THE AGRICULTURAL BOARD. *Principles of Resource Conservation Policy: With Some Applications to Soil and Water Resources*. Washington, D.C., 1961. 50 pp. (National Research Council Publication 885)

Defines and delimits conservation in the national sense and sets up an analytical framework for appraising conservation efforts based on physical, economic, and institutional interrelationships. Illustrates some of the problems of soil and water conservation, and identifies areas needing further research and education.

254. PELZIER, KARL J. "Land utilization in the humid tropics agriculture," *Proceedings of the Ninth Pacific Science Congress*. 1957, v. 20, pp. 124-143.

Contains a brief introduction to tropical soils and the two main types of agriculture in the tropics, shifting field and permanent field, and reviews the techniques that are most important to these methods of production. Indicates that shifting agriculture has certain merits and that where this land use system is an integral part of peasant cultivation, the cultivator is conservation minded. The peasant in tropical agriculture needs the benefit of much additional research in conservation practices.

255. PENDLETON, ROBERT L. "Agricultural and forestry potentialities of the tropics," *Agronomy Journal*. v. 42, pp. 115-123.

States that "less than 5% of the soils of the tropics measures up to the popular conception of potential fertility," and points up the destructiveness of utilizing intensive agronomic and horticultural practices of Europe and the United States within these soil areas. Briefly generalizes concerning forestry potentials in these areas.

256. U.S. BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING. *Soil Survey Manual*. Washington, D.C., 1951. 593 pp

A guidebook for making soil surveys for agricultural development, outlining the equipment and techniques needed for carrying out the surveys. Combines the information into suitable form for making the suggested utilization of different types of land.

257. U.S. DEPARTMENT OF AGRICULTURE. *Soil Yearbook of Agriculture 1957*. Washington, D.C., U.S. Government Printing Office, 1957. 784 pp.

Papers on basic soil science, soil classification, and soils of the United States, written in nontechnical language with emphasis on the management of soil for sustained economic production.

## V. Mineral Resources

258. BAXTER, CHARLES HOMER. *Examination and Valuation of Mineral Property* (4th ed) Reading, Mass., Addison-Wesley, 1957. 507 pp

Discusses such subjects as: examination of mineral property; preliminary phases; geological investigation, sampling calculations and practices; ore estimation; assets other than ore; economic consideration; estimating costs and profits; mine valuation (mathematical premises, compound interest, uniform annual income, and nonuniform annual income), interest rates; miscellaneous interest rate calculations, case valuations, valuation of oil property (property rights, field examination and valuation factors, case valuation, and producing property), the O'Donahue, Morkill, and Grimes-Craigie formulas for mine valuation, valuation tables; and the Michigan mine appraisal system

259. COMPTON, R. R. *Manual of Field Geology*. New York, Wiley, 1962. 378 pp.

Presents basic information needed in any field evaluation of the subsurface terrain. Describes the instruments and procedures used in mapping geological features, including the most recent field instruments and the use of aerial photographs, and discusses the elements that go into a good field report. Presents separate sections dealing with special problems of field work with sedimentary rocks, volcanic rocks, igneous and igneous-appearing plutonic rocks, and metamorphic rocks. Clearly and simply written with many illustrations.

- 259a. INTERNATIONAL SYMPOSIUM ON MINING RESEARCH, MISSOURI, 1961. *Proceedings*, edited by George B. Clark. New York, Pergamon Press, 1962. 2 v.

Deals principally with rock mechanics, ground support, use of explosives, drilling, and the more recent application of statistical analysis. Some of the concepts discussed, particularly those related to ammonium nitrate—fuel oil explosives, ground support, and mining methods—are particularly useful in planning new mineral enterprises. Also illustrates

how research is becoming important in the mining industry and how, in solving mining problems, increasing attention is being directed to basic research.

260. KRUMLAUF, HARRY EUGENI. *Exploration and Development of Small Mines*. TUCSON, ARIZ., University of Arizona, Arizona Bureau of Mines, 1954. 34 pp. (Technology Series No. 48)

A study of the exploration and development of small mines. The general principles of trench and pit sampling, diamond and wagon drilling, shaft sinking, drifting, and raising are examined. Special methods are discussed, with particular emphasis on the factors governing choice of method.

261. LADOO, RAYMOND BARDEEN, and MYERS, W. M. *Nonmetallic Minerals* (2d ed) New York, McGraw-Hill, 1951. 605 pp.

A comprehensive discussion of the composition, general description, physical properties, occurrence, production, and utilization of the important nonmetallic minerals from abrasives to zirconium.

262. ROBIN, EDWARD H. (editor) *Economics of the Mineral Industries*. New York, American Institute of Mining, Metallurgical, and Petroleum Engineers, 1959. 755 pp.

A comprehensive treatment of the economics of the mineral industries. All facets of the field are examined: the significance of the mineral industries; the valuation of mineral properties, mine financing; marketing of minerals, accounting procedures; conservation, changing patterns of supply and demand; and the economic implications of nuclear energy.

263. SCHWARTZ, GIORGE M. "Hydrothermal alteration," *Economic Geology* Mar.-Apr. 1959, v. 54, no. 2, pp. 161-183.

A general background summary including an exhaustive list of references to papers dealing with hydrothermal alteration in many major mining districts. Recognition of alteration products and their significance is of fundamental importance to an exploration project.

264. TAGGART, ARTHUR FAY. *Elements of Ore Dressing*. New York, Wiley, 1951. 595 pp.

Emphasis is on the analysis of machines and processes and the identification of their elements with established scientific laws, rather than on structural and operating detail. Through the newly adopted flow-sheet form and the method of flowsheet analyses which the new form facilitates, consideration of mills as process units is stressed. The philosophy that a mill and all its parts comprise a single treatment process is a continuing theme throughout the book.

265. THEOBALD, PAUL K., JR. *The Gold Pan as a Quantitative Geologic Tool*. Washington, DC, U.S. Government Printing Office, 1957. 54 pp. (U.S. Geological Survey Bulletin 1071-A)

Describes in detail experiments designed to test the effectiveness of panning as a means of concentrating heavy minerals. Shows the correlations between specific gravities of selected minerals and amounts recovered by panning techniques. Offers suggestions as to the most effective use of a pan to improve recovery of minerals. Contains extensive tabulated data.

266. U.S. BUREAU OF MINES. *Mineral Facts and Problems*. Washington, D.C., U.S. Government Printing Office, 1960. 1016 pp. (Bulletin 585)

A comprehensive treatment of minerals in the United States, with particular reference to development of submarginal resources, possible new or wide uses for abundant resources, development of substitutes, conservation; the wise use of mineral resources, types of mineral research being carried on, and selected mineral-industry studies. There is a balanced and uniform coverage of different commodities to facilitate the comparative study of minerals.

## VI. Climate

267. BYERS, HORACE R. *General Meteorology* (3d ed) New York, McGraw-Hill, 1959. 540 pp.

Definitive work in meteorology. A fundamental book for the serious student of physical sciences and technology, presenting up-to-date material in a rapidly changing field.

268. CLOUD PHYSICS CONFERENCE, 2D WOODS HOLE, MASS., 1959. *Physics of Precipitation*, edited by H. Weickmann and W. Smith. Washington, D.C., American Geophysical Union of the National Academy of Sciences-National Resource Council, 1960. 435 pp.

The subject is discussed from three points of view—the scale of synoptic meteorology, the scale of clouds and cloud systems, and the scale of microphysics. The conference was concerned with the morphology of precipitation, clouds and cloud systems, morphology of precipitation and precipitation particles, and fundamental precipitation processes.

269. LEE, DOUGLAS HARRY KLDGWIN. *Climate and Economic Development in the Tropics*. New York, Harper & Bros., 1957. 182 pp.

A presentation of the effects of tropical climates on economic development, men, materials, animals, plants, soils, and industrial production. It summarizes the state of knowledge in 1957 and makes suggestions for applying what we know to the underdeveloped tropical lands.

270. McDONALD, J. E. "The physics of cloud modification," *Advances in Geophysics*. New York, Academic Press, 1958, v. 5, pp. 223-303.

A systematic review of basic cloud physics knowledge and cloud modification experiments, including a discussion of the many unresolved questions regarding the possibilities of artificial intervention into natural cloud processes. Also included is a discussion of problems of cloud and water vapor transport on a geophysical and planetary scale, indicating that the role of clouds is incidental to broad-scale atmospheric processes.

271. PETTERSEN, SVERRE. *Introduction to Meteorology* (2d ed) New York, McGraw-Hill, 1958.

This first acquaintance with the atmosphere utilizes a minimum of mathematical expression. It is widely used in the academic fields of geography, agriculture, and aviation, as well as in various industries.

272. RIEHL, HERBERT. *Tropical Meteorology*. New York, McGraw-Hill, 1954. 392 pp.

An advanced text and reference which covers climate in general, local climate, clouds and rain-producing processes, weather disturbances, monsoons, tropical storms, and the setting of the tropics in the worldwide air circulation pattern.

273. TANNEHILL, IVAN RAY. *Drought: Its Causes and Effects*. Princeton, N.J., Princeton University Press, 1947. 264 pp.

Examines the historical weather records, including such indicators as tree-rings, in an attempt to utilize these data for determining the causes of drought and suggests effective areas of research to aid in this endeavor.

274. THORNTHWAITTE, C. W. "An approach toward a rational classification of climate," *Geographical Review*. Jan. 1948, v. 38, no. 1, pp. 55-54.

An analysis of the factors entering into climatic classifications, discussing the role of evaporation and transpiration and the essentials of a climatic classification.

275. TREWARTHA, GLENN THOMAS. *Earth's Problem Climates*. Madison, Wis., University of Wisconsin, 1961. 334 pp.

An analysis of the unusual and extraordinary climates of the world, offering brief and precise descriptions of climatic characteristics and explanations of some of the problem climates. Climatic differentiation is discussed for Latin America, Australia, Africa, Asia, Europe, and North America.

276. WEXLER, H. "Modifying weather on a large scale," *Science*. Oct. 1958, v. 128, no. 3331, pp. 1059-1063.

A presentation of the processes involved in the modification of weather on a large scale. The author concludes that current proposals are either impractical or likely to produce cures that are worse than the ailment, and he presents his own method of weather modification.

## VII. Forestry

277. BRUNS, PAUL ERIC. *Applied Forest Management*. Missoula, Mont., 1954. 383 pp.

A comprehensive treatment of forest management practices, including such topics as the economics of logging and forestry, forest inventories and roads, management of young growth timber; forest regulation, business records, land use coordination; and intensive and extensive forestry.

278. CHOATE, G. A. "A selected annotated bibliography of aerial photo interpretation keys to forests and other natural vegetation," *Journal of Forestry*, 1957, v. 55, pp. 513-515.

A "key" is "reference material designed to facilitate rapid and accurate identification and determination of the significance of objects or conditions from the analysis of their photo images." A total of 26 references is cited.

279. DUERR, WILLIAM ALLEN. *Fundamentals of Forestry Economics*. New York, McGraw-Hill, 1960. 579 pp.

Resource allocation in forestry production. Examines alternative uses of the resource and suggests possible combinations to achieve maximum benefits to the total society. This is achieved by studying such questions as how far can the forest owner reasonably carry his land-management of the timber-processing and timber-marketing firm and what are the consumers' alternatives? Includes a section on the forest economy of the world.

280. FORBES, REGINALD DUNDFORDALE, and MEYER, ARTHUR B. *Forestry Handbook*. New York, Ronald Press, 1955. 1247 pp.

A compilation of basic facts, techniques, and working methods of modern North American forestry. Deals with such topics as forest measurement and management, geology and soils, silvics, watershed management, weed technology, economics and technology, surveying, and protection against fire, insects, and disease.

281. HADIN-GUIST, SILPHIN (editor) *World Geography of Forest Resources*. New York, Ronald Press, 1956. 736 pp.

A comprehensive presentation of forestry in many aspects: its importance to man, principles and practices of forestry, products of forestry, forest influences. Separate chapters discuss the forests of specific countries and regions of the world.

282. GUICK, LUTHER HANSEL. *American Forest Policy, a Study of Government Administration & Economic Control*. New York, Duell, Sloan & Pearce, 1951. 252 pp.

A complete and detailed analysis of American forest policy beginning with a account of American lumbering. Also discusses the effects of government administration and economic control of timberlands on national forestry policy.

283. HLITAGL, CLARK C. "Reducing wood waste," *TAPPI*. Aug. 1954, v. 37, no. 8, pp. 155-8A.

Discusses the specific accomplishments of the period 1945-54 relative to lumber manufacture as the keystone of raw material integration; gains and losses of the pulpmaker as a result of integrating with lumber; development of the low cost, dry compression log barker to greatly expand potential residual chip supply, increase in the supply of mill residuals through integration, permitting the harvesting of cull logs; many uses for residual chips, bark utilization problem, and use of shavings for particle board. The effect of integrated utilization on the log harvest, the problem of partial stocking, the necessity for cheaper thinnings procurement, and actual examples of progress in all these matters are covered.

284. MILLER, HANS ARTHUR, et al. *Forest Management* (2d ed) New York, McGraw Hill, 1961. 282 pp.

A careful presentation of the principles involved in forest management. Parts I and II are devoted to the general problems of forest organization, while Part III is devoted to a discussion of the principles and methods of forest regulation; i.e., the principles and methods used in determining allowable cut.

285. PANSHIN, ALEXIS JOHN. *Forest Products: Their Sources, Production, and Utilization*. New York, McGraw-Hill, 1950. 549 pp.

Presents information on the origin, methods of conversion, and utilization of the principal primary and secondary forest products, with the exception of construction lumber. Conversion processes are presented in the form of flowcharts.

286. U.S. DEPARTMENT OF AGRICULTURE. *Trees: Yearbook of Agriculture 1949*. Washington, D.C., U.S. Government Printing Office, 1949. 944 pp.

A volume of interest to those dealing with trees and forests. Of special importance are the sections dealing with the small woodlands; namely, "Cooperatives and Small Woodlands," "Company Forests," "Private Forestry in the West," "The National Forests," and "New Security for Forest Communities."

287. U.S. DEPARTMENT OF AGRICULTURE. FOREST SERVICE. *Forest Industry Opportunities in Rural Development*. Washington, D.C., Mar. 1960. 27 pp (Agriculture Information Bulletin No. 222)

Directed toward encouraging the industrial utilization of large areas of forest land tributary to many communities, which currently contribute little to the local economy. The smallest operation involving two men, a power saw, and a truck, if adequately financed, properly equipped, and intelligently managed can operate as effectively as the largest. The realizable values are described, starting with stumpage and ending with the manufacture and sale of such engineered products as flooring and paneling.

288. ZIVNUSKA, JOHN A. *The Forest Products Mix in a Changing Economy Proceedings, Society of American Foresters*. Washington, D.C., Society of American Foresters, 1960.

Deals logically and authoritatively with certain critical aspects of future forest products planning induced by rapid and complex contemporary changes in the economy. Industry structure or organization is of great importance in adapting to these changes. One must now recognize that in the large volume manufacturing fields in which forest products generally compete for their main outlets, effective research and promotion require efforts and expenditures that can only be supported by large units with specific markets to be protected.

## VIII. Fisheries

289. PERLMUTTER, ALFRED. *Guide to Marine Fishes*. New York, New York University Press, 1951. 431 pp.

A detailed discussion of methods of marine fish identification. There are many drawings, identifying particular species, technical language has been held to a minimum, and identification of the various species is based on easily seen external features. The fishes included are all of the marine types commonly found along the shores of the temperate-water zone from Cape Cod to Cape Hatteras.

290. ROUNSEFELL, GEORGE ARMYTAGE, and EVERHART, W. HARRY. *Fishery Science*. New York, Wiley, 1953. 444 pp.

Presents the basic similarities of freshwater and marine fisheries, and summarizes the most successful and specialized methods employed in research, conservation, and management of fishery resources, regardless of where the fish occur.

291. TRESSLER, DONALD KITLEY, and LYMON, J. McW. *Marine Products of Commerce* (2d ed) New York, Reinhold, 1951. 782 pp.

Discusses various fish and their uses, methods of catching, preparation, and storage. Also covers uses and harvesting methods of marine plants and chemicals.

292. WALFORD, LIONEL ALBERT. *Living Resources of the Sea; Opportunities for Research and Expansion*. New York, Ronald Press, 1958. 321 pp.

Summarizes present knowledge concerning the living resources of the sea in order to determine how the harvest of the sea fisheries could be increased for the benefit of humanity. Emphasis is placed on the problems of those regions where population pressures and food needs are most critical.

293. WASHINGTON (STATE) UNIVERSITY. COLLEGE OF FISHERIES. *Biological and Economic Aspects of Fisheries Management*, edited by James A. Crutchfield. Seattle, Wash., University of Washington, Department of Economics, 1959. 160 pp.

A collection of papers divided into four main topics biological and economic aspects of fishery management, which includes techniques; halibut fishery management, salmon fishery management in Alaska, and international trade policies and their relation to fisheries.

## IX. Resource Management

294. AHMAD, JALEEL. *Natural Resources in Low Income Countries: An Analytical Survey of Socio-Economic Research*. Pittsburgh, Pa., University of Pittsburgh Press 1960. 118 pp.

An annotated bibliography of current research on natural resource availability and utilization in low income countries. The several major divisions include such resources as land and water, energy, and minerals. The introductory essay analyzes and appraises the existing literature and indicates current research gaps.

295. CONFERENCE ON NATURAL RESOURCES AND ECONOMIC GROWTH, 1960. *Natural Resources and Economic Growth*, edited by Joseph J. Spengler. Baltimore, Md., Johns Hopkins Press, 1961. 306 pp.

Analyzes the role played by land and other natural resources in economic development. Asserts that resources essentially exert their influence in subtly shaping the composition rather than the rate of growth, that the influence of resources on growth is part of a complex of many influences; and that the influence of resources in the United States is neither as compelling nor as immediate as in former times or as important as it is in less developed countries.

296. ELY, NORTHCUTT. *Summary of Mining and Petroleum Laws of the World*. Washington, D.C., U.S. Department of the Interior. Bureau of Mines, 1961. 215 pp.

A reference summarizing the mining and petroleum laws of the world as of 1959. This work is a timely study of the provisions and philosophy expressed in the mining laws of the world, and aids the prudent investor to make intelligent decisions relative to investment in a mining venture. The basic provisions of the mining laws of Canada, Peru, and the Union of South Africa—nations which have experienced great advances in mineral production—are particularly pertinent.

297. FIREY, WALTER IRVING. *Man, Mind, and Land: A Theory of Resources Use*. Chicago, Ill., Free Press, 1960. 256 pp.

Presents a conceptual model of resource utilization which gives primary emphasis to developing the implications of resource utilization phenomena in terms of their structural properties. For illustrative and background data, the author describes and analyzes four distinct resource systems: two in folk societies, one in a feudal society, and one in an industrial society.

298. MOUZON, OLIVIER. *International Resources and National Policy*. New York, Harper & Bros., 1959. 752 pp.

Presents the basic information on national and international resources needed for understanding and making national policy decisions. Divided into three sections. The first covers the general objectives, policy, and nature of the resources of the United States to 1953. The second analyzes the strength and production potentials of the U.S. within the framework of natural, capital, and human resources. The third section is addressed to the question: how can the elements of strength and production potential of the U.S. best be employed to achieve security?

299. MURPHY, EARL FINBAR. *Water Purity, a Study in Legal Control of Natural Resources*. Madison, Wis., University of Wisconsin Press, 1961. 212 pp.

A careful analysis of Executive orders and legislative statutes in relation to the control of natural resources. Serves also to provide a framework of unity in regard to the different executive agencies and statutory programs.

300. NATIONAL RESEARCH COUNCIL. SPECIAL COMMITTEE ON RENEWABLE NATURAL RESOURCES. *The Need for Basic Research With Respect to Renewable National Resources*. Washington, D.C., National Academy of Sciences-National Research Council, Division of Geology and Agriculture, 1957. 21 pp.

A policy statement which points up the lack of scientific knowledge in certain areas of science important to natural resource conservation. Further delineates those areas of research which seem to offer optimum cost-benefit ratios under present conditions.

301. RESOURCES FOR THE FUTURE. *Comparisons in Resource Management*, edited by Henry Jarrett. Baltimore, Md., Johns Hopkins Press, 1961. 271 pp.

Aims to bring expert opinion to bear upon a few resource problems of wide interest and significance. Specifically, the text seeks to shed light on some of the resource conservation problems of the next 50 years from the vantage point of a critical review of the past 50 years. Resource management of England, Sweden, Great Britain, West Germany, Canada, and France are examined in light of what the United States can learn from the experience of these countries.

302. SCHURR, S. H., et al. *Energy in the American Economy, 1850-1975, an Economic Study of Its History and Prospects*. Baltimore, Md., Johns Hopkins Press, 1960.

A history of energy consumption in America during the period 1850-1950 which provides insights useful to countries which are now beginning the process of industrialization. It contains much information on the methodology of energy demand estimation and on the conceptual and measurement problems of energy resource estimation.

303. U.S. DEPARTMENT OF AGRICULTURE. LAND AND WATER POLICY COMMITTEE. *Land and Water Resources, a Policy Guide*. Washington, D.C., U.S. Government Printing Office, 1962. 73 pp.

A statement of principles and policy designed to provide a comprehensive long range framework for the formulation and operation of land and water programs to improve the national well-being. Stresses in general terms what needs to be done in the United States until the target year of 1980.

304. WENGFERT, NORMAN IRVING. *The Administration of Natural Resources*. New York, Asia Publishing House, 1962. 71 pp.

Illustrates the inter-relationship between politics and administration and the extent to which program decisions involve the bureaucracy in the political struggle. Provides insight into the ways in which program decisions are made and programs are developed in the United States. Emphasizes that in a democratic society all important decisions about resource development eventually must be political in character, and that the concept of public interest constantly must be kept in mind.

305. WESTERN RESOURCES CONFERENCE. 7ST. UNIVERSITY OF COLORADO, 1959. *Resources Development: Frontiers for Research*, edited by Franklin S. Pollak. Boulder, Colo., University of Colorado Press, 1960. 333 pp.

Considers the importance of research on the utilization of the major resources of water, land, minerals, and energy. Among the factors discussed in relation to natural resources are population growth, atomic energy from fission, multiple use of the resources to achieve optimum benefits, and planning to achieve these ends.

## Chapter 4.

# POPULATION, MANPOWER, AND LABOR PROBLEMS

### I. General Population Studies

306. CHICAGO. UNIVERSITY. NORMAN WAIT HARRIS MEMORIAL FOUNDATION. 30TH INSTITUTE, 1954. *Population and World Politics*, edited by Philip M. Hauser. Glencoe, Ill., Free Press, 1958. 297 pp.

Discusses world population growth in relation to: fertility and mortality, resources and energy, income distribution, income and per capita consumption, migration and economic development, regional occurrence, communism, internal and world policies, and United States foreign policy. Describes the impact of population on world power distribution and types of economic systems.

307. COALI, ANSLEY J. "The effect of changes in fertility and mortality on age composition," *Milbank Memorial Fund Quarterly*. Jan. 1956, v. 34, no. 1, pp. 79-114.

Demonstrates that the increase in the proportion of the population in the elder age groups observed in many western countries is due primarily to declining birth rates rather than to a decrease in mortality rates.

308. COALI, ANSLEY J., and HOOVER, EDGAR M. *Population Growth and Economic Development in Low-Income Countries*. Princeton, N.J., Princeton University Press, 1958. 389 pp.

Discusses relations between population and economic development; summarizes population projections for India for the period 1951-86 on three alternative assumptions as to fertility and discusses the basic estimates of fertility and mortality; examines the determinants of economic growth in relation to agricultural development, the supply of funds, and investment output ratios, deals with the influence of popula-

tion growth on Indian economic development; and applies the general considerations to the 30-year prospects in low-income areas with different demographic conditions and different initial economic conditions, as exemplified by Mexico, and to longer range prospects there and in India.

309. COONTZ, SYDNEY. "The economics of high fertility in densely-populated underdeveloped areas," *International Population Conference, Vienna 1959*. Vienna, Austria, International Union for the Scientific Study of Population, 1959. pp. 83-91.

Author rejects the neo-Malthusian concept that population growth causes economic backwardness. He attacks these concepts, discusses the economics of fertility in underdeveloped areas, and emphasizes the family as the economic unit of production in densely populated underdeveloped areas. He contends that planned rapid industrialization in such areas will not be accompanied by a significant population explosion.

310. DAVIS, KINGSLEY. *The Population of India and Pakistan*. Princeton, N.J., Princeton University Press, 1951. 263 pp.

A study of the demographic position of the two countries in their cultural and economic setting. Although written before the 1951 census results were made available, a considerable amount of estimation and adjustment is undertaken by the author to make up for the deficiencies of basic statistics. The pressure of population in agriculture and the outlook for rapid population growth are seen as complicating the problems of raising levels of living, and as calling for policies designed to restrain the rate of increase.

311. HAUSER, PHILIP M., and DUNCAN, OTIS DUDLEY (editors) *The Study of Population: An Inventory and Appraisal* Chicago, Ill., University of Chicago Press, 1959. 864 pp.

A collection of writings which discuss demography as a science; the development and current status of demography; studies in various disciplines; and the elements such as composition, distribution, fertility, mortality, migration, and family statistics. Provides a comprehensive picture of demography as a science and profession in the mid-twentieth century.

312. HERTZLER, J. O. *The Crisis in World Population: A Sociological Examination with Special Reference to the Underdeveloped Areas*. Lincoln, Nebr., Nebraska University Press, 1956. 279 pp.

Presents a sociological examination of world population problems in an historical perspective. Explores the causes and effects of population increase, the sociological conditions for change, and the major national and international problems of adjusting the population-resources equation to fit the modern demographic situation. It is of the "alarmist" school in pointing to potential population problems. Discusses problems of modernization, population pressure, food supply, fertility reduction, and migration, with special attention given to the underdeveloped countries.

313. HILL, RUBIN, et al. *The Family and Population Control*. Chapel Hill, N.C., University of North Carolina Press, 1959. 481 pp.

Based on research done among Puerto Ricans, states that there are motivations for smaller families, that knowledge of birth control should be more accurate and extensive, that a major difficulty is poor communication between marital partners, and that consistent use of contraceptives is more of a problem than gaining initial use. Authors propose, on basis of empirical experiments, a program for accomplishing population control.

315. MILLER, RICHARD L. *Modern Science and the Human Fertility Problem*. New York, Wiley, 1959. 263 pp.

Starting from the premise that increasing population is one of the greatest deterrents to economic development in underdeveloped areas, the author deals with current scientific realities and hopes for fertility control, considers the impact of fertility control on population growth, social institutions, and economics; and develops the need for use of relevant social science data and theories in consideration of population problems. Considers several approaches, including psychological to family limitation, and demonstrates the interrelationship of demography and other social and physical sciences.

316. MILBANK MEMORIAL FUND. *The Interrelations of Demographic, Economic, and Social Problems in Selected Underdeveloped Areas: Proceedings of a Round Table at the 1953 Annual Conference of the Milbank Memorial Fund*. New York, 1954. 200 pp.

A series of reports on trends and prospects in Japan, Taiwan, Puerto Rico, India, Ceylon, Burma, and Central Africa. The experience of rapid in-

dustrialization in Japan, together with the preservation of traditional rural values, is considered as a warning for other nations of Asia. The problems attending efforts at population control are considered for the other areas, and research needs and suggestions for research projects are summarized.

317. NATIONAL BUREAU OF ECONOMIC RESEARCH. *Demographic and Economic Change in Developed Countries*. Princeton, N.J., Princeton University Press, 1960. 536 pp.

Although focused primarily on developed countries, it includes some useful examples of methodology and points of view with broader implications.

318. SMITH, THOMAS LYNN. *Latin American Population Studies*. Gainesville, Fla., University of Florida Press, 1958. 83 pp.

A report of studies of Latin American populations made by the author since 1951. In addition to data on the number, distribution, and growth of population in the 20 Latin American republics, it provides information about two basic characteristics of the population: the rate of reproduction and the migration of people from the country to the city.

319. STOCKWELL, EDWARD G. "The relationship between population growth and economic development," *American Sociological Review*. Apr. 1962, v. 27, no. 2, pp. 250-252.

A comparison of annual rates of increase in population and per capita income during the period 1952-58 in 16 underdeveloped countries. Analysis shows a negative relationship between changes in man's material status and the rate of increase in population.

320. THOMPSON, WARREN S. *Population and Progress in the Far East*. Chicago, Ill., University of Chicago Press, 1959. 443 pp.

Descriptive analysis and discussion of problems of agricultural and industrial development under conditions of rapid population growth. Areas discussed include Japan, India, China, Pakistan, Ceylon, Southeast Asia mainland, Southeast Asia islands, Taiwan, and Korea. Describes patterns of human population growth, some prerequisites for rapid economic development, and general population pressure in the Far East.

321. WHELPTON, P. K., and KISER, CLYDE V. (editors) Social and Psychological factors affecting fertility," *Milbank Memorial Fund Quarterly*. 1943—

A series of articles appearing annually from 1943 to date on such topics as the planning of fertility; interrelationship of marital adjustment, fertility control, and size of family; fertility rates; and the use, effectiveness, and acceptability of methods of fertility control.

322. WOYTINSKY, WLADIMIR S., and WOYTINSKY, F. S. *World Population and Production*. New York, Twentieth Century Fund, 1953. 1268 pp.

Presents a statistical picture of the collective resources of the nations of the world, as well as their economic performance and promise. Subject matter is divided into five parts: man and his environment; world needs and resources; agriculture; energy and mining; and manufacture. Indexed references provide the reader with considerable source material.

## II. Demographic Analysis

323. BARCLAY, GEORGE W. *Techniques of Population Analysis*. New York, Wiley, 1958. 311 pp.

Directed toward general population analysis including methodology applicable to greatly varying data, particularly in underdeveloped areas. Logic of procedure is emphasized over specific technique. A generalized approach to demography, rates and ratios, accuracy, life table, mortality, fertility, population growth, migration and distribution, and manpower. Extensive tabular material.

324. BOGUE, DONALD J. "A technique for making extensive population estimates," *Journal of the American Statistical Association*. June 1950, v. 45, no. 250, pp. 149-163.

Describes a population estimating technique which is designed to facilitate the study of population trends during postcensus periods. By using current vital statistics, population estimates for groupings of areas are obtained which permit inferences to be made concerning growth or decline since the last census.

325. COALE, ANSLEY J., "The population of the United States in 1950 classified by age, sex, and color; a revision of census figures," *Journal of the American Statistical Association*. Mar. 1955, v. 50, no. 269, pp. 16-54.

Discusses errors of omission and mistaken inclusion in the 1950 census and the erroneous classification of persons according to their age, sex, and color. Surveys the evidence that reveals imperfections in the census, and offers a set of numbers believed to come closer than census figures do to the United States population in 1950, classified according to age, sex, and color.

326. CONFERENCE ON RESEARCH IN FAMILY PLANNING, NEW YORK, 1960. *Research in Family Planning*, edited by Clyde V. Kiser. Princeton, N.J., Princeton University Press, 1962. 662 pp.

An illustrated description and evaluation of the present state of research on population problems. It interprets research evidence with respect to its significance in understanding the population growth in underdeveloped areas. Special attention is given to the cancellation of increases in standards of living by parallel increases in the population. Data are presented on the problems of motivating people to learn about, accept, and practice family planning.

327. DORN, HAROLD F. "Pitfalls in population forecasts and projections," *Journal of the American Statistical Association*. Sept. 1950, v. 45, no. 251, pp. 311-334.

Reviews the development of demography and population forecasting. The advantages and disadvantages of several methods of making population predictions and errors in demographic theories are examined. Points out the complexity of the problem of forecasting either for short periods or long-time trends with presently available techniques.

328. DURAND, JOHN D. "Population structure as a factor on manpower and dependency. Problems of underdeveloped countries," *Population Bulletin of the United Nations*. Oct. 1953, no. 3, pp. 1-16.

Age structures of the population of industrial, semi-industrial, and agricultural countries are contrasted and related to the resulting degree of economic dependency. From statistics for economically active and inactive males, it is shown that in underdeveloped countries the high proportion of employed children and aged does not bring the numerical relation between dependent and productive persons into line with that of more advanced countries. Statistics are presented to support the discussion of the influence of mortality rates and years of dependency and of urbanization and industrialization on the ratio of dependents to workers.

329. EATON, JOSEPH W., and MAYR, ALBERT J. *Man's Capacity To Reproduce; The Demography of a Unique Population*. Glencoe, Ill., Free Press, 1954. 59 pp.

A study of fertility among the Hutterite population in the United States and Canada, covering the period from 1880 to 1950. The study is of

particular interest because of the very high fertility rate found. The findings are examined in their biological and cultural aspects, with analysis based on family records rather than general population statistics.

330. FRANCIS, ROY G. (editor) *The Population Ahead*. Minneapolis, Minn., University of Minnesota Press, 1958. 160 pp.

Contains nine essays on whether present population growth threatens living standards and the direction of genetic composition of the population. Views are presented of an anthropologist, a demographer, a sociologist, a geneticist, an economist, a geographer, a biologist, and a medical man.

331. FREEDMAN, RONALD, et al. *Family Planning, Sterility, and Population Growth*. New York, McGraw-Hill, 1959. 515 pp.

Analyzes the results of 2,713 interviews of young married women, conducted by Survey Research Center, University of Michigan. Topics include sterility, regulation and limitation of conception, methods of limitation, social and economic correlates, and attitudes. Predicts family sizes by social and economic group, and total population growth, 1955-2000. Includes detailed documentation.

332. GORDON, JOHN E., and WYON, JOHN B. "Field studies in population dynamics and population control," *American Journal of Medical Science*. Sept. 1960, no. 240, pp. 361-386.

Reviews the epistemological and methodological bases of scientific research on problems of human ecology and population dynamics, and delineates the steps in approaching population dynamics. Discusses the three analytical methods which are relevant to population studies: clinical investigation, laboratory experiment, and epidemiological analysis. Classifies population control field studies; exhaustively reviews empirical literature with attention to conceptual and methodological shortcomings and the conclusions which seem reasonably well established; and describes in detail the Khanna Study of Population Dynamics.

333. GRABILL, WILSON H. *The Fertility of American Women*. New York, Wiley, 1958. 448 pp.

Analyzes fertility trends and differentials since the colonial period, including the interrelationships of residence, nativity and ethnic groups, working women, education, fertility of cohorts, contraception, religion, and other social and psychological factors. Suggests inadequacy of demographic variables may explain fertility differentials.

334. KISER, CLYDE. *Fertility Trends and Differentials Among Non-Whites in the United States*. New York, Milbank Memorial Fund, 1958. 197 pp.

A study of the possible causes of the decrease in childlessness and the increase in fertility among nonwhites since 1940. Among the causes reflected in the study are: greater encouragement to have children, medical discoveries, accelerated migration to urban areas; decrease in medical impairment, improved occupational opportunity; and advance in civic status.

335. MILBANK MEMORIAL FUND. *Approaches to Problems of High Fertility in Agrarian Societies*. New York, 1952. 171 pp.

Reports on the cultural factors underlying high fertility in underdeveloped countries, and on attitudes and problems connected with the control of fertility.

336. ———. *Thirty Years of Research in Human Fertility. Retrospect and Prospect*. New York, 1957.

Nine papers which are oriented toward methods and research in general, and toward findings in the United States in particular. Fields of interest include a critical analysis of indices, new census and registration data required, and research in the biological control of fertility.

337. ———. *Trends and Differentials in Mortality*. New York, 1956.

A conference report containing analyses of recent trends in both underdeveloped and highly developed countries, as well as research reports on the interaction between mortality and age patterns. A description is given of a plan to investigate the role of environmental factors in six differentials in mortality.

338. STANBERRY, HENRY VAN BEUREN. *Some New Techniques for Area Population Projections*. Los Angeles, Calif., John Randolph Haynes and Dora Haynes Foundation, 1960. 98 pp.

The objective of this study was to develop techniques for including in projections of area populations the effects of expected increases in both population mobility and populations for the nation and the area under consideration. These studies were empirical being based on population data for the State of California; however, the formulae and techniques are relevant for any area possessing data on mobility, births, deaths, fertility, mortality, and the racial, sex, and age composition of the population.

339. STOLNITZ, GEORGE J. "A century of international mortality trends," *Population Studies*. July 1955 and July 1956, v. 9, pt. 1, pp. 24-55; v. 10, pt. 1, pp. 17-42.

Section I summarizes available evidence on world mortality developments during the past 100 years. It is emphasized that the usual methods of evaluating such changes can be supplemented by other approaches and that the history of mortality in western nations may prove an unreliable guide to future trends elsewhere. The study is based on a nearly complete compilation of all national life tables on record. The data in Section I are applied to several additional questions in Section II. Some past and prospective efforts of mortality changes on potential size of the labor force and on net productivity are examined. Sex differentials are reviewed, selected propositions are tested for empirical validity and lead to some inferences of general demographic nature.

340. STYCOS, J. MAYONE. *Family and Fertility in Puerto Rico: A Study of the Lower Income Group*. New York, Columbia University Press, 1955. 332 pp.

Considers the behavior and attitudes of low-income Puerto Ricans toward a range of problems relating to fertility, including child-rearing, courtship, early marriage, consensual union, marital and nonmarital sexual relations, and attitudes toward fertility and birth control. Concludes that primary factors in a high birth rate are early marriage, male dominance, poor communication between marital partners about birth control, and misinformation about birth control.

341. TIETZE, CHRISTOPHER. "Pregnancy rates and birth rates," *Population Studies*. July 1962, v. 16, no. 1, pp. 31-37.

The relationships between pregnancy rates per hundred woman-years of exposure and annual birth rates per thousand population are analyzed by means of a simple model. It is shown that even with universal practice of contraception and with only two surviving children desired by the average couple, a high level of contraceptive effectiveness is required to reduce the birth rate to the level of the death rate.

- 342 U.S. BUREAU OF THE CENSUS. *Handbook of Statistical Methods for Demographers; Selected Problems in the Analysis of Census Data*. Washington, D.C., U.S. Government Printing Office, 1951. 278 pp.

A compilation of readings and exercises, with accompanying text, designed to provide materials for use in the teaching of statistical methods especially applicable to demography. The subject matter emphasizes problems and methods judged to be most appropriate for persons expecting to act as census or registration officials. Assumes a knowledge of elementary techniques; e.g., the computation of crude rates and simple ratios.

343. WHELPTON, P. K. "An empirical method of calculating future population," *Journal of the American Statistical Association*. 1936, v. 31, pp. 457-473.

A classical presentation of the method of population predictions by projecting separately for each age and sex group.

### III. Manpower Problems

344. BALDWIN, GEORGE B. "Labor problems in a developing economy," *Current History*. Aug. 1959, v. 37, no. 216, pp. 91-95.

Proposes an analytic framework to show that governmental action to regulate labor management problems is a "result of the social forces that emerge from the specific structure of particular societies." Outlines the special problems confronting governments of underdeveloped countries and contrasts them with those of western societies in their development process.

345. CARPENTER, HOWARD S. "Human resource planning: aid to free world development," *Employment Security Review*. May 1960, v. 27, no. 5, pp. 3-28.

Under this heading are several papers reporting developments and progress in various kinds of employment programs especially in Thailand, Tunisia, and Peru.

346. CORNELL UNIVERSITY. INSTITUTE OF INTERNATIONAL INDUSTRIAL AND LABOR RELATIONS. *Labor, Management and Economic Growth Proceedings of a Conference on Human Resources and Labor Relations in Underdeveloped Countries*. Ithaca, N.Y., State School of Industrial and Labor Relations, Cornell University, 1954. 251 pp.

These papers are divided among six main headings and are of two types: those presenting research concepts or frameworks, and those reporting research findings. Main topics are (1) factors in economic and social change, including a report on an experiment in the process of cultural change among Andean Indians in Peru, (2) problems of industrial productivity in backward areas, containing a paper on the effect of technique choice on labor attitudes and productivity, (3) ownership and managerial problems, formation of entrepreneurial groups in underdeveloped countries, and development of modern business communities in India; (4) labor movements and organizations, including an analysis of organized labor's impact on Indian industrialization; and (5) effects of outside

agencies, impact of the International Labor Organization on labor legislation and policies in India, and foreign and local influences on Latin American trade unionism. The final section outlines research programs and potentials, what has been done and what yet needs to be done.

347. DEYRUP, FELICIA J. "Organized labor and government in underdeveloped countries: sources of conflict," *Industrial and Labor Relations Review*. Oct. 1958, v. 12, no. 1, pp. 104-112.

Position and structure of organized labor in underdeveloped countries is contrasted with that of industrialized countries. The author then predicts that labor and government in underdeveloped countries will continue to clash until economic development is achieved.

348. GALENSON, WALTER (editor) *Labor and Economic Development*. New York, Wiley, 1959. 304 pp.

Summarizes the development of an industrial labor force and of labor organizations in five varying countries. India, Japan, Egypt, French West Africa, and the British West Indies. Each presentation considers labor problems for that country within the framework of economic analysis. These essays collectively help to suggest the political repercussions of alternative labor policies.

349. GINZBERG, ELI, et al. *Improving the Work Skills of the Nation*. New York, Columbia University Press, 1955. 203 pp.

A collection of 12 essays presented at the "Arden House Conference on Skilled Manpower." The essays and the conference discussion report convey the opinion and theories of key executives and scholars in the United States on human resources development.

350. HARBISON, FREDERICK H. "Human resources development planning in modernizing economies," *International Labor Review*. May 1962, v. 85, no. 5, pp. 435-458.

Reviews the general elements in the manpower situation in developing countries. Proposes a general strategy consisting of a manpower survey to determine shortages, surpluses, and to set targets, then an attack on the problems through improved incentives (material and social status), training of employed persons, and rationalization of the educational system. Suggests that human resources policy be placed in the hands of an inter-ministerial board composed of generalists.

351. HILLARD, JOHN F. "Essentials of manpower planning in economic development," *International Development Review*. Mar. 1962, v. 4, no. 1, pp. 9-13.

A brief review of the increasing awareness of the need for and of experiences in developing manpower programs. Essentials of successful planning are set forth, and required elements of resources assessment are outlined.

352. KERR, CLARK, et al. "The labor problem in economic development: a framework for reappraisal," *International Labor Review*. Mar. 1955, v. 71, no. 3, pp. 223-235.

Industrialization changes relationships between man and his work, and between man and his cultural setting. The thoughts and habits of people and the nature of institutions that bind them together are decisive factors in successful economic development. In pursuit of this wider perspective, new questions must be asked. These questions are outlined by the authors in three areas: recruitment and commitment of the labor force, the organizational factor in the industrialization process, and emergence and management of protest.

353. MOORE, WILBERT ELLIS. "Labor attitudes toward industrialization in underdeveloped countries," *American Economic Review*. May 1955, v. 45, pp. 156-165.

In search of a theory by which labor behavior can be predicted, the author examines experience in labor recruitment, the nature of underdeveloped areas, modern economic organization, and labor attitudes conducive to transition.

354. NATIONAL MANPOWER COUNCIL. *Education and Manpower*, edited by Henry David. New York, Columbia University Press, 1960. 326 pp.

A selection of papers either previously published by the National Manpower Council or prepared by members of its staff. They deal with the relationship between education (broadly conceived) and manpower development and use. The material is divided under three section headings: secondary education, vocational guidance, and higher education.

355. SCHWARZ, PAUL A. *Aptitude Tests for Use in Developing Nations*. Washington, D.C., American Institute for Research, June 1962. 86 pp.

Reviews study conducted in several African nations by American Institute for Research in 1960-61 to determine requirements for cross-cultural aptitude tests for use in industrial selection and training programs. Can also be used in screening for admission to certain academic curricula. Compiles unique set of new test specification principles.

356. U.S. DEPARTMENT OF LABOR. *Manual on Manpower Programs and Planning in Economic Development*. Washington, D.C., International Cooperation Administration, Office of Labor Affairs, 1960. 120 pp.

This manual is designed to demonstrate and explain the relationship between economic development plans and human resources programs and to present a practical and concise methodology for establishing manpower programs and the organizations needed to implement them.

357. WILTS, LEO R. *A Manpower Program for Economic Development*. New York and New Delhi, Ford Foundation, 1960. 153 pp.

The author served as a consultant for the foundation at the Ministry of Home Affairs of the Republic of India to design manpower programs and policy implementing the Indian 5-year plans. In this manual he has restated the essence of his observations and advice, and has used his experience to present a model program applicable to developing country conditions in general.

#### IV. Manpower Analysis and Requirements

358. ALBEE, GEORGE W. *Mental Health Manpower Trends*. New York, Basic Books, 1959. 361 pp. (Joint Commission on Mental Illness and Health, New York. Monograph Series, No. 3)

A statement of the nature, extent, and general significance of the mental health manpower problem, dealing with the supply and demand for various categories of psychiatric personnel in the United States. It is argued that any general solution of the professional manpower shortage depends upon the development of the educational system, and an indication is given of changes required.

359. AMERICAN COUNCIL ON EDUCATION. COMMISSION ON THE SURVEY OF DENTISTRY IN THE U.S. *The Survey of Dentistry*. Washington, D.C., 1961. 603 pp.

Analyzes the problems and issues related to the future of the dental profession in the United States. Divided into four sections concerned with dental health, the area of dental practice, the problem of dental education, and dental research. Attention is directed to the ways of meeting the changing manpower requirements of the profession.

360. BLANK, DAVID MORDECAI, and STICLER, GEORGE J. *The Demand and Supply of Scientific Personnel*. New York, National Bureau of Economic Research, 1957. 200 pp.

Factors and procedures involved in the supply and demand for scientific personnel are applied to the situation in the United States in 1955. Emphasis is on engineers and chemists, with a chapter on mathematicians and advanced physicists. Appendices include data on numbers and education for engineers with projections to 1970.

361. BROWN, JAMES DOUGLAS, and HARRISON, FREDERICK. *High-Talent Manpower for Science and Industry: An Appraisal of Policy at Home and Abroad*. Princeton, N.J., Princeton University, Industrial Relations Section, 1957. 97 pp.

The first of these two essays reviews the essential ingredients of industrial progress and the functions performed in mass production, describes the characteristics common to people engaged in the creation and implementation of new ideas, analyzes problems which face state, university, and corporation in supplying this talent. The second essay presents four propositions which point out that the supply of human resources in a developing country is largely dependent upon the effectiveness of managerial personnel, and suggests policies for developing such strategic manpower resources.

362. BURTLE, JAMES. "Input-output analysis as an aid to manpower policy," *International Labor Review*. May 1952, v 65, no. 5, pp 600-625.

Report of a technique to simplify analysis of the maze of interindustry transactions and relationships in order to obtain an overview of a whole economy and appraise the impact of demand on all of its sectors. Input and output tables, developed by Leontief, are described, and their use in forecasting labor needs is explained.

363. GERARD, RALPH WALDO. *Mirror to Physiology: A Self-Survey of Physiological Science*. Washington, D.C., American Physiological Society, 1958. 372 pp.

An extensive survey of the field of physiology which provides a systematic examination of all phases of the field in terms of its future development. It seeks to characterize the personnel in the profession in terms of their activity, recruitment, and training, and the research which they carry on.

364. HARVARD UNIVERSITY. Graduate School of Business Administration. *Teamwork in Technology: Managing Technician Manpower, A Report to Industry*. Scarsdale, N.Y., Technician Manpower Associates, 1959. 172 pp.

Discusses the use and recruitment of technicians to relieve the shortage of highly skilled and educated manpower. The role of the technician as an assistant to management is discussed, and the changing role of the manpower thus released is analyzed.

365. JAFFE, ABRAM J., and STEWART, CHARLES D. *Manpower Resources and Utilization; Principles of Working Force Analysis*. New York, Wiley, 1951. 532 pp.

While major emphasis is given to analysis of the United States working force and of its interrelations over time with the social and economic changes occurring in the entire society, consideration also is given to the manpower and working force problems of the less developed areas. Part I defines the nature of the working force activity; Part II provides a statistical description of the American working force, both past and present; and Part III presents the available factual data on the relationship between the working force and the technological, demographic, and social factors of society.

366. McCANLEY, JOHN S. *Manpower Requirements and Training Needs in Construction Occupation 1960-1970*. Washington, D.C., U.S. Department of Labor, Bureau of Apprenticeship. 12 pp.

A. monograph on skill acquisition and projected manpower requirements.

367. NATIONAL MANPOWER COUNCIL. *A Policy for Scientific and Professional Manpower*. New York, Columbia University Press, 1953. 263 pp.

Advances a series of policy recommendations to insure that the United States will have adequate resources of scientific and professional manpower. Emphasis is placed upon the need to develop more reliable knowledge about human resources, and to strengthen the institutions which educate and train scientists and professionals. The nature and extent of shortages are analyzed, and measures are suggested for reducing and preventing them in the future.

368. PUERTO RICO. COMMITTEE ON HUMAN RESOURCES. *Puerto Rico's Manpower Needs and Supply*. San Juan, Puerto Rico, 1957. 134 pp.

An attempt to deal with the methodological problems inherent in manpower analysis as a basis for human resource planning. Data are presented regarding the estimated future availability of employment opportunities at 5-year intervals up to 1957 for 11 major occupational groups and for a number of specific professions and crafts. The labor force also is projected for this period by age, sex, and educational levels, as the basis for estimating shortages and surpluses of manpower. Concludes with general and specific recommendations for governmental action in light of this analysis.

369. TAYLOR, GEORGE W., and PIERSON, FRANK C. (editors) *New Concepts in Wage Determination*. New York, McGraw-Hill, 1957. 336 pp.

A group of papers by economic authorities which presents a theory of wages and an integration of wage principles, and market and institutional considerations. Emphasizes that wage determination varies between companies, industries and countries, depending on several factors: the difference in production and product-market conditions; the degree to which wages as a cost are critical, technical conditions of production; organizational forms; processes of wage determination, and the social norms and customs of the economy.

370. U.S. BUREAU OF EMPLOYMENT SECURITY. *Handbook on Sources of Data for Manpower Projection*. Washington, D.C., 1961. 80 pp.

Describes and evaluates data available in the United States, and provides procedures for projecting population; labor force; agricultural and non-agricultural employment status; wages and salaries in nonagricultural employment by industry; and employment by occupation distribution and major industries.

371. U.S. NATIONAL SCIENCE FOUNDATION. *The Long-Range Demand for Scientific and Technical Personnel: A Methodological Study*. Washington, D.C., U.S. Bureau of Labor Statistics, 1961. 70 pp.

Report of a study which utilized statistical relationships between scientific and technical employment and other such economic parameters to derive projections. Validity of such ratios was tested through an analysis of scientists and engineers in chemical and electrical industries. Methods for making projections to 1970 for private industry, colleges and universities, and government agencies are described, and suggestions are made with regard to education and training in relation to expected demand.

372. WOLFLE, DAEL LEE. "Forecasting surpluses and shortages in key occupations," *Annals of the American Academy of Political and Social Science*. Sept. 1959, v. 325, pp. 29-37.

The author cites the growing need for teachers, the increase in research activities, and the expected continuation of a high rate of industrial production as three factors certain to produce a shortage of scientific and technical manpower. He discusses the accuracy of trend projections, the way they are used, and the way they are made.

## V. Labor Organization and Problems

373. ABRUZZI, ADAM. *Work, Workers, and Work Measurement*. New York, Columbia University Press, 1956. 318 pp.

A discussion of assessing the value of work and workers. Also includes ways of measuring work. The author combines these elements to produce a theory about work, and supports this thesis using studies in time measurement, process standardization, production rates in short-term, standard data systems, and work fatigue.

374. BAKKE, E. WRIGHT. *Bonds of Organization: An Appraisal of Corporate Human Relations*. New York, Harper & Bros., 1950. 239 pp.

Presents the first in a series of reports on the investigation of human relations in industry, based upon a study of a telephone company and a telephone workers' union. Being the first in the series, attention is given to clarifying the terms and categories used to build a realistic definition of the "bonds of organization" revealed in the experience of participants. These bonds are conceived as being certain devices that weld a group of individuals into a functional team. In this respect, discusses such subjects as functional specification, status system, communication system, and reward and penalty system.

375. DUNLOP, JOHN T. *Industrial Relations System*. New York, Holt, 1958. 399 pp.

A general theoretical structure for analyzing the widest possible range of industrial relations, facts, and practices is advanced, involving the conceptualization of industrial relations as an organized system. The universality of the concept which the author develops is tested by examination of the existing situation in various specific countries as well as by an historical review of the impact of economic development upon such systems.

376. HABLER, S. *Female Labor Force Participation and Economic Development*. Santa Monica, Calif., Rand Corporation, 1958. 79 pp.

Examines some trends of increased participation of females in the labor force and the factors which have caused this, on both the supply and demand side. Discusses the implications of this increased participation for further economic development. Though the data are drawn from United States experience, the analysis of the trends should be useful to nations now experiencing rapid structural changes in their economies.

377. KORNHAUSER, ARTHUR W., et al. *Industrial Conflict*. New York, McGraw-Hill, 1954. 550 pp.

Contains 15 essays on crucial aspects of industrial relations in the United States and abroad. The authors are leading American labor relations experts.

378. MANN, FLOYD E., and HOFFMAN, RICHARD L. *Automation and the Worker: A Study of Social Change in Power Plants*. New York, Rinehart & Winston, 1960. 272 pp.

Authors summarize answers given by 400 employees of two powerplants to some 225 multiple choice questions on automation. There are about 75 tables.

379. MOORE, WILBERT ELLIS. *Industrialization and Labor: Social Aspects of Economic Development*. Ithaca, N.Y., Cornell University Press, 1951. 410 pp.

Presents a "comparative analysis of the social preconditions to industrial development, particularly with respect to the motivations of workers." Five chapters are devoted to summary and evaluation of a large number of previous studies that bear on the attitudes of native workers toward industrial changes. Theories of economic motivations, wages, and acculturation are discussed as they relate to the analysis made. The second portion of the book reports on research in Mexico, beginning with a review of the economic and social backgrounds of the country and proceeding to direct investigation in two agricultural villages located near several modern factories. The inquiry extends further into the factories where characteristics of the workers are probed. This well-documented work concludes with a comprehensive summary and appendices giving data for the field work done in Mexico.

380. MOORE, WILBERT ELLIS, and FELDMAN, ARNOLD S. *Labor Commitment and Social Change in Developing Areas*. New York, Social Science Research Council, 1960. 378 pp.

This collection of papers is a many-faceted examination of "commitment," both in performance and acceptance of appropriate behavior, and its relation to the development of an industrial way of life. The volume points up the difficulties involved in framing all-embracing generalities about the process of commitment and the inherent dangers of provisional generalizations if they lead to a closed concept of what a modernized society "should be like."

381. MYERS, CHARLES A. *Labor Problems in the Industrialization of India*. Cambridge, Mass., Harvard University Press, 1958. 297 pp.

A study of India's manpower problems in the process of development. Describes the dimensions of labor force and managerial problems, the emergence and commitment of an industrial labor force, the growth and development of an organized labor movement, the managerial response to labor problems, the organization and development of managerial personnel, and the role of government in labor management relations. Points out that experience of highly industrialized countries may not be directly applicable to countries starting from a much lower level. The book concludes with a commentary on the policy implications of industrialization for labor, management, and government.

382. ORNATI, OSCAR. *Jobs and Workers in India*. Ithaca, N.Y., Cornell International Industrial and Labor Relations Reports, 1955. 215 pp.

Informative analyses of India's problems of industrial relations, of conditions under which workers are employed, and of characteristics of the Indian work force are brought together in this scholarly study. It does not define solutions, but rather points up issues to be examined in search for answers. The author probes the trade union movement and indicates the nature of concomitant problems. His preface suggests that such material might lead to generalizations applicable "possibly to the broader area of the impact of labor organizations in underdeveloped countries."

383. "Retraining the Unemployed," *Monthly Labor Review*. Aug., Sept., Oct., 1961. Washington, D C., U S. Department of Labor.

This substantial article is in three parts. The first deals with European government programs and legislation, the second, with United States public policies and programs, and the third, with skill improvement techniques for electricians and plumbers used in the United States.

384. ROSINSILIN-RODAN, PAUL N. "Disguised unemployment and under-employment in agriculture," *Monthly Bulletin of Agricultural Economics and Statistics*. July/Aug 1957, v. 6, no 7/8, pp. 1-7.

Outlines the basic concepts of static and dynamic disguised unemployment in agriculture. Classifies these in a precise fashion and gives details for directly measuring or estimating the percentage of under-employment. Documents these concepts with empirical evidence drawn from southern Italy.

385. SLOTKIN, JAMES S. *From Field to Factory: New Industrial Employees*. Glencoe, Ill., Free Press, 1960. 156 pp

An anthropological analysis of cultural processes at work as a community adopts an industrial system, with emphasis on conditions needed for this change to take place successfully. A body of generalizations to explain and predict employee behavior is based on the author's theory that these processes occur among workers first entering an industrial setting, whether or not the area is already industrialized.

386. WENNACOTT, PAUL. "Disguised and overt unemployment in underdeveloped economies," *Quarterly Journal of Economics*. May 1962, v. 76, no. 303, pp. 279-297.

A wage-work unit relationship is presented and detailed to differ from most others regarding the possible existence of a zero marginal productivity of labor. Policy implications of this concept are argued, and similarities and differences with those policies arising from other theories based upon the same basic postulate are discussed.

## Chapter 5. EDUCATION AND TRAINING

### I. Education and Development

387. AMERICAN ACADEMY OF ARTS AND SCIENCES. "Education in the age of science," *Daedalus*. Winter 1959. 208 pp.

A series of articles revolving around the following issues in American education: the purpose of knowledge, science versus the humanities, social needs provided by schools, equipping students for citizenship roles, and the social matrix within which education in the United States takes place.

388. AMERICAN EDUCATIONAL RESEARCH ASSOCIATION. "Educational research in countries other than the United States," *Review of Educational Research*. 1962, v. 32, no. 3, pp. 216-362.

Reviews the educational literature for the five-year period 1957-62. Included are studies from Australia, New Zealand, Canada, Latin American countries, Japan, Israel, East Africa, Belgium, France, Switzerland, West Germany, Finland, Sweden, Yugoslavia, Poland, Spain, and the United Kingdom.

389. ANDERSON, ARNOLD. "Sociology in the service of comparative education," *International Review of Education*. 1959 v. 5, no. 3, pp. 310-319.

Sketches some of the potential contributions of sociology to comparative education by outlining some current educational problems.

390. BARTON, WILLIAM HENRY, et al. *Education for Effective Thinking*. New York, Appleton-Century-Crofts, 1960. 508 pp.

Gives special attention to the areas of mathematics, science, literature, and social studies, and to sub-problems involved in each. Reference is made throughout to "everyday thinking," or dealing with practical problems. Presents a summary of the relationship between formal logic and thinking as it occurs in real situations.

391. COMBS, ARTHUR W. (editor) *Perceiving, Behaving, Becoming A New Focus for Education*. Washington, Association for Supervision and Curriculum Development, 1962. 256 pp.

Proposes new insights relating to the psychological foundations of education, with implications for the social and philosophical aspects. A third "force" in psychology, constituting a new vision of human potentiality is projected.

392. CRAMER, JOHN FRANCIS, and BROWN, GEORGE STEPHENSON. *Contemporary Education A Comparative Study of National Systems*. New York, Harcourt, Brace, 1956. 637 pp.

An analysis of the basic factors which give a distinct character to all national educational systems. The administration, control, financing, and operation of school systems in Australia, the United States, the Soviet Union, Japan, and Germany are compared. Out of these comparisons, there emerge the common and distinct problems of each.

393. *ENCYCLOPEDIA OF EDUCATIONAL RESEARCH* (3d ed) edited by Chester W. Harris. New York, Macmillan, 1960. 1564 pp.

Critical evaluation by more than 200 authorities of recent American research in education and related fields. Included articles on audio-visual communication, communication arts, international relations in education, mass media, and training devices.

394. ENNIS, ROBERT H. "A concept of critical thinking," *Harvard Educational Review*. 1962, v. 32, no. 1, pp. 81-111.

Presents a range definition of critical thinking by listing 12 aspects which characterize a critical thinker. Then a logical analysis of the 12 abilities is made along three dimensions—the logical, the criterial, and the pragmatic. It is suggested that such a simplification would present foci for evaluation and teaching.

395. GARDNER, JOHN WILLIAM. *Excellence*. New York, Harper & Bros., 1961. 171 pp.

Deals with the problem of maintaining the level of excellence in higher education. Attempts to determine how the benefits of higher learning can be brought to people of widely varying talents, abilities, and interests without endangering the more traditional functions of higher education.

396. HAVIGHURST, ROBERT JAMES, and NEUGARTEN, BERNICE L. *Society and Education*. Boston, Allyn & Bacon, 1957. 465 pp.

Selects certain major educational topics and problems, and analyzes them from a sociological point of view. Emphasizes the child's social environment, the school in the social structure, and the teacher's relation to society. The school is viewed as one of many social systems that operate in a complex social structure.

397. HOFSTADTER, RICHARD. "The child and the world," *Daedalus*. Summer 1962, v. 91, no. 3, pp. 501-526.

An inquiry into the intellectual and social roots of John Dewey's educational philosophy. Discusses Dewey's beliefs on authority, education for democracy, education and class stratification, educational curriculum, and growth as an aim of education. Points out vagueness in Dewey's philosophy, and some misconceptions by later imitators.

398. HULLFISH, HENRY GORDON, and SMITH, PHILIP G. *Reflective Thinking The Method of Education*. New York, Dodd, Mead, 1961. 273 pp.

Based on the premise that the method of learning is the method of skilled thinking, analysis of the thinking process is given with emphasis on believing and value judgments. Tools of thinking and learning are discussed, and a theory of learning for teachers is suggested.

399. KAPLAN, LOUIS. *Mental Health and Human Relations in Education*. New York, Harper & Bros., 1959. 476 pp.

A lucid presentation of current knowledge and experience regarding mental health and human relations. Presents the problems of mental disorder and maladjustment in the United States, shows how it is directly

related to the learning process, and describes some of the work being done to meet this problem. In addition, the environmental and psychological forces and influences are described as they affect the behavior of children. Selected references included.

400. NATIONAL SOCIETY FOR THE STUDY OF EDUCATION COMMITTEE ON INDIVIDUALIZING INSTRUCTION. *Individualizing Instruction*. Chicago, Ill., University of Chicago Press, 1962. 337 pp. (Yearbook, 61st, part 1)

A compilation of papers dealing with the problems of instructional difficulties associated with individual differences. Considers biological, social, and educational forces related to the origin and development of variation. Describes selected evidence about human variability and various practices intended to provide for individual differences.

401. NEFF, KENNETH L. *Education and the Development of Human Technology*. Washington, D C, U.S. Government Printing Office, 1962. 34 pp.

A concise review of the factors that must be considered in programing implementation of the educational objectives of the 1961 Act for International Development. Assistance in developing "human technology" is considered the prerequisite for the elimination of illiteracy, for the establishment of programs of vocational and professional training, and for the development of bodies of educational theory peculiar to the country to which aid is given. The author cautions against the possible misuse of the skills of the pedagogic expert.

402. *The New Education in the United States*. Washington, D.C., U.S. Department of State, Bureau of Educational and Cultural Affairs, 1962. 29 pp.

Summary of recent education thinking and developments in the United States conceived for use abroad and prepared by specialists, including Evans, Clinchy, Martus, and White. Includes brief supplementary listing of information sources and bibliography.

403. PRESCOTT, DANIEL ALFRED. *The Child in the Educative Process*. New York, McGraw-Hill, 1957. 502 pp.

Based on the premise that children learn and cannot be taught. Suggests that learning, development, and adjustment are individual matters which

take place in a group context. Analyzes the knowledge and skills which a teacher must have to understand his students as individuals, and proposes a theoretical foundation for the explanation of human development, behavior, and adjustment.

404. RENSHAW, EDWARD F. "Estimating the returns to education," *Review of Economics and Statistics*. Aug. 1960, v. 42, no. 3, part 1, pp. 318-324.

Considers the investment of education as capital in economic man and the resulting returns. Discusses the methods and problems of such considerations. Relates factor of differences in income among college graduates, relationship of amount of training to professional success, effect of education on economy's over-all efficiency, relation between education and ability, education and length of workday, other types of education in relation to formal education, job market imperfections discounting ability and education, and other costs of education. Includes a table of differences of income between persons with high school and college education.

405. SCHULTZ, THEODORE W. "Capital formation by education," *Journal of Political Economy*. Dec. 1960, v. 68, no. 6, pp. 571-583.

On the principle that some increases in national income are a consequence of additions to the stock of human capital, education is treated as investment in man and its results as a form of capital. This paper presents a set of estimates of the value of the resources that have been entering into education from 1900 to 1956. Resources consist of earnings students forego and resources to provide schools and services rendered by schools.

406. "SCIENCE AND EDUCATION," *Bulletin of the Atomic Scientists*. Nov. 1958, v. 14, no. 9, pp. 345-384.

A series of seven articles that deal with different aspects of the view that to meet the demands of contemporary civilization, education must give more attention to the place of science and must integrate it with the humanities.

407. TILTON, JOHN WARREN. *An Educational Psychology of Learning*. New York, Macmillan, 1951. 248 pp.

Emphasis is on a broad picture of the educational significance of the psychology of learning. Learning theory is discussed in terms of elements, prior experience, and effects. Learning process is described, and the problems related to theories of the individual learner are analyzed. Closes with implications for education.

## II. Planning and Administration

408. COOMBS, PHILIP H. "Educational planning in the light of economic requirements," *Forecasting Manpower Needs for the Age of Science*. Organization for European Economic Cooperation, Sept. 1960. pp. 25-35.

Identifies major developments in education which have been common to the United States and Western Europe in recent years and which foreshadow change. Attempts to provide economic assumptions for a framework for planning future educational development. In this framework the author indicates some basic educational changes that seem essential and the first steps toward educational planning.

409. DEITCH, KENNETH. "Some observations on the allocation of resources in higher education," *Review of Economics and Statistics*. Aug. 1960, v. 42, no. 3, part 2, supplement, pp. 192-198.

An economic analysis of the allocation problems of a college administrator, emphasizing the need for applying economic tools to educational administration.

410. EDUCATIONAL POLICIES COMMISSION. *Manpower and Education*. Washington, D.C., 1956. 128 pp.

This monograph reviews the educational implications of the manpower problem. While attention is given only to the salient features of the manpower situation in the United States, certain value criteria for approaching the problem are proposed and some of their major implications for educational institutions are suggested. Recommendations are made regarding educational policy in the light of the situation indicated by the manpower analysis.

411. FISCHER, JOHN H. "Automation—implications for schools," *Education Digest*. Jan. 1958, v. 23, no. 5, pp. 26-29.

Explores need for greater board, staff, and community relationships in evaluating and planning the curriculum of schools faced with larger numbers of students needing a higher standard level of education.

412. LUCIO, WILLIAM H., and McHEIL, JOHN D. *Supervision: A Synthesis of Thought and Action*. New York, McGraw-Hill, 1962. 282 pp.

Presents a relationship between the function of supervision and the perspective of the schools' unique function. Analyzes sources contributing to theories of supervision, and suggests methods for testing the effectiveness of both procedures and ends. A new supervisory concept is advocated, that of supervision by objectives.

413. MOEHLMAN, ARTHUR BERNARD *School Administration* (2d ed) Boston, Mass., Houghton Mifflin, 1951. 514 pp.

Based on premise that instruction is the supreme purpose of the schools and that all activities and services essential to the successful operation and improvement of instruction must be considered as contributory. Discusses functional administration, community administration of education, the state education authority, and the Federal Government and education.

414. REEDER, WARD GLEN. *The Fundamentals of Public School Administration* (3d ed) New York, Macmillan, 1951. 756 pp.

Discusses the recurring problems of administration of a local school system, both in rural and urban and in small and large communities. A manual of theory and practice, primarily from the point of view of the school's chief administrator. Includes discussion of administrative personnel, administration of instructional employees, administration of the school plant, and administration of school business affairs.

415. ROSS, CLAY CAMPBELL. *Measurement in Today's School* (3d ed) Englewood Cliffs, N.J., Prentice-Hall, 1954. 485 pp.

A comprehensive text which explains the quantitative and qualitative aspects of individual, group, and school measurements. The processes of test construction, of test administration, of statistical analysis of results, and of the uses and limitations of norms are explained in detail for the teacher. The classification and promotion of pupils is analyzed in terms of individual differences and school standards. The evaluation of schools in organizational as well as in academic terms includes the consideration of objective and subjective data, most of which can be systematically and meaningfully presented.

416. RUTGERS UNIVERSITY. SCHOOL OF EDUCATION. *Mental Measurements Yearbook* (5th ed) Highland Park, N.J. Gryphon Press, 1959. 1292 pp.

A compilation of reviews of tests and books on testing. Includes materials representative of all areas of testing: achievement batteries, character, vocations, social studies, reading, aptitude, health, mathematics, intelligence, foreign languages, fine arts, and English.

417. STANFORD RESEARCH INSTITUTE. *Toward Strategies of Education*. Menlo Park, Calif., 1961. 37 pp

Applying concepts from economics and systems analysis to the role of education in a society's ecology, the paper discusses types of investment in education as levels of culture and consumption are changed. Education investment is discussed with respect to other aspects of development requiring educated persons, both as to quantity and kind of education. Related to stages of economic growth. Suggests a set of building blocks of strategies, in three groups of decision variables: (1) educate whom and how much; (2) approximate curricula; and (3) educational technology and organization.

418. THURSTONE, LOUIS LEON. *The Measurement of Values*. Chicago, Ill., University of Chicago Press 1958. 322 pp.

A collection of papers concerned with subjective and attitude measurement, covering general topics of learning, test theory, factor analysis, psychophysics, and applications in the behavioral sciences.

419. WEISBROD, BURTON A. "The valuation of human capital," *Journal of Political Economy*. Oct. 1961, v. 69, no. 5.

The capital value of human labor is advanced as more useful than its market value in decision making, and a method for calculating such capital values is developed. By use of this method, involving a man's gross and net contributions to production, by age, at discount rates of 4 percent and 10 percent, figures for males in 1950 are derived and related to decision policies in resource allocation.

### III. Newer Education Media

420. AMERICAN EDUCATIONAL RESEARCH ASSOCIATION. "Instructional materials: education media and technology," *Review of Educational Research*, Apr. 1962, v. 32, no. 2, pp. 117-211.

Review of professional research literature from April 1956 to date. Covers theory, textbooks, audio-visual aids, television, language laboratories, programmed learning, and administration of instructional materials.

421. BEREDAY, GEORGE Z. F., and LAUWERYS, JOSEPH A. (editors) *Communication Media and the School*. Tarrytown on-Hudson, N.Y., World Book Co., 1960. 592 pp. (Yearbook of Education, 1960)

Presents roles of communication media in education. Reviews impact of radio and television on education, investigations and research in the field, area studies, and case approaches involving use of audio-visual aids in particular teaching assignments. Includes material of potential value to diverse societies

422. COSTELLO, LAWRENCE F., and GORDON, GEORGE N. *Teaching With Television, A Guide to Instructional TV*. New York, Hastings House, 1961. 191 pp.

A manual on the most effective methods of production and utilization of televised instruction at all education levels.

423. DE BERNARDIS, AMO, et al. *Planning Schools for New Media*. Portland, Oreg., Portland State College, Division of Education, 1961. 72 pp.

Guide for educational authorities, administrators, and architects. Presents and illustrates principles of designing school facilities for the most effective use of all major types of instructional materials and equipment.

424. EDUCATIONAL POLICIES COMMISSION. *Mass Communication in Education*. Washington, D.C., 1958. 137 pp.

Traces growth of mass communication, showing major effects on changing social, political, and economic characteristics; lines for needed research; and relationships between development of mass media and educational goals and practice. Outlines for teachers the concepts, feelings, and vocabularies derived from mass media, how these may contribute to classroom learning, how radio, movies, TV, tape, and printed recordings may be used effectively, and how listening and viewing may be taught as equivalents to the reading process in learning.

425. FINN, JAMES D., and PERRIN, DONALD G. *Teaching Machines and Programmed Learning, 1962. A Survey of the Industry*. Washington, D.C., National Education Association, 1962. 85 pp. (Occasional Paper No. 3)

A quantitative review of teaching machines and programmed learning as developed by American industry. Presents, with numerous charts and illustrations, the full range of materials currently produced in the United States, and offers some interpretation of the role and promise of programmed learning in education.

426. FITZGERALD, H. T. "Teaching machines: a demurrer," *The School Review*. 1962, v. 72, no. 3, pp. 217-256.

Expresses doubt that programmed instruction (teaching machines) will be the panacea in education that is being forecast for them. Admits their efficiency and objectivity, but opposes their lack of flexibility, their inability to allow for inquiry, insight, emergence, and critical faculty in the learner.

427. HUTCHINSON, JOSEPH C. *The Language Laboratory*. Washington, D.C., U.S. Office of Education, 1961. 85 pp.

Illustrated guide to language laboratory facilities, their installation, and use in schools.

428. LEWIS, PHILIP. *Educational Television Guidebook*. New York, McGraw-Hill, 1961. 238 pp.

Introduction to the technical side of educational television: equipment needs, buildings, techniques, personnel planning, and programing. Could serve as a checklist for those planning to develop new facilities.

429. LUMSDAINE, ARTHUR A., and GLASER, ROBERT (editors) *Teaching Machines and Programmed Learning, A Source Book*. Washington, D.C., National Education Association, Department of Audio-Visual Instruction, 1960. 724 pp.

Afford. basic introduction to the field in 48 selected papers covering development of teaching machines from the 1920's to date. Includes 110-page appendix which abstracts and annotates 240 articles, plus an 18-page bibliography.

430. MEIERHENRY, WESLEY C., et al. "Learning theory and A-V utilization," *Audio-Visual Communication Review*. Sept. 1961, v. 9, no. 5, supplement 4, pp. 3-88.

Present theoretical foundation for instructional use of audio-visual materials and equipment. Covers implications of Gestalt psychology for A-V learning; stimulus-response psychology and audio-visual education; learning in the technology of instruction, motivation and the communication process; and human learning and audio-visual education.

431. MIDWEST PROGRAM IN AIRBORNE TELEVISION INSTRUCTION. *Using Television in the Classroom*, edited by Mary Howard Smith. New York, McGraw-Hill, 1961. 118 pp.

Intended to give the classroom teacher an introduction to instructional television (ITV), together with suggestions for its practical use. It describes the history, use, and potential of ITV; analyzes the partnership between the classroom teacher and the studio teacher, discusses the classroom teacher's role in ITV; and gives examples of television lessons in the classroom.

432. MILLER, NEAL E., et al. "Graphic communication and the crisis in education," *Audio-Visual Communication Review*. 1957, v. 5, no. 3, 120 pp.
- Contains two main sections barriers to optimum use of visual aids with suggestions for overcoming them, and scientific principles for maximum learning from motion pictures.
433. *Newer Educational Media* University Park, Pa., Pennsylvania State University, 1961. 104 pp.
- Includes papers of Regional Research Conference on Newer Educational Media which summarize research findings on motion pictures and other pictorial media, television, and automated instruction. Suggests implications of research for curriculum change, administrative organization, and teacher education.
434. RUFVOLD, MARGARET I., and GUS, CAROLYN. *Guides to Newer Educational Media*. Chicago, Ill., American Library Association, 1961. 74 pp.
- Cites commercial catalogs and listings issued by professional organizations, journals, and major references to educational films, filmstrips, phonograph records, radio, slides, and television.
435. STANFORD UNIVERSITY. INSTITUTE FOR COMMUNICATION RESEARCH. *Educational Television, the Next Ten Years*. Stanford, Calif., 1962. 375 pp.
- A definitive report on the promise of educational television which includes recommendations for national policy. Conducted under auspices of the United States Office of Education.
436. STOLUROW, LAWRENCE M. *Teaching by Machine*. Washington, D.C., U.S. Office of Education, 1961. 173 pp. (Cooperative Research Monograph No. 6)
- Examines the potentialities of various auto instructional materials as aids in the solution of some of today's critical problems in education. Includes tables, diagrams, and bibliography.

437. SYMPOSIUM ON THE STATE OF RESEARCH IN INSTRUCTIONAL TELEVISION AND TUTORIAL MACHINES, STANFORD UNIVERSITY, 1959 *New Teaching Aids for the American Classroom*. Stanford, Calif., Institute for Communication Research, 1960. 173 pp

Presents statements by 10 authorities on how research can contribute to the understanding and use of new instructional media

438. WITTICH, WALTER ARNO, and SCHULLER, CHARLES FRANCIS *Audio-Visual Materials, Their Nature and Use*. New York, Harper & Bros., 1962. 500 pp.

Revised and illustrated edition of basic text on use of audio-visual materials. Provides frequent reference to research studies and results in terms of improving their use. A directory of sources of materials is appended.

#### IV. Primary and Secondary Education

439. ABRAMSON, DAVID A. "The effectiveness of grouping for students of high ability," *Educational Research Bulletin of Ohio State University* Oct. 1959, v. 38, no. 7, pp. 169-182.

Investigates the relationship between grouping of pupils in the high school on the basis of ability and their subsequent progress in college. Finds no significant differences in grade point averages earned by students who had been grouped by ability and those who had not.

440. ALCOCK, MARVIN D., and LINLEY, JAMES M. (editors) *Issues in Curriculum Development*. Yonkers-on-Hudson, N.Y., World Book Co., 1959. 420 pp.

A compilation of readings on the educational curriculum movement and its operation, process, and direction. Among the topics covered are trends in curriculum on elementary and secondary levels; trends in subject-matter areas, resources for teaching and learning, programs for meeting special needs of learners, and forces affecting the curriculum.

441. ASSOCIATION FOR SUPERVISION AND CURRICULUM DEVELOPMENT. *Balance in the Curriculum*. Washington, D.C., 1961. 197 pp.

Proceeds from the assumption that curriculum must change to accommodate the future, and that balance of intellectual, humane, and social considerations must be insured. Discusses curriculum balance in the current social scene, balance in teaching methods and learning processes, balance and purpose in education, and balance in selection of curriculum content.

442. BRANDWIN, PAUL FRANZ, et al. *Teaching High School Science, A Book of Methods*. New York, Harcourt, Brace, 1958. 568 pp.

Presents teaching principles for secondary schools. Covers such topics as teaching science prone and science shy students, the content and objectives of elementary and secondary school science courses, evaluation, science equipment and facilities, textbooks, and methods of curriculum planning.

443. CALANDRA, ALEXANDER. *Symbols, A Language Arts Introduction To Mathematics and Science*. St. Louis, Mo., Washington University Bookstore, 1962. 48 pp.

An introduction to symbols, and their use in thinking, as preparation for study of mathematics, science, and language. This introduction is conceived as the first part of an integrated mathematics and science program for upper primary and lower secondary classes.

44. CARTER, HOMER L. J., and MCGINNIS, DOROTHY J. *Teaching Individuals To Read*. Boston, Mass., Heath, 1962. 229 pp.

Stresses the development at all levels of common reading skills such as vocabulary building, reading for meaning, finding and organizing ideas, effective use of books, and the art of critical thinking. Reading is regarded as a thinking process, and emphasis is placed on integration rather than on accumulation of isolated basic skills.

445. CONFERENCE ON BOOKS AND THE SCHOOLS, HARRIMAN, N.Y., 1961. *Books in the Schools*, edited by James Cass. New York, American Book Publishers Council, 1961. 65 pp.

A collection of articles on effective use of books in the classroom. Eleven contributors view the way books are being used in the schools from the vantage points of the teacher and administrator, the writer and publisher, the subject specialist, and the expert in the new media.

446. FINOCCHIARO, MARY. *Teaching English as a Second Language in Elementary and Secondary Schools*. New York, Harper & Bros., 1958. 335 pp.

Brings together theories in general education, in foreign language teaching, and in the teaching of English. Outlines and evaluates various methods.

447. FULLER, ELIZABETH MECHEM. *About the Kindergarten*. Washington, D.C., National Education Association, American Educational Research Association, Department of Classroom Teachers, 1961. 32 pp.

Summarizes relevant research on a variety of matters related to the kindergarten: the characteristics of five-year-olds; the kindergarten curriculum; aspects of readiness; the language arts; social development-adjustment; teacher qualifications; and influence of other school personnel.

448. GALLAGHER, JAMES JOHN. *The Gifted Child in the Elementary School*. Washington, D.C., National Education Association, American Educational Research Association, Department of Classroom Teachers, 1959. 32 pp.

Reviews research findings regarding where giftedness begins, whether the gifted are easily identified, and what gifted children are like. Discusses school programs for the gifted, and evaluation of special programs.

449. GOLDSTEIN, HERBERT. *The Educable Mentally Retarded Child in the Elementary School*. Washington, D.C., National Education Association, 1962. 33 pp.

Summarizes research findings on the subject of retarded elementary school children. Defines characteristics of the educable mentally retarded child, and outlines school programs for him. Discusses problems faced by the teacher and the child, integrated services for the retarded, and evaluation for the teacher.

450. JONES, J. CHARLES, et al. "The elementary school curriculum; a comparison of two methods of introducing science," *The Science Teacher*. Apr. 1962, v. 29.

A report of a study which evaluates two methods of inservice training of elementary teachers. It concludes that a program which uses scientific materials in conjunction with demonstration teaching is an effective means of introducing science into the elementary school curriculum.

451. KARPLUS, ROBERT. "The beginning of study in elementary school science," *American Journal of Physics*. Jan. 1962, v. 30, no. 1, pp. 1-9.

Working with other scientists of the University of California, Karplus developed experimental units for teaching in the elementary school. These were tried out in the classroom. He concludes that scientists can and must make substantial contributions to the elementary school program and at the same time, must work closely with educators, school teachers, and psychologists.

452. KELLER, FRANKLIN J. *The Comprehensive High School*. New York, Harper & Bros., 1955. 302 pp.

A discussion of the nature of a comprehensive high school, as a result of firsthand observation of many schools throughout the country in an attempt to find the best kind of educational organization.

453. LADO, ROBERT. *Annotated Bibliography for Teachers of English as a Second Language*. Washington, D C., U.S. Government Printing Office, 1955. 224 pp. (Office of Education Bulletin, 1955, No. 3)

A comprehensive bibliography which lists books, pamphlets, and articles to guide teachers of English as a foreign language, including materials appropriate for the students and oriented toward specific native-language backgrounds. For the teacher there is a listing of tests and testing methods, dictionaries, language and linguistics guides, and academic and cultural orientation sources.

454. LEPPER, ROBERT R. (editor) "Who should plan the curriculum?" *Educational Leadership* 1961, v. 19, no. 1, pp. 4-45.

A series of articles on curriculum planning, considering the role of various elements: teachers, students, school boards, minimum state curriculum requirements, subject matter groups, legislation, citizens, interest groups, and state departments of education.

455. MAHAR, MARY H. "School library materials in science, mathematics, modern language, and guidance, and how to use them," *School Life Official Journal of the Office of Education* Jan-Feb 1959, pp. 20-22.

A selective bibliography of pamphlets, books, journals, syllabi, and articles which includes lists of school library materials as well as descriptions of methods for using those materials. Designed for American school systems, but relevant for any school system which places similar emphasis upon these subjects.

456. MICHAELIS, JOHN UDELL (editor) *Social Studies in Elementary Schools* Washington, D C, National Council for the Social Studies, 1962. 334 pp.

Provides an overview of recent trends, issues, and problems in the social studies in the elementary schools. Considered are: social and psychological foundations, content, trends in organization, current affairs, special events and civic participation, skills and processes, materials for instruction, planning for instruction, planning for children of varying ability, and evaluation of learning.

457. NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS. *The Revolution in School Mathematics*. Washington, D.C., 1961. 90 pp.

A compilation of reports of regional orientation conferences in mathematics. Among topics discussed are progress in mathematics and its implication for the schools, the drive to improve school mathematics, classroom experiences with the new mathematics programs, implementing new mathematics programs, and teacher-training.

458. NATIONAL EDUCATION ASSOCIATION AND THE ASSOCIATION FOR SUPERVISION AND CURRICULUM DEVELOPMENT. *Elementary School Science Research, Theory and Practice*. Washington, D.C., 1957. 67 pp.

This subject is discussed in four basic parts: the role of science education in the elementary school, the nature of an elementary science program, teaching science in the elementary school, and improving the elementary science program.

459. "Reading on the International Scene," *The Reading Teacher*. 1962, v. 16, no. 1, pp. 1-30.

A series of articles on the general theme of reading throughout the world. Included are problems in teaching reading in Brazil, developments in reading instruction in Iran, teaching reading in Japan, reading instruction in Peru, first-grade reading instruction in Swedish schools, and the first conference of the International Reading Association in Australia.

460. SCHWAB, JOSEPH J., and BRANDWEIN, PAUL F. *The Teaching of Science*. Cambridge, Mass., Harvard University Press, 1962.

Two essays on science teaching in American high schools and elementary schools. One makes a plea that the teaching of science should be permeated with the spirit of inquiry and illustrates from actual practice how this can be done. The other proposes the basis for an elementary science curriculum developed around conceptual schemes, and gives examples of the manner in which these schemes may be taught.

461. "Science Teaching in Elementary and Junior High Schools," *Science*. June 1961, v. 133, no. 3469, pp. 2019-2044.

A report summarizing the recommendations of three regional conferences of scientists, school administrators, and teachers to explore the current

status of the teaching of science in elementary and junior high schools and to consider the feasibility of a major course content improvement program at these levels. It was agreed that there is great need for instructional materials in science for the elementary grades prepared jointly by teams of scientists and teachers.

462. STODDARD, GEORGE DINSMORE. *The Dual Progress Plan*. New York, Harper & Bros, 1961. 225 pp.

The dual progress plan is described as a new philosophy and program in elementary education, dividing subject matter into two cores of basic studies—the language arts and social studies as one core and science and mathematics as the other.

463. TRUMP, J. LLOYD. *Focus on Change*. Washington, D C., National Education Association, 1959.

A comprehensive treatment of alternative solutions to the teacher and classroom shortages in overpopulated centers. The team-teaching method, which allows instructions to larger classes and yet gives senior teachers ample time for individual attention, is introduced, also, the physical redistribution of school facilities and restructuring of the curriculum to match student abilities are discussed in terms of modern academic and vocational requirements.

## V. Professional and Higher Education

464. AMERICAN ASSMBLY. *The Federal Government and Higher Education*. Englewood Cliffs, N.J., Prentice-Hall, 1960. 205 pp.

Discusses the role of the Federal Government in colleges and universities and in determining the future of higher education in the United States. Points up the need for a national policy as compared with current stop-gap solutions. Describes the history of Federal practices, purpose and policy of higher education, federally sponsored university research, issues in Federal aid, and national goals and Federal means.

465. ARMSBY, HENRY H. *Three-Two Plan of Engineering Education*. Washington, D.C., U.S. Office of Education, 1961. 32 pp. (Bulletin No. 15)

A discussion of programs designed to provide engineering students with a liberal education background. The usual pattern includes three years in a non-engineering college, followed by two years in an engineering college. With satisfactory work, the student gains a Bachelor of Arts degree at the end of his fourth college year from the non-engineering institution and a Bachelor of Science degree from the engineering college at the end of the fifth year. The pamphlet describes these plans and their results.

466. BROWN, GORDON S. "New horizons in engineering education," *Daedalus*. Spring 1962, v. 91, no. 2, pp. 341-361.

Discusses new developments in engineering education from the perspective of the present state of constant change. Discusses new programs and procedures, and suggests a revised curriculum for engineers to meet the rapid changes.

467. BROWN, JOHN A., et al. "Promising practices in mathematics teacher education," *School Science and Mathematics*. 1958, v. 58, pp. 25-40 and pp. 435-444.

These articles discuss such problems as the need for "modern" mathematics at secondary school level, the use of logic and preparatory courses

leading into math courses, the types of curriculum for training mathematics teachers, and the need to keep mathematics teachers stimulated and in touch with their field and induce them to increase their training in subject matter fields.

468. CARTWRIGHT, WILLIAM H. "Current trends in teacher education," *Educational Forum*. Mar. 1960, v. 24, no. 3, pp. 261-270.

Discusses such trends as the education of more teachers, more concern and education for teachers, narrowing the gap between professional educators and academic scholars, and placing greater responsibility for the education of teachers on the institutions which train them.

469. COLE, CHARLES CHESTER, JR. *Encouraging Scientific Talent*. New York, College Entrance Examination Board, 1956. 259 pp

Report of a study on the loss by universities of talented high school graduates and of ways to encourage those with high level ability, particularly those with scientific talent, to enter institutions of higher education and to follow scientific careers. Objectives of the study are to bring together relevant information from all available sources on the nature of scientific ability and its supply and demand, the factors encouraging or discouraging the production of scientists; the evaluation of estimates of this loss of students from high school to college with an analysis of the factors influencing college-going among different groups of the population; and the various means by which more capable persons might be attracted to colleges and to science careers.

470. COMMISSION ON HUMAN RESOURCES AND ADVANCED TRAINING. *America's Resources of Specialized Talent: A Current Appraisal and a Look Ahead*. New York, Harper & Bros., 1954. 332 pp.

A survey report covering 26 fields of specialization in the United States. The increase in the number of college graduates since 1900 is described, and the distribution of those graduates is related to undergraduate major interest and actual employment. Characteristics of students entering specialized fields, with emphasis on intelligence, are studied. Concluding chapters consider how well-trained persons now are being used and how this utilization can be improved.

471. *Guidelines for Preparation Programs of Teachers of Secondary Science and Mathematics.* National Association of State Directors of Teacher Education and Certification and the American Association for the Advancement of Science, 1961.

Lists proposed programs for the preparation of teachers in biology, chemistry, physics, physical science, junior high school science, and mathematics. Represents a consensus which was reached through conferences of scientists, state Department of Education personnel, other leaders in teacher education, and secondary school teachers throughout the country

472. HIGHT, GILBERT. *The Art of Teaching* New York, Vintage Books, 1954. 259 pp.

Suggestions about teaching methods, drawn from practical experience and operating from the point of view that teaching is an art, not a science. Considers the character and abilities which make a good professional teacher, and examines his methods

473. MALLINSON, GEORGE G., et al. "Promising practices in science teacher education," *School Science and Mathematics* 1958, v. 58, pp. 13-25.

Suggests that science teachers should be trained broadly in biological, physical, and earth sciences with intensive training in one of the areas, combined with broad in service training to aid the teacher to keep up to date. The article describes recommended curricula for training science teachers.

474. MICHIGAN STATE UNIVERSITY OF AGRICULTURE AND APPLIED SCIENCE. OFFICE OF INSTRUCTIONAL RESEARCH. *Evaluation in Higher Education*, by Paul L. Dressel et al. Boston, Mass., Houghton Mifflin, 1961. 480 pp.

Concerns the role of evaluation in many different aspects of higher education. Demonstrates that evaluation should play a pervasive and interrelated role, both psychologically and philosophically.

475. TANNENBAUM, HAROLD E., and STILLMAN, NATHAN. *Science Education for Elementary School Teachers*. Boston, Mass., Allyn & Bacon, 1960. 339 pp.

Provides authoritative science education for elementary school teachers. Presents a suggested elementary school program in science, discusses use of children's interests as point of departure, and outlines methods for using reference materials. Also discusses evaluating children's growth in science and building a program for gifted children, and suggests methods of integrating science with other areas of study.

476. WILLIAMSON, EDMUND GRIFFITH. *Student Personnel Services in Colleges and Universities*. New York, McGraw-Hill, 1961. 474 pp.

Presents interpretations of significant research in the field. Highlights recent student developments, with special attention to communication, student attitudes, discipline, and campus government.

## VI. Vocational and Technical Training

477. AMERICAN EDUCATIONAL RESEARCH ASSOCIATION. "Vocational and technical education," *Review of Educational Research*. Oct. 1956, v. 26, pp. 349-410.

Reviews, contrasts, and to some extent synthesizes much of the literature produced in the United States during the period from October 1950 to October 1956. Relates to one of the following seven areas of vocational and technical education: vocational selection, work experience, home and family life, agricultural, industrial, business, or technical education.

478. ERICSON, EMANUEL E. *Teaching the Industrial Arts*. Peoria, Ill., Bennett, 1956. 384 pp.

A general and theoretical text for teachers of industrial arts with emphasis on basic teaching techniques rather than on concrete suggestions applicable to industrial arts.

479. FARMER, J HAROLD, et al. *Illustrating for Tomorrow's Production*. New York, Macmillan, 1950. 203 pp.

A presentation of various techniques and methods of making illustrations for industrial production, including isometric and oblique drawing, as mechanical method for exploding views. Discusses the production illustrator's contribution to industrial advertising.

480. GIACCHINO, JOSEPH WILLIAM. *Course Construction in Industrial Arts and Vocational Education* (2d ed) Chicago, Ill., American Technical Society, 1961. 234 pp.

Designed to aid a neophyte vocational education teacher in the preparation and implementation of a curriculum. Concerned chiefly with organizing instructional material into worthwhile educative experiences.

481. HOLLENBERG, A. H., and JOHNSON, E. J. *Buildings, Equipment, and Facilities for Vocational Agriculture Education*. Washington, D.C., U.S. Department of Health, Education, and Welfare, Vocational Division, 1960. 90 pp. (Bulletin No. 284, Agricultural Series No. 76)

Concerned with planning and location of vocational agriculture departments, building type and design, construction materials, and tools, equipment, and facilities

482. PROSSLER, CHARLES ALLEN, and BASS, M. RYLD. *Evening Industrial Schools* (rev. ed) Chicago, Ill., American Technical Society, 1951. 372 pp.

A manual on the organization and operation of evening industrial or vocational schools. Covers all major facets of the subject, including the rationale, physical plant, curriculum, selection and training of instructors, proved teaching methods, management techniques, record keeping practices, and evaluation of students.

483. SCHOOL SHOP. *Modern School Shop Planning*. Ann Arbor, Mich., Prakken Publications, 1953. 113 pp.

Reflects American practice in regard to the plans, specifications, layout, and design of modern school shops.

484. SMITH, LEO FRED, and LYSSETT, LAWRENCE. *The Technical Institute*. New York, McGraw-Hill, 1956. 319 pp.

Describes the curriculum and training provided for students at technical institutes. Illustrates how the technical institute has played an important role in the recent development of American industry, and presents a detailed account of the way these institutes train technicians.

485. U.S. OFFICE OF EDUCATION. *Electrical and Electronic Technology*. Washington, D.C., 1959. (OE-80004)

Describes fields of work in which electrical and electronic technicians are employed. Discusses job relationships and the grouping of jobs for training purposes, gives detailed job descriptions for 14 occupations, outlines the subject matter required for a training program, and suggests procedures for developing curricula.

186. ———. *Mechanical Technology Design and Production*. Washington, D.C, 1962. (OE-80014)

Describes fields of work in which technicians are employed in mechanical design and production. Discusses job relationships and the grouping of jobs for training purposes, gives detailed job descriptions for 20 occupations in mechanical design and production, outlines the subject matter required for a training program, and suggests procedures for developing a curriculum.

487. VARNUM, WILLIAM HARRISON. *Industrial Arts Design, a Text Book of Practical Methods for Students, Teachers, and Craftsmen*. Peoria, Ill., Manual Arts Press, 1933. 248 pp.

Presents the principles of industrial design as a practical guide for students who are working in clay, plastics, and base or precious metals. Includes a brief description of the decorative processes adapted to the materials under discussion, with the design principles directly applied to these processes so that the designs may be worked out in the studio or shop.

## Chapter 6.

### HEALTH AND SANITATION

#### I. Planning and Organizing Health Services

488. FERRER, REINALDO A. "Regionalization in Puerto Rico problems and progress," *American Journal of Public Health* Sept. 1960, v. 50, no. 9, pp. 1257-1263.

Describes the problems and progress of a large-scale effort to create a regional organization for all health services in Puerto Rico. A five-year trial period was anticipated. During the first three years, activities developed around the following objectives: coordination of services, continuing education, and development of community technical consciousness of health needs. Includes maps and statistics.

489. HANLON, JOHN JOSEPH. *Principles of Public Health Administration* (3d ed) St. Louis, Mo., C. V. Mosby, 1960. 714 pp.

Provides a thoroughly documented and comprehensive guide for the public health administrator. Includes sections on philosophy of public health, economic justification for public health activities, and behavioral science and public health, in addition to such traditional public health categories as vital statistics, nursing, and sanitation. Also deals specifically with the problems of world health and their economic, political, and social relationships.

490. MACEachern, MALCOLM THOMAS. *Hospital Organization and Management*. Chicago, Ill., Physicians Record Co., 1957. 1316 pp.

A useful reference for everyone responsible for caring for the sick in hospitals. Useful as a handbook in practical situations as well as a reference for those learning how to organize and manage hospitals. Throughout the text are standards, which permit of adaptation and amplification by the individual institution concerned.

491. MAXCY, KENNETH F. *Rosenau Preventive Medicine and Public Health* (8th ed) New York, Appleton Century-Crofts, 1956. 1465 pp.

Concerned with modern progress in prevention of communicable diseases, nutrition and deficiency diseases, maintenance of health and prevention of disability, food sanitation, environmental medicine; industrial hygiene, water sanitation, sewage and refuse disposal, and public health methods, organizations, and activities.

492. P. LION, WALTER J, and WISAN, JACOB M. *Dentistry in Public Health* (2d ed) Philadelphia, Pa., Saunders, 1955. 282 pp.

Deals comprehensively with the practice of public health dentistry, including principles of administration, analysis of needs and resources, and prevention and control procedures. Describes surveys and evaluation of dental health care.

493. "Public Health Is One World" *American Journal of Public Health*. June 1960, v. 50, no. 6, part 2, 94 pp.

A collection of 15 papers presented at the first worldwide workshop in public health sponsored by a non-governmental agency and concerned with international aspects and implications of public health programs. Articles of particular significance in terms of less developed areas are those dealing with "Recent Developments in Maternal and Child Health in the Americas" and "Problems in Developing International Health Programs."

494. U.S. INTERNATIONAL COOPERATION ADMINISTRATION. *Technical Cooperation in Health*. Washington, DC, U.S. Government Printing Office, 1950. 150 pp. (Department of State Publication 6855)

A description of the work done by the United States International Cooperation Administration in support of programs directed toward the conquest of diseases and health deficiencies. Gives origins of U.S. bilateral cooperation health, summarizes ICA health programs, operations, and achievements; and analyzes program for international malaria eradication. Includes charts, graphs, maps, and nation-by-nation description of ICA programs.

495. U.S. PUBLIC HEALTH SERVICE. *Republic of the Congo (formerly the Belgian Congo), A Study of Health Problems and Resources*. Washington, D.C., Division of International Health, Public Health Service, U.S. Department of Health, Education, and Welfare, 1960. 115 pp. (Public Health Service Publication No. 806)

A comprehensive picture of the health situation in the Republic of the Congo based on information from a variety of sources. Describes health organization, personnel resources; incidence and prevalence of disease; and descriptive, historic, geographic, and cultural background. Maps, charts, and graphs are used and a bibliography of sources is included.

496. WEGMAN, M. E. "Organization for new responsibilities in public health: needs and trends," *American Journal of Public Health* May 1962, v. 52, pp. 759-766.

The author indicates present emphasis on problems of medical care administration as part of common concern for individual health. He discusses organizational needs and concepts, and applies them to the developing countries. Indicates that international health itself is a new responsibility requiring cooperative-coordinated effort.

497. WINSLOW, CHARLES EDWARD AMORY. *The Cost of Sickness and the Price of Health*. Geneva, Switzerland, World Health Organization, 1951. 106 pp.

Provides a basis for the discussion of the economic value of preventive medicine. Describes the interrelationships of poverty and disease and the economic results attained when the burden of disease is reduced. Gives plans and costs of a national health program, and stresses the importance and objectives of programs for technical assistance to less developed nations.

## II. Epidemiology and Health Practices

498. AMERICAN ACADEMY OF PEDIATRICS. *Standards and Recommendations for Hospital Care of Newborn Infants*. Evanston, Ill., 1960. 144 pp.

A description of procedures and facilities requisite for the optimum hospital care of full-term and premature newborn infants, which, in the opinion of the Academy, are all "essential to the protection of the infant." Includes nursery diagrams, sample charts, and record forms.

499. AMERICAN COLLEGE OF OBSTETRICIANS AND GYNECOLOGISTS. *Manual of Standards in Obstetric-Gynecologic Practice*. Chicago, Ill., Mar. 1959. 55 pp.

A reference book of standards for facilities and care for gynecologic and obstetric patients which includes sections on physical facilities, equipment, personnel, organization, nursing care, intrapartal and postpartal care, consultation, referral, and radiation hazards.

500. AMERICAN PUBLIC HEALTH ASSOCIATION. *Control of Communicable Diseases in Man* (9th ed). New York, 1960. 234 pp.

A reference book for governmental, voluntary, and private agencies concerned with control of communicable diseases, and for public health administrators. Contains much information applicable to field operations as well as material useful in preparing regulations and legal requirements for control of communicable diseases; developing health education programs; and in managing communicable disease control programs.

501. ANDERSON, GAYLORD W., and ARNSTEIN, MARGARET G. *Communicable Disease Control* (4th ed). New York, Macmillan, 1953. 606 pp.

A detailed analysis of programs for the control, care, and prevention of more than 30 groups of communicable diseases, which deals historically with the protection of both the individual and the community. Discusses control measures, legal considerations, school problems, home care, personnel, and epidemiological investigations.

502. CECIL, RUSSELL L., and LOEB, ROBERT F. *A Textbook of Medicine*. Philadelphia, Pa., W. B. Saunders, 1959. 1665 pp.

A comprehensive study of 16 major categories of diseases, subdivided for discussion by appropriate medical authorities. Although intended primarily for physicians, it is useful to the non-physician in increasing his knowledge about the complexity of problems facing the physician.

503. EASTMAN, NICHOLSON J. "Global aspects of midwifery," *American Journal of Public Health* 1956, v. 46, pp. 310-312.

The author indicates that the most practical way to improve maternity care and to reduce maternal and prenatal mortality rates in most economically underdeveloped areas of the world is to provide some training to the traditional, birth attendants. According to the author, such training should be part of the activity of any rural health unit in economically underdeveloped countries and should be the main function of the trained midwife on the public health team.

504. FINER, HERMAN. *Administration and the Nursing Services*. New York, Macmillan, 1961. 333 pp.

This study, based on research experience, offers a guide to the application of administration and the social sciences to nursing service. It attempts to answer two specific questions. First, is the science of administration needed in the conduct of nursing service? Second, what inferences are to be drawn for the spread of knowledge of administration among nurses already on the job at various levels in nursing service departments?

505. GALTON, MILDRED M., and ARNSTEIN, PAUL. *Poultry Diseases in Public Health*. Atlanta, Ga., U.S. Department of Health, Education, and Welfare, Public Health Service, Bureau of State Services, Communicable Disease Center, 1959. 40 pp.

A review of the role of poultry in the outbreak of bacterial, viral, fungal, and parasitic diseases, which, although based on United States data, would be useful to epidemiological workers in other parts of the world. Includes comments on the beneficial effect of compulsory inspection of poultry in interstate commerce, and provides an extensive reference list.

506. INDUSTRIAL COUNCIL FOR TROPICAL HEALTH. *Industry and Tropical Health Proceedings of the 4th Conference, Industrial Council for Tropical Health*. Boston, Mass., Harvard School of Public Health, July 1960. 311 pp.

Topics covered at this conference included preventive medicine in the tropics and responsibilities for health sciences in developing areas, as well as discussion of specific disease problems and control of insects. This volume will be of help to managerial and technical persons, as well as to those in industrial medicine who are interested in the application of preventive health measures and industrial hygiene in tropical areas.

507. INSTITUTE ON VETERINARY PUBLIC HEALTH PRACTICE, 151. UNIVERSITY OF MICHIGAN, 1958. *Comparative Medicine in Transition*. Ann Arbor, Mich., University of Michigan School of Public Health. [1961]

This compilation reflects an interprofessional approach to the utilization of veterinary resources in public health and includes the historical development of veterinary medicine, particularly that phase devoted to the interest of human health. Practically every phase of public health activity is discussed in relation to the specialization of veterinary services in public health administrative activities, experimental medicine, and biological and pharmaceutical production and control activities. Offers many suggestions on expansion of veterinary medicine in the field of public health.

508. JACO, E. GARTLY. *Patients, Physicians, and Illness*. Glencoe, Ill., Free Press, 1958. 600 pp.

A sourcebook of the writings, research, and ideas of behavioral scientists dealing with varied aspects of medicine organized under broad headings including "Social and Personal Components of Illness," "Health and Community," "Socio-cultural Aspects of Medical Care and Treatment," which discuss the patient, medical education, practitioners, and the medical setting, hospital, clinic, and office.

509. KOLMIR, JOHN A. *Clinical Diagnosis by Laboratory Examinations* (3d ed). New York, Appleton-Century-Crofts, 1961. 543 pp.

A comprehensive manual delineating laboratory procedures which permit a more specific clinical diagnosis. Makes information available to the bedside physician for corroborating initial diagnoses and offers a concise

teaching tool for both the physician and student. The author suggests that a special knowledge of laboratory procedures is necessary for both direct patient care and for supervision of laboratory personnel by medical staff.

510. McCOMBS, ROBERT P. *Internal Medicine. A Physiologic and Clinical Approach to Disease* (2d ed) Chicago, Ill, Year Book Publishers, 1960. 750 pp.

This volume comprises a summary of the most important clinical facts, physiologic concepts, diagnostic methods, and therapeutic measures used in the study and management of internal diseases. The book is noteworthy for its avoidance of duplication, elimination of detailed discussions of subjects that are primarily related to such independent specialties as neurology and psychiatry, and exclusion of dubious theories and unproved therapeutic methods.

511. MEYER, KARL F. *The Zoonoses in Their Relation to Rural Health*. Berkeley, Calif., University of California Press, 1955. 49 pp.

Discusses the control of diseases transmissible from one animal to another or from animals to man. Stresses particularly the part that veterinary public health services can play in combating the zoonoses, both those which are most dangerous because of their direct effect on the health of rural populations and those whose main impact is in their effect on the world's food supply. Discusses individual diseases, uses epidemiological charts, and summarizes the current status of epidemiological knowledge.

512. NEW YORK ACADEMY OF SCIENCES. "Animal disease and human health," *Annals of the New York Academy of Sciences*. June 1958, v. 70, article 3, pp. 277-762.

A series of papers describing the relationship of animal disease to human welfare. The introductory article stresses the significance of this relationship to human health, pointing out that only the harmonious efforts of scientists and laymen can cope with the challenges to human health and welfare resulting from diseases in animals. Other articles deal with specific disease entities and with international programs for animal-disease control.

513. TUCKER, WILLIAM B. "The evolution of the cooperative studies in the chemotherapy of tuberculosis of the Veterans Administration and Armed Forces of the U.S.A.," *Advances in Tuberculosis Research*, 1960, v. 10, pp. 1-68.

A condensed summary of the development and results of the 15-year experience of 760 cooperating hospitals in evaluating the therapeutic efficacy and toxicity of more than 60 antituberculosis drug regimens.

514. WINSLOW, CHARLES EDWARD AMORY. *Man and Epidemics* Princeton, N.J., Princeton University Press, 1952. 246 pp.

Describes the historical background, and the research, planning, medical, and engineering practices involved in combating diseases spread by water, milk and foods, and insects

### III. Social-Cultural Aspects

515. COMMITTEE ON CHILD HEALTH. *American Public Health Association Guides*. New York, American Public Health Association, 1961.

A set of individually published guides for public health personnel on the child health conference, general principles and practices for a community-wide program for all handicapped children, causes and prevention of handicaps, rehabilitation and therapy, and specific practical ways of building special services for handicapped children

516. FOSTER, GEORGE McCLILLAND. *Problems in Intercultural Health Programs. Memorandum to the Committee on Preventive Medicine and Social Science Research*. New York, Social Science Research Council, Apr. 1958. 49 pp.

Deals with the human and social problems associated with the planned diffusion of health and medical knowledge. The problems are defined as social and cultural and it is suggested that both theoretical and applied knowledge are necessary to cope with them. Concludes with a section on the role of the social scientist in intercultural programs.

517. GOFFMAN, ERVING. *Asylums*. Garden City, N.Y., Doubleday, 1961. 386 pp.

Four independent essays describing and analyzing the social life of patients in mental hospitals. This analysis of patient and staff behavior makes inferences which are applicable to many institutions. The author theorizes that in modern society individual lives tend to be compartmentalized. In institutions these barriers break down under forces resulting from institutional life conducted in the same place under the same authority in the immediate company of large numbers of other people in this "sameness" atmosphere

518. KRAMER, BERNARD M. *Day Hospital: A Study of Partial Hospitalization in Psychiatry*. New York, Grune & Stratton, 1962. 103 pp.

An analysis of day-care hospitals for mental patients in various parts of the world. The aim is to replace full-time hospitalization for significant

numbers of patients. Discusses physical plant, staff interactions, activity programs, patient experiences, and treatment problems. The day hospital requires minimal investment in building facilities and far fewer professionally trained staff members than a full-time mental hospital.

519. LLI, DOUGLAS HARRY KIDGWIN. "Physiology as a guide to combatting tropical stress," *New England Journal of Medicine* Nov 9, 1950, v. 243, no. 19, pp. 723-730.

Examines the triple interaction of northern man with temperate cultures, tropical environments, and tropical people. He calls for a system of integration between the fields of psychology, sociology, and physiology for clear understanding of human climatology related to tropical adaptation. He concludes that the evidence indicates that the art of "man management" is most important under tropical conditions, but that it is also likely to be dulled by the physiologic stresses of the environment it is called upon to encounter, and that the physiologist is responsible for calling misconceptions to the attention of policy makers.

520. LEIGHTON, ALEXANDER H. "Mental illness and acculturation," *Medicine and Anthropology*, edited by Iago Galdston. New York, International Universities Press, 1959 pp. 108-128.

The author suggests that a society exposed to rapid and extensive acculturation is apt to pass, at least for a time, into a state of disorganization in which it begins to fail in many of its vital functions. This often results in mental illness among individual members of the society. The implications of this for public health relates to preventive measures regarding cultural change and social and economic planning.

521. McDIRMOTT, WALSH, et al "Introducing modern medicine in a Navajo community. Physicians and anthropologists are cooperating in this study of changing patterns of culture and disease," *Science*. Jan. 1960, v 131, no. 3395-3396, pp. 197-205, 280-287.

Report of study utilizing the joint skills of medical and social sciences in systematic investigation of the broad question of technological development as it applies to medicine. Describes study in reference to socioeconomic factors, disease patterns, and available personnel carrying out health program. Includes sound analysis of the procedures of the study, analysis and description of findings relative to specific disease, and a philosophical analysis of the significance of the study.

522. MASLAND, RICHARD L., et al. *Mental Subnormality Biological, Psychological, and Cultural Factors*. New York, Basic Books, 1958. 442 pp.

Report of a survey of the field of mental subnormality designed to provide a basis for programs of research in this field. The two broad areas which relate to the causation of mental subnormality are discussed in separate reports. "One of the areas has to do with those factors which produce anatomical or chemical abnormalities of the nervous system and their interference with the ability of the brain to respond normally to environmental stimuli. The other is concerned with the study of cultural and environmental factors which, through the establishment of unhealthy or inadequate patterns of intellectual response, may prevent the optimum functioning of the mind in a person whose nervous system is ironically capable of normal activity."

523. MAY, JACQUES MEYER. *Studies in Disease Ecology*. New York, Hafner, 1961. 613 pp. (Studies in Medical Geography, v. 2)

The authors view disease as an anthropological phenomenon with geographical distribution. The second volume of a treatise based on the study of the ecological approach to transmissible, degenerative, and behavioral disease presents the ecology of Smallpox, Dengue, Filariasis, Onchocerciasis, Tularemia, Relapsing Fevers, Hydatidosis, Malaria, African Trypanosomiasis, Schistosomiasis, Leishmaniasis, Scrub Typhus, and Plague. Maps, graphs, and tables are liberally used.

524. OPLER, MARVIN K. (editor) *Cultures and Mental Health*. New York, Macmillan, 1959. 533 pp.

An interdisciplinary collection of articles dealing with the variable effect of cultural stress on mental health. Includes studies of the American Indian and of people of the South Pacific, Asia, and Africa. Describes methodology, observations, and areas of needed research. Includes bibliographies and international recommendations. Section III, "Asian Contrasts"; Section IV, "African Contrasts"; and Section VII, "World Perspectives", are particularly applicable to problems faced in less developed nations.

525. PAUL, BENJAMIN D. *Health, Culture and Community*. New York, Russell Sage Foundation, 1955. 493 pp.

Case studies of public reactions to health programs. Each case deals with a concrete health situation or with a health program operating at

the community level. All cases are written by persons who were directly involved in the action or who lived in the community long enough to assess the situation at firsthand through direct observation or interview.

526. PICK, ROBERT F., and MITCHELL, JAMES V., Jr. *Mental Health*. Washington, D C, National Education Association, 1962. 33 pp.

Draws from research material on mental health items deemed promising for classroom teachers. The school is discussed as a psychosocial world. Summaries are presented of selected recent research in the mental health of the pupil, mental health and classroom learning, mental health of the teacher, effect of the teacher's mental health on pupil learning, and health aids for the teacher.

527. REDL, FRITZ, and WINEMAN, DAVID. *Controls from Within*. Glencoe, Ill., Free Press, 1952. 332 pp.

Describes the techniques for treatment of aggressively disturbed children in a resident group setting.

528. WORLD FEDERATION FOR MENTAL HEALTH. *Mental Health in International Perspective*. New York, 1961. 84 pp.

Review of mental health in world perspective made by an international and interprofessional study group. Deals with the changing state of the world (1948-61) relative to mental health activities, potentials, and limitations. Indicates present trends in care, treatment, and prevention of mental disorders. Stresses the role of voluntary activity and suggests long-term activities and programs for individuals, communities, and national organizations.

#### IV. Health Education and Research

529. AMERICAN PUBLIC HEALTH ASSOCIATION STATISTICS SECTION, COMMITTEE ON SAMPLING TECHNIQUES IN PUBLIC HEALTH "On the use of sampling in the field of public health," *American Journal of Public Health* June 1954, v. 44, no. 6, pp. 719-740

Deals with sampling methods and principles as they apply to studies in public health. Investigates the nature and potential of sampling as a tool for the health worker and describes means of determining sample size, the variety of sampling designs that are possible, and when and how to make use of expert assistance. Indicates that sampling is useful only in certain situations and cannot substitute for an inventory. Illustrations are given and an annotated bibliography included.

530. GRANT, JOHN B. "Trends in medical education and the opportunity of the University of Puerto Rico," *Journal of Medical Education*. Sept. 7, 1956, v. 31, no. 9, pp. 605-612.

Analyzes the opportunity available to the Puerto Rican medical center to develop fully the "successful marriage of basic science and hospital laboratories with social-medical research in the community." Outlines the steps by which the university may extend its medical influence into the community, recognizing the need for adequate budget provision and well defined expectations. Medical regionalization is described and justified, and a case is made for embracing the concept of comprehensive medical care.

531. GREEN, DAVID EZRA, and KNOW, EUGENE W. *Research in Medical Science*. New York, Macmillan, 1950. 492 pp.

Representatives of 26 different areas of medical research survey the methods and problems of their particular fields with a view to enlightening and inspiring the nonspecialist reader. Illustrate the great variety in training and preparation needed to carry on medical research, and shows how broad is the foundation of fundamental knowledge on which the edifice of medical research rests. Includes contributions from physicians, chemists, engineers, anthropologists, and many other disciplines.

532. JOURNAL OF MEDICAL EDUCATION. Sept 1962, v. 37, no. 9, pp 807-1051.  
(Special International Issue)

This issue is devoted to medical education throughout the world and includes descriptive and analytical articles from all continents. Of particular significance to less developed nations are the articles, "Medical Education in Southeast Asia," "A Developing Medical School in the Tropics," and "An Experiment in Teaching Community Health."

533. MILLER, GEORGE EDWARD (editor) *Teaching and Learning in Medical School*. Cambridge, Mass, Harvard University Press, 1961. 304 pp

Reviews the process of teaching and learning and compares several of the basic techniques of teaching, pointing out their advantages, disadvantages and limitations.

534. INTER-AMERICAN HEALTH EDUCATION SEMINAR, 1957 *Report*. Washington, D.C., International Cooperation Administration, Public Health Division. 42 pp

Deals with a meeting where health education workers were able to exchange experiences in and establish guidelines for professional training in health education, national planning of health education services, priorities for providing such services, and health education training for other public health workers.

535. U.S. SENATE COMMITTEE ON GOVERNMENT OPERATIONS. *International Medical Research. A Compilation of Background Material*. Washington, D.C., U.S. Government Printing Office, 1958. pp 87-117

This section of the compilation outlines the international aspects of research, giving details of types of programs and listing international organizations participating in such programs. Expenditures of the National Institute of Health for International Medical Research are itemized according to country, institution, and individual.

536. ———. *The U.S. Government and the Future of International Medical Research*. Washington, D.C., U.S. Government Printing Office, 1961. 2 v.

A three-volume report of the hearings of the subcommittee on Reorganization and International Organizations held in July 1959. Contains transcripts of statements made by many prominent professional and lay persons on a wide variety of public health problems (education, research, and progress) with regard to the United States as well as many other nations. Contains reports on public health activities and programs of several national and international agencies including ICA, FOA, and UNICEF. Includes numerous charts, tables, and exhibits.

## V. General Environmental Sanitation

537. BABBILL, HAROLD EALON. *Engineering in Public Health*. New York, McGraw-Hill, 1952. 582 pp.

A textbook designed to meet the needs of engineers practicing in public health. Attempts to cover a large number of subjects which otherwise are to be found in specific texts concerned with such subject matter as epidemiology of communicable disease, public health administration, and industrial hygiene.

538. DERRYBERRY, MATTHEW. "Health education aspects of sanitation programmes in rural areas and small communities," *Bulletin of the World Health Organization* 1954, v. 10 no. 2, pp. 145-154.

The author shows that although in large population centers the sanitarian can effect the environmental changes needed without widespread participation of the people, they themselves will have to perform many of the actions needed to break the chain of transmission of disease. The sanitarian, to be successful, must therefore apply the sciences of human behavior in any attempt to carry out environmental improvements. Before any educational program for environmental sanitation can be planned, it is necessary to find out what health problems the people recognize and are interested in, how much they already know, what the usual channels of communication are, what social, cultural, and other influences are operating, and what resources exist that could contribute to the program.

539. FILERS, VICTOR MARCUS, and STEEL, ERNEST WILLIAM. *Municipal and Rural Sanitation* (5th ed). New York, McGraw-Hill, 1958. 596 pp.

The fifth edition of this classic text on environmental sanitation now includes chapters concerned with new problems such as radiological sanitation. The original sections provide a broad view of sanitation problems in urban and rural environment.

540. GOTAAS, HAROLD B. *Sanitary Disposal and Reclamation of Organic Wastes*. Geneva, Switzerland, World Health Organization, 1956. 205 pp.

This monograph presents methods and processes by which organic waste materials, which could constitute a public health hazard or source of disease communication, may be treated for sanitary disposal by the use of the agricultural methods of composting.

541. HOPKINS, EDWARD SCOTT, and SCHULZI, WILMER HENRY. *The Practice of Sanitation* (3d ed) Baltimore, Md., Williams and Wilkins, 1958. 487 pp

This volume is designed to provide very general knowledge of the field of environmental sanitation. It is not primarily intended for the expert in the field, but rather for health officers and nurses. It covers the entire field of sanitation, including administration, and is a good guide book to the field.

542. PHELPS, EARLE BERNARD *Public Health Engineering*. New York, Wiley, 1948-50. 2 v.

The two volumes include a section on water and one on food. The author attempts a new approach to the field by dividing the environment into "contacts" between man and the three segments of the environment—air, water, and food. Though not an "applied" text, it provides a sound understanding of man's relationship to the several phases of his environment.

543. SALVATO, JOSEPH A. *Environmental Sanitation*. New York, Wiley, 1958. 660 pp.

A practical guide for the practicing public health engineer concerned with small communities. Comprehensive in scope, the book covers such topics as control of communicable disease, community planning, water supply, waste water treatment, sewerage, food, insects and rodents, housing, and public health administration. Though this treatise is directed primarily to the 1,000-5,000 population community in the United States, the principles enunciated are applicable elsewhere.

544. SAWYER, CLAIR N. *Chemistry for Sanitary Engineers*. New York, McGraw-Hill, 1960. 367 pp.

A textbook in sanitary chemistry for engineers which brings into focus those aspects of chemistry necessary to practice sanitary engineering. It lays a groundwork for understanding the specialized area of chemical analysis and chemical interactions which is necessary for the intelligent use of laboratory data and for an appreciation of laboratory-based design criteria. Not a methods book for sanitary analysis.

## VI. Water Supply and Sewage

545. AMERICAN PUBLIC WORKS ASSOCIATION. COMMITTEE ON REFUSE DISPOSAL. *Municipal Refuse Disposal*. Chicago, Ill., Public Administration Service, 1961. 506 pp.

Provides a well-founded basis for the planning and programming of municipal waste disposal by responsible officials. Data have been gathered principally in the United States, and geographical and seasonal variations have been borne in mind in the analysis of the quantities of refuse produced according to season and climate and costs for many types of services and installations.

546. AMERICAN WATER WORKS ASSOCIATION. *Water Quality and Treatment, A Manual* (2d ed). New York, 1950. 451 pp.

Provides those interested in the quality and treatment of water with an understanding of where water comes from and where it goes. It discusses causes of pollution and identifies organisms in the water. Discusses reservoirs, aeration, coagulants, sedimentation basins, filtration, softening, removal of impurities, and chemical treatment of water for physiological benefits.

547. BABBITT, HAROLD EATON. *Sewerage and Sewage* (8th ed). New York, Wiley, 1958. 790 pp.

Designed to instruct the reader in the field of sewage treatment from preliminary design and investigation to preparation of plans, specifications, and contract documents. Methods for the solutions of most of the common types of problems faced by the consulting sanitary engineer are elucidated. Theoretical considerations are tempered by a thorough knowledge of practical applications as used in the field of design and construction of sanitary facilities.

548. BABBITT, HAROLD EATON, et al. *Water Supply Engineering* (6th ed). New York, McGraw Hill, 1962. 672 pp.

A text on public water supplies for undergraduate students, a reference for graduate students, and a handbook for the practicing engineer. Contains factual, well-organized material that is readily applicable.

549. BARFSCH, A. F. "Algae as a source of oxygen in waste treatment," *Water Pollution Control Federation Journal*. Mar. 1961, v. 33, no. 3, pp. 239-249.

Discusses the role of algae in the production of oxygen by photosynthesis as an element in sewage treatment. Sees the role of algae in trickling filters as minimal, whereas in waste stabilization ponds it is critical. Questions the reliability of BOD loading as a measure of effective treatment when algae are used. Discusses the merits and demerits of stabilization ponds using algae and comments on cropping of algae from ponds.

550. FAIR, GORDON M., and CUYER, JOHN C. *Elements of Water Supply and Waste-Water Disposal*. New York, Wiley, 1958. 615 pp.

A comprehensive treatment which sets forth the important advances which reduce water sanitation to an orderly process of calculation. The book encompasses the collection and distribution of water, the collection and removal of waste water, and the treatment of water and waste water.

551. FITZMAK, CLARENCE J. "Well drilling and latrine construction in rural Burma," *Public Health Reports*. Apr. 1954, v. 69, no. 4, pp. 391-397.

Describes how well drilling and latrine construction projects were instituted in rural areas. A survey of general living conditions was made to determine the needs, crews were organized and trained, and project sites were selected. The article describes construction methods used and the health education program established.

552. HERMANN, E. R., and GLOYNA, E. F. "Waste stabilization ponds, I. Experimental investigation, II. Field practices, III. Formulation of design equations," *Sewage and Industrial Wastes Journal*. Apr., May, Aug., 1958, v. 30, nos. 4, 5, 8, pp. 511-538, 646-651, 963-975.

Reports the results of experimental investigation of waste stabilization ponds. Analyzes the factors influencing effective treatment of waste as measured in BOD loading at various detention times. Statistically analyzes ponds in 188 Texas communities for importance in measuring degree of treatment, aesthetic values, relationship to community size, and significance in developing design criteria to arrive at some rather precise design criteria for stabilization ponds and their use.

553. JOINT COMMITTEE OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS AND FEDERATION OF SEWAGE AND INDUSTRIAL WASTES ASSOCIATION *Sewage Treatment Plant Design* Washington, D.C., Water Pollution Control Federation, 1959 375 pp

Summarizes and interprets contemporary practice in the design of sewage treatment plants, using as its criterion the processes, equipment, and standards used by engineers in designing plants from 1935 to 1955. Practicing engineers constitute the referees, and, to the extent that they follow standards, this manual refers to such standards. Criteria for many types of equipment and processes are given.

554. KNIESL, ALLEN V. *Water Pollution Economic Aspects and Research Needs* Baltimore, Md, Johns Hopkins University Press, 1962. 107 pp

Within an economic framework, the emphasis is upon the proper orientation of research pollution abatement and the specific areas where this research should be conducted. Points up the economic and social costs of inefficient waste disposal systems.

555. NORDELL, ESKEL. *Water Treatment for Industrial and Other Uses* (2d ed) New York, Reinhold, 1961 598 pp

A comprehensive guide for executives, engineers, operators, chemists, and students on industrial water conditioning including municipal, commercial, and institutional water supplies. Objectional impurities in water are discussed along with their deleterious effects and methods of treatment. While the major portion of the book is devoted to industrial water treatment, many of the treatment methods and unit processes discussed are of equal value in municipal water treatment, particularly in smaller installations.

556. RIEHL, MERRILL L. *Water Supply and Treatment* (8th ed) Washington, D.C., National Lime Association, 1957 221 pp

Designed to instruct water treatment personnel in methods, equipment, chemicals, and procedures used in the production and quality control of potable and industrial water. Some theory is presented, along with brief statements about geology and hydrology.

557. RUDOLPHS, WILLIAM. *Principles of Sewage Treatment* (4th ed) Washington, D.C., National Lime Association, 1955. 130 pp.

Gives basic information about the composition and treatment of sewage, and the biological factors involved in waste water treatment. Discusses common problems in the operation of treatment plants as well as chemical constituents and analyses

- 558 *Standard Methods for the Examination of Water and Wastewater* (11th ed) New York, American Public Health Association, American Water Works Association, and Water Pollution Control Federation, 1960. 626 pp.

The latest edition of this standard reference, with sections covering physical and chemical examination of natural and treated waters, sewage, effluents, polluted waters, industrial wastes, sludge, and sediment, methods for the radiological examination of water and wastes, bioassay methods for the evaluation of industrial wastes, bacteriologic examinations of water, detection of iron and sulfur bacteria, and biological examination of water, sludge, and bottom materials.

559. STILL, ERNEST WILLIAM *Water Supply and Sewerage* (4th ed) New York, McGraw-Hill, 1960. 655 pp.

Treats sanitary engineering as one of the divisions of civil engineering. Subjects covered include estimation of water needs and waste water, estimation of runoff, design of storm sewers and structures, sanitary sewer design, water distribution system design, water and sewage treatment, plant design and operation, sanitary engineering unit processes. Although principally designed for students, the book should be of use to consulting engineers, operators, and city managers

560. WHIPPLE, GEORGE CHANDLER *The Microscopy of Drinking Water* (4th ed) New York, Wiley, 1948. 586 pp

Presents to the water works engineer and chemist methods for the analysis of microscopic organisms in types of organisms present. Topics covered include microscopic organisms in drinking water, microscopic organisms and sanitary water analysis, tastes and odors in water, sample collection and analysis, limnology, storage of water, and self-purification of streams, as well as information on specific classifications of aquatic organisms.

561. WRIGHT, FORREST B. *Rural Water Supply & Sanitation* (2d ed) New York, Wiley, 1956. 347 pp.

A discussion of the new and important developments in the field of rural water supply and sewage disposal. Particular emphasis has been placed on methods of securing adequate sources of water, the design, installation, and selection of pumping and plumbing systems; and the design and installation of sewage disposal systems. There are practical aids for planning or installing water supply or sewage disposal equipment.

## VII. Food, Air, and Other Special Problems

562. ADAMS, HAROLD S. *Milk and Food Sanitation Practice* New York, Commonwealth Fund, 1947. 311 pp

Concerned with objectives and techniques of milk and food sanitation. It is intended to be useful in orienting the public health student who plans to work in the field of environmental sanitation, and to serve as a guide for health officers, engineers, and sanitarians whose work involves the sanitary supervision of milk and food supplies.

563. AMERICAN PUBLIC HEALTH ASSOCIATION. *Public Exposure to Ionizing Radiation* New York, 1958. 55 pp

Introduces the public health worker to the techniques required to provide ionizing radiation protection. It is not meant for experts, and it is not a definitive guide for the uninitiated, but a first step for the experienced public health worker who wishes to understand this new responsibility.

564. ———. *Standard Methods for the Examination of Dairy Products* (11th ed) New York, 1960. 448 pp.

This 11th edition reflects the continual work on the part of the sponsoring organizations to advance the standardization of analytical procedures used in the evaluation of milk and milk products. Discusses efficient methods for sampling and storage, bacterial analysis, chemical analysis, physical analysis, and quality control.

565. DACK, GAIL MONROE. *Food Poisoning* (rev. ed) Chicago, Ill., University of Chicago Press, 1956. 184 pp.

Discusses food poisoning from the standpoint of causative agents such as chemicals, poisonous plants, bacteria and their products, viruses, protozoans, helminths. This volume is of value to those interested and responsible for programs in milk, food, and communicable disease control. In addition, the group of foodborne diseases of unknown origin are described.

566. ELLINGER, FRIEDRICH PHILIPP. *Medical Radiation Biology*. Springfield, Ill., Thomas, 1957. 945 pp.

Presents observations on the effects of radiation as they pertain to man under conditions of health and disease. The four major divisions of the work include fundamental radiation biology, biology of ionizing radiations, biology of ultraviolet radiation, and photobiology.

567. HARRIS, CYRIL M. *Handbook for Noise Control*. New York, McGraw-Hill, 1957

Presents the specialized areas of noise control, covering such subjects as properties of sound, effects of noise on man, vibration control, instrumentation and noise measurement, techniques of noise control, community noise, and legal aspects of noise problems

568. McDERMOTT, WALSH (editor) *Conference on Airborne Infection*. Baltimore, Md., Williams and Wilkins, 1960. 382 pp.

This work is the proceedings from a conference on airborne infections which was called to seek an informed contemporary reassessment of the significance of the subject in the dissemination of communicable disease. Some of the topics discussed include airborne organisms, the respiratory system and airborne infection, bacterial diseases, virus and fungus diseases, immunology and public health.

569. MCGILL, PAUL L., et al (editors) *Air Pollution Handbook*. New York, McGraw-Hill, 1956. various pagings

Discusses theoretical, technological, and practical aspects of air pollution. Subject matter treated includes city planning and plant location in relation to air pollution control, chemistry of contaminated atmospheres, epidemiology of air pollution, visibility, harmful effects to animals, sampling procedures, and legislative and legal problems. Contains a great amount of what is now known about air pollution and its control.

570. PATTY, FRANK ARTHUR. *Industrial Hygiene and Toxicology* (2d ed) New York, Interscience, 1958.

Deals with the functions of industrial hygiene personnel, factors contributing to health and safety in the industrial plant, and toxicology and sanitation in both the industrial and general sense. Among the sub-

jects covered are industrial hygiene records and reports, surveys and personnel, modes of entry and action of toxic materials, sampling and analysis of atmospheric contaminants, ventilation and air conditioning, pulmonary dust diseases, noise, lighting, and industrial hazards.

571. RILEY, RICHARD L., and O'GRADY, FRANCIS. *Airborne Infection Transmission and Control*. New York, Macmillan, 1961. 180 pp.

Relevant theory and independent research are utilized as the basis for this discussion of the problem of spread and control of airborne infection. Includes a historical survey of airborne infectious disease and previous attempts at its control. The physical and biological principles of transmission are studied and applied. An important portion of the book results from research undertaken by the authors in the area of Tubercle Bacilli transmission in hospital wards. This research was unique and highly significant, the conclusions are exact, and some recommendations are readily practicable.

572. U.S. ATOMIC ENERGY COMMISSION. *Atomic Energy Research, Life and Physical Sciences, Reactor Development, Waste Management*, Dec. 1961. Washington, D.C., U.S. Government Printing Office, 1962. 333 pp.

The purpose of this volume is to disseminate information on research carried out by or through the United States Atomic Energy Commission. Among the types of research described are medical, agricultural, and radiation effects, basic and applied physical science, reactor development; and waste management.

573. WILACI, BRUCE. *Radiation, Genes, and Man*. New York, Holt, 1959. 205 pp.

Presents the facts on genetic damage caused by radiation in language which can be understood by the nonspecialist. Among the topics discussed are spontaneous mutation, atoms and radiations, genetic effects of radiation on populations, and unsolved problems.

## VIII. Nutrition

574. KINNLY, THOMAS D., and FOLLIS, RICHARD H, Jr. "Nutritional Disease," *Federation Proceedings* Sept. 1958, v. 17, no. 3, part 2, supplement no. 2, pp. 3-162.

Papers discuss epidemiology, clinical features and special problems of beriberi, endemic goiter, and hypovitaminosis, including, in the case of hypovitaminosis, the pathology, biochemical considerations, and pathogenesis. Prepared by those who have worked with various aspects of the problem throughout the world.

575. POLLACK, HERBERT "Symposium on nutrition. Studies in nutrition in the Far East VII The problem of rice supplementation," *Metabolism. Clinical and Experimental* May 1956, v. 5, no. 3, pp. 276-278.

Short discussion of the role of rice in Far Eastern diets, the problems in improving the nutritional qualities of these diets, and the effects of some governmental efforts to support trade balances by altering food laws.

576. SCHAEFER, ARNOLD E., and BERRY, FRANK B. "U.S. interest in world nutrition," *Public Health Reports* Aug. 1960, v. 75, no. 8, pp. 677-686.

Summary of the work of the Interdepartmental Committee on Nutrition for National Defense in 14 countries, pointing out that the nutrition studies are a cooperative, scientific, training, and people-to-people program. Contains 22 references to specific studies.

577. SCRIMSHAW, NEVIN S., and BHAR, MOISES. "Protein malnutrition in young children," *Science*. June 1961, v. 133, no. 3470, pp. 2039-2047.

A review of the clinical characteristics, physiology, pathology, epidemiology, treatment, and prevention of protein malnutrition in children. Emphasizes the point that malnutrition is still a major factor in the high morbidity and mortality rates found in underdeveloped areas.

578. RITCHIE, JLAN A. S. *Teaching Better Nutrition; A Study of Approaches and Techniques*. Washington, D.C., H. K. Press, 1950. 148 pp. (FAO Nutritional Studies No. 6)

A manual for those teaching good nutrition practices in areas throughout the world which includes, in addition to methods and techniques, interesting material on the cultural values of diet in different countries and examples of nutrition education programs conducted in Iran, Guatemala, Nigeria, the Netherlands, Puerto Rico, Jamaica, and India.

- 579 U.S. INTERDEPARTMENTAL COMMITTEE ON NUTRITION FOR NATIONAL DEFENSE *Nutrition Survey* Washington, D.C., U.S. Government Printing Office, 1956 to date. various paging

Surveys of 13 countries issued from 1956 to the present and listed by country, covering such topics as major nutrition and feeding problems with recommendations for improvements; food availability, technology, and distribution; dietary patterns; personnel training; and epidemiology of nutritional disease. Covers the following countries: Colombia, Chile, Ecuador, Ethiopia, Iran, Thailand, Libya, Peru, the Philippines, Lebanon, Vietnam, Turkey, and the West Indies.

## Chapter 7.

### SOCIAL WELFARE

#### I. Social Work

- 579a. BIRREN, JAMES E (editor) *Handbook of Aging and the Individual: Psychological and Biological Aspects*. Chicago, Ill., University of Chicago Press, 1959. 939 pp

A reference book on the biological and psychological aspects of human aging prepared primarily for graduate students and professional and scientific specialists. The book is organized into four parts which include Foundations of Research on Aging, Biological Bases of Aging, Aging in Environmental Settings, and Psychological Characteristics of Aging.

580. COHEN, NATHAN EDWARD. *Social Work in the American Tradition*. New York, Dryden Press, 1958. 404 pp.

Traces the growth of social work during the past 50 years, considers the dominant themes in the philosophy of social work, discusses social work as a profession, and evaluates its future role.

581. HALL, DARL MFRIDETH *Dynamics of Group Action* (2d ed) Danville, Ill., Interstate Printers and Publishers, 1960. 243 pp.

Discusses the theory and practice of intra-group relations, formulates guidelines to such questions as how, what, and why to achieve effective leadership, and considers the skills needed by individuals and groups in solving their problems. These factors along with an analysis of action systems and their sources of authority are examined with emphasis on understanding the role of cooperative effort within an enlarging democratic framework.

582. KAHN, ALFRED J (editor) *Issues in American Social Work* New York, Columbia University Press, 1950. 354 pp.

A group of eminent scholars and teachers of social work address themselves to major social issues. The authors stress a broad rather than

limited concept of social work. Emphasis is on social policy rather than methodology. The book focuses on major problems related to the social welfare function, non-professional social work roles, sound development of the social work profession, and the utility of social science knowledge in social work.

583. KASTUS, CORA (editor) *New Directions in Social Work*. New York, Harper & Bros, 1954. 258 pp.

Presents a critical look at the established landmarks of social work as well as the offices within and without the profession that give direction to social welfare. The present state of social work is examined from several vantage points, and recommendations are made for the future. Contains 13 articles on issues in social welfare work, including an article on international social work development.

584. KURTZ, RUSSELL H. (editor) *Social Work Year Book*. New York, National Association of Social Workers, 1960. 767 pp.

Offers extensive coverage of various aspects of social work and social welfare. Part I consists of three articles on the development, status, and trends of social work and social security in the United States. Part II contains 68 topical articles on subjects such as community development and international social welfare. Part III includes four directories of national and international agencies, whose programs are related to Parts I and II. A valuable resource for social work practitioners, administrators, and teachers, as well as for members of allied professions.

585. LANDIS, PAUL H. *Social Problems in Nation and World*. Philadelphia, Pa., Lippincott, 1959. 752 pp.

A text of American social problems and policies, contrasted with similar problems in other parts of the world. Attention is focused on the manifold problems of industrial and technological change, mass production and distribution, and personal and social disabilities related to these phenomena throughout the world. Illustrated.

586. MERRIFIELD, CHARLES W. *Leadership in Voluntary Enterprise*. New York, Oceana, 1961. 232 pp.

The problems and necessity of leadership development are examined through a series of readings designed to illustrate the fact that leadership function in free and flexible societies is of peculiar and critical significance. These papers delve into the methods of stimulating, mobilizing, directing, and coordinating the motives and loyalties of free men to engage in voluntary organizations and enterprises.

587. MURASE, KENNETH. "International students in education for social work: an assessment by international graduates of schools of social work in North America, 1948-1957," *Social Service Review*. June 1961, v. 35, no. 2, pp. 171-183.

Questions the value for students in social work from less developed countries of the specialized social work education program commonly found in North America. Outlines the training needs of international students from less developed countries and proposes ways to meet these needs.

588. RUSSELL, JAMES E. (editor) *National Policies for Education, Health, and Social Services*. New York, Doubleday, 1955. 551 pp.

Covers policies, evaluations, and analyses relevant to the United States without specifically delineating principles applicable to underdeveloped areas.

589. STFIN, HERMAN D. (editor) *Social Perspectives on Behavior*. Glencoe, Ill., Free Press, 1958. 666 pp.

A series of papers which discuss the application of social science theory to social work. Emphasizes the importance of environmental factors in the diagnosis and treatment of individual, group, and community problems.

590. WILENSKY, HAROLD L., and LLBEAUX, CHARLES N. *Industrial Society and Social Welfare*. New York, Russell Sage Foundation, 1958. 401 pp.

Analyzes the impact of industrialization on demand, supply, and organization of social welfare services in the United States. Part I deals with the development of urban industrial society and the emergence of social problems, Part II discusses social problems and supply of welfare services in the U.S.; and Part III analyzes the organization of welfare services in the U.S.

## II. Community Development

591. DUNHAM, ARTHUR, and PAUL, RAMLSHWAR N. "Community development—a working bibliography," *Community Development Review* (Washington, D.C.) Mar. 1959, v. 4, no 1, pp. 60-93.

An annotated bibliography of 129 books, articles, and pamphlets on community development, plus a description of 11 journals devoted mainly or exclusively to it. Publications are categorized under headings of: Community Development—General, Community Development in Specific Countries (17 are listed, plus continents and areas), Technical Assistance; Personnel and Training; Relation of Community Development to Special Fields and Vocations; Specialized and Voluntary Agencies, Case Materials; and Bibliographies Indexed by author, general topics, and publisher

592. ENSMINGER, DOUGLAS. *A Guide to Community Development*. Delhi, India, Government of India, 1957. 205 pp.

A guide to the community development and national extension program of India, directed primarily to those concerned with the administration or implementation of the program. Includes principles of community development with special reference to problems and methods relevant to village welfare in underdeveloped areas.

593. KING, CLARENCE. *Working With People in Small Communities. Case Records of Community Development in Different Countries*. New York, Harper, 1958. 130 pp.

Intended specifically for use in training community development workers, the book is a collection of 10 brief case records on community development, representing the United States, Korea, Mexico, Egypt, Greece, India, Nigeria, New Zealand, Thailand, and Puerto Rico. Each case is presented by a narrative followed by an analysis including the discussion of specific questions such as how to discover what the community wants, how working for can be changed to working with people, and whether force can be used to bring about community development.

594. MINICILLI, LOUIS. "Social group work in community development programs," *Community Organization*, 1960. New York, Columbia University Press, 1960. pp. 117-127.

Points out that "community development is broader than social work as it has evolved and is practiced in the United States" and that "United States social work has barely touched the fringe of community development." Notes some differences between community development and social work, but points out that "social work and community development share the same basic philosophy. They are both concerned with the worth of the individual in a democratic society. The ability to understand social conditions, understand psychology, work with people, and get people to work with each other is fundamental in both cases."

595. NATIONAL TRAINING LABORATORIES. *Forces in Community Development*. Washington, D C, 1961. 106 pp. (Selected Reading Series 4)

Presents a collection of papers dealing with the assumptions about people and communities made within the context of community development programs. The focus of the papers is on viewing community development as an educational process. This, in turn, means that the end product is changed, not in communities alone, but in people themselves. The community development worker is therefore an education aid or an agent of change.

596. NELSON, LOWRY. *Community Structure and Change*. New York, Macmillan, 1960. 464 pp.

Provides a meaningful, theoretical framework for community analysis and demonstrates its practical application to community development. Designed for citizens participating in local community affairs; professional workers in health, education, recreation, social welfare, and related fields; and students.

597. PHILLIPS, PAUL G. *Trends in Community Development Programs in the United States*. Washington, D.C., International Cooperation Administration, Community Development Division, 1958. 60 pp.

A report prepared in connection with the United Nations Second International Survey of Programmes of Social Development. Programs are discussed according to their sponsorship by agencies of the Federal govern-

ment; universities, colleges, and professional associations; regional associations and corporations; endowed foundations; and business and citizens organizations.

598. POSTON, RICHARD W. *Democracy Speaks Many Tongues; Community Development Around the World*. New York, Harper & Row, 1962.

A pioneer in community development shows why foreign aid has so often failed to produce a climate favorable to democratic ideas and then traces what he regards as successes of community development programs in Guatemala, India, the Philippines, Turkey, and Colombia.

599. ROSS, MURRAY G. *Community Organization Theory and Principles*. New York, Harper & Bros., 1955. 239 pp.

A theoretical discussion of community organization from the standpoint of the social sciences. The author's broad generic approach, plus some specific discussion and illustrations of community development, have special relevance for those concerned with community development programs.

600. RUOPP, PHILLIPS (editor) *Approaches to Community Development: A Symposium Introductory to Problems and Methods of Village Welfare in Underdeveloped Areas*. The Hague, Netherlands, W. van Hoeve, 1953. 352 pp.

Presents a collection of papers dealing with problems and methods of village welfare in underdeveloped areas. Papers are grouped under the general headings of the sociology of community development; the economics of community development; education for community development; and regional considerations.

601. *Rural Sociology*. Mar. 1958, v. 23, no. 1, 95 pp.

Contains five articles by different authors on various aspects of community development, particularly issues pertaining to theory, practice, training, and social action. The articles cover the following subjects: theories of community development, its social components; community involvement in community development; and social action in community development. Particularly valuable for professionals and citizens engaged in community development activities in the underdeveloped countries.

602. SANDERS, IRWIN TAYLOR. *The Community: An Introduction to a Social System*. New York, Ronald Press, 1958. 431 pp.

Treats the generic characteristics found in all communities, stressing orientation and the general conceptual framework. A basic, introductory text divided into three parts: social traits of the community; the major systems at work; and community action.

603. U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT. *Community Development: An Introduction to C.D. for Village Workers*. Washington, D.C., U.S. Government Printing Office, v. 1, series A. 27 pp.

Relates the role of the technical assistant to the area in which the assistance is given. Describes the evidences of a higher cultural awakening as well as areas of needed improvement.

### III. Urban Development

604. ANDERSON, NELS. *The Urban Community: A World Perspective*. New York, Holt, 1959. 500 pp.

Examines the growth of urban life created by industrialism as a new kind of unity of interests. The author feels that as we better understand the processes and trends of urbanism, we can cope more effectively with its social problems. Although the book deals largely with the American scene, it draws comparisons with other countries.

605. ANDREWS, RICHARD B. "Urban economics: an appraisal of progress," *Land Economics*. Aug. 1961, v. 37, no. 3, pp. 219-227

A review paper which explains some of the shortcomings of the inductive and the deductive approaches to urban land analysis; i.e., absence of dynamics, lack of depth, and avoidance of areas that are difficult to measure and analyze. Proposes to overcome shortcomings of urban economic techniques by blending some of the features of the two principal approaches.

606. BRIAN, J. L. BERRY "City size distributions and economic development," *Economic Development and Cultural Change* July 1961, v. 9, no. 4, part 1, pp. 573-588

Analyzes city size distributions and economic development, by (1) describing the city size distribution of several countries and comparing them with the indices of urbanization and primacy included in the *Atlas of Economic Development*, (2) describing the relative economic development of these countries; and (3) comparing these two aspects to test the hypothesis of a relationship between city size distributions and economic development. Finds no direct relationships between type of city size distribution and either relative economic development or the degree of urbanization of countries, although urbanization and economic development are closely associated.

607. CHAPIN, FRANCIS STUART. *Urban Land Use Planning*. New York, Harper & Bros., 1957. 397 pp.

Considers the interrelationships of the three main categories of land use determinants—economic, social, and public interests. Analyzes the principal factors in land use planning—urban economy, employment studies, population studies, urban land studies, and transportation in relation to land use. Somewhat technical in approach, although it contains many tables and maps to simplify meaning.

608. DUGGAR, GEORGE S. (editor). *The New Renewal*. Berkeley, Calif., University of California, Bureau of Public Administration, 1961. 158 pp.

Papers concerned with analyses of the major factors to be considered in urban renewal, particularly looking to the future, written by persons concerned with urban renewal. The articles reflect an overriding vote against uniformity in housing. Relationships were analyzed between participants in private-public, local-federal, and local-public relationships.

609. DYCKMAN, JOHN W. *Capital Requirements for Urban Development and Renewal*. New York, McGraw-Hill, 1961. 334 pp.

One of a series of studies on housing and community development in urban areas of the United States, this volume explores the capital investment required in cities, and the organization of the economy necessary to realize urban goals. It translates national expenditure totals into specific changes in the urban environment, and converts specific local efforts into a national program.

610. GOODMAN, PAUL, and GOODMAN, PERCIVAL. *Communitas: Ways of Livelihood and Means of Life*. New York, Random House, 1960. 248 pp.

Systematizes generic types of urban and regional plans that have been proposed into three classes: corn belts, industrial plans, and integrated plans. Analyzes their implications for kinds of technology, attitude toward technology, relations of work and leisure, domestic initiative, and practical realization. Presents three possible alternative idealized regional schemes, using differing choices regarding technology, surplus, and ends-means relationships, and looks at the implied social, economic, and esthetic functions. These three alternatives involve efficient consumption, elimination of the difference between production and consumption, and planned security.

611. HAAR, CHARLES M. *Land Use Planning. A Casebook on the Use, Misuse, and Reuse of Urban Land.* Boston, Mass., Little, Brown, 1959. 790 pp.

An exploration and analysis of the evolution of property law from the 18th century to the present. Examines the assumptions, doctrines, and implications of city planning law in regard to the common law of property rights, of the operation of the land market in a constitutional democratic state, and of the lawyer's role in real estate transactions. These facts are presented interpretatively so that students and practitioners of law and planning may effectively analyze the legal and administrative problems of allocating and developing increasingly scarce urban land.

612. HOSELITZ, BERTHOLD F. "The role of cities in the economic growth of underdeveloped countries," *Journal of Political Economy*. June 1953, v. 61, no. 3, pp. 195-208.

An attempt to identify the major problem areas in examining the process of urbanization and in studying the impact of towns and cities upon the economic growth of underdeveloped countries. A basic question is raised regarding the extent to which an urban culture in an underdeveloped nation is a vehicle for changing the values and beliefs of the society in order to make it more receptive to economic growth. Some questions for further study are suggested, including the relationship between industrialization and the development of efficient governmental services, and the nature of city growth in underdeveloped countries.

613. HUMES, SAMUEL. *The Structure of Local Governments Throughout the World.* The Hague, Martinus Nijhoff, 1961. 449 pp.

Gives a systematic classification of local government in many countries, demonstrating central-local relationships and variations. The three major themes are the nature and technique of central control; the design of local representative institutions at the local level; and the classification of local government systems into geographical groups.

614. MAYER, HAROLD M., and KOHN, CLYDE F. (editors) *Readings in Urban Geography.* Chicago, Ill., University of Chicago Press, 1959. 625 pp.

A compilation of scholarly articles found in widely scattered professional journals designed to facilitate a comprehension of the character and scope of urban geography. These articles highlight the contribution which

knowledge of urban geography can make to urban planning for the number, nature, and location of internal transportation routes and facilities within factories, shops, schools, and residences necessary to optimize the efficiency of each. A knowledge of geography also facilitates the evaluation of a city's economic and physical patterns in relation to the direction and character of its future development.

615. MLYIRSON, MARTIN (editor) "Metropolis in ferment," *Annals of The American Academy of Political and Social Science*. Nov. 1957, v. 314, 231 pp.

The whole issue is devoted to a discussion of major aspects of urban living and the conditions of the American metropolis. The articles, written by specialists in different fields, investigate the physical as well as the social aspects of urbanization, the understanding of which is essential to planning and action. Subjects discussed include values for urban living; production and distribution, transportation, housing; community sources; metropolitan organization, plans and programs; and the suburban dislocation.

616. MUMFORD, LEWIS *The City in History*. New York, Harcourt, Brace, 1961. 657 pp.

Provides a comprehensive analysis of the city in historical perspective, discussing the nature of the city and how it came into existence; the processes it furthers; the functions it performs, and the purposes it fulfills.

617. OWEN, WILFRED *The Metropolitan Transportation Problem*. Washington, D.C., Brookings Institution, 1956. 301 pp.

Gives insights into the transportation problems evolving from the expanding population and from the economic growth in the United States. Stresses the utilization of various modes of transport and transportation resources to attain a higher degree of efficiency. Presents charts and tables helpful in understanding comparative costs of different modes of transportation with regard to planning and forming transport facilities for an urban society.

618. PERLOFF, HARVEY S. (editor) *Planning and the Urban Community Essays on Urbanism and City Planning*. Pittsburgh, Pa., University of Pittsburgh Press, 1961 235 pp.

Paper presented before a joint planning seminar during the fall of 1958, organized into three sections. Part I focuses on the urban community, indicating what we know or may come to know about it. Part II deals mainly with various approaches to organizing city planning. Part III examines the nature of urban planning activities, present and future, and their implications for planning education.

619. FFOOTS, RALPH WILLIAM (editor) *Techniques of Urban Economic Analysis*. West Trenton, N.J., Chandler-Davis, 1960 410 pp.

Examines the controversy between the elements of the basic-service theory of urban development, the economic base analysis based on the multiplier and goods flows, and the input-output approach. Emphasis is on the basic-service theory in regard to historical analysis and evolution, however, the basic framework and an illustrative example of the multiplier analysis is given in addition to a brief critique of input-output analysis.

620. SCHNORE, LEO F. "The statistical measurement of urbanization and economic development," *Land Economics* Aug. 1961, v. 37, no. 3, pp. 225-245.

Develops a multi-variable model for the empirical investigation of the relationship between urbanization and industrialization, and for the specific study of the correlates of urbanization (which also provides by-product data on the statistical interrelations between other indices of modernization).

621. SCHULTZ, THEODORE W. "Land in economic growth," *Modern Land Policy*, by Land Economics Institute. Urbana, Ill., University of Illinois, 1960. pp. 17-39.

Examines the classical theory that the supply price of the services of land rises relative to the prices of the services of other resources during economic growth. Uses data on United States farmland to show that in the U.S. land has not become scarcer in comparison to other resources based on what has been happening to the relative prices of the services of farmland. Sets forth the framework of a theory of economic growth to cope not only with substitutes for land but also with other economic developments that alternative theories have not been able to manage.

622. SHLVKY, ESHREF, and BELL, WENDELL. *Social Area Analysis*. Stanford, Calif., Stanford University Press, 1955. 70 pp.

Illustrates the theory, application, and computational procedures involved in a study of the social structure of ten cities of the San Francisco Bay Area. Describes a practical method of finding out how the people of American cities are stratified and differentiated according to social rank, segregation, urbanization, and other criteria.

623. FISHMAN, MARVIN B (editor) *Community Structure and Analysis*. New York, Crowell, 1959. 454 pp.

Presents a selection of articles directed toward understanding the social forces in the community and the patterns of social action, which together contribute to the structure of the community. Areas covered are community typology; community analysis; community development; community action; community structure, community problems; and community change.

624. TAMIMENT INSTITUTE. *The Future Metropolis*, edited by Lloyd Rodwin. New York, George Braziller, 1961. 253 pp.

A collection of 12 articles, by a variety of specialists, dealing with the significance of the metropolis for both developed and underdeveloped countries. The metropolis, which is a new phenomenon, is discussed from different points of view, particularly the way in which metropolitan development can be controlled to ease the transitional phases. Analyzes the inherent values of metropolitan life and how they can be enhanced, the form the metropolis should take and facilities it should have, and the technical and administrative means needed for future plans.

625. TURNER, ROY (editor) *India's Urban Future*. Berkeley, Calif., University of California Press, 1962. 470 pp.

Papers from a conference which discuss urbanization in India, considering growth and migration, hinterland city relationships, village-city relationships, the economic structure of cities, and the patterns which result. The problems of planning, economic and physical, are considered at some length, as well as the question of decentralization and the means of governing Indian cities. Discusses the urban policy questions facing Indians and speculates on future developments.

626. U.S. HOUSING AND HOME FINANCE AGENCY. *Application of Climatic Data to House Design*. Washington, D.C., 1954. 152 pp.

A report of research which attempts to find a method of approach for evaluation of existing weather data for a particular climatic region illustrates various alternative procedures for design and control of changing weather factors. Among the specific factors covered are selection of optimum conditions for human comfort under different weather conditions and the compilation of necessary regional weather data; a graphic method for design of a particular shading device, radiation data, and general observations concerning the application of the above data to specific buildings and sites in a particular locality.

627. VIOLICH, FRANCIS. *Low Cost Housing in Latin America*. Washington, D.C., Pan American Union, 1949. 93 pp.

Summarizes the factors influencing low-cost housing in Latin America and discusses the existing housing situation throughout the world, considering each country separately. The increases in low-cost housing are not as great as the natural increase in population.

#### IV. Social Security: Unemployment and Old Age

628. FARMAN, CARL H. "Social Security in Central America," *Social Security Bulletin*. Nov. 1957, v. 20, pp. 11-18.

A summary review of the programs of five Central American States: Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua.

629. KAPLAN, JEROME. *A Social Program for Older People* Minneapolis, Minn., University of Minnesota Press, 1953. 158 pp.

Discusses creative group activities for older persons, traces the development of community social and service clubs designed for them and presents a case study of the pioneering work of the Hennepin County Welfare Board in the Minneapolis area.

630. MEYERS, ROBERT J. "International Trends in Social Security," *International Social Security Bulletin*. Jan./Feb. 1958, v. 11, no. 1/2, pp. 41-51.

A concise description of the latest world developments in social security. Trends in social security are identified as efforts to offset the effects of inflation, changes in the basic nature of systems, and modifications of the retirement conditions. It is stressed that the social security system of each country is based on the philosophy and the social and economic conditions which exist in that country, and while countries can learn from each other, they must not feel pressure to duplicate another system.

631. "Twenty Years of Unemployment Insurance in the U.S.A., 1935-1955," *Employment Security Review*. Aug. 1955, v. 22, no. 8, pp. 1-14.

Includes articles on coverage, benefit financing, benefits, disqualifications, administration, the changing role of unemployment insurance, and issues for tomorrow.

632. U.S. SOCIAL SECURITY ADMINISTRATION. DIVISION OF PROGRAM RESEARCH. *Social Security Programs Throughout the World, 1958, Including Five Charts Summarizing the Principal Legislative Provisions.* Washington, D.C., U.S. Government Printing Office, 1961. 93 pp.

Summarizes the principal provisions in various countries relating to old-age invalidity, survivors' insurance, and pension (or assistance) programs, health and maternity insurance, work-injuries insurance, unemployment insurance, and family allowance programs.

## V. Family and Youth

633. AMERICAN ACADEMY OF PEDIATRICS COMMITTEE ON ADOPTIONS. *Adoption of Children*. Evanston, Ill., 1959. 60 pp.

Considers services to the natural parents, to the child, and to the adoptive parents. Discusses basic principles of adoption, placement and supervision, the handicapped child, adoptive services in the community, law relating to adoptions, and interstate and intercountry adoptions.

634. BELL, NORMAN W., and VOGEL, EZRA F. (editors) *A Modern Introduction to the Family*. Glencoe, Ill., Free Press, 1960. 691 pp.

A scientific study of the family. The introductory statement sets forth a theoretical scheme designed to facilitate the systematic study of the structure of family life. While the scheme has not been empirically tested, the editors believe that it is a tool applicable to cross-cultural study of family life. The descriptive statement of the scheme is followed by a series of 51 papers which discuss its internal and external functions.

635. BURMEISTER, EVA ELIZABETH *The Professional Houseparent*. New York, Columbia University Press, 1960. 244 pp.

A guide for houseparents working with institutionalized children.

636. CHARNLEY, JEAN. *The Art of Child Placement*. Minneapolis, Minn., University of Minnesota Press, 1955. 265 pp.

A guide for social workers engaged in placing children in foster homes or institutions. Methods and techniques are applicable under a wide variety of conditions.

637. ERIKSON, ERIK H. *Childhood and Society*. New York, Norton, 1950. 397 pp.

A psychoanalytic study of the relation of the ego to society. The book is based on "specimen situations which called for interpretation and cor-

rection: anxiety in young children, apathy in American Indians, confusion in veterans of war, annoyance in young Nazis." The book is essentially based on the theory that "only a gradually accruing sense of identity based on the experience of social health and cultural solidarity at the end of each major childhood crisis, promises that periodical balance in human life which—in integration of the ego stages—makes for a sense of humanity . . . and whenever this sense is lost an array of associated infantile fears are apt to be mobilized."

638. FELDMAN, FRANCES LOMAS. *The Family in a Money World*. New York, Family Service Association of America, 1957. 188 pp.

Presents data dealing with the complicated relationships among the economic, social, cultural, and psychological meaning and use of money. Considers various aspects of budget counseling and related services, analyzes human needs and values, and outlines social resources.

639. MAYER, MORRIS FRITZ. *A Guide for Child-Care Workers*. New York, Child Welfare League of America, 1958. 184 pp.

Written for child-care workers in institutions and hospitals. Discusses the individual child, his interaction with the group, the routine of daily living, play, and discipline; considers staff cooperation and communication.

640. RAYMOND, LOUISE. *Adoption and After*. New York, Harper & Bros., 1955. 238 pp.

Presents pertinent information on legal, emotional, institutional, and other problems involved in adoption. Includes a list of adoption agencies in the United States and Canada, as well as additional suggested readings.

641. SEARS, ROBERT RICHARDSON, et al. *Patterns of Child Rearing*. Evanston, Ill., Row, Peterson, 1957. 549 pp.

Report of child rearing practices of 379 mothers as reflected in a study conducted by Howard University's Laboratory of Human Development of the Graduate School of Education. Describes such child rearing practices as feeding, toilet training, and weaning. Seeks to determine what kind of child-rearing practices are most conducive to the development of children's identification with their parents. The book includes a comprehensive reference section of tables, rating scales, interview schedules and bibliography.

642. SPOCK, BENJAMIN. *Baby and Child Care*. New York, Duell, Sloan & Pearce, 1957. 627 pp.

A handbook and guide for parents on management of common problems of children. It combines medical, psychological and cultural aspects of child care, and provides a revealing description of how parents rear children in a technologically advanced country.

643. STONE, ALAN A., and ONQ<sup>U</sup> GLORIA C. *Longitudinal Studies of Child Personality Abstracts With Index*. Cambridge, Mass., Harvard University Press, 1959. 314 pp.

An annotated bibliography of studies primarily concerned with emotional and social behavior in infants and children.

644. STRANG, RUTH MAY. *The Adolescent Views Himself A Psychology of Adolescence*. New York, McGraw-Hill, 1957. 581 pp.

A study of the ways in which adolescents perceive themselves in the psychological, social, and physical settings in which they are living. Original data consist of adolescents' own statements of their attitudes and values, activities and relationships, and problems of maturation. This is supplemented by information from previous research and by insight from psychological literature. Against this background the uniqueness of each adolescent, as well as his common characteristics, is illustrated.

645. VOILAND, ALICE L. *Family Case Work Diagnosis*. New York, Columbia University Press, 1962. 369 pp.

An approach to family case work based on an eight-year research program sponsored by Community Research Associates, Inc. Their objectives were "the development of a diagnostic classification system which identifies disordered family types; and the articulation of concepts and principles of family case work diagnosis." The client system studied was the multi-problem family; the three basic problems with which these families were concerned were dependency, ill health and maladjustment.

646. WILLIAMS, HAROLD MARSHALL, and WALLIN, J. E. WALLACE. *Education of the Severely Retarded Child A Bibliographical Review*. Washington, D.C., U.S. Department of Health, Education, and Welfare, 1959. 26 pp. (Office of Education Bulletin 1959, No. 12)

An annotated bibliography of recent publications.

## VI. Deviancy: Mental, Juvenile, Criminal

647. ABRAHAMSEN, DAVID. *Who Are The Guilty?* New York, Rinehart, 1952. 340 pp.

Presents a broad mental-hygiene plan based upon educational aspects and represents a synthesis of present knowledge about the relationship between the human mind and delinquent activities. Calls for education as a long-term measure to counteract crime successfully.

648. AMERICAN CORRECTIONAL ASSOCIATION. *Manual of Correctional Standards.* New York, 1959. 629 pp.

An authoritative guidebook and manual for prison administrators on how to organize services, personnel, and administrative procedures.

649. CAPLAN, GERALD (editor) *Prevention of Mental Disorders in Children.* New York, Basic Books, 1961. 425 pp.

Theoretical information which should be helpful for workers concerned with the prevention of mental disorders in children. These 18 essays focus on etiologic, epidemiologic, and prevention factors related to mental illness in children. The essays represent attempts to survey relevant systems of etiologic theory in order to formulate plans for further research and action.

650. CHILD WELFARE LEAGUE OF AMERICA. *Residential Treatment of Emotionally Disturbed Children: A Descriptive Study.* New York, 1952. 313 pp.

Describes the operation of 12 treatment institutions. Considers form of organization, intake policies and procedures, children in residence, staff, treatment, aftercare, costs, and sources of support.

651. COHEN, ALBERT KIRCIDEL. *Delinquent Boys: The Culture of the Gang.* Glencoe, Ill., Free Press, 1955. 202 pp.

A study of delinquency which considers the general theory of subcultures, growing up in a class system, and delinquency control.

652. CRESSLY, DONALD RAY (editor) *The Prison Studies in Institutional Organization and Change*. New York, Holt, Rinehart & Winston, 1961. 392 pp.

These articles were written by nine social scientists who based their research on prisons. The authors explore the social relations between prisoners and staff and their effect upon the tendency of a prisoner to become "hardened" or rehabilitated. These findings generally reflect the fact that many personality traits of the inmates as well as of staff members were properties of the organizations, not of the person. These findings have useful implications for administrators of prisons.

653. EATON, JOSEPH W. *Stone Walls Not a Prison Make The Anatomy of Planned Administrative Change*. Springfield, Ill., Charles C Thomas, 1962. 212 pp.

Study of the implementation of planning to reorganize a prison system in terms of the objectives of the correctional reform movement, which is international in scope. A theory of newism and its relationship to planned change is elaborated. The reorganization of the California prison system is described with an emphasis on its treatment program, staff development procedures, and research activities.

654. EISENSON, JON, and OGILIVIE, MARDEL. *Speech Correction in the Schools*. New York, Macmillan, 1957. 294 pp.

Seeks to provide a better understanding of the physical and mental factors and problems of the speech defective child and to present information on how to meet these problems.

655. FINNION, NORMAN. *An Introduction to Group Counseling in State Correctional Service*. Sacramento, Calif., Department of Corrections, 1961. 107 pp.

A handbook to group counseling and its use in prisons to develop a therapeutic milieu. Includes guidelines written for untrained personnel on the methods of group counseling. Administrative conflicts between group counseling and group psychotherapy, and related theoretical issues are also discussed.

656. GLUECK, SHELDON (editor) *The Problem of Delinquency*. Boston, Mass., Houghton Mifflin, 1959. 1183 pp.

A group of materials, designed for persons working with the juvenile delinquent, under the headings of incidence and causation, the juvenile court and the law, treatment, and prevention.

657. GOODE, WILLIAM J. "Illegitimacy, anomie, and cultural penetration," *American Sociological Review*. Dec. 1961, v. 26, pp 910-925

Reports a study that has attempted to relate cultural penetration, cultural and social anomie, and illegitimacy rates, by considering the main areas of high illegitimacy rates: northwestern Europe, urbanized Africa south of the Sahara, and the New World south of the Mason-Dixon line. Deduction from the analysis suggests a correlation between low national rates and the degree of national cultural and social integration.

658. KATZ, ALFRED. *Parents of the Handicapped*. Springfield, Ill., Charles C Thomas, 1961. 155 pp.

Report of a case study which seeks to illuminate and test four hypotheses with reference to self-organized parents groups on the handicapped child. The hypotheses are: parents and relatives groups develop and organize in response to their concern respecting the handicapped child and look to health and welfare agencies for guidance and help; these groups tend to form their own social service when social agencies are unable or unprepared to help, these groups have socialization and therapeutic value for the participants; these groups have distinctive characteristics but are somewhat similar to other voluntary health and welfare groups.

659. NATIONAL CONFERENCE ON SOCIAL WELFARE. *Mental Health and Social Welfare*, by Robert H. Felix et al. New York, Columbia University Press, 1961. 203 pp.

Discusses the need to clarify the common elements and the distinctions between the fields of social welfare and mental health. Stresses the relationship of social work practice to the maintenance of mental health as well as its particular role in the provision of services for the mentally ill.

660. NATIONAL PROBATION AND PAROLE ASSOCIATION. *Standards and Guides for the Detention of Children and Youth*. New York, 1958. 142 pp.

Sets forth sound detention practices, points out pitfalls in the overuse of detention, and indicates important relationships between detention and other preventive and corrective services.

661. TAPPAN, PAUL W. *Crime, Justice and Correction*. New York, McGraw-Hill, 1960. 781 pp.

Presents an extensive study in criminology. Examines the nature, prevalence, and causation of crime, the procedures and major problems in the administration of justice; and the methods of correctional treatment. The analysis is based upon a synthesis of the behavioral sciences. Part I deals with crime and causation; Part II discusses the administration of justice; Part III is concerned with correction.

662. WEINBERG, S. KIRSON. *Society and Personality Disorder*. Englewood Cliffs, N.J., Prentice-Hall, 1952. 536 pp.

Provides an integrated analysis of disordered behavior from social, psychological, and sociological viewpoints. It covers mainly the kinds of social relations and personality processes which lead to disordered behavior, and the social aspects of treating, caring for, and preventing disordered behavior. Though the discussion is limited mainly to the American setting, cross cultural comparisons are also indicated.

## VII. Cooperatives and Cooperation

663. ABRAHAMSEN, MARTIN ABRAHAM, and SCROGGS, CLAUD L. (editors) *Agricultural Cooperation: Selected Readings*. Minneapolis, Minn., University of Minnesota, 1957. 576 pp.

A group of papers concerned with the more important characteristics of farmer cooperatives. Describes the historical basis of agricultural cooperation and examines its social and economic basis. The legal foundations, aims, objectives, philosophy, principles, and theories of cooperatives are discussed and related to conditions in the United States. The principles, however, apply to other areas of the world.

664. BOGARDUS, EMORY STEPHENS *Principles of Cooperation* (2d ed) Chicago, Ill., Cooperative League, 1958. 77 pp.

Traces the role of cooperation in survival and development of human society. Presents an analysis of the seven main principles of cooperation as they have developed in different countries, and examines the expression, testing, and adjustment of these principles under current and changing conditions. The role of education in further development of these principles and methods is examined. Finally, all of these factors are arranged into a composite to show how cooperative effort enriches and promotes a peaceful and dynamic social order.

665. BOWEN, EUGENE RIDER. *The Cooperative Organization of Consumers and its Relation to Producer and Public Organizations*. Chicago, Ill., Cooperative League, 1957. 87 pp.

Stresses that since we are consumers first, we must organize as consumers; gives reasons, methods, and result. Explores relations among cooperatives, the public, and producer organizations.

666. INFIELD, HENRIK F., and MAIER, JOSEPH V. (editors) *Cooperative Group Living*. New York, Koosis, 1950. 261 pp.

A symposium of cooperative group farming practices in different countries of the world, including the United States, Canada, Mexico, Israel,

the Soviet Union, and Nova Scotia. A survey of efforts to establish producers cooperatives in agriculture is made, with a candid discussion of the many difficulties and failures experienced by such enterprises.

667. MCKAY, ANDREW W, and ABRAHAMSON, MARTIN ABRAHAM. *Helping Farmers Build Cooperatives*. Washington, D.C, U.S. Government Printing Office, June 1962. 82 pp.

A history of the development of governmental services to farmer cooperatives, designed to help them improve their operations. It includes many references to reports about different phases of this consultative service.

668. U.S. FARMER COOPERATIVE SERVICE. *Co-ops in Other Lands*. Washington, D.C., 1958 40 pp.

Reprints of a series of articles appearing in *News for Farmer Cooperatives* in various parts of the world.

669. ———. *LP, FCS, List of Publications*. Washington, D.C., 1962. 109 pp.

A comprehensive, annotated bibliography of publications explaining the activities and aims of the farmer cooperatives in the United States with a brief section on cooperatives in other countries. The publications point out how farmers can make good use of marketing, farm supply, and farm business service cooperatives; and they report the results of research studies made by the Farmers Cooperative Service. Copies of publications listed are currently available. The bibliography is revised periodically to keep it up to date

Chapter 8.  
AGRICULTURE

I. Agriculture and Change

671. BISHOP, R. A. "Input-output work as a basis for development planning," *FAO Monthly Bulletin of Agricultural Economics and Statistics*. May 1956, v. 5, no. 5, pp. 1-10.

Presents a general description of what is meant by input-output work as well as some of the arguments for and against it. Illustrates this presentation by theoretical examples. Points up some of the problems of using this technique in agriculture, concluding that at the present, input-output work is unrealistic in reference to the conditions of growth of agriculture itself, but may be helpful in estimating the availability of agricultural commodities entering into agricultural production and the requirements for agricultural commodities which are generated in other sectors of the economy.

672. BREDO, WILLIAM "Agriculture in underdeveloped regions: rural industrialization for agricultural development," *Journal of Farm Economics*. Dec. 1959, v. 41, no. 5, pp. 1332-1344

Advances the view that it is appropriate to enhance and achieve broad-based economic progress in the developing nations, and to attain early integration of industry with rural and agricultural development. Decentralization of industry is proposed as a means of bringing underdeveloped areas and agriculture into the mainstream of development and of planning for future population increases. These generalizations are presented with illustrative examples drawn from India and Pakistan, however, the principles are relevant to other nations.

673. CHANG, PEI-KANG. *Agriculture and Industrialization: The Adjustments that Take Place as an Agricultural Country is Industrialized*. Cambridge, Mass., Harvard University Press, 1949. 270 pp.

Analyzes the dynamic interrelationship of agriculture and industry in a developing economy. Divided into four sections which include the

relationship between industrialization and agricultural reform, the relative allocation of resources between these two sectors in a developing economy, the relevance of the experiences of older industrialized nations for newer industrializing countries, and specific illustrations of the problems of development confronting Japan.

674. CROMARTY, WILLIAM A. "An econometric model for United States agriculture," *Journal of the American Statistical Association*. Sept. 1959, v. 54, no. 287, pp. 556-574.

An attempt to clarify the relationships between the agricultural and non-agricultural sectors by adding onto a master model of the total economy a set of estimated relationships for the agricultural sector. Twelve product categories are examined in estimating supply, demand, and price relationships in agriculture. The results, with further refinement, should be useful as forecasting aids for disaggregated commodity groups within agriculture.

675. HEADY, EARL ORLL. *Agricultural Policy Under Economic Development*. Ames, Iowa, Iowa State University Press, 1962. 682 pp.

Attempts to balance between theoretical-analytical and descriptive-literary approaches to the subject of agricultural development. Uses some technical economics and formulas. Analyzes economic relationships of agriculture, business, and industry. Concerned with policy, competition, market and supply, political processes, labor, education, research, and many other elements in relation to agriculture.

676. JOHNSTON, BRUCE F, and MELLOR, JOHN W. "The role of agriculture in economic development," *American Economic Review*. Sept. 1961, v. 51, no. 4, pp. 566-593.

Examines interrelationships between agricultural and industrial development, and develops the thesis that, in the underdeveloped countries where agriculture constitutes a major part of the total national income, it must furnish the major part of the food supply and transfer labor, while additionally making a significant net contribution to capital formation in the expanding sectors. Defines three different phases of agricultural development and specific priorities for each of these phases.

677. KUZNETS, SIMON SMITH. "Economic growth and the contribution of agriculture: notes on measurement," *International Journal of Agrarian Affairs*. Apr. 1961, v. 3, no. 2, pp. 56-75.

Examines some of the schemes which have been developed by the author for measuring alternative allocations within and between agriculture and other sectors, and for measuring the contribution of a sector. Delineates specific contributions agriculture has made or can make (product, market, factor) and explains the importance and effect of these different types of "contribution." Suggests that in determining and measuring these allocations and contributions emphasis should be given to aggregative, structural, and international aspects and their interrelationships. Illustrates each of these aspects by developing the specific factors that influence and determine their limits.

678. MELLOR, JOHN W. "The process of agricultural development in low-income countries." *Journal of Farm Economics*. Aug 1962, v. 44, no. 3, pp. 700-716.

Emphasizes the nature of agricultural development in the early stages of economic development. Argues that the agriculture sector may make a large net contribution of capital in the early stages of development, and supports this idea by depicting the qualities of agriculture in low-income countries which tend to make its development a relatively low-cost, high-return process, the qualifications for allocation of inputs in agricultural development; and the advantages of developing an existing agriculture as compared to new land programs.

679. NICHOLLS, WILLIAM H. "The place of agriculture in economic development," *Proceedings. International Economic Association Roundtable on Economic Development, Gomagari, Japan*. London, Macmillan, 1962. 23 pp.

Presents a summary of the interrelationships between agricultural and industrial development and of the lessons drawn from history of western economic development. Examines the special problems of overpopulated countries of Asia within this framework and emphasizes the necessity of a continuing food surplus as a fundamental precondition for economic development.

680. OSHIMA, HARRY T. "A strategy for Asian development," *Economic Development and Cultural Change* Apr. 1962, v. 10, no. 3, pp. 294-316.

Citing data from India, Ceylon, and the Philippines, an attempt is made to evaluate present investments in industrial and agricultural programs. Suggests that the lack of emphasis on agricultural investment is contributing to economic unrest in these countries. Alternative proposals are made for more intensive and efficient state investments to improve existing labor skills, technology, farms, crafts, and communications, leaving industrialization largely to private initiative.

681. SCHNITKER, JOHN A., and HLADY, EARL ORIEL. "Application of input-output analysis to a regional model emphasizing agriculture," *Iowa Agricultural Experiment Station Research Bulletin* Dec. 1957, no. 454, pp. 152-172.

An application of input output analysis to a 21-sector model of the United States economy in 1949. Major emphasis is on the relationship between agriculture production and geographic regions, and between agriculture and the industries which (1) process agricultural products and (2) provide productive factors to agriculture. Also reviews the limitations of the economic organization to instability of agriculture.

682. SCHULTZ, THEODORE WILLIAM. *The Economic Organization of Agriculture*. New York, McGraw-Hill, 1953. 374 pp.

Utilizes micro analysis as well as macro-analysis, with a blending of the social and political processes, to outline and define the potential role of agriculture in a changing economy. Develops the interrelationships between agriculture and other sectors. Emphasizes the possibilities of the community to seek optimal returns through economic agricultural organization. Discusses the necessity for either eliminating or adapting the economic organization to instability of agriculture.

683. SMITH, THOMAS CARLYLE. *The Agrarian Origins of Modern Japan*. Stanford, Calif., Stanford University Press, 1959. 250 pp.

Studies the modernization of Japan after the Meiji Restoration of 1868 by examining the agrarian changes which ensued. Shows that cadastral surveys served as a satisfactory means of determining needed adjustment of land taxes. Monetary incentives resulted increasingly in commercial farming and increased productivity, and made possible the mobilization and training of an industrial labor force.

684. TANG, ANTHONY MING. *Economic Development in the Southern Piedmont 1860-1950, Its Impact on Agriculture*. Chapel Hill, N.C., University of North Carolina Press, 1958 256 pp.

A comparative study of the influence of industrialization in increasing local sources of non-farm employment, enlarging incomes and productivity of farming, and furnishing capital for expanding and diversifying farm operations.

685. U.S. DEPARTMENT OF AGRICULTURE. *Major Statistical Series of the United States Department of Agriculture How They Are Constructed and Used*. Washington, D.C., U.S. Government Printing Office, 1957. (Agriculture Handbook No. 118)

Nine volumes which explain what these statistical series include; what concepts and definitions are used, how the data are obtained, tabulated, and analyzed, how accurate and reliable they are; and how the different series are related. The nine volumes cover the following topics: (1) Agricultural Prices and Parity, (2) Agricultural Production and Efficiency; (3) Gross and Net Farm Income; (4) Agricultural Marketing Costs and Charges, (5) Consumption and Utilization of Agricultural Products; (6) Land Values and Farm Finance; (7) Farm Population, Employment, and Levels of Living, (8) Crop and Livestock Estimates; and (9) Farmer Cooperatives. The wealth of information relating to the compilation and utilization of these series should be particularly helpful to economists, planners, and others using statistical data in the development process.

## II. Economic and Social Aspects of Modernization

686. *Agricultural Supply Functions, Estimating Techniques and Interpretations*, edited by Earl Orel Heady et al. Ames, Iowa, Iowa State University Press, 1961. 305 pp.

Examines various aspects of agricultural supply including regression analysis of aggregative and time-series data, supply estimates derived from individual farm data; regional competition and spatial equilibrium models; and interpretation of supply functions.

687. ANKER, DESMOND L. W. "Some effects of farm mechanization," *International Labour Review*. Mar. 1955, v. 71, pp. 236-254.

Describes the effects of mechanization both on employment in the advanced countries and on economic and social conditions in agriculture. Indicates some of the problems involved in mechanization where there is a surplus agricultural labor supply.

688. BISHOP, CHARLES E., and TOUSSAINT, WILLIAM D. *Introduction to Agricultural Economic Analysis*. New York, Wiley, 1958. 258 pp.

An introduction to analytical agricultural economics. Illustrations are employed to demonstrate the use of theoretical concepts in solving empirical problems. Divided into four sections: necessity for economic organization in agriculture; problems involved in making production decisions; factors affecting demand for farm products; and cyclical changes such as price, demand, and supply.

689. CASE, H. C. M., et al. *Principles of Farm Management*. Chicago, Ill., Lippincott, 1960. 467 pp.

Presents alternative procedures for developing an economically sound system for planning, organizing, and operating a farm. Outlines the scope of farm management, the resources available to agriculture, and the economic principles involved in agricultural production. Overall objective is to teach an individual to develop a method of working out an optimum farming system for a given set of natural and economic conditions, and then to proceed from this static analysis to a process of decision making under dynamic conditions.

690. EDDY, EDWARD DANFORTH. *Colleges for Our Land and Time*. New York, Harper & Bros., 1957. 328 pp.

Outlines and explores the history, organization, motivation, and rationale of the land-grant college system as it has evolved in the United States. Though in many respects it is peculiar to the United States the general framework is flexible enough to assist developing nations attempting to organize an effective system of higher education.

691. GANT, GEORGE F. "The role of home economics in developing countries," *Journal of Home Economics* Sept. 1962, v. 54, no. 7, pp. 564-569

Briefly outlines the dynamic changes occurring today as well as some of the conditions existent in the underdeveloped countries. Discusses the role and opportunity of women in these societies with special emphasis on South and Southeast Asia. Recommends a reevaluation of the role of home economics by these countries in order that it may become a professional occupation.

692. GEORGESCU-ROEGEN, N. "Economic theory and agrarian economics," *Oxford Economic Papers* Feb. 1960, v. 12, no. 1, pp. 1-40.

An attempt to construct a theory elucidating the basic and essential features of an agrarian economy. The author compares the structure of an agrarian economy with that of an advanced economy, delineating between the two. Within this framework, he points up errors in past and present extrapolations applied to overpopulated societies based on advanced economies. Suggests alternative considerations concerning factor inputs and their combination to achieve sustained economic development.

693. GRILICHES, ZVI "Research costs and social returns hybrid corn and related innovations," *Journal of Political Economy*. Oct. 1958, v. 66, no. 5, pp. 419-431.

Attempts to estimate the rate of return on public investment in hybrid corn seed research. Describes the procedure used and briefly explores alternative methods of making estimates. Using these estimates, the author postulates possible implications of further research of a similar nature to aid policymakers in choosing alternative public investments.

694. HEADY, EARL OREL. *Economics of Agricultural Production and Resource Use*. New York, Prentice-Hall, 1952. pp. 672-734 and pp. 794-830.

A review of production economics. The three referenced chapters examine the aggregate production and supply functions of agriculture, economic efficiency, and technological change and economic progress. Within these topics, detailed attention is given to fixed costs, intra year and inter-year production and supply functions, technical and physical conditions necessary to achieve maximum economic efficiency; output of the firm; and returns to factors of production. The flow of innovations in agriculture is discussed from the viewpoint that each specific innovation requires readjustment of resources by the farm, while technical change requires readjustment of the relative allocation of resources between agriculture and industry.

695. HEADY, EARL OREL, and JENSEN, HAROLD R. *Farm Management Economics*. Englewood Cliffs, N.J., Prentice-Hall, 1954. 645 pp.

An elementary presentation of principles of farm management. Principles are emphasized throughout, first by introduction and then by revision in applied decisions concerning crop production, soil management, livestock production, and engineering applied to machinery and buildings. Illustrates how decisions differ among operators with different tenure and capital positions, and how managerial ability and uncertainty affect choices in farm management.

696. KELSEY, LINCOLN DAVID, and HEARNE, CANNON C. *Cooperative Extension Work* (2d ed) Ithaca, N.Y., Comstock, 1958. 424 pp.

Authoritative discussion of what extension is, how it works, and what its objectives are. Specific examples, using the methods and techniques of extension as adult and youth education programs are presented. Contains practicable examples such as visits, demonstrations, publications, and youth programs.

697. KREITLOW, BURTON W., et al. *Leadership for Action in Rural Communities*. Danville, Ill., Interstate Printers and Publishers, 1960. 346 pp.

Directed toward leaders "searching for more effective ways to serve," particularly in rural communities. The 20 chapters are grouped in four parts: the setting for leadership and action; principles and practices of leadership, programs of action; and the leader, the community, and the action.

698. LIONBERGER, HERBERT FREDERICK. *Adoption of New Ideas and Practices*. Ames, Iowa, Iowa State University Press, 1960. 164 pp.

Primarily devoted to a review of the studies which deal with communication, adoption of ideas, and technological change in agriculture, with implications for action-oriented programs in the United States. Discusses the personal, social, and institutional factors influencing the rate and manner in which change takes place. Those areas of communication which are not defined thoroughly are suggested as fertile ground for additional research.

699. LOOMIS, CHARLES PRICE, and BEEGLE, J. ALLAN. *Rural Sociology, the Strategy of Change*. Englewood Cliffs, N.J., Prentice-Hall, 1957. 488 pp.

Provides an analytical scheme that can be applied either to the whole structure or to individual parts of a rural society. It deals with those aspects of rural society that are subject to change, as well as with those agencies and systems through which change may be achieved. Particularly relevant for effecting change in rural life.

700. LOOMIS, RALPH A., and BARTON, GLEN T. *Productivity of Agriculture, United States, 1870-1958*. Washington, D.C., U.S. Department of Agriculture, Apr. 1961. 63 pp. (Technical Bulletin No. 1238)

A report on measurement, analysis, and interpretation of United States agricultural inputs and productivity in the aggregate. Reviews the growth in productivity, the changing composition of total inputs, the forces behind the changing productivity, and the implication of growth in productivity. Contains appendices explaining some of the techniques used and some of the implications and alternatives of these techniques.

701. MOSHER, ARTHUR THEODORE. *Technical Cooperation in Latin American Agriculture*. Chicago, Ill., University of Chicago Press, 1957. 449 pp.

Includes a brief history of some technical assistance programs in Latin America; however, it is primarily a survey and analysis of programs active in 1952 and 1954. Drawing on the experiences of these programs, reports, and interviews, an analysis is made of the role of technical assistance in agricultural development. In addition, there is an overall assessment of the effectiveness of these programs and recommendations for their improvement.

702. NEW YORK STATE COLLEGE OF AGRICULTURE AT CORNELL. *The Comparative Extension Education Program Publications*. Ithaca, N.Y., Cornell University.

A series of publications dealing with various aspects of cooperative extension work in the emerging nations. Studies survey interrelationships between agricultural development, social organization, personal attitudes and values, and establishing a home economics program. Includes a paper by Arthur T. Mosher, "Varieties of Extension Education and Community Development," describing these elements as useful tools in aiding rural development. This series, which also includes a bibliography on extension education, is particularly useful to persons concerned with extension programs both at the planning and implementing level.

- 703 O'LAUGHLIN, C. "The measurement and significance of agricultural sector statistics in national accounting," *Social and Economic Studies*. Sept. 1957, v. 6, no. 3, pp. 363-379.

Outlines the source of statistical data for the agricultural sector, discusses the methodology by which certain estimates are reached, and appraises the value of the results.

704. ROBINSON, K. L. "Political obstacles tending to retard the increased economic welfare offered by technical change in agriculture," *Proceedings of the International Conference of Agricultural Economists*. London, England, Oxford University Press, 1956. pp. 515-532.

Focuses attention on the major problems which tend to prevent the introduction of change due to lack of governmental support. The first part deals with resistance to enactment of legislation and appropriation of funds for programs that might stimulate innovation in agriculture. Part 2 discusses barriers to technical change in agriculture caused by protective interest group legislation. The effects of this legislation on long-term improvements is related to retardation of innovation.

705. ROGERS, E. M. "A conceptual variable analysis of technological change," *Rural Sociology*. June 1958, v. 23, no. 2, pp. 136-145.

Reports the finding of a sociological study of the processes by which new technological changes are communicated to and adopted by rural people in the United States. The purpose of the study is to utilize one approach to sociological theory in examining technological change—the conceptual

variable analysis. This method seeks to reduce the analysis of human group life to variables and their relations. Technological change, as measured by a scale of farm practices, was found to vary with the concept of change orientation, communication competence, and status achievement.

706. RUTTAN, VERNON W. "Research on the economics of technological change in American agriculture," *Journal of Farm Economics*. Nov. 1960, v. 42, no. 4, pp. 735-754.

The major part of the article is devoted to outlining research designed to improve understanding of forces leading to technological changes in American agriculture and to measure the impact of technological change on resource utilization. Concludes by outlining the problems and types of research which call for economists and other social scientists to utilize their skills and creativity in applying new technology to bring about socially desirable adjustments.

707. STREET, JAMES H. "Cotton mechanization and economic development," *American Economic Review* Sept. 1955, v. 45, no. 4, pp. 566-583.

Summarizes the effects of a period of long stagnation followed by a period of sharp increase in the application of mechanized methods of production in the cotton region of the southern United States. Considers institutional, technological, and exogenous factors as the forces affecting the process of regional and interregional development.

708. U.S. DEPARTMENT OF AGRICULTURE. *An Evaluation of Agricultural Research*. Washington, D.C., 1960. 68 pp. (Miscellaneous Publication No. 816)

An appraisal of the public research program of the United States in the fields of agriculture, forestry, home economics, and veterinary medicine, with recommendations concerning the goals the program should seek. Focuses on the relationships between the State experiment stations and the Federal Government, with comment on the influence of Federal-State relationships affecting areas of research. Relevant to central-regional-local problems in the agriculture of other countries.

709. VINCENT, WARREN H. (editor) *Economics and Management in Agriculture*. Englewood Cliffs, N.J., Prentice-Hall, 1962. 452 pp.

Emphasizes the role and functions of farm management in discussions of production and consumption economics, prices and marketing, some institutional factors affecting agriculture, and some political-economic problems of agriculture.

### III. Crops

710. ALLARD, ROBERT WAYNE. *Principles of Plant Breeding*. New York, Wiley, 1960. 485 pp.

Explains the principles of plant breeding, using examples from many crops, with discussions of quantitative and population genetics, systems of mating, and heterosis and genetics of pathogenic organisms.

711. AMERICAN CHEMICAL SOCIETY. DIVISION OF AGRICULTURAL AND FOOD CHEMISTRY. *Pesticides in Tropical Agriculture*. Washington, D.C., 1955. 102 pp.

Describes insecticides and pesticides available in 1955 and discusses their utilization in various tropical areas for cotton, beans, corn, coffee, rice, cacao, bananas, citrus crops, and other tropical crops.

712. BAUM, EMANUEL L. (editor) *Economic and Technical Analysis of Fertilizer Innovations and Resource Use*. Ames, Iowa, Iowa State University Press, 1957. 393 pp.

Papers on various phases of research and related educational efforts in fertilizer development, distribution, and use. Papers are presented on the following subjects: research in agronomic and economic efficiency in rate of application, nutrient ratios, and farm use of fertilizers, physical and economic aspects of water solubility of fertilizers, liquid fertilizers and some related marketing problems, farm planning research and its practical application; and agricultural policy implications of innovation in agriculture.

713. DUNGAN, GEORGE HARLAN, and ROSS, W. A. *Growing Field Crops*. New York, McGraw-Hill, 1957. 495 pp.

Covers the basic plant requirements for optimum growth, and outlines the various phases of crop production in chronological order. Includes sections on storage and marketing.

714. FOOTE, RICHARD J., and WEINGARTEN, HYMAN. "Alternative methods for estimating changes in production from data on acreage and condition," *Agricultural Economic Research*. Jan. 1958, v. 10, no. 1, pp. 20-25.

Explores means of translating acreage intentions data into meaningful decisions regarding prospective changes in production for specific crops, and analyzes the usefulness of data on seeded acreage for forecasting harvest yields.

715. GUNTHER, FRANCIS A., and JEPSON, L. R. *Modern Insecticides and World Food Production*. New York, Wiley, 1960. 284 pp.

Provides an insight into the utilization of modern insecticides and acaricides and the problems associated with their use. Examples, details, and illustrations are included to enable the individual to form his own opinion about these helpful but poisonous chemicals.

716. HILL, ALBERT FREDRICK. *Economic Botany* (2d ed). New York, McGraw-Hill, 1952. 560 pp.

An introduction to the structure, function, and economic botany of the world's commercially important plants.

717. LAMIR, MIRKO. *The World Fertilizer Economy*. Stanford, Calif., Stanford University Press, 1957. 715 pp.

A comprehensive study of soil and plant nutrition, with an analysis of the economic aspects of commercial fertilizers in relation to production, consumption, trade, and price developments. Examines the use of fertilizers in the major producing and consuming nations before, during, and after World War II.

718. McVICKAR, MALCOLM HEDLEY. *Using Commercial Fertilizers: Commercial Fertilizers and Crop Production*. Danville, Ill., Interstate Printers and Publishers, 1961. 286 pp.

A study of the production and utilization of commercial fertilizer, with emphasis on its proper application, which includes information on determining fertilizer requirements, the effect of fertilizers in soil conservation, and the economics of fertilizer use.

719. *Pasture and Range Research Techniques*. Ithaca, N.Y., Comstock, 1962. 242 pp.

A guide to the latest techniques of range and pasture research, including management of experimental pastures and animals, herbage production, yield and quality, and techniques for studying pasture flora. General principles presented are applicable in any area of the world with minor modification for peculiar conditions of vegetation or climate.

720. PIERRE, WILLIAM HENRY (editor) *Soil and Fertilizer Phosphorous in Crop Nutrition*. New York, Academic Press, 1953. 492 pp.

Discusses the need for phosphorous compounds in the soil and the relation of these compounds to various types of soils. Gives a summary of soil tests and methods for manufacturing phosphorous fertilizers.

721. ROBBINS, WILFRED WILLIAMS, et al. *Weed Control* (2d ed) New York, McGraw-Hill, 1952. 503 pp.

Presents a practical look at the various methods of weed control, such as tillage, biological control, chemicals (both selectives and non-selectives), and flame control.

722. SCHNEIDER, GEORGE WILLIAM, and SCARBOROUGH, C. C. *Fruit Growing*. Englewood Cliffs, N.J., Prentice-Hall, 1960. 307 pp.

Presents fundamental principles of fruit production and their application. Divided into two parts. botany and physiology of fruit crops, and fruit quality and factors affecting it, and special problems encountered in producing each of the major fruits. Chapters on tropical fruits are included.

723. SPRAGUE, GEORGE FREDERICK. *Corn and Corn Improvement*. New York, Academic Press, 1955. 699 pp.

Designed to provide the advanced student and researcher with information on the genetics and cytology of corn. Divided into three broad divisions: breeding, production, and utilization. Breeding includes such topics as history, morphology, cytogenetics. Production treats climatic requirements, mineral nutrition, culture, production of hybrid seed, special types of corn, and diseases and pests. Utilization discusses processing for human consumption and livestock feed.

724. SPRAGUE, HOWARD B (editor) *Grasslands*. Washington, D.C., American Association for the Advancement of Science, 1959. 406 pp. (Publication No. 53)

Discusses general principles of significance to further improvement of the grasslands in the United States and other areas. Covers forage production and utilization, engineering, climatology, ecology, and range management.

725. STAKMAN, ELVIN CHARLES, and HARRAR, J GEORGE *Principles of Plant Pathology* New York, Ronald Press, 1957. 581 pp.

Discusses the economic importance and causes of plant diseases; reasons for their variable destructiveness; and the principal methods of controlling them by means of chemicals, cultural practices, quarantine, and disease-resistant varieties of crop plants.

726. STODDART, LAURENCE ALEXANDER, and SMITH, ARTHUR D. *Range Management* (2d ed) New York, McGraw-Hill, 1955. 433 pp.

Discusses general problems of range management in the United States, with emphasis on plant physiology and ecology. Includes details on pasturing capacities for various types of livestock under different conditions encountered in the United States

727. THOMPSON, HOMER COLUMBUS, and KELLY, WILLIAM C. *Vegetable Crops* (5th ed) New York, McGraw-Hill, 1957. 611 pp.

Comprehensive treatise covering all the major vegetables, as well as many of the minor ones, grown in the temperate zone. Contains a chapter on subtropical and tropical vegetable crops. Covers such items as machinery and equipment useful to mechanization in all phases of growing and handling, new and improved insecticides, manures and fertilizers, cultivation, mulches, and cropping practices.

728. U S DEPARTMENT OF AGRICULTURE *Insects Yearbook of Agriculture 1952*. Washington, D.C., U S Government Printing Office, 1952. 780 pp.

Contains information about useful and harmful insects and methods of identifying them. Explains the nature of insecticides, their application, needed safety precautions, and other types of insect controls. Seventy-two color plates of economically important insects with descriptive captions are included.

729. ———. *Manual for Testing Agricultural and Vegetable Seeds*. Washington, D.C., 1952. 440 pp.

A guidebook for determining the planting quality of seeds with discussion of seed sampling and testing equipment, procedures for determining purity composition, germination procedures, identifications, and pathological considerations. Numerous drawings and illustrations.

730. ———. *Plant Diseases. Yearbook of Agriculture 1953*. Washington, D.C., U.S. Government Printing Office, 1953. 940 pp.

Includes 150 illustrated articles on the causes and control of important diseases of economic and ornamental plants in the United States, written in non-technical language.

731. ———. *Seeds. Yearbook of Agriculture 1961*. Washington, D.C., U.S. Government Printing Office, 1961. 591 pp.

Articles dealing with the history, life processes, production, processing, certification, testing, and marketing of seeds.

#### IV. Livestock and Products

732. AMERICAN SOCIETY OF ANIMAL PRODUCTION *Techniques and Procedures in Animal Production Research* Beltsville, Md, American Society of Animal Production, 1959. 228 pp.

A monograph which assembles in one volume the information on research techniques and procedures which are important and generally unique in relation to farm animals. Among the areas discussed are design and analysis of animal husbandry experiments, techniques in quantitative animal genetics, research techniques in the physiology of reproduction in the female, design for comparative feeding trials, methods employed in nutrition research, and meat research techniques pertinent to animal production. The principles elucidated in this monograph have universal applicability and should be useful to students, teachers, research workers, administrators, and others interested in animal production. Includes numerous literature citations of original supporting research.

733. CARROLI, WILLIAM E, et al. *Swine Production* (3d ed) New York, McGraw-Hill, 1962. 435 pp.

An extensive treatment of the principles of swine production. It covers physical, genetic, physiological, and nutritional problems of a swine enterprise in relation to the influence that such various production factors as organization, management, and feeding have on profits. Of particular importance is the presentation of nutritive requirements in terms of the exact weight of individual nutrients required to support optimum production. The latest applied swine production research is used for documentation of the authors' statements in many sections, and bibliographical materials are listed for additional reading.

734. ECKLES, CLARENCE HENRY, et al. *Milk and Milk Products* (4th ed) New York, McGraw-Hill, 1951. 454 pp.

An introduction to the characteristics of milk, the fundamental processes of milk processing, and the production of milk by-products. Covers the properties and constituents of cheese, ice cream, condensed milk, dry milk, and other milk by-products. Appendix contains charts and tables.

735. ENSMINGER, M. EUGENE. *Animal Science* (4th ed) Danville, Ill, Interstate Printers and Publishers, 1960. 1158 pp.

One of the most general yet complete books covering the diverse phases of production, marketing, and processing of farm animals. The coverage is skimpy in some areas, but gives a basic description of the history, distribution, types and breeds, systems of production, breeding, feeding, and marketing of cattle, sheep, goats, swine, and horses. Excellent appendix with such items as animal units, weights and measures, integration in the livestock industry, and other similar aids.

736. HAGAN, WILLIAM ARTHUR, and BRINER, D. W. *The Infectious Diseases of Domestic Animals* (4th ed) Ithaca, N.Y., Comstock, 1961. 1033 pp.

Authoritative text on the etiology of diseases of animals, including diseases that are uncommon in the United States. Covers micro-organisms, fungi, protozoa, and viruses as they relate to the infectious diseases of animals.

737. JULL, MOPLEY ALLAN. *Poultry Husbandry* (3d ed) New York, McGraw-Hill, 1951. 526 pp.

Covers fundamental principles involved in poultry husbandry such as the breeds of chickens, biology of the chicken, breeding principles and practices, incubation, housing, feeding, disease prevention, and marketing. Useful to both the student and the practical poultry producer.

738. KAMMLADE, WILLIAM G., and KAMMLADE, WILLIAM G., JR. *Sheep Science*. Philadelphia, Pa., Lippincott, 1955. 536 pp.

An inclusive presentation of current practices in the production of sheep. Covers the principal breeds of sheep raised throughout the world and discusses the relative merits of these breeds for differing conditions and management operations. Emphasizes general principles rather than detailed descriptions of specific operations. It is designed primarily as a textbook for agricultural colleges but is also useful as an elementary reference book.

739. KING RANCH CORPORATION, KINGSVILLE, TEXAS. *Breeding Beef Cattle for Unfavorable Environments A Symposium presented at the King Ranch Centennial Conference*. Austin, Tex., University of Texas Press, 1955. 248 pp.

Defines an unfavorable environment for breeding beef cattle and its effects upon beef production. Deals in detail with breeding beef cattle suited to such environments. Contains much general information concerning climatic stress, heat tolerance, low-level nutrition, forming new breeds, inbreeding, crossbreeding, and estimating heritability.

740. KNODT, CLOY BERNARD. *Successful Dairying*. New York, McGraw-Hill, 1954. 381 pp.

Provides information for the development and operation of a successful dairy farm, by describing in detail the various activities of a dairyman, and by providing illustrations, diagrams, and drawings sufficient for a clear understanding of the discussion.

741. MAYNARD, LEONARD AMBY, and LOSLER, JOHN K. *Animal Nutrition* (5th ed) New York, McGraw-Hill, 1962. 533 pp.

Authoritatively covers the field of animal nutrition at an intermediate level, with discussions of the characteristics of requirements for different nutrients, and the measurement of nutrient utilization through quantitative experiments based on growth, reproduction, lactation, and work production.

742. MORRISON, FRANK BARRON. *Feeds and Feeding* (22d ed) Clinton, Iowa, Morrison Publishing Co., 1959. 1165 pp.

Authoritative and comprehensive presentation of the most important facts about feeds and their use. Divided into three parts. Part I presents briefly the fundamental principles of animal nutrition and emphasizes the bearing of these principles upon the practical feeding of livestock. Part II gives comprehensive information concerning the composition, properties, and use of important feeding stuffs. Part III gives more detail concerning the nutrition, feeding, care, and management of the various classes of livestock and poultry. Appendix contains tables on feed composition, energy, vitamins, minerals, and rations. Extensive references follow each chapter.

743. RICE, VICTOR ARTHUR, et al. *Breeding Better Livestock*. New York, McGraw-Hill, 1953. 465 pp.

Presents the basic principles underlying the mechanisms of reproduction and heredity so they can readily be understood by one with a limited knowledge of biology, genetics, and physiology. Discusses inbreeding, outbreeding, crossbreeding, linebreeding, and general principles of selection, with individual sections on selection of cattle, sheep, swine, horses, and dairy cattle.

744. SNAPP, ROSCOE R., and NEUMAN, A. L. *Beef Cattle*. New York, Wiley, 1960. 684 pp.

An up-to-date treatment of various phases of production and marketing of beef cattle. Covers commercial cow and calf programs, stocks and finishing operations, purebred programs, and problems of management and marketing common to different management programs. Includes discussions dealing with such new ration additives as hormones, antibiotics, pelleting, and high concentrate rations. Also shows special attention to the economic aspects of heritable productive traits of beef cattle. Makes use of both Morrison's feeding standards and the National Research Council Recommendations in discussing beef cattle feeding programs.

745. "A Symposium on the Effects of Climate on Animals," *Journal of Heredity*, 1958, v. 49, no. 2, pp. 46-81.

A general treatment of the effects of climate on animal performance and physiology, with special attention given to the influence of high temperatures on reproduction, on milk production, and on growth and fattening. One paper is devoted to improving livestock environment in areas where the temperature is high; another considers breeding methods in relation to climatic problems.

746. U.S. DEPARTMENT OF AGRICULTURE. *Animal Disease: Yearbook of Agriculture 1956*. Washington, D.C., U.S. Government Printing Office, 1956. 591 pp.

Contains information about the nature, causes, effects, and prevention of common animal diseases on American farms. Discusses the health of animals in relation to the environment and to the health of man. Discusses the maintenance of healthy animals through applying basic principles of nutrition and medicine.

747. ZIEGLER, PERCIVAL THOMAS. *The Meat We Eat*. Danville, Ill., Interstate Printers and Publishers, 1962. 448 pp.

A presentation of basic facts concerning the meat we eat, describing the slaughtering processes, and the way meat is cut, graded, preserved, and stored. Contains numerous useful photographs, diagrams, and charts.

## V. Capital, Credit, and Mechanization

748. CHILDES, MARCUS WILLIAM. *The Farmer Takes A Hand*. Garden City, N.Y., Doubleday, 1952. 256 pp.

The rural electric cooperative movement was born in the early 1930's when poverty, unemployment, and unrest were widespread in the farm belt of the United States. Through the Rural Electrification Administration, electric power was brought to 3,500,000 farms and other rural establishments where electricity for lighting and labor-saving appliances have caused a revolution in living standards and farming methods.

749. DAVIS, IRVING F., JR. (editor) *Selected Readings in Agricultural Credit*. International Conference on Agricultural Credit. Berkeley, Calif., University of California, 1952.

A compilation of articles by American and foreign authors which covers a wide variety of topics associated with improving the system of agricultural credit in a nation. Emphasizes the relationship of the total capital and credit structure of a nation to the agricultural credit system. An appendix lists some Government-sponsored lending institutions which have been useful in developing a more satisfactory agricultural credit system.

750. EDISON ELECTRIC INSTITUTE. FARM GROUP COMMITTEE. *Farm Electric Sales Handbook* (rev. ed) New York, 1960. (Publication No. 59-223)

Discusses the application of electricity to various farm operations. Designed primarily to provide information that will enable farm electric salesmen to discuss electric applications with farmers

751. HENDRIX, WILLIAM E. *Approaches to Income Improvement in Agriculture*. Washington, D.C., Agricultural Research Service, U.S. Department of Agriculture, 1959. 44 pp. (Production Research Report No. 33)

Illustrates through U.S. experience how low-income farm families have increased their farming resources, expanded farm output, improved production efficiency, and obtained higher incomes through the use of farm

management supervised credit programs. The kinds of public and private assistance which have been used in the United States are explained through these examples.

752. HENTON, TRUMAN EDWARD, et al. *Electricity in Agricultural Engineering*. New York, Wiley, 1958. 393 pp.

A textbook in rural electrification for the use of agricultural engineering students concerned with fundamentals of electric energy and its applications to agricultural practices. Extensive attention is given to the application, wiring requirements, control, and protection of electric motors due to their ever increasing importance as a farm power unit. Electro-magnetic radiation and problems relating to its effects on agricultural products and practices also are discussed.

753. INTERNATIONAL CONFERENCE ON AGRICULTURAL CREDIT, UNIVERSITY OF CALIFORNIA, 1952. *Proceedings*, edited by Elizabeth K. Bauer. Berkeley, Calif., University of California Press, 1952. 2 v.

Volume 1 contains papers dealing with the problems of agricultural credit ranging from the basic causes of poverty and credit need to a complete system of agricultural credit and all its requisites. Among the topics specifically considered are supply of capital, role of government, supervised credit, problems of cooperatives, farm appraisal for loans, central bank policy, stabilization measures and the relation of credit and rural development. Volume 2 includes a case description of the agricultural credit structure of 30 countries with suggestions for improvements.

754. MCCOLLY, HOWARD F, and MARTIN, J. W. *Introduction to Agricultural Engineering*. New York, McGraw-Hill, 1955. 553 pp.

A basic coverage of agricultural engineering, including the principles and techniques of agriculture mechanics, farm power, farm machinery, rural electrification, processing of products, farm structures, and soil and water conservation. Includes suggested additional readings on each of the topics.

755. MURRAY, WILLIAM G. "The finance of the additional capital required for technical change," *Proceedings of the International Conference of Agricultural Economists*. Oxford, England, Oxford University Press, 1956. pp. 194-205.

Examines the important points involved in providing credit for technical change in agriculture. Divides these points into four major areas: the sources of information on the experience of other countries in using credit for technical change, the role of government, the kind of credit organization required; and the source of funds. Describes the pertinent literature and illustrates alternative or specific courses of action.

756. NICHOLLS, WILLIAM H. "Investment in agriculture in underdeveloped countries," *American Economic Review* May 1955, v. 45, no. 2, pp. 58-73.

Analyzes Turkey's development policies of concentrating investment in mechanization and of price supports for the agricultural sector. Shows that a large part of the increase in agricultural production during 1948-53 was due to improved weather conditions, and expansions of marginal lands. Suggests that mechanization has displaced many agricultural workers and benefited a minority of the agricultural population at the expense of the majority. Recommends investments in human resources, and small and inexpensive schemes to utilize non labor displacing techniques.

757. PARSONS, KENNETH H. "Capital formation and use in agricultural development," *Indian Journal of Agricultural Economics* Oct/Dec. 1957, v. 12, no. 4, pp. 11-18.

Attempts to classify concepts relevant to capital formation in agriculture which the author considers to be synonymous with economic growth. Distinguishes between tangible (physical) and intangible capital (skill, fund of knowledge, and institutions). Cooperatives and property relations are mentioned as one type of social capital.

758. PERKINS, MAURICE, and WITT, LAWRENCE. "Capital formation: past and present," *Journal of Farm Economics*. May 1961, v. 43, no. 2, pp. 333-343.

Briefly reviews the structure of capital formation in agriculture as it occurs at different stages of development. Compares capital formation

within the firm in commercial agriculture with that in the subsistence or near subsistence sector, and examines capital formation in the total agricultural sector. Classifies the process of general and agricultural development into three stages on the basis of level of development, and makes recommendations for differing capital investments in agriculture corresponding to the level of development.

759. ROBINSON, RICHARD D. "Tractors in the village: a study in Turkey," *Journal of Farm Economics*. Nov. 1952, v. 34, no. 4, pp. 451-462.

Relates some of the pressing social and economic problems that arise when a mass influx of farm machinery is thrust upon the hitherto traditional society of the Chukurova section of Turkey. Among the factors studied were social organization and change, labor problems, village morale, and economic status.

760. TOSTLEBL, ALVIN SAMUEL. *Capital in Agriculture. Its Formation and Financing Since 1870*. Princeton, N.J., Princeton University Press, 1957. 232 pp.

Studies the long-term trends in the accumulation and financing of real capital in agriculture. Uses detailed breakdowns of types of farm capital in 10 major agricultural regions of the United States to examine the impact of changes in the size of the agricultural sector and of technological changes upon the structure and location of agricultural capital. Shows that the farmers' own incomes furnished the larger part of the funds for replacement and additions to physical capital and working cash.

761. U.S. DEPARTMENT OF AGRICULTURE. *Power To Produce: Yearbook of Agriculture 1960*. Washington, D.C., U.S. Government Printing Office, 1959. 480 pp.

Deals with the application and control of power in agriculture, with the use of a growing variety of materials, and with the improvement in technical processes, in order to raise the productivity and efficiency of economic activities and reduce their requirements of human labor.

## VI. Land and Taxes

762. BARLOWE, RALEIGH *Land Resource Economics*. New York, Prentice-Hall, 1958. 585 pp.

The theme of this book revolves around principles and problems of land-resource use as related to the utilization of the world's land resources. The author examines these factors within the framework of physical, biological, economic, and institutional factors that influence man in his use of land resources. Within these general areas, he treats such topics as land income and values, development and investment costs, location factors, nature of rights in property, land resource planning, and taxation of landed property. The concepts and working tools of the other social sciences are applied to the problems of land economics to explain the relationship of land economics to the broader field of political economy.

763. CONFERENCE ON WORLD LAND TENURE PROBLEMS, UNIVERSITY OF WISCONSIN, 1951. *Land Tenure, Proceedings of the International Conference*. Madison, Wis., University of Wisconsin Press, 1956. 739 pp.

An attempt to evaluate the total impact of land reform on economic development in relevant international terms. Papers presented by American and other academicians and administrators examining technical, economic, and social problems of implementing and sustaining land reform. Land tenure systems from the major geographical areas are analyzed to determine those basic principles which have universal applicability. These principles are then studied to aid each participant to adapt them to meet specific conditions and institutions within his own country.

764. FROELICH, WALTER (editor) *Land Tenure, Industrialization, and Social Stability: Experience and Prospects in Asia*. Milwaukee, Wis., Marquette University Press, 1961. 301 pp.

Essays on land reform and development in the non-Communist part of South, Southeast, and Northeast Asia. Emphasis is on the description and analysis of the change which is involved and on a discussion of

specific aspects of the programs in the countries of Taiwan, Japan, Korea, Philippines, Vietnam, Thailand, Indonesia, India, and Pakistan. Examines the possible emergence of a new type of social stability through changes wrought by land reform.

765. HENDERSON, JAMES M. "The utilization of agricultural land: a theoretical and empirical inquiry," *Review of Economics and Statistics* Aug. 1959, v. 41, no. 3, pp. 242-259.

Attempts the development of a theoretical analysis based upon maximizing behavior which can be empirically implemented and will generate numerical predictions of short-run land utilization patterns for the economy as a whole. Particular emphasis is given to land heterogeneity and alternative uses. The data are based on U.S. experience and compared with 1955 production data to test their validity.

766. JOHNSON, V. WEBSTER, and METCALF, JOHN E. "Land redistribution and economic development," *Land Economics* May 1953, v. 29, no. 2, pp. 155-160.

Views the present land capital structure of underdeveloped countries and states that it is the limited capital accumulation in the face of strong social rigidity that tends to retard present development. Discusses two alternative types of techniques for carrying on land reform and revolutionary ways of carrying out the latter, while providing for alternative types of attractive investment. This would entail reimbursement of the former landowners by government. On application to a central bank, bonds could be negotiated for industrial development loans to finance approved investment projects.

767. PARSONS, KENNETH H. "Land reform in the postwar era," *Land Economics*. Aug. 1957, v. 33, no. 3, pp. 213-227.

Presents a general idea of the relation of land reform to economic development. Uses individual, contemporary experiences to illustrate and to show that there are diverse methods of accomplishing land reform.

768. SCHICHELE, RAINFR. "Theories concerning land tenure," *Journal of Farm Economics*. Dec 1952, v. 34, no. 5, pp. 734-744.

Describes the foundations of two essential types of land tenure: the family farm tenure pattern and the farm business theory. After outlining the

basic differences, the author attempts to bring them together and establish satisfactory guidelines for alternative choices between the social and economic benefits to be derived from adopting these new tenure patterns.

769. SENIOR, CLARENCE OLLSON. *Land Reform and Democracy*. Gainesville, Fla., University of Florida Press, 1958. 269 pp.

A case study of a large-scale agrarian reform in the Laguna region of Mexico where the author attempts to view agrarianism, democracy, and social change in the framework of sociology, economics, and demography.

770. U.S. DEPARTMENT OF AGRICULTURE. *Land Yearbook of Agriculture 1958*. Washington, D.C., U.S. Government Printing Office, 1958. 605 pp.

Papers which present an historical view of how the United States has acquired the land tenure structure it now has, and how public and private land is managed and utilized today. There are conflicting arguments for land use which add considerably to the usefulness of the book as an aid in planning land use.

771. ———. ECONOMIC RESEARCH SERVICE. *Agrarian Reform and Economic Growth in Developing Countries*. Washington, D.C., 1962.

Papers presented at a seminar on research perspectives and problems in agrarian reform. Subjects discussed include agrarian reform as a conditioning influence in economic growth, agrarian reform policy as a field of research and flexibility, security, and other considerations in agrarian reform programs. Attention is directed toward determining how land-grant colleges and universities and the U.S. Department of Agriculture can be helpful.

772. WALD, HASKELL P. *Taxation of Agricultural Land in Underdeveloped Economies: A Survey and Guide to Policy*. Cambridge, Mass., Harvard University Press, 1959. 231 pp.

Comprehensive study of methods of taxing agricultural land in the modern economic development context. Divided into three parts: begins with a detailed description of land taxation methods in various countries; analyzes the principal types of taxes in the context of equity, economic policy, and administration; points out that the fiscal problems of underdeveloped countries can be considerably lessened by a well-planned and applied land tax.

773. WICKIZER, V. D. "The plantation system in the development of tropical economies," *Journal of Farm Economics*. Feb. 1958, v. 40, no. 1, pp. 63-77.

Discusses means of replacing both the plantation system and typical peasant type farming by alternatives which may combine the best features and overcome the weaknesses of each.

## VII. Food Requirements and Availabilities

774. BEAN, LOUIS H. "Closing the world's nutritional gap," *Food and People* Washington, D.C., U.S. Government Printing Office, 1961. pp. 31-64.

This is a study paper prepared for the Joint Economic Committee of the U.S. Congress by Dr. Bean, who has served as economic consultant to the Director of the Food for Peace Program. Topics covered include current and prospective trends in world population and agricultural production, the nutritional gap, long-range economic development and human feeding programs, balancing the world's food budget, and the need for qualitative goals for U.S. overseas feeding programs

775. BLACK, JOHN D. *Food Resources for an Expanding World Population*. Santa Barbara, Calif, Technical Military Planning Operation, General Electric Co, 1959 70 pp.

Uses a general framework to delimit the balance of food production and population in the period 1970-75. Explores these relationships in a range of countries and regions representative of the world, estimates the prospective balances of food production and population in each in 1970-75, and then converts these data into a world pattern. Recommends specific methods and policies to achieve a better food-population balance in the period.

776. BRANDOW, G. E. *Interrelations Among Demands for Farm Products and Implications for Control of Market Supply* University Park, Pa, Pennsylvania State University, Agricultural Experiment Station, 1961. 124 pp. (Bulletin 680)

A systematic framework of the economic relationships between commodity quantities and prices for U.S. farm products is given in order to deal with the problems of supply, control, and market adjustment. By synthesizing several domestic and external demand relations for food and commercial products, the author claims to insure internal consistency and establish a better position for dealing with policy questions. Even though the study is based on U.S. estimates of the relationships, the conceptual model may be useful to economics relying heavily on agricultural demand and supply.

777. IOWA STATE UNIVERSITY. CENTER FOR AGRICULTURAL AND ECONOMIC ADJUSTMENT. *Food—One Tool in International Economic Development*. Ames, Iowa, Iowa State University Press, 1962.

Papers on "optimizing the use of food and food-producing resources in economic development." Among the subjects covered are future prospects for food deficits and surpluses by regions of the world, role of research and education, world trade patterns, institutions aiding productivity, agrarian reform, and areas needing research.

778. JOHNSTON, BRUCE F. *The Staple Food Economies of Western Tropical Africa*. Stanford, Calif, Stanford University Press, 1958. 305 pp.

A comprehensive study concerning the geographical distribution, relative importance, and characteristics of the major staple food crops of western tropical Africa. Concentrates on the major starchy foods that are of predominant importance in the African diet—millets and sorghums, maize, rice, manioc, yams, plantains, cocoyams, and sweet potatoes. Evaluates the prospects for increasing productivity and assuring adequate supplies of these crops. Maps of rainfall, moisture regions, potential evapotranspiration, vegetation zones, and population are included.

779. MACINNON, C. FRANCES. "Changing food habits: the dietitian's dilemma," *Journal of the American Dietetic Association*. 1955, v. 31, no. 6, pp. 566-569.

Illustrates with three situations the dietitian's need for help in understanding and motivating behavior. A plea for guidance in making their work more effective.

780. OSER, JACOB. *Must Men Starve? The Malthusian Controversy*. New York, Abelard-Schuman, 1957. 331 pp.

Presents the thesis that natural resources, ingenuity, technology, and sensible population control can be utilized to counteract the Malthusian idea of population expanding at a faster rate than food resources. Sixteen tables on population, birth rates, crop yields, productivity, prices, and output in various countries.

781. SMITH, VICTOR E. "Linear programming models for the determination of palatable human diets," *Journal of Farm Economics*. May 1959, v. 41, pp. 272-283.

Presents three models which illustrate the way in which "conventional" restraints can be used in programming models to raise the level of palatability of the human diet.

782. U.S. DEPARTMENT OF AGRICULTURE. *Agricultural Production and Food Consumption in Western Europe*. Washington, D.C., 1951. 66 pp. (Agricultural Monograph No. 10)

Gives a brief account of the methods used by the European Division of the Foreign Agricultural Service in preparing evaluations of food balances, indices of agricultural production, estimates of consumption, and measurements of relevant quality-quantity differences for 14 European countries.

783. ———. *Food: Yearbook of Agriculture 1959*. Washington, D.C., U.S. Government Printing Office, 1959. 736 pp.

Presents details of nutrition in an easily understood perspective. Covers such items as vitamins, minerals, proteins, carbohydrates, calories and body weight, health statistics, food allowances, quality in food, menus, recipes and plans, food habits, and domestic and international food programs.

784. U.S. ECONOMIC RESEARCH SERVICE. *The World Food Budget, 1962 and 1966*. Washington, D.C., U.S. Government Printing Office, 1961. 78 pp. (Foreign Agriculture Economic Report No. 4)

An attempt to measure the foods produced and consumed by the people of the world in 1958, and as projected for 1962 and 1966. Assesses the adequacy of the consumption as measured against nutritional reference standards. Examines trends in production and population, and analyzes the resources of individual countries and areas to meet their nutritional needs.

785. U.S. FOREIGN AGRICULTURAL SERVICE. *Food Balances in Foreign Countries*. Washington, D.C., 1960-61.

A series of bulletins giving estimated food balances for some 80 free world countries in 1958. Summarizes in statistical form the food supply situation of each country or area, showing production, import requirements, export availabilities, the utilization of domestically consumed supplies, and the national consumption, in both total amounts and average amounts per capita, of individual foods or food groups.

## VIII. Markets, Marketing, and Price

787. ABBOTT, J. C. "Role of marketing in the development of backward agricultural economics," *Journal of Farm Economics*. May 1962, v. 44, no. 2, pp. 349-362.

Considers three basic conditions for assisting market demand reasonably stable prices, adequate marketing facilities, and a satisfactory system of land tenure. Expands upon the difficulties of transferring the incentives for expanded production through present marketing facilities. Considers such impediments as transportation and storage, handling and grading, market and price information, lack of trained marketing personnel, and uncoordinated production units. Suggests that coordinated production, marketing programs, training of marketing personnel, and a large input of capital and production equipment are essential to achieve economic development.

788. BAER, JULIUS BERNARD, and SWANSON, OLIN GLENN. *Commodity Exchanges and Futures Trading*. New York, Harper & Bros., 1949. 324 pp.

A comprehensive historical treatise on the development, function, and purpose of commodity exchanges and futures trading in the United States. Explains in detail the relationship of this institution to price change and stability. By example, shows the transaction of one commodity from producer to consumer and the role occupied by the commodities exchange.

789. BREDO, WILLIAM. *Transportation Problems of Expanding Western Agriculture*. Washington, D.C., Agricultural Marketing Service, 1954. 227 pp.

Analyzes the transportation problems that may arise from the creation of new agricultural areas, and discusses the extent to which transportation facilities and changes affect location of agricultural areas. Covers the role of motor carriers.

790. BOWRING, JAMES R, et al. *Marketing Policies for Agriculture*. Englewood Cliffs, N J., Prentice-Hall, 1960. 276 pp

Presents agricultural marketing problems in a theoretical framework, but uses empirical examples to illustrate the needs and wants of conflicting interests as they alter the forces which influence the market. Emphasizes the firm but also examines the industry in regard to cost, market developments, allocation. Also examines the role of government in developing satisfactory policy to encourage agricultural development.

791. FOX, KARL AUGUST. *The Analysis of Demand for Farm Products*. Washington, D C, U.S. Department of Agriculture, 1953. 90 pp. (Technical Bulletin No. 1081)

Presents methods for the analysis of demand for farm products, emphasizing the use of single equation methods when they are applicable. Clarifies the relationship between single-equation and simultaneous-equation approaches in analysis of demand for farm commodities. Contains simple diagrams of demand-supply structure helpful in determining whether consumer demand equations for various products are statistically measurable and, if so, whether single-equation or simultaneous-equation methods are appropriate.

792. HILTIER, JOHN. "Analysis of possible relationship between commodity price and sown crop area in an underdeveloped country," *The Annals of the Association of American Geographers*. Sept. 1960, v. 50, pp. 325.

Investigates the relationship between price received in the marketplace and crop acreages in an underdeveloped country. The hypothesis is that, all other things being equal, as the return per acre for a given crop in an area varies, absolutely or relatively, the area sown in that crop the following year also varies. The area of study is the Chukurova district of Turkey. Indicates some basis for a price-area generalization, but suggests need for additional research.

793. HIRSCH, LION V. *Marketing in an Underdeveloped Economy*. Englewood Cliffs, N J., Prentice-Hall, 1961. 392 pp

Describes, analyzes, and evaluates marketing in an underdeveloped country, using the sugar industry of North India as an example. Primarily is an attempt to determine the effectiveness of Indian distribution

from the viewpoint of the Indian economy as a whole and also from the viewpoint of local and foreign businessmen. Consists of four parts: background, procurement, marketing, and consumption.

794. HOLTON, RICHARD H. "Marketing structure and economic development," *Quarterly Journal of Economics*. Aug 1953, v. 67, no. 3, pp. 344-361.

Examines the role of commodity distribution in underdeveloped countries, using food distribution and non-food distribution in Puerto Rico to illustrate that the inefficient marketing structure and high cost of inefficient distribution are borne disproportionately by the low-income families. Prospects for changing the food distribution system depend primarily on the possibilities of changing merchants' attitudes toward innovation and expansion.

795. NICHOLLS, WILLIAM H. "Domestic trade in an underdeveloped country—Turkey," *Journal of Political Economy*. Dec. 1951, v. 59, no. 6, pp. 463-480.

A study of Turkish domestic commerce, covering the areas of distribution of industrial raw materials and desirable goods, marketing of farm products, distribution of other consumer non-durables, and business organization. Conclusions are broadly applicable to other countries at the same stage of economic development as Turkey.

796. SHEPHERD, GEOFFREY SEDDON. *Agricultural Price Analysis* Ames, Iowa, Iowa State College Press, 1950. 279 pp.

Applies the principles of economic theory and methods of statistical analysis to the study of agricultural prices. Attempts to measure quantitatively how much the supply or demand changes and how much the price changes in response. Also examines elasticity, stability, and shape or curvature of demand and supply curves for different farm products. Treats, also, cyclical and secular movements in the prices of individual farm products. Concludes with an appraisal of parity prices.

797. STERN, ROBERT M. "The price responsiveness of primary producers," *Review of Economics and Statistics* 1962, v. 44, no. 2, pp. 202-207.

Empirical example of how producers of primary products in less developed areas respond to changes in relative forces on their commodities. Article deals with acreage adjustments by Indian cultivators of jute and competing crops in response to changes in relative price of jute.

798. SWERLING, BORIS C. "Some interrelationships between agricultural trade and economic development," *Kyklos*. 1961, v. 14, pp. 364-395.

Discusses long-term patterns of commodity trade, especially from the viewpoint of primary-producing countries having to make alternative choices between domestic and export production. Evaluates some previous studies of the deterioration of the trade position of Southeast Asia and South America relative to Africa, and the relations of such trade phenomena to general growth processes. Also emphasizes the influence of deliberate national policies on these growth processes.

799. U.S. DEPARTMENT OF AGRICULTURE. *Marketing Yearbook of Agriculture* 1954. Washington, D.C., U.S. Government Printing Office, 1954. 506 pp.

Gives a general view of the components of the marketing system of the United States, describing its major parts and discussing some of its many problems. Contains flow charts showing the major areas of production, processing, and marketing of the major commodities.

800. WAITE, WARREN CLELAND, and TRELOGAN, HARRY C. *Agricultural Market Prices* (2d ed) New York, Wiley, 1951. 440 pp.

A basic text which examines the effects of structural changes in the market and the effect on supply and demand and changes in price. Emphasizes the need for further knowledge concerning agricultural prices with increasing government market regulation.

801. WAUGH, FREDERICK VAIL (editor) *Readings on Agricultural Marketing*. Ames, Iowa, Iowa State College Press, 1954. 456 pp.

Brings together a wide range of writings, some with conflicting views, on various phases of agricultural marketing. Discusses location, time, and ownership aspects of marketing; efficiency; competition; cooperation; and market improvement through cooperation.

## Chapter 9.

# INDUSTRY

### I. Industrial Development

802. ACKERMANN, JEAN MARIE. *Communicating Industrial Ideas*. Menlo Park, Calif., Stanford Research Institute, 1962. 145 pp.

A handbook on the communication aspects of industrial extension work, designed to help industrial development workers use their talents and energies more effectively. Contains information from many countries on concrete situations illustrative of the communications problems of getting the message across to small entrepreneurs. Useful in-training courses for industrial development workers.

803. AUBREY, HENRY G. "Small industry in economic development," *Social Research*. Sept. 1951, v. 18, no. 3, pp. 269-312.

Describes features of development trends of small and rural industry in the Far East today and presents several analytical considerations that have a bearing on the eventual determination of priorities and other policy decisions regarding size, location, and technological level of new industries and improvements on existing facilities. Includes an extensive bibliography.

804. BOSKEY, SHIRLEY. *Problems and Practices of Development Banks*. Baltimore, Md., Johns Hopkins Press, 1959. 201 pp.

An explanatory discussion of development banks, their growing popularity, and their purposes and types. Discusses establishing a development bank's finances, board of directors, problems of operation. The appendix contains data on development banks, sample loan agreement provisions, sample charters, and an appraisal of proposals and supervision of investments.

805. BRYCE, MURRAY D. *Industrial Development; A Guide for Accelerating Economic Growth*. New York, McGraw-Hill, 1960. 282 pp.

Explains how to approach the job of development. Covers problems of analysis, choice, and financing of industrial projects whose profitability is treated from the point of view of both individual business and the economy as a whole. It is designed to avoid the pitfalls that many planners in the underdeveloped world have already fallen into.

806. BUCKINGHAM, WALTER S. *Automation Its Impact on Business and People*. New York, Harper & Bros., 1961. 196 pp.

Presents the social and economic problems created by automation with regard to management, worker's training and readjustment, and general planning for production.

807. CHENERY, HOLLIS B. "Patterns of industrial growth," *American Economic Review*. Sept. 1960, v. 50, no. 4, pp. 624-654.

An econometric presentation analyzing the relationship of economic growth factors such as supply, demand, and overall ratio of industries to the course of industrial development. The theory is generalized for most countries.

808. HAGEN, EVERETT EINAR. *Handbook for Industry Studies*. Glencoe, Ill., Free Press, 1958. 89 pp.

Presents an outline of factors pertinent to industry development in the form of a series of questions relating to history, composition, production, and economic makeup. A glossary is included.

809. LANDSBERGER, HENRY A. *Hawthorne Revisited*. Ithaca, N.Y., Cornell University Press, 1958. 119 pp.

A review of *Management and the Worker*, the book which describes the Hawthorne plant of the Western Electric Co. between 1927-32. Criticisms of the "human relations in industry" are covered, i.e., different concepts of the role of the workers in society. Also reviews area of human relations. Both sides of arguments are presented in a rational and systematic manner.

810. LIKERT, RENSIS. *New Patterns of Management*. New York, McGraw-Hill, 1961. 279 pp.

Deals with all hierarchal levels from corporation executive to non-supervisory employers. It summarizes the principles and practices used by productive managers, then proposes a management system based on these principles. In particular it describes a new management system designed to achieve productivity levels equal or superior to those currently reached with fewer of the resentments, hostilities, grievances, and stoppages inherent in present systems. The newer system utilizes motivational principles different from those normally employed, in addition to economic motivations.

811. MCGREGOR, DOUGLAS. *The Human Side of Enterprise*. New York, McGraw-Hill, 1960. 246 pp.

Contends that formal programs for management development have far less to do with actual development than do the underlying concepts held by management pertaining to the nature of its task and its policies and practices. Author claims that a poor job is being done of utilizing human resources in organizations. Proposes that management today is greatly hampered by the lack of adequate organization theory and attempts to point out a more adequate theory.

812. PRINCETON UNIVERSITY INDUSTRIAL RELATIONS SECTION. *Management in the Industrial World: An International Analysis*, edited by Frederick Harbison and Charles A. Myers. New York, McGraw-Hill, 1959. 413 pp.

The growth and development of management is presented as it relates to the processes of industrial growth as a basis for formulating an international concept of management applicable to various stages of economic growth. Management is analyzed in three different ways: as an economic resource, as a system of authority, and as a class of elite. Attention is given to the processes for generating management resources in industrializing countries. Two-thirds of this volume is directed to comparison of systems of management on some 12 different countries.

813. STANFORD RESEARCH INSTITUTE. *Industrial Estates, Tool for Industrialization*, by William Bredo et al. Glencoe, Ill., Free Press, 1960. 240 pp.

A study designed especially for planners and administrators in the newly industrialized countries who have the responsibility for the development

of small- and medium-scale industrial enterprises. The principles involved in developing industrial estates are illustrated with references to other countries' experiences. Approach is from an economic point of view.

814. ———. *The Role of Small-Scale Manufacturing in Economic Development: The Experience of Industrially Advanced Nations as a Guide for Newly Developing Areas*. Washington, D.C., International Cooperation Administration, 1957. 167 pp.

Manual on the developmental role which medium and small industrial units play in the early stages of economic development. Specifically addressed to public officials in underdeveloped countries who are promoting industrial development and to businessmen considering enterprises in underdeveloped countries. Chapters on the structure of manufacturing in the United States, economic development of the U.S., scale of manufacturing in other industrially advanced countries, and the role of small-scale industry in newly developing countries.

815. ———. *Small Industry Advisory Services: An International Study*, by Joseph E. Stepanek. New York, Free Press, 1960. 193 pp.

A survey and analysis of the ways in which technical and managerial advice can help in developing modern small industry. Covers the organization, staffing, and evaluation of advisory services and the difficulties of introducing basic change, with concrete references to the experience of over 20 countries in varying stages of industrialization. The appendix includes detailed descriptions of programs and organizations in Asia, Europe, and the Americas.

816. U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT. TECHNICAL AID BRANCH. *Plant Requirements Primer: How To Start a New Factory or Shop*. Washington, D.C., 1955. 62 pp. (Plant Requirement Report PR-2)

A pictorial pamphlet setting forth the factors involved in starting a new business, together with capital and labor requirements for 11 small industries.

## II. Management and Programing

817. BAIN, JOE STATEN. *Industrial Organization*. New York, Wiley, 1959. 643 pp.

Analyzes the organization and operation of the enterprise sector of a capitalist economy, with special reference to the economy of the United States and with emphasis of the market behavior of enterprises. Surveys relevant theoretical constructs, traces general environmental background of American industrial organization; analyzes, on an empirical level, market structure, conduct, performance, and their interrelations in American industries. The stress is on economics rather than political economy, and the approach is through cross sectional analyses rather than case studies.

818. BELLMAN, RICHARD ERNEST. *Dynamic Programming*. Princeton, N.J., Princeton University Press, 1957. 342 pp.

Dynamic programing is a newly developed mathematical technique which is useful in many problems and situations where a series of consecutive management decisions have to be made. The optimum overall policy could be arrived at by considering the effects of each decision separately. In the inventory area, as in other areas, this approach is useful.

819. BENDIX, REINHARD. *Work and Authority in Industry Ideologies of Management in the Course of Industrialization*. New York, Wiley, 1956. 466 pp.

This book is a product of the Inter-University research group. Author compares labor outlook and employment policies of management of four typical national systems at different stages of industrialization England during its earlier process of industrialization, present-day United States, Russia under the tsars, and East Germany of today. Gives insight into the consequences of managerial policies for the cultural and institutional pattern of labor-management relations and social development.

820. BETHEL, LAWRENCE L., et al. *Industrial Organization and Management* (4th ed) New York, McGraw-Hill, 1962. 704 pp.

A text which presents the latest developments and trends in industrial technology, organization, and management in an attempt to give an overall view of the operations of an industrial organization, the interrelationship of functions, and the fundamental principles of management which lead toward effective coordination and control.

821. BOVAIRD, ROBERT L. "Characteristics of optimal maintenance policies," *Management Science*. Apr. 1961, v. 7, no. 3, pp. 238-253.

Presents a cost-minimizing maintenance model which utilizes mathematics and economic theory. It first discusses the problem with respect to short-run daily operating decisions and then with respect to long-run decisions as they relate to equipment design and to maintenance facilities. The maintenance problem is then stated in mathematical terms.

822. CHARNES, ABRAHAM, and COOPER, W. *Management Models and Industrial Applications of Linear Programming*. Wiley, New York, 1961. 2 v.

Concerned with new and improved techniques for management planning with special reference to managerial applications of linear programming.

823. EWING, DAVID W. (editor) *Long-Range Planning for Management*. New York, Harper & Bros., 1958. 489 pp.

Contains discussions of the nature and principles, procedures and problems, and limitations of long range planning. Also discusses general production strategy and forecasting of requirements of capital, labor, plant, and materials.

824. HEINRICH, HERBERT WILLIAM. *Industrial Accident Prevention* (4th ed) New York, McGraw-Hill, 1959. 480 pp.

Covers all areas of industrial safety from the basis and philosophy of accident prevention to specific details on planning and executing a safety program to fit any size and type of operation. Illustrated.

825. HEINRITZ, STUART F. *Purchasing Principles and Applications* (3d ed) Englewood Cliffs, N.J., Prentice-Hall, 1959. 616 pp.

Explains fundamental economic principles in relation to their applicability to formulation of sound purchasing techniques and policies. Emphasizes both the management and the value concepts of the purchasing function, in addition to its conventional service aspect. Includes case studies and bibliography.

826. HOLT, CHARLES CARTER, et al *Planning Production, Inventories and Work Force*. Englewood Cliffs, N.J., Prentice-Hall, 1960. 419 pp.

Discusses the quantitative methods of making decisions, both mathematical and statistical which may be used to reduce costs through improved production planning and inventory control systems. Illustrates that these methods are useful in actual situations involving production and distribution management. The authors present several cases in which these or related approaches have been used.

827. IMMER, JOHN R. *Materials Handling*. New York, McGraw-Hill, 1953. 591 pp.

Discusses a range of topics related to efficient materials handling, including basic principles, work simplification, materials handling equipment, industrial storage facilities, packaging section, methods of analysis, types of surveys, operator training and safety, machine operations, warehousing, railroad and truck handling, and several others.

828. LANGSNER, ADOLPH, and ZOLLITSCH, HERBERT G. *Wage and Salary Administration*. Cincinnati, Ohio, South-Western Publishing, 1961. 726 pp.

Presents the philosophy and fundamental guiding principles essential to establishing and maintaining adequate and equitable compensation for all employees in an enterprise. Intended as a textbook for graduate and undergraduate college students, practitioners in industrial engineering and wage and salary administration, and others interested in gaining an insight into the various activities, principles, and techniques of compensation. Emphasis is on the philosophy of why certain procedures must be followed, together with the practices that have proved successful. Illustrations show how management actually copes with the problems faced in the administration of a sound and equitable salary wage program.

829. MELNITSKY, BENJAMIN *Profiting From Industrial Standardization*. New York, Conover-Mast, 1953. 381 pp.

Considers the needs and selection of standards of production, design, and materials. Reviews the historical development of industrial standard, within companies, within single industries, and nationally. Classifies standards into rough categories, such as, specification of characteristics of use, nomenclature, dimensional standards, testing methods, ratings, standard practices, simplification, and safety. Proposes that standards can be evaluated in terms of development according to consensus principle, logical relation to existing needs, recurring nature of needs, measurability of standard, practicability of standard, openness to revision, minimum subjectivity in application, and profit yielded by the standard. Considers in a practical fashion a number of specific kinds of standards and their application.

830. NATIONAL SAFETY COUNCIL. *Accident Prevention Manual*. Chicago, Ill.

An extensive working manual on methods of determining and correcting hazards in the workplace. Covers all the fundamentals for a successful in plant safety program

831. SHUBIN, JOHN A. *Managerial and Industrial Economics*. New York, Ronald Press, 1961. 518 pp.

A general economic history and study of the industry and firm from the managerial point of view. Contains a section on forecasting which is useful for purposes of planning. Written for the executive in industrial management

832. SMITH, GEORGE ALBERT, JR. *Managing Geographically Decentralized Companies*. Boston, Mass., Harvard University, Graduate School of Business Administration, Division of Research, 1958. 185 pp

Explains the steps and procedures taken when decentralization of operations takes place. Outlines different possible methods and processes for allocation of power, coordination and control, and "human problems." Valuable for Government-controlled industries in less developed areas. Describes procedures used to provide effective organization for a wide spread industry. Useful for both government and private industry.

833. STANFORD RESEARCH INSTITUTE. *Managers for Small Industry: An International Study*, by Joseph E. Stepanek. New York, Free Press, 1960. 245 pp.

The importance to small industry of the intangible human factors that make a successful manager are studied with reference to experience in many countries. The origins and characteristics of small-industry managers, their problems and especially their opportunities for professional growth are analyzed in detail. Much of the study discusses training suitable for managers and potential managers through formal courses and through self-study. An appendix includes materials drawn from India, Japan, and the United States, which should be useful in planning management courses, particularly in the newly industrializing countries.

834. U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT. COMMUNICATIONS RESOURCES DIVISION. *Management Development*. Washington, D.C., 2 v.

Discussions, suggestions, and case studies for consideration of various phases of management such as authority, communication, motivation, and personnel relations.

835. WIKSTROM, WALTER A. (editor) *Developing Better Managers: An Eight-Nation Study*. New York, National Industrial Conference Board, 1961. 182 pp.

Compares the nature and extent of manager development programs in Chile, France, Germany, Great Britain, India, Italy, Japan, and the United States. The studies are based on questionnaires and interviews of management personnel in selected firms. Each study describes the general economic environment and the types of firms, and gives a history of the development of management training programs in the country and the form they take. There seems to be a progression in the development of managerial training from none to training by managers themselves in professional associations to university participation in plant programs.

### III. Control, Accounting, and Cost Analysis

836. AMERICAN MANAGEMENT ASSOCIATION. *Control of Non-Manufacturing Costs*. New York, 1957. 142 pp. (Special Report No. 26)

Discusses incremental methods of reducing overhead costs, considers cost reduction by central fiat, by employee suggestion, by reorganization of functions, and by pure imagination. Discusses the budget process and market analysis as it affects product development for profit. Considers the use of distributional cost analysis and means of lowering office costs.

837. BENNETT, CLINTON W. *Standard Costs: How They Serve Modern Management*. Englewood Cliffs, N.J., Prentice-Hall, 1957. 515 pp.

Shows the various types of costs relevant to a modern industrial firm. Develops the role of standard costs and methods for arriving at them. Discusses efficient firm organization, incentive system, and sound accounting principles. Textbook including review questions and problems.

838. DAVIS, LOUIS E. "Job design and productivity: a new approach," *Personnel*. Mar. 1957, v. 33, no. 5, pp. 418-430.

Criticizes the usual methods of job design with reference to productivity and waste and presents a new plan which reduces specialization to increase production and reduce rejection rate.

839. FLIGENBAUM, A. V. *Total Quality Control*. New York, McGraw-Hill, 1961. 627 pp.

The activity of controlling the quality of products is discussed as it extends throughout the entire business system. Determining the wants and needs of the customer, interpreting these in the form of a design, conforming to the design during production, follow-up on field performance, and feedback of information to further improve the control system are discussed. Fundamentals such as planning the quality control system, setting up a suitable organizational structure, integrating the various functional activities, and measuring the result in terms of costs and product quality levels are covered.

840. GRANT, EUGENE LODEWICK, and IRENSON, W. G. *Principles of Engineering Economy* (4th ed) New York, Ronald, 1960. 574 pp.

Offers an exhaustive study of economic decision-making about capital goods. Presents guiding principles to the choice of economic alternatives. Investigates equipment depreciation, investment, forecasting, and related subjects.

841. HOAG, M. W. *The Relevance of Costs in Operations Research*. *Journal of Operations Research Society of America*. Baltimore, Md., Aug. 1956, v. 4, no. 4, pp. 448-459.

Author suggests that operations research studies may be divided into three categories in relation to costs "Fixed inputs and one objective" in which costs are largely irrelevant because the problem is maximizing of one objective subject to fixed constraints, "fixed inputs and multiple objectives" wherein real costs must be approximated by money costs, because the form and amount of many inputs can be altered. Scope of analysis and time available determine which category is applicable. The general position of the author is that estimation of comparative production costs explicitly in real terms is unlikely and that the substitution of estimated money costs is the least unsatisfactory alternative.

842. JOHNSTON, J. *Statistical Cost Analysis*. New York, McGraw-Hill, 1960. 197 pp.

A handbook for solving problems of efficient output. Contains a brief section on theories of costs and output relationships, but is devoted mainly to solution of problems with empirical, statistical results in such fields as electricity generation, road passenger transport, coal mining, and food processing.

843. JURAN, JOSEPH M. *Quality Control Handbook*. New York, McGraw-Hill, 1962. 1075 pp.

A completely rewritten and expanded version of a widely accepted book which provides ready reference to the know-how developed in industry for achieving better quality at lower cost.

844. MACNIFCE, E. H. *Industrial Specifications*. New York, Wiley, 1953. 158 pp.

Discusses the need for setting manufacturing specification of materials to control quality and performance. Gives examples and describes the problems to be considered in setting specifications

845. MAZZ, ADOLPH, et al *Cost Accounting* (3d ed) Cincinnati, Ohio, South-Western Publishing, 1952. 805 pp.

Treats cost accounting as "a tool of management," the modern conception. The emphasis throughout is on the processing and reporting of a firm's historical and projected data to assist management in planning future policy and operation, in making decisions, and in controlling and analyzing costs and profits. This objective is accomplished in two ways: the subject matter is technical, conceptual, and managerial, and each chapter or related group of chapters is treated with four basic points of view in mind (a) cost principle, (b) cost determination, (c) cost control, and (d) cost analysis

846. MOORE, F. T. "Economies of scale some statistical evidence," *Quarterly Journal of Economics*. May 1959, v. 73, no. 2, pp. 232-245.

A reference to empirical work establishing operating rules. Distinguishes new investment in a new process in existing locations, replacement of obsolete equipment and expansion, and conversion from one process to another.

847. PRITZKER, ROBERT A., and GRING, ROBERT A. (editor) *Modern Approaches to Production Planning and Control* New York, American Management Association, 1960. 445 pp.

The first three of four main sections deal with the separate phases of production planning and control organization and administration; planning tools and control techniques; and mechanical and mathematical aids. The last section presents full-length studies of actual systems of production planning and control.

#### IV. Food Processing and Preservation

848. *Complete Course in Canning*. Baltimore, Md, Canning Trade, 1958. 403 pp.

Describes in detail the complete process of preparation and canning of various food products from fruits to meats. Includes factory layout charts for processing some products.

849. CRUICK, WILLIAM VERE. *Commercial Fruit and Vegetable Products* (4th ed) New York, McCraw-Hill, 1958. 884 pp.

Discusses washing, cooking, peeling, canning, and other processing of various fruits and vegetables. Also covers the making of pickles, candies, jams, and preserves. Considers processes, sanitation, waste and byproducts, and frozen foods.

850. PARKER, MILTON E., et al. *Elements of Food Engineering*. New York, Reinhold, 1952-54. 3 v.

Volume 1 covers engineering factors in food processing; foods and food processing, the food processing industry; refined foods processing (13 chapters on such products as flour, rice and oats, fats and oils, sugars, syrups, food protein derivatives, spices, beverages, nuts, etc). Volume 2 discusses assembly of raw materials (harvesting, transporting), preparation of raw materials (mixing, cleaning, separating, disintegrating, pumping); conversion of raw materials (mixing, heat exchange-heating, refrigerating). Volume 3 includes conversion of raw materials (evaporating and distilling, dehydration and drying, controlling); treatment of final products (coating, forming, packaging, testing packages, and quality control).

851. PYLER, ERNST JOHN. *Baking Science and Technology*. Chicago, Ill., Siebel Publishing, 1952. 2 v.

Discusses the basic science, materials, processes, and equipment of baking. Also gives formulas and techniques for bread and cake baking

852. TRESSLER, DONALD KILLEY, and EVLRS, C. F. *The Freezing Preservation of Foods* (3d ed) Westport, Conn., Avi, 1957. 2 v.

Discusses methods of preparation and freezing for various foods in general and specific methods for some of the more complicated foods.

853. TRESSLER, DONALD KILLEY, and JOSLYN, MAYNARD A. *Fruit and Vegetable Juice Processing Technology*. Westport, Conn., Avi, 1961. 1028 pp.

Covers technological methods used in juice processing, particularly in America and Europe. Chapters deal with the historic, economic, physiological, nutritive, enzymological, and microbiological aspects of fruit juices and related products as well as preservation by freezing, chemical means, vacuum concentration, dehydration, and other methods; plant location, design, and sanitation, deterioration in storage, processing wastes, and volatile flavor recovery; standards, regulations, quality control, laboratory examination, and analytical techniques. Many different types of juices, blends, nectars, beverages, and syrups are also included.

854. VON LOLSCKE, HARRY W. *Drying and Dehydration of Foods*. New York, Reinhold, 1955. 300 pp.

Discusses general types of dehydrators and the dehydration of fruits, vegetables, dairy products, meats, and other foods. Also discusses sanitation, packaging, and storage.

## V. Products of Animal and Vegetable Origin, and Substitutes

855. BAILEY, ALTON EDWARD. *Industrial Oil and Fat Products* (2d ed). New York, Interscience, 1951. 967 pp.

Discusses the sources, reactions, structures, and properties of various fats and oils and their products. Also considers their processing into products useful in foods, coatings, soaps, and other products.

856. CASEY, JAMES P. *Pulp and Paper Chemistry and Chemical Technology*. New York, Interscience, 1960. 3 v.

Volume 1 covers cellulose and hemicellulose; pulpwood; fiber preparation, sheet formation, wet strength, coloring, microbiology. Volume 2 includes properties of paper, pigment coating, printing, laminating, and pasting, coating with resinous materials, resins.

857. HICKS, EDWARD. *Shellac, Its Origin and Applications*. New York, Chemical Publishing Co., 1961. 272 pp.

All aspects of the manufacture and application of shellac from its harvesting to its uses in industry are covered. There are ample data on the physical and chemical examination of shellac. Authoritative specifications are covered. An appendix covers shellac solubility in various organic solvents. Useful to those engaged in the shellac field, finishing superintendents, manual training schools, purchasing agents, production executives, merchandisers, and the consumer. Includes a glossary, a list of periodicals, and a comprehensive index.

858. HIMMELFARB, DAVID. *Technology of Cordage Fibers and Rope*. New York, Interscience, 1958. 370 pp.

Attempts to present a complete account of the technology of cordage fibers used commercially by the hard and soft fiber industries. Chapters are devoted to the growth, extraction, and trading of fibers, their properties; methods of combing and spinning into yarns; twisting and finishing rope; and the behavior of rope and cordage, relating their structures to the deteriorating aspects of usage. The book covers methods and

application extensively, and furnishes the basic principles inherent in modern technology. The final chapter is devoted to identification.

859. HUKLE, D. W. *Introduction to Natural and Synthetic Rubbers*. New York, Chemical Publishing, 1961. 164 pp.

Serves as an introduction to the behavior of natural and synthetic rubbers how they behave and why they behave as they do. Processing and manufacturing of a wide range of rubbers is described and illustrated. Includes the manufacture and processing of general purpose synthetics.

860. HUNT, GEORGE McMONIES, and GARRATT, GEORGE A. *Wood Preservation* (2d ed) New York, McGraw-Hill, 1953. 417 pp.

Discusses the deterioration of wood and processes to prevent it, including chemicals, equipment; properties of treated wood; and the problems of treating.

861. O'FLAHERTY, FRED O. (editor) *The Chemistry and Technology of Leather*. New York, Reinhold, 1956-62. 3 v.

Describes histology and composition of animal skins and the operations performed on these skins. Discusses skin structures, the chemistry of collagen, methods of minimizing skin deterioration, optimum soaking conditions, methods and equipment for unhairing and the role of pickling systems in tannage preparation, and degreasing pickled skins.

## VI. Textiles

862. *ADVANCES IN TEXTILE PROCESSING*, edited by J. E. Lynn and J. J. Press. New York, Textile Book Publishers, 1962, v. 1. 79 pp.

The first of a series designed to supply the orientation required to place all textile processing advances in the proper perspective. Included are articles relevant to fundamental and applied chemical, mechanical, and economic aspects of textile processing. Additional references are listed as supporting evidence.

863. BOOTH, JOHN E. *Principles of Textile Testing*. New York, Chemical Publishing Co, 1961. 497 pp.

An introduction to the methods of measuring and investigating physical and mechanical properties of textile materials and products. Traditional methods and instruments as well as the most recent procedures and tests are covered. Discusses the elements of statistics, selection of samples for testing, moisture relations and testing, fiber and fabric dimensions and qualities, tensile and evenness testing, and miscellaneous testing instruments.

864. COHEN, HARRY, and LINTON, GEORGE E. *Chemistry and Textiles for the Laundry Industry*. New York, Interscience, 1961. 429 pp.

Factors necessary in the efficient operation of a laundry are discussed and many related fields are covered. A practical work, the book covers water, alkalies, soap, synthetic detergents, bleaches, lime soap and phosphates, carboxymethylcellulose, iron bluing, starches, sours, spot and stain removal, drycleaning, organization in the laundry industry, major textile fibers, fabrics, dyeing, textile testing, rug cleaning, and causes of defects in fabrics and garments.

865. HARRIS, MILTON (editor) *Handbook of Textile Fibers*. New York, Interscience, 1955. 356 pp.

A handbook containing textile terms and definitions, fiber types and sources, constitution and structure of textile fibers, chart of fiber properties,

physical properties of textile fibers, chemical properties of textile fibers, effect of biological agents, identification of textile fibers, yarn numbering and count systems, chemical and engineering tables, economic and production data, and a list of textile periodicals.

866. MAURSBERGER, HERBERT RICHARD (editor) *Matthew's Textile Fibers: Their Physical, Microscopic, and Chemical Properties* (6th ed) New York, Wiley, 1954. 1283 pp.

Discusses the structure, processing, and testing of various fibers used in textile manufacture such as cotton, wool, animal fibers, plant fibers, and synthetics.

867. PRISS, J. J. *Man-made Textile Encyclopedia*. New York, Textile Book Publishers, 1959. 913 pp.

Covers many facets of this industry including: polymer science, fiber production, laundering, fabric and clothing manufacture, and textile engineering principles.

868. SOLINGR, JACOB *Apparel Manufacturing Analysis*. New York, Textile Book Publishers, 1961. 796 pp.

Discusses requirements for machinery and materials used in apparel manufacture, and suggests methods of improving production by analysis and method improvement. Processes discussed include design, cutting, sewing, pressing, and packaging.

## VII. Metals

869. BLACK, PAUL HOWARD. *Theory of Metal Cutting*. New York, McGraw-Hill, 1961. 204 pp.

A scientific analysis of the effects on the metal, coolant, and cutting tool in the machining of metals by lathe, shaper, and other methods.

870. BRAGDON, CHARLES RIDGWAY. *Metal Decorating From Start to Finishes*. Freeport, Maine, Bond Wheelwright Co., 1961. 166 pp.

A history and description of the development of adapting lithography to metal decorating, including the growth of food canning in metal containers, changes in sheet metal manufacture, and the formulation of inks and organic finishes for containers, closures, and other metal articles in commercial use.

871. BRAY, JOHN LEIGHTON. *Ferrous Process Metallurgy*. New York, Wiley, 1954. 414 pp.

Discusses practices of reduction and refining of ferrous metals including the processes of the iron blast furnace, production operation of wrought iron, the Bessemer process, the basic open hearth process, the acid open-hearth process, electric furnaces, and ingots and ingot molds.

872. COENEN, FRANCIS L. "Basic toolings for spinning metals," *Tool Engineer*. Mar. 1954, v. 32, no. 2, pp. 57-63.

Describes and illustrates spun work pieces and the special tools used. Presents formulas for determining the sizes of the blank sheets and illustrates shapes made by spinning.

873. COOK, GLENN J. *Engineered Castings: How To Use, Make, Design, and Buy Them*. New York, McGraw-Hill, 1961. 257 pp.

The production and design of metal castings from the industrial or design engineer's viewpoint is presented in descriptive form. Materials from

which castings are made, production processes, design, applications, and purchasing of castings are discussed.

874. DEMOND, THEODORE C. *Fabricated Materials and Parts* New York, Reinhold, 1953. 332 pp.

Discusses selecting a process for fabrication of non-assembled parts and the general cost, finish, strength, and accuracy of the methods. Includes description of processes and most suitable design methods.

875. HAMPEL, CLIFFORD A. (editor) *Rare Metals Handbook* (2d ed) New York, Reinhold, 1961. 715 pp.

Discusses the chemical and physical properties and the production and utilization of the rare metals. Some of the major sources for rare metal ores are also included.

876. HAYWARD, CARL REED *An Outline of Metallurgical Practice* (3d ed) New York, Van Nostrand, 1952. 728 pp.

Discusses extracting from ores and purifying metals such as copper, zinc, gold, iron-steel, manganese, and tin.

877. LI, KUO CH'IN, and WANG, CHUNG YU *Tungsten Its History, Geology, Ore Dressing, Metallurgy, Chemistry, Analysis, Applications, and Economics* (3d ed) New York, Reinhold, 1955. 506 pp.

Discusses the mining, refining, and use of tungsten, and the chemistry, metallurgy, and analysis involved in producing tungsten products.

878. MORRIS, JOE LAWRENCE *Modern Manufacturing Process* Englewood Cliffs, N.J., Prentice Hall, 1955. 533 pp.

Describes various practices in foundries such as molding, casting, and pouring. Working of metals, hot and cold, industrial testing, welding, and the lathe are also included, and various industrial operations are described and illustrated. Useful to industrial planner. Good bibliography for advanced engineers and specialists.

879. PAGONIS, GEORGE A. *The Light Metals Handbook*. New York, Van Nostrand, 1954. 2 v.

Discusses chemical and physical properties and characteristics of magnesium and magnesium-base alloys and aluminum and aluminum-base alloys. Volume 1 contains the text and Volume 2 contains tables to be used with the text material.

880. PEARSON, OSCAR. "The use of oxygen in duplex and stationary open hearth practice," *Journal of the Iron and Steel Institute*. Apr. 1959, v. 191, pp. 305-318.

Describes recent developments, showing advantages of the use of basic roof and vertical oxygen roof lances.

881. PRODUCT ENGINEERING. *Spring Design and Application*. New York, McGraw-Hill, 1961. 344 pp.

Presents spring design data, equations, and theory, contributed by over 100 specialists in the field. Topics covered include basic design considerations, design for minimum size and weight, dimensional analysis, fastening and adjusting, dynamic and stress considerations, special helical springs, design of flat springs, torsion springs and bars, constant-force and variable-rate springs, Belleville springs, ring springs, liquid and air springs, plastic and rubber springs, spring materials, spring manufacture, and testing. Facts presented in the book are drawn from articles that appeared in *Product Engineering* magazine over several years.

882. RUSINOFF, SAMUEL EUGENE. *Foundry Practices*. Chicago, American Technical Society, 1955. 261 pp.

Describes and discusses mold and core making, tools, machines, and materials needed to cast metal shapes. Also discusses handling, testing, and safety.

883. SHRAGER, ARTHUR M. *Elementary Metallurgy and Metallography*. New York, Dover, 1961. 390 pp.

Discusses the structure and chemistry of metals; processing from ore and from lower forms such as iron to steel by the open-hearth, Bessemer process, or electric ore furnace; annealing, hardening, alloying; foundry prac-

tice forming and finishing. The major emphasis is on iron and steel. Contains a glossary of terms.

884. UDY, MARVIN J. (editor) *Chromium*. New York, Reinhold, 1956 2 v.

Volume 1 discusses the physical and chemical properties of chromium compounds and their uses in various industries. Volume 2 discusses the recovery of chromium from ores by electrolysis and deposition and the uses of chromium as a metal and in alloys.

885. U.S. STEEL CORPORATION *The Making, Shaping and Treating of Steel* (7th ed) Pittsburgh, Pa., 1957 1048 pp.

Deals with refractories, iron ore, flux and slag, addition agents, steel wrap, and a score of other topics relating to the iron and steel industry. Purports to be a comprehensive summary of present day theory and practice.

## VIII. Chemicals

886. AKIN, RUSSELL BLISS. *Acetal Resins*. New York, Reinhold, 1962. 178 pp.

Deals primarily with acetal resins of high molecular weight. It covers properties, design procedures, and commercial applications. Molding, extrusion, and finishing techniques are discussed from the viewpoint of the designer and user rather than the processor. There is considerable practical information on how these newer plastics can be used in industry.

887. KATELL, SIDNEY, et al. *Bibliography of Investment and Operating Costs for Chemical and Petroleum Plants*. Washington, DC: U.S. Bureau of Mines, 1962. 68 pp. (Information Circular 8117)

Prepared as an aid to making cost estimates for all processes in general use in the petroleum refining and chemical industries.

888. BENNETT, HARRY. *The Chemical Formulary*. New York, Chemical Publishing, 1960. Vol. 11. 411 pp.

Contains formulas contributed by experts in their respective fields, which do not overlap with those given in the previous 10 volumes. Useful as a source of information for the practicing chemist who is interested in an area outside his specialization, the beginner, the student, and the businessman starting or expanding a business. The list of chemicals and their suppliers has been enlarged with new trademark chemicals. The introduction to the book presents elementary information on formulas and compounding methods to serve as a guide for beginners and students.

889. BRUNNER, WALTER, et al. *High-Temperature Plastics*. New York, Reinhold, 1962. 231 pp.

Attempts to present a broad background at an engineering level of the materials families—both those which have proved worthwhile and those which offer future promise. An attempt has also been made to report the developments to date. Short-term, ultra-high temperature data has been evaluated and selected. Some data from material suppliers also is given on long-term heat resistance in the 400–600° F. range. The

information should be helpful in assessing the field and for providing a background for plastics and material engineers.

890. CHRISTOPHER, WILLIAM F., and FOX, DANIEL W. *Polycarbonates*. New York, Reinhold, 1962. 182 pp.

Available fabrication and property data on these new high-temperature plastics are presented for use by research and application workers. Emphasis is given to extrusion, injection, and compression molding, especially of Bisphenol-A, which is the only one in this group at present available commercially. Numerous possible uses and applications are cited, not only for existing polycarbonates, but for those which hold promise of developing ultimately into commercial plastics.

891. DAVIDSON, ROBERT L. *Successful Process Plant Practices*. New York, McGraw-Hill, 1958. 302 pp.

Presents helpful hints for safety programs, installing and maintaining equipment, and handling materials for petroleum processing plants.

892. DUECKER, WERNER W., and WEST, JAMES R. *The Manufacture of Sulfuric Acid*. New York, Reinhold, 1959. 515 pp. (American Chemical Society Monograph Series No. 144)

Discusses from theoretical and practical standpoints the raw materials, purification, processing of gases, manufacture, and concentration of sulfuric acid. Also discusses testing, handling, and safety precautions.

893. EVANS, FRANK L., JR. *Maintenance Supervisor's Handbook*. Gulf Oil Corp., 1962.

Specifically designed and written for those interested in the maintenance functions of refineries, petro-chemical plants, and gas processing plants. This is not a book of generalized maintenance procedures that may or may not work, but proven procedures by experts in this field.

894. FAITH, WILLIAM LAWRENCE, et al. *Industrial Chemicals*. New York, Wiley, 1957. 844 pp.

Contains a short description for the production, uses, and properties of many industrial chemicals. The description of the process includes the reaction, material requirements, and the steps and intermediate processes.

895. FRICK, THOMAS C., and TAYLOR, WILLIAM R. (editors) *Petroleum Production Handbook*. New York, McGraw-Hill, 1962. 2 v.

Volume 1 gives mathematical tables, weights and measures, and also describes and discusses pipe, pumps, separators, and other equipment for removing and transporting oil. Volume 2 discusses geological, economic, and engineering considerations of the oil reservoir.

896. MARKELY, KLARE STEPHEN. *Fatty Acids: Their Chemistry, Properties, Production, and Uses* (2d ed) New York, Interscience, 1960-61. 714 pp.

A rewritten and augmented edition on the fatty acid series and their derivatives. Industrial production and utilization of these acids are stressed.

897. NIVEN, WILLIAM W. (editor) *Industrial Detergency*. New York, Reinhold, 1955. 340 pp.

Discusses the uses and needs for detergents in the laundry, drycleaning, textile manufacturing, food, metals, and other industries.

898. PERRY, JOHN HOWARD (editor) *Chemical Business Handbook*. New York, McGraw-Hill, 1954. various pagings.

Discusses various topics concerning a chemical plant such as cost accounting and planning, research, marketing, production, transportation, and public relations.

899. RILEY, MALCOLM W. *Plastics Tooling* (2d ed) New York, Reinhold, 1955. 123 pp.

The term "plastic tooling" has come to connote those tools using plastics that can be cast, laminated, or otherwise formed easily at relatively low temperatures to the final shape desired in the tool. Potentially useful materials are discussed and the necessary chemistry given wherever needed. A concise and up-to-date summary of all available information on plastics tooling of substantial help to tool engineers and plastics fabricators.

900. SAUCHELLI, VINCENT. *Manual on Fertilizer Manufacture* (2d ed) Baltimore, Md., Davison Chemical Co., 1954. 179 pp.

Discusses plant nutrition and the materials in mixed fertilizers such as nitrogen, ammonia, phosphates, potassium compounds. Considers the mixing and processing of these ingredients into a product which will satisfy the requirements for plant nutrition, ease of handling, and economy.

901. SHREVE, RANDOLPH NORRIS. *The Chemical Process Industries* (2d ed) New York, McGraw-Hill, 1956. 1004 pp.

A general discussion of production methods and materials used in various industries such as fuel, ceramic, sulfur, photographic, paint, leather, oils, fats, soap, rubber, and petroleum.

## IX. Building Materials and Techniques

902. ABBETT, ROBERT WILLIAM (editor) *American Civil Engineering Practice*. New York, Wiley, 1956-57. 3 v

Presents fundamentals and techniques of entire field of civil engineering. Comprehensive reference source for professional engineers and engineering students. Volume 1 includes metropolitan and community planning, surveying, and highway engineering. Volume 2 includes hydraulics, sanitary engineering, and harbor engineering. Volume 3 includes masonry, reinforced concrete structures, steel structures, and timber structures.

903. ARCHITECTURAL RECORD *Buildings for Industry*. New York, Dodge, 1957. 309 pp

Considers the layout and design of industrial plants with regard to beauty, efficiency, and workers' comfort. Gives drawings, photos, and floorplans of specific buildings for various industries, large and small manufacturing.

904. BROWNELL, ADON H. *Hardware 1ge Builders' Hardware Handbook* (2d ed) Philadelphia, Pa, Chilton Co, Book Division, 1961. 262 pp

Supplies hardware information for architects, hardwaremen, teachers, students, and contractors. It covers numerous hardware products made from metals, finishes, scheduling, blueprint reading, sales and service, and specifications; and information on locks and other functioning hardware used about the house. Includes illustrations and pictures of standard hardware items, as well as miscellaneous drawings describing their basic construction and mode of operation.

905. FOSTER, NORMAN *Practical Tables for Building Construction*. New York, McGraw-Hill, 1962. 288 pp.

This pocket digest contains basic information on weights and measures, numerical functions, and climatic and tidal data; separate sections of tabulation for earthwork; concrete and formwork; masonry; lathing and plastering; flooring; paints; carpentry and lumber; iron and steel; roofing; glass; and piping.

906. GAYLORD, EDWIN H., and GAYLORD, CHARLES N. *Design of Steel Structures*. New York, McGraw-Hill, 1957. 540 pp.

Deals with the design of structural members and their connections, with application to steel bridges and building frames. Contains many examples of design which are explained and illustrated.

907. MAGNILL, GUSTAVI. *Prestressed Concrete* (3d ed) New York, McGraw-Hill, 1954. 345 pp.

Includes current developments and applications of concretes. Includes the methods of prestressing and various illustrated designs for concrete beams. Contains numerous illustrations and graphs which simplify the work of determining when and how to use various types of concrete in structures. Useful for countries planning any amount of construction work.

908. MCKAIG, THOMAS H. *Building Failure* (3d ed) New York, McGraw-Hill, 1962. 656 pp.

From a study of the causes of building failures, architects, engineers, and builders can learn to design and build more safely. For this reason, the author has assembled and annotated over 200 case studies. Over 5,600 new terms in atomic physics, nuclear science, and related fields have been incorporated into this reference work.

909. MUNCE, JAMES F. *Industrial Architecture* New York, Dodge, 1960. 232 pp.

An analysis of international building practice. The history as well as most modern aspects of every type of factory building are discussed and shown in sectional plans and illustrations. Intended for the student of architecture as well as the industrial architect.

910. NATIONAL LUMBER MANUFACTURERS ASSOCIATION. *Lumber Literature, A Bibliography* Washington, D.C., 1947. 56 pp.

Lists and describes the information available through the Federated Associations of lumber manufacturers which compose the National Lumbermen's Association.

911. PECK, RALPH BRAZELTON, et al. *Foundation Engineering*. New York, Wiley, 1953. 410 pp.

Provides the ability to investigate and evaluate subsurface conditions, selects the most suitable types of foundation for a given site, judges the performance of each type in service, and designs the structural elements of the type finally selected.

912. PFURIFOY, ROBERT LEROY. *Construction Planning, Equipment and Methods*. New York, McGraw-Hill, 1956. 533 pp.

Provides professional engineers in the construction industry with a guide to planning construction projects and selecting the most suitable construction equipment and construction methods. Also serves as an aid to engineers and architects in designing projects and writing specifications for using the most satisfactory and economical construction methods. Applies the fundamentals of engineering to the construction field in such a way that they can be understood by persons with vocational training. Discusses construction stages and layout, equipment performance, and costs.

913. ———. *Estimating Construction Costs* (2d ed) New York, McGraw-Hill, 1958. 446 pp.

Deals with the detailed estimate, based on quantity take off and man-hours, priced and extended, covers building cost estimating as well as the various types of heavy construction. This edition has 130 pages of new material, including data on depreciation and cost.

914. RAZ, HOWARD F., and BARROW, M. H. *Project Engineering of Process Plants*. New York, Wiley, 1957. 692 pp.

Discusses various considerations in designing and planning a production plant and its equipment, including office procedure, flow diagrams, and motors, piping, and similar equipment designs.

915. REYNOLDS METALS COMPANY. *Aluminum in Modern Architecture*. New York, Reinhold, 1956-60. 2 v. and 2 supp.

Volume 1 presents various structures which have used aluminum. Volume 2 discusses aluminum production and use in construction and the engineering factors of construction aluminum. The 1958 and 1960 sup-

plements present further buildings using aluminum and discuss new techniques such as anodizing.

916. ROSATO, D. V. *Asbestos Its Industrial Application*. New York, Reinhold, 1959. 214 pp.

Discusses varied industrial application of asbestos and an overall view of the methods of fabrication. Includes asbestos products such as buildings, materials, insulation, electrical units, chemical units, asbestos-cements, filters, friction materials, packings, adhesives, lubricants, plastics, machinery, paper, and medicine.

917. SHAND, LEOPOLD B. *Glass Engineering Handbook* (2d ed) New York, McGraw Hill, 1958. 484 pp.

Describes the processes of glass manufacture and gives basic technical information on glass and its applications. Covers the composition, chemical and physical properties, and methods of testing glass.

918. TING, WAYNE C. *Foundation Design*. Englewood Cliffs, NJ, Prentice-Hall, 1962. 464 pp.

A complete treatise of foundation design encompassing both theory and practice. Coordinates the most recent advancement in soil mechanics and time tested know how in foundation engineering. Covers spread footing, drilled caisson, sheetpiling walls, and cofferdams.

919. U S BUREAU OF RECLAMATION. *Earth Manual A Guide to the Use of Soils as Foundations and as Construction Materials for Hydraulic Structures*. Washington, D C, 1960. 751 pp.

Discusses the identification, classification, investigation, and selection of materials for various construction work. An appendix discusses laboratory methods for testing samples.

920. WADDILL, JOSEPH J. *Practical Quality Control for Concrete*. New York, McGraw-Hill, 1962. 320 pp.

A practical manual of concrete as a building material, with emphasis on the prevention and cure of defects. Gives practical guidance on the processing, classification, stockpiling, and inspection of concrete materials—including additives—and recommends techniques for mixing, placing, and curing concrete under a wide range of conditions.

## X. Bibliographies and Handbooks

921. ABRAHAM, HERBERT *Asphalts and Allied Substances*, v. 5. Princeton, N.J., Van Nostrand, 1962. 500 pp

Full details of the methods of sampling and testing manufactured bituminous products are given, including paving mixtures such as bituminous macadam, grouts, mastics, and pipe sealers, premolded compositions, electrical insulation compositions, and bituminized fabrics. Tests are given for specific gravity, hardness, and softening point, for determining the percentage and nature of the constituents, and for examining the physical and chemical characteristics of same.

922. ALEXANDER-FRUTSCHI, MARIAN CHILIS *Small Industry, an International Annotated Bibliography*. Glencoe, Ill., Free Press, 1960. 218 pp

Presents in bibliographical form topics such as internal management, policy and planning, geographical areas and countries, specific industries, including beverages, tobacco, textiles, and metal products, technical aid, organizations, and many others. A survey of worldwide literature covering more than 1,100 books, articles, and pamphlets.

923. ALJIAN, GEORGE W. (editor) *Purchasing Handbook*. New York, McGraw-Hill, 1958. various pagings

A standard reference book of 1,388 pages on purchasing policies, practices, procedures, contracts and forms, prepared by a staff of 220 specialists. Presents facts, principles and methods, and data covering the organization and management of the purchasing department and the entire purchasing routine. Should be useful to purchasing personnel of any size firm, particularly to persons in management responsible for procurement. Complete information ranges from how to buy major construction to how to set up a "cash purchase order" system for small business.

924. AMERICAN INSTITUTE OF STEEL CONSTRUCTION *Steel Construction*. New York, 1960. 454 pp

An extensively used handbook in its field. Contains all commercially available shapes and sizes along with the latest theory of design in easy-to-understand terms.

925. AMERICAN SOCIETY OF TOOL AND MANUFACTURING ENGINEERS. *Tool Engineer's Handbook* (2d ed) New York, McGraw-Hill, 1959. various pagings

Discusses various tools and machines and their uses in shaping, finishing, joining, and testing of materials. Also discusses gears, cams, and bearings with relation to their manufacture and use. Considers all phases of planning, control, design, tooling, etc., involved in the mechanical processing of finished products.

926. BRADY, GEORGE STUART. *Materials Handbook* (8th ed) New York, McGraw Hill, 1956. 1022 pp.

Provides practical data on approximately 10,000 materials. Presents pertinent facts on metals, alloys, refractories, abrasives, woods, and many other materials. Concentrates on supplying essential and useful facts for purchasing agents, engineers, and executives. In Part II, basic information on the economic geography of material resources, weights, measurements, and physical comparisons is presented.

927. CRISPIN, FREDERIC SWING. *Dictionary of Technical Terms*. Milwaukee, Wis., Bruce Publishing Co., 1961. 454 pp.

Compiled for the use of students, draftsmen, mechanics, builders, electricians, and for workmen generally, to aid them in securing an understanding of technical terms with which they come in contact daily. It contains terms and definitions not found in earlier editions of this publication, or in the average dictionary, particularly in the fields of aeronautics, auto mechanics, electricity, plastics, radio, television, and welding.

928. "LNR REPORTS HIGH STRENGTH STEEL," *Engineering News Record*, Feb. 15, 1962, v. 168, no. 17, pp. 40-55

Tells of new high strength steels and their properties, how to select an economic steel, how chemistry affects its behavior, and how engineers are using these steels.

929. MAYNARD, HAROLD BRIGTH (editor). *Industrial Engineering Handbook*. New York, McGraw-Hill 1956. various pagings

A thorough treatment of modern industrial methods of management. Examples, discussion, and procedure are given for motion and time

studies and other methods of work measurement, wage payments, control of inventory and cost, and design of plant facilities. A section is also included on basic skills from using a slide rule to training methods for personnel.

930. ROCHLIN, ROBERT S., and SCHULTZ, WARNER W. *Radioisotopes for Industry*. New York, Reinhold, 1959. 190 pp.

Discusses various uses of radioisotopes in industry for measurement, control, and research. Contains bibliography and list of useful isotopes.

931. STANAR, WILLIAM (editor) *Plant Engineering Handbook* (2d ed) New York, McGraw-Hill, 1959. various pagings

Written for those people in industry who are responsible for organization, design, construction, operation, and maintenance. The book is a compendium of industrial know how and presents in compact form material that appears in greater detail in specialized reference works. Treats subjects such as foundations, materials of construction, refrigeration, powerplants, power transmission, bearings, materials handling, plant layout, product planning, standardization, and process synchronization.

932. U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT. COMMUNICATIONS RESOURCES DIVISION. *Book Reviews*. Washington, D.C., 1962. 170 pp.

Annotated bibliography of United States publications relating to industry, mostly in 1962.

933. U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT. TECHNICAL AID BRANCH. *Report Series*. Washington, D.C.

Plant Requirements Reports: Plant reports, as listed in the *Index of Publications* (above), are short studies presenting basic information for a United States prototype on plant site, machinery, equipment, materials, labor, prices, and other basic requirements for production in a small plant in a particular segment of industry, together with information on the factory operations performed, the capital requirements, and the practical aspects of the operation. Operational Data Reports: These reports are short versions of the Plant Requirements Reports. They are based on an answer to a specific request from an overseas cooperative program and modified to the specific size and/or productive capacity

specified by the requestor. **Plant Operations Reports:** These reports are basically the same as Plant Requirements Reports, but in fuller detail and with more comprehensive outlines of the factory operations. **Technical Inquiry Service Reports** These reports are also short versions of the Plant Requirements Reports. They are based on an answer to a specific request from an overseas cooperative program and modified to the specific size and/or productive capacity specified by the requestor.

## Chapter 10.

# TRANSPORTATION AND TRADE

### *A. Transportation*

#### I. Transportation Policy and Development

934. BECKMANN, MARTIN, et al. *Studies in the Economics of Transportation*. New Haven, Conn., Yale University Press, 1956. 232 pp.

Designed for economists, engineers, mathematicians, and other professionals interested in efficient transportation methods. The first section discusses highways and includes traffic control, intersection problems, and costs and tolls. The second section discusses railroads, including freight operations and yard management.

935. CONFERENCE ON TRANSPORTATION RESEARCH, WOODS HOLE, 1960. *Transportation Design Considerations*. Washington, D.C., National Academy of Sciences, 1961. 243 pp.

Papers and discussions from a conference of physical scientists, engineers, and social scientists; selected on criteria of significance, novelty, and difficulty of access in other sources. Discusses the volume and spatial distribution of various types of transport; "models" of transportation systems and the concept of systems applied to transportation; the future development and necessary inputs for various types of transportation in the United States, the interaction between transportation and differential regional economic growth; transportation problems in the urban setting; and the requirements for urban planning of transportation.

936. DAGGETT, STUART. *Principles of Island Transportation* (4th ed) New York, Harper & Bros., 1955. 788 pp.

Describes the development and place in the economy of the principal modes of transportation: railroads, truck, air transport, water and pipeline. Examines the interrelationship of these different transportation systems and their legal, regulatory, and operational status.

937. HALL, H. H. *Sizes and Types of Standard Freight Containers for Universal Carrier Interchange*. Bulk Solids Handling Symposium, The American Society of Mechanical Engineers, Oct. 17-18, 1961.

Discusses flexibility of container interchange between rail, highway, marine, and air carriers

938. HAY, WILLIAM WALLER. *An Introduction to Transportation Engineering*. New York, Wiley, 1961. 505 pp.

Introduces to the layman some elements of engineering science and technological factors, as well as principles and problems involved in the planning, forming, and functioning of various modes of transport in moving persons and goods. Also relates the characteristics of operation and the suitability and utility of particular modes of transport to the nation's transportation resources and to the cost of such transportation.

939. KAUFMANN, JOHN H. "Planning for transport investment in the development of Iran," *American Economic Review* May 1962, v. 52, no. 2, pp. 396-404.

Discusses bases for analyzing the transportation structure of a developing nation in terms of long term growth rather than short-term gain.

940. LOCKLIN, DAVID PHILIP. *Economics of Transportation* (5th ed) Homewood, Ill., Irwin, 1960. 874 pp.

A comprehensive treatment of the economic characteristics of transportation. Emphasizes the necessity of improved transportation systems for economic development. Uses railways, railway rate theory, and rate-making practices as illustrative examples to develop the major principles of transportation relevant to all types of transport with the differences and similarities carefully distinguished.

941. MYLER, JOHN ROBERT, et al. *The Economics of Competition in the Transportation Industries*. Cambridge, Mass., Harvard University Press, 1959. 359 pp.

Discusses problems, procedures, rates, and market structure of the transportation industry, including air, land, water, and combined transportation.

942. MOSSMAN, FRANK HOMER, and MORTON, NEWTON. *Principles of Transportation*. New York, Ronald Press, 1957. 510 pp.

Presents the basic economic principles of transportation and illustrates the practices involved in carrier operation, management, and regulation. There is a historic development of all the major transport facilities, including rail, motor, air, and water transportation; pipelines, railway express and freight forwarders; and urban transportation.

943. OWEN, WILFRED. "Transportation and economic development," *American Economic Review*. May 1959, v. 49, no. 2, pp. 179-187.

Discusses transport as the gap between producer and consumer and the methods to lessen this gap through an effective transport policy and system. Stresses need for resources and people capable of developing transport and thus promoting economic growth. Covers such topics as amount of investment in various transportation facilities and type of transport that is most efficient by serving the most, yet costing the least.

944. ———. "Transportation and technology," *American Economic Review*. May 1962, v. 52, no. 2, pp. 405-413.

Discusses the application of modern technology to increasing and improving the transportation facilities of underdeveloped countries. Covers costs, avoidance of waste, appropriate transportation programs, and transport innovations.

945. RUPPENTHAL, KARL M. (editor) *Challenge to Transportation*. Stanford, Calif., Stanford University, Graduate School of Business, 1961. 206 pp.

Deals with various aspects of the challenges and anticipated changes in transportation in the decade ahead. Covers tools for transportation management; astronautics; consolidation; air, rail, and motor transport; pricing; and engineering.

## II. Road and Road Transportation

946. AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS. COMMITTEE ON PLANNING AND DESIGN POLICIES. *Informational Report on Road User Benefit Analyses for Highway Improvements. Part I Passenger Cars in Rural Areas.* Washington, D.C., 1955. 137 pp.

Demonstrates and explains simple mathematical formulae for improving rural roads for automobile traffic. Discusses problems of location, design, construction, repair, and costs.

947. BAUER, JOHN, and COSHILLO, PETER. *Transit Modernization and Street Traffic Control.* Chicago, Ill., Public Administration Service, 1950. 271 pp.

Presents a program of municipal responsibility and administration to replace mass private transportation with public carriers. Discusses factors of modernization including types of carriers and systems now in use. Discusses the merits of private companies versus municipal ownership, financing, fares, and labor, and traffic planning.

948. GARRISON, WILLIAM L., et al. *Studies of Highway Development and Geographic Change.* Seattle, Wash., University of Washington Press, 1959. 291 pp.

Analyzes the influence and characteristics of highway development on retail business and customer movement, residential land use, and highway related services, particularly medical.

949. HIGHWAY RESEARCH BOARD. *Bulletin.* Washington, D.C., 1946.

A series of more than 250 monographs which deal with a wide variety of technical matters related to highway design, construction, materials, durability, utilization, financing, and administration.

950. MATSON, THLODORÉ MALVIN, et al. *Traffic Engineering*. New York, McGraw-Hill, 1955. 647 pp.

An introduction to the understanding of highway traffic phenomena required in the planning, operating, and administration of an efficient highway system. Charts and diagrams are used extensively as additional aids. Gives a general background on characteristics, regulations, control devices, and design applicable to automotive transportation.

951. MOHRING, HERBERT, and HARWITZ, MITCHELL. *Highway Benefits: an Analytical Framework*. Evanston, Ill., Northwestern University Press, 1962. 209 pp.

Deals with the nature and measurement of highway benefits and the way in which their magnitude and distribution are affected by alternative financing systems. Discusses recently developed tools for measuring benefits of highways to the economy, describes existing body of highway impact research and its applicability, and presents theoretical and empirical problems on the effect of highway investments on land values.

952. NATIONAL ASSOCIATION OF COUNTY ENGINEERS. *Manual on Advance Road Programs*. Washington, D C., Oct. 1960.

First of a series of methods manuals. Advance road programing provides the means to develop highways and highway systems that will be capable of handling vehicular traffic more efficiently. It is based on an accounting of existing road facilities, on studies of the kind and volume of traffic, and on systematically grouping similar roads into classes. Thereafter, programing involves establishing a financial plan, assigning priorities to work projects and scheduling them into long- and short-range road improvement programs. The process provides for a periodic review of progress to assure the program's development in balance with needs and ability to finance.

953. RITTER, LEO JOHN, JR., and PAQUETTE, RADNOR J. *Highway Engineering* (2d ed) New York, Ronald Press, 1960. 751 pp.

Designed to give an integrated picture of the broad field of highway engineering with emphasis on administration, economics, financing, and planning. Discusses design, drainage, surveys, construction, surfacing treatments, and maintenance.

954. SCHMIDT, ROBERT E., and CAMPBELL, M. EARL. *Highway Traffic Estimation*. Saugatuck, Conn., Eno Foundation, 1956. 247 pp.

A guide for highway planning, design, and traffic engineers. Concerned mainly with traffic aspects of urban areas and growth of traffic resulting from increase in population. Considers highway safety and anticipated parking needs.

955. TAIT, CHARLES ALBERT. *Commercial Motor Transportation* (rev. ed) Homewood, Ill., Irwin, 1955. 673 pp.

An analytical and factual account of commercial motor transportation in both property-carrying and passenger-carrying phases. Presents the scope of bus and truck transportation and the scope of the highway network, the latter emphasized as the key to motor transportation. Various phases of trucking management, operations, and types of carriers as well as the bus and transit problems of passenger carrying and passenger-carrying management and operation are covered in detail.

956. THOMAS, BENJAMIN EARL. *Transportation and Physical Geography in West Africa*. Los Angeles, Calif., University of California, Department of Geography, 1960. 54 pp.

A discussion of trade routes in West Africa with emphasis on physical conditions and seasonal differences. Includes maps showing the monthly changes in usable roads. Separately treats the three main geographical divisions—the Sahara, the savanna and steppe zone, and the Guinea Coast area.

957. Woods, KENNETH BRADY (editor) *Highway Engineering Handbook*. New York, McGraw-Hill, 1960.

Contains latest information on procedures in locating, designing, and constructing highways, and chapters on urban transportation planning and traffic engineering. Data and procedures set forth in these chapters should be of considerable value to officials in developing countries, where the growth in the number of automobiles is creating substantial urban traffic problems.

### III. Railways

958. ABRAMOVITZ, MOSES. "The economic characteristics of railroads and the problem of economic development," *Far Eastern Quarterly*. Feb. 1955, v. 14, no. 2, pp. 169-178.

Introductory article on the ways economic growth is affected by various patterns of railway development. Presents a categorical framework useful in analyzing and understanding the economic characteristics and differences among the various types of railroad transportation systems.

959. ASSOCIATION OF AMERICAN RAILROADS SIGNALING SECTION. *American Railway Signaling Principles and Practices*. Chicago, Ill., 1953-61

A series of educational pamphlets covering all phases of railroad signaling. Sections include history of signaling, symbols, economics of signaling, optional forms of signals available, interlocking devices and techniques, and electrical information. Many charts.

960. HAY, WILLIAM WALTER. *Railroad Engineering*. New York, Wiley, 1953. v. 1.

Fundamentals which the railway civil engineer requires for location, construction and maintenance of a modern railroad; i.e., the diesel-electric and the electric locomotive.

961. MCGOWAN, GEORGE F. *Diesel-Electric Locomotive Handbook*. New York, Simmons-Boardman Publishing Corp., 1951. 262 pp.

A basic reference book for enginemen, maintenance men, and other railroad personnel engaged in operating diesel electric locomotives. Book presupposes that reader does not have technical education but has had technical experience. Analyzes basic principles of diesel-electric locomotives and locomotive mechanics. Excellent manual for railroad operators not familiar with locomotive engineering.

962. *Railway Track and Structures Cyclopedia* (8th ed) New York, Simmons-Boardman Publishing Corp., 1955. 854 pp.

An extensive manual of engineering, maintenance and signaling, including descriptions, illustrations, and methods of use of the materials, equipment, and devices employed in the construction and maintenance of tracks, bridges, buildings, water service, signals, and other fixed railway properties and facilities

#### IV. Water Transportation

963. ELDEN, RODNY M. *Ship Management*. Cambridge, Md., Cornell Maritime Press, 1962. 106 pp.

A study of the basic elements in the costs of operation of ships, including labor, food, maintenance, materials, insurance, and other factors, written in an informal style.

964. McDOWELL, CARL E., and GIBBS, H. M. *Ocean Transportation*. New York, McGraw Hill, 1954. 475 pp.

Ocean transportation, the merchant marine, and the shipping industry and their contributions to the world's economy are treated primarily from the point of view of the shipowner and/or operator, and secondarily from the point of view of the shipper, the government, and the public.

965. MANDIL, PHILIP. *A Comparative Evaluation of Novel Ship Types*. Transaction of the Society of Naval Architects and Marine Engineers, June 21-23, 1962.

Analyzes technical characteristics of unusual surface and near-surface craft and their potential in comparison with conventional ships.

966. NATIONAL RESEARCH COUNCIL. MARITIME CARGO TRANSPORTATION CONFERENCE. *Maritime Transportation of Utilized Cargo, a Comparative Economic Analysis of Break-Bulk and Unit Load Systems*. Washington, D.C., National Academy of Sciences National Research Council, 1959. 102 pp. (National Research Council Publication 745)

Serves as a management guide to individual ship operators. Helps the operator to determine the probable effects of unitization upon his operations. Chapters included on general methodology and organizing of employment and data, comparative operation expenses, and critique of methodology. Also included in appendix are examples of computation procedures and work sheets, and formulas and equations for derivations of net cargo and degrees of unitization.

967. ———. *Unitization in Maritime Transportation An Annotated Bibliography*. Washington, D.C., National Academy of Science-National Research Council, 1960. 43 pp

Examines applicability and effects of unitization in maritime transportation. Bibliography of studies in maritime transportation

968. U.S. DEPARTMENT OF COMMERCE OFFICE OF TECHNICAL SERVICES, MARITIME ADMINISTRATION. *Shoreside Facilities for Trailership, Trainship, and Containership Services*. Washington, D.C., 1956.

Outlines prospects for new types of shipping services.

## V. Air Transportation

969. FREDRICK, JOHN HUTCHINSON *Airport Management*. Chicago, Ill., Irwin, 1949. 316 pp.

Discusses airport planning, financing, accounting, and revenues, management duties and procedures, public relations, and service areas.

970. ———. *Commercial Air Transportation* (5th ed) Homewood, Ill., Irwin, 1962. 547 pp.

Discusses safety and organization for air freight and passenger transportation, with sections on regulation, rates and financing, as controlled in the United States by governmental agencies.

971. HYMAN, HANS, JR. "Air transport and economic development: some comments on foreign aid programs," *American Economic Review* May 1962, v 52, no 2, pp 386-395.

Discusses the potential advantages and problems of air transportation in newly emerging nations. Recommends short-distance hauling as possible solution in some areas.

972. SPIAS, ROBERT DIXON *Technical Aspects of Air Transport Management*. New York, McGraw Hill, 1955. 316 pp.

Discusses airline organization, operating costs and revenues, traffic control, communications, and meteorology for cargo and passenger operation. Also considers technological factors for various planes and engines with regard to take off, climb and ceiling performances, cruise control, fuel-load ratios, and maintenance and engineering.

973. STEPIŃSKI, W. Z. "The subsonic VTOL and GETOL in perspective," *Aerospace Engineering*. Apr. 1962, v 21, no. 4.

Discusses technical characteristics of unusual surface and near-surface aircraft and their potential in comparison with conventional types. The possible roles of VIOL (Vertical Take-off and Landing) and GETOL

(Ground Effects Take-off and Landing) aircraft are explored against a background of conventional fixed wing aircraft.

974. ZWENG, CHARLES A, and ZWANG, A. C. *Radio and Instrument Flying*. North Hollywood, Calif, Pan American Navigation, 1948. 355 pp.

A study for the United States Civil Aeronautics Administration cross-country instrument rating examination.

## VI. Traffic Management and Transport Methods

975. ASSOCIATION OF AMERICAN RAILROADS. RAILROAD COMMITTEE FOR THE STUDY OF TRANSPORTATION. *Report by Subcommittee on Pipe Line Transport.* Washington, D. C., 1944.

A 1943 study of United States oil reserves and the feasibility of railroads' attempting to enter the oil marketing industry through construction of steel pipelines.

976. BERMAN, LEWIS PAUL, et al. *Freight Containerization, A Critical Review of its Current Status.* Cambridge, Mass., Containerization Research Company, 1961. 77 pp.

Treats containerization in a manner broad enough to encompass all modes of transportation. Offers methods of improving present development. Vested interests, lack of uniformity, and inability to cooperate are considered obstacles to further uniformity in containerization. However, policy to facilitate the development of containerization is outlined with recommendations for implementing this policy.

977. COLTON, RICHARD C. *Practical Handbook of Industrial Traffic Management.* Washington, D.C., Traffic Service Corporation, 1959. 411 pp.

A practical view of freight transportation aimed at the practicing traffic man. Covers items as freight classification, routing, rates, warehousing, organizing, and equipping a traffic department, passenger traffic, and export and import.

978. CONFERENCE ON TRANSPORTATION OF PERISHABLES, 5TH. *Proceedings.* Davis, Calif., University of California, Division of Agricultural Science, 1961.

Compilation of a series of papers covering harvesting and field handling, packing, cooling and loading, transportation equipment and services by air, truck, ship, and rail.

979. EMERSON, H. N. "Oil--No. 1 transportation job," *Oil and Gas Journal*. Nov. 18, 1957, v. 55, no. 46, pp. 226-238.

Discusses the use of oil transportation in the United States. Ocean tankers, rivertow, railroad tankcars, transport trucks, product pipelines and crude-oil pipelines are included. Describes the principal criteria applicable to an evaluation of each functional method of transportation and an appraisal of each transportation method in terms of these criteria.

980. LESTER, C. B. *Hydraulics for Pipelines*. Bauprene, N.J., Olden Publishing Co., 1958.

Step-by-step approach to the design of a pipeline for handling crude oil products and other liquid hydrocarbons, to meet varying conditions of topography, economics, and throughput.

981. PENNEY, RONALD WALTER, and GULLFOG, ROBERT F. *Laboratory Tests of Refrigerator Cars for Perishable Foods*. Washington, D.C., Department of Agriculture, Agricultural Marketing Service, Marketing Research Division, 1959. 22 pp.

Discusses the efficiency of refrigerated cars, as used in the movement of agricultural products, in terms of their best transfer performance. Offers information to assist in improving design and to reduce deterioration of perishable foods in transit.

982. PHILLIPS, CLINTON WOODWARD, et al. *A Rating Method for Refrigerated Trailer Bodies Hauling Perishable Foods*. Washington, D.C., U.S. Department of Agriculture, Agricultural Marketing Service, 1960. 52 pp. (Marketing Research Report No. 433)

A detailed description of the facility, instruments, equipment, and procedure to be used for testing or rating refrigerated trailers. Standard method proposed determines the cooling load imposed by heat transferred from outside to inside the insulated body.

983. SHOTT, JOHN C. *Piggyback and the Future of Railroad Transportation*. Washington, D.C., Public Affairs Institute, 1960. 43 pp.

A summary of the inception, growth, and development of piggyback operations. Various plans, studies, and conclusions on service, and pertinent economic aspects are included.

984. TAFF, CHARLES ALBERT. *Traffic Management: Principles and Practices*. Homewood, Ill., Irwin, 1955. 570 pp.

Designed for training industrial traffic managers. A major portion of the book is concerned with aspects of freight traffic management. Although based on United States practices, principles are adaptable to low-income nations.

985. *Traffic Engineering Handbook* (2d ed) New Haven, Conn., Institute of Traffic Engineers, 1950. 514 pp.

A study by traffic specialists on various solutions to automobile traffic and transportation problems. Supplements the accepted practices and principles applicable to specific automotive problems with the use of diagrams, graphs, and other illustrative devices.

986. WILSON, GEORGE LLOYD. *Traffic Management: Industrial, Commercial, and Governmental*. Englewood Cliffs, N.J., Prentice-Hall, 1956. 416 pp.

Suggests ways to select the appropriate carrier, trace and expedite the movement of shipments, select routes and secure the best services at the lowest rate. Documented with pertinent Government decisions.

## B. Trade

### I. Institutions and Functions

987. BAKKEN, HENRY. *Theory of Markets and Marketing*. Madison, Wis., Mirmir, 1953. 362 pp.

By attempting to relate the areas of economic history, law, and institutional economic, the author presents a general theory of the evolution of market institutions, their structure, purpose, functions, and inherent characteristics. Attempts to further distinguish between marketing functions and those of production economics. Conceptualizes historical interrelationships which should be useful to understanding and facilitating the development of markets at various stages of development.

988. BECKMAN, THEODORE N., and DAVIDSON, WILLIAM R. *Marketing*. New York, Ronald Press, 1962. 873 pp.

Presents a comprehensive picture of the development and present status of the United States marketing system. Analyzes the total marketing process and institutions. Examines the major policies underlying the activities of these marketing institutions with emphasis on the economic, social, and business implications of these policies.

989. CLEWETT, RICHARD N (editor) *Marketing Channels for Manufactured Products*. Homewood, Ill., Irwin, 1954. 518 pp.

Describes channels by which manufactured products flow from production to consumption. Gives a theoretical and historical explanation of how United States channels developed. The manufactured products mentioned are automobiles, automobile tires, canned foods, frozen foods, household washing machines, meat and related products, men's suits, petroleum products, shoes, steel, textiles, and women's apparel. Channel policy of individual companies and the effect of U.S. Federal legislation on marketing are discussed.

990. COMISH, NEWEL HOWLAND. *Small Scale Retailing*. Portland, Oreg., Binfords & Mort, 1946. 397 pp.

Discusses most of the managerial problems which face the small retail executive. Gives practical answers to problems relating to store organi-

zation, retail locations, store buildings, store layouts, buying and pricing merchandise, interior and window displays, retail advertising, personal salesmanship, telephone selling, and other means of promotion. Also explores the questions of store personnel, compensation systems, control through turnovers, financing, credit and collections, stock control plans, and standards of efficiency.

991. DRUCKER, PETER F. "Marketing and economic development," *Journal of Marketing*. Jan. 1956, v. 22, no. 3, pp. 252-259.

Builds a case for marketing as a vital area of economic development in underdeveloped countries and as a needed and teachable discipline in economic activity.

992. FREDERICK, JOHN HUTCHINSON. *Using Public Warehouses*. Philadelphia, Pa., Chilton, 1957. 149 pp.

Shows the importance of a public warehousing industry as a means of moving goods from manufacturers or other producers and placing them at points of effective consumption for the lowest cost. Examines such aspects as costs, location, legal problems, regulation, and storage. Contains an appendix on common problems in private warehousing and another on terms and conditions of storage in public warehouses.

993. GALBRAITH, JOHN KENNETH, and HOLTON, RICHARD. *Marketing Efficiency in Puerto Rico*. Cambridge, Mass., Harvard University Press, 1955. 204 pp.

A comprehensive study of the marketing of food and other important products of everyday use in Puerto Rico. Emphasis is on the inhibiting marketing institutions and the necessity of structural changes. Extensive use of tables.

994. HEPNER, HARRY WALKER. *Modern Marketing Dynamics and Management*. New York, McGraw-Hill, 1955. 599 pp.

Textbook on marketing geared to the expectations of management, with emphasis on the important administrative marketing problems of top management, their solutions, and the dynamic forces that affect marketing practices. Other areas discussed are possible markets for the products, channels of distribution to be used in selling the products, and sales promotion through dealers and personal selling.

995. HOLDREN, BOB R. *The Structure of a Retail Market and the Market Behavior of Retail Units*. Englewood Cliffs, NJ., Prentice-Hall, 1960. 203 pp.

Results of a study of supermarkets to determine the market structure of a particular form of food retailing and to develop an adequate model of the retail unit. Discusses the nature of the factor markets in which the retail units purchase factors, the nature of the retail units' demand function, and the internal technology of the retail unit.

996. NYSTROM, PAUL HENRY (editor) *Marketing Handbook*. New York, Ronald, 1948. 1321 pp.

Covers various phases of marketing, including policies, training, equipment and compensation of salesmen, quotas, advertising, pricing, and market research. A discussion of the theory and nature of these areas is given and suggestions of practical value are made.

997. SOLOMON, MORTON R. "The structure of the market in undeveloped economics," *Quarterly Journal of Economics*. Aug. 1948, v. 62, pp. 519-541.

Introduces the various sources used in market structure, imperfections, and control mechanisms. Interrelates as well as examines types of markets such as personal services, perishable consumers' goods, and capital goods. Also states the influence of the market structure on economic development in a nation's economy.

998. ZIMMERMAN, MAX MANDELL. *The Supermarket, a Revolution in Distribution*. New York, McGraw-Hill, 1955. 340 pp.

A chronicle of personalities and firms in the supermarket development. Points out the differences between traditional merchandising and the supermarket, and the resultant effects on consumption and production.

## II. Market Research and Forecasting

999. ALEVIZOS, JOHN P. *Marketing Research; Applications, Procedures, and Cases*. Englewood Cliffs, N J, Prentice Hall, 1959. 676 pp.

Gives background information into the mechanics and applications of the techniques of marketing research with reference to 73 case studies. The role of marketing research in marketing management, the methods by which it provides management with the necessary data to develop markets, products, and distribution methods and the organization of a marketing research department all are discussed.

- 1000 AMERICAN MANAGEMENT ASSOCIATION. *Establishing a New Product Program*. New York, 1958. 124 pp. (Management Report 8)

Considers general company policies, design, pricing, management, and marketing research for new product programs in an established company. Discusses when to add and when to drop a product or line of products.

1001. BOYD, HARPER, JR., and WESTGALL, R. *Marketing Research*. Homewood, Ill., Irwin, 1956. 657 pp.

Analyzes research in general and marketing research in particular, and gives a seven step procedure for defining a problem and carrying out the research necessary for its solution. Discusses alternative solutions to major problems encountered in research. Concludes with a discussion of the application of marketing research to four areas of major interest to marketers, and describes the specialized techniques used in each of these.

1002. COPULSKY, WILLIAM. "Forecasting sales in underdeveloped countries," *Journal of Marketing*. July 1959, v. 24, no. 1, pp. 36-40.

Gives keys to identify a country's phases of economic development and to predict the impact that each phase has upon the demand for various classes of products, using the chemical industry as an example.

1003. COREY, E. RAYMOND. *The Development of Markets for New Materials*. Boston, Mass., Harvard University, Graduate School of Business Administration, Division of Research. 1956. 165 pp.

Focuses on the development of markets for aluminum, fibrous glass, and the plastics (particularly polyvinyl chloride and polystyrene) through case studies. Indicates the character, magnitude, and problems of the task which material producers undertake in the development of new end-product markets.

1004. CRISP, RICHARD D. *Sales Planning and Control*. New York, McGraw-Hill, 1961. 402 pp.

One of the McGraw-Hill series on marketing and advertising written primarily for those who work in marketing and marketing-management in industry, it will also be helpful in seminars and executive-development programs sponsored by industries, trade associations, and businesses. It includes a checklist of specific steps to be taken to increase marketing effectiveness and reduce marketing costs.

1005. FERBER, ROBERT, and WALFS, HUGH (editors) *Motivation and Market Behavior*. Homewood, Ill., Irwin, 1958. 437 pp.

Presents a number of papers concerned with motivation research in marketing. Deals with the concept of motivation research from a scientific and a value perspective with pros and cons in each case; discusses and evaluates psychological projective tests, field studies, and aggregate market behavior analysis.

- 1006 *Mathematical Models and Methods in Marketing*, edited by Frank Myron Bass et al. Homewood, Ill., Irwin, 1961. 545 pp.

A collection of readings that focus attention on actual and potential applications of mathematical concepts and techniques to the solution of marketing problems. Technical appendices develop the underlying mathematics for each model examined. Discusses the nature and construction of models of consumer shopping and buying, policy models, and models for allocation of promotional effort and marketing operations.

1007. SILK, LEONARD SOLOMON, and CURLEY, M. LOUISE. *Forecasting Business Trends*. New York, McGraw-Hill, 1956. 157 pp.

Helps in developing practical forecasting judgment. Describes symptomatic and systematic techniques of forecasting, and gives data for business forecasting.

1008. STAUDT, THOMAS A. *A Basic Bibliography on Industrial Marketing*. East Lansing, Mich., American Marketing Association, 1958. 233 pp.

A discussion of marketing management; industrial procurement and buying behavior; product policy and strategy; channels of distribution and marketing institutions, physical distribution; management of sales forces; personal selling; sales service; advertising; sales promotion; pricing and credit; marketing research; and export marketing.

## Chapter II.

### COMMUNICATIONS

#### I. Communication and Development

1009. BERLO, DAVID KENNETH. *The Process of Communication An Introduction to Theory and Practice*. New York, Holt, Rinehart & Winston, 1960. 318 pp.

Recent textbook intended to help students increase their abilities to understand, predict, and affect human behavior through the use of communications. Includes material drawn from behavioral sciences and language studies.

1010. DOOR, LEONARD WILLIAM. *Communication in Africa A Search for Boundaries*. New Haven, Conn., Yale University Press, 1961. 406 pp.

Analyzes 12 variables affecting communication in Africa, using authoritative illustrations based on firsthand observation of African societies in Ghana, Kenya, Nigeria, and South Africa. Covers fundamental areas of non-speech, gesture, rhythm, and language, as well as more complex methods.

1011. EMERY, EDWIN, et. al. *Introduction to Mass Communications*. New York, Dod D, Mead, 1960. 435 pp.

Surveys newspapers, magazines, radio and television, book publishing, and various types of films. Gives brief media histories and analyzes in lay terms their functions as purveyors of news and entertainment and as molders of opinion. Includes chapters on advertising, public relations, and mass communications research, with a separate section devoted to education for mass communication.

1012. GORDON, JAY E. *Motion Picture Production for Industry*. New York, Macmillan, 1961. 352 pp.

Suggests procedures for producing and distributing low budget films prepared for business and industry. Useful to those planning a filmed statement regarding national products or agency work.

1013. GRANNIS, CHANDLER B. (editor) *What Happens in Book Publishing*. New York, Columbia University Press, 1957. 414 pp.

Broad survey of American book publishing with discussion of specific operations and processes, including selection of manuscripts, production, design, and manufacturing; sales; promotion, subsidiary rights; legal problems, distribution of American books abroad, role of university presses, children's books; mass market paperbacks, book clubs; and the publishing of specialized subjects, including religious, technical, scientific, and medical books.

1014. HALL, EDWARD TWITCHILL. *The Silent Language*. Garden City, N.Y., Doubleday, 1959. 240 pp.

Based on a concept of man as a cultural being conditioned by time and spatial perceptions, attitudes toward work and play, and values placed on learning, all of which vary according to setting. The author explains the behavior of men at three distinct levels of activity which he exemplifies in terms of attitudes toward change in instances involving the transfer of knowledge from one foreign group to another.

1015. HUTH, ARNO G. *Communications Media in Tropical Africa*. Washington, D.C., International Cooperation Administration, 1960. 171 pp.

Report based on author's visits to 15 African countries for purpose of drawing together information about radio, films, publications, teaching material, and languages. Offers recommendations for future application of modern communications processes to social and economic development needs.

1016. MOTT, FRANK LUTHER. *American Journalism: A History of Newspapers in the United States Through 270 Years: 1690-1960* (3d ed) New York, Macmillan, 1962. 901 pp.

Comprehensive history and reference work. Arranged chronologically, with much attention given to individual newspapers, as well as to broad trends.

1017. O'HARA, ROBERT C. *Media for Millions: The Process of Mass Communication*. New York, Random House, 1961. 421 pp.

Examines and evaluates various mass media to help the layman analyze and interpret what he reads and hears. Employs easy-to-read, non-technical language and includes an extensive bibliography.

1018. PETERSON, THEODORE BERNARD. *Magazines in the Twentieth Century*. Urbana, Ill., University of Illinois Press, 1956. 457 pp.

Most complete work in the field. Reviews facts, figures, dates, titles, authors, editors, publishers, and other material pertinent to development of American magazines in the 20th century.

1019. PIERCE, JOHN R. *Symbols, Signals and Noise: The Nature and Process of Communication*. New York, Harper, 1961. 305 pp.

Studies the nature of communication, the concepts of information theory, and the relation of information theory to physics, cybernetics, psychology, and art. Discusses the basic works on information theory, as well as the concepts, mathematics, and implications of information theory.

1020. ROSENBERG, BERNARD, and WHITE, DAVID MANNING (editors) *Mass Culture; The Popular Arts in America*. New York, Free Press, Glencoe, 1957. 561 pp.

Shows interplay between mass media and society as described in 51 essays which were written by eminent critics, social scientists, and journalists on books, magazines, detective fiction, comics, radio and television, motion pictures, and advertising.

1021. SCHICK, FRANK L. *The Paperbound Book in America: The History of Paperbacks and Their European Background*. New York, Bowker, 1958. 262 pp.

Summarizes the history of paperbound books in Europe and America; touches briefly upon such phases as technical production, distribution, censorship, and other aspects; and gives short descriptions of the majority of paperback firms and lines in business in 1958.

1022. SCHRAMM, WILBUR LANG *Communication Development and Economic Development*. Stanford, Calif., Stanford University Press, 1962. 36 pp.

Studies interaction between the economic, social, and political changes in newly developing countries and developments in communication in order to derive a basis for understanding it.

1023. SCHRAMM, WILBUR LANG (editor) *Mass Communications: A Book of Readings* (2d ed) Urbana, Ill., University of Illinois Press, 1960. 695 pp.

Second edition of a standard work which helped to establish mass communication as a separate field of study. Presents background material on development, structure and function, control and support, process, content, audience, effects, and responsibility of the various media. Includes ethical codes of the American Society of Newspaper Editors, the Motion Picture Association of America, and the National Association of Broadcasters, compares the size of mass communications systems in 21 key countries, and provides an extensive bibliography.

1024. WINFIELD, GERALD F. *The Roles of the Communications Processes in the Economic Growth of Nations*. Washington, D C, International Cooperation Administration, 1959. 16 pp.

Highlights importance of communications media in providing international and educational resources essential to development of societies. Analysis based in part on articles by Walter Rostow in *The Economist* of August 15 and August 22, 1959.

1025. WRIGHT, CHARLES ROBERT. *Mass Communication: A Sociological Perspective*. New York, Random House, 1959. 124 pp.

Examines the social, political, and educational implications of the development of mass production systems in the cultural field. Includes a discussion of alternative organizations, called authoritarian, paternal, commercial, and democratic.

## II. Electronics in Communication

1026. ABBOT, WALDO, and RIDLER, RICHARD L. *Handbook of Broadcasting, the Fundamentals of Radio and Television*. New York, McGraw-Hill, 1957. 531 pp.

Fourth edition of a standard text which covers all aspects of radio and television.

1027. BOEHM, G. A. W. "Electronics goes microminiature," *Fortune*. Aug. 1962, v. 66, pp 98-102.

A popular presentation of some of the seemingly fantastic possibilities for utilization of ultra-thin films for miniaturizing the components used in computers and other complex electronic systems. Advantages of miniaturization include not only space and weight saving, but also a reduction of power requirements and an increase in the speed of operation of electronic circuits.

1028. BRETZ, RUDOLF. *Techniques of Television Production*. New York, McGraw-Hill, 1962. 517 pp.

Covers all aspects of television production, including basic types of equipment and their operation, make-up, color television, communication in TV production, and television recording.

1029. CAMIES, B. S. *Principles of Frequency Modulation Applications in Radio Transmitters and Receivers and Radar*. New York, Rider, 1959. 147 pp.

Discusses in detail theories and calculations of frequency modulation and circuits for generating frequency-modulated waves, with emphasis upon FM detectors and receivers.

1030. CARROLL, JOHN MILLAR. *Modern Transistor Circuits*. New York, McGraw-Hill, 1959. 268 pp.

Articles by many authors provide background material on basic circuit design, transistor amplifiers, design of transistor oscillators, design of

pulse circuits, radio and television equipment, industrial control circuits, industrial measuring instruments, scientific and medical instruments, and computer circuit design.

1031. COOKE, NELSON MAGOR, and MARKUS, JOHN. *Electronics and Nucleonics Dictionary*. New York, McGraw-Hill, 1960. 534 pp.

An illustrated dictionary of definitions, abbreviations, and synonyms for 13,000 terms used in television, radio, medical electronics, avionics, nuclear science, and nuclear engineering.

1032. DUNLAP, ORRIN E. *Communications in Space. From Wireless to Satellite Relay*. New York, Harper & Bros., 1962. 175 pp.

Simplified introduction to space technology which reviews discovery of electromagnetic waves and the electron, and subsequent developments in radio, television, radar, and satellite relay systems.

1033. EMERY, WALTER BYRON. *Broadcasting and Government*. East Lansing, Mich., Michigan State University Press, 1961. 482 pp.

Encyclopedic approach to the laws, rules, and regulations which govern the issuance of licenses by the United States Federal Communications Commission, and other information of interest to the students of American government, administrative processes, and broadcasting.

1034. GANT, HARRY NORMAN. *Mobile Radio Telephone*. New York, Macmillan, 1959. 125 pp.

Explains the terms and specifications frequently encountered in manufacturers literature and the effect that these will have on the performance of the equipment. Also explains the installation, maintenance, testing, uses, and limitations of mobile radio telephones.

1035. GARTNER, WOLFGANG W. *Transistors Principles, Design and Applications*. Princeton, N.J., Van Nostrand, 1960. 675 pp.

A general treatment of the basic principles of transistor operation and circuitry. Among the major areas covered are transistors, semiconductor physics, and transistor design, construction, and characteristics.

1036. GREINER, RICHARD A. *Semi-Conductor Devices and Applications*. New York, McGraw-Hill, 1961. 403 pp.

Covers such topics as the physical principles underlying the operation of semi-conductor devices, types of semi-conductors widely used, and transistors and their application to specific types of circuits. Lists some of the solid-state devices which are now available to the electronic engineer.

1037. "LONG-RANGE TROPOSPHERIC TRANSMISSION," *Proceedings of the Institute of Radio Engineers*. Jan. 1960, v 48, no. 1, pp 30-44.

Reviews tropospheric propagation theories, and describes experimental observations of propagation characteristics and the methods used in exploiting tropospheric fields for radio-communication purposes.

1038. PARRY, C. A. "A study of the technical and economic feasibility for tropospheric scatter circuits in primary trunk networks of underdeveloped countries," *Institute of Radio Engineers Transactions on Communications Systems*. Dec. 1959, v. CS-7, no. 4, pp. 290-295.

Briefly touches on the capabilities of the tropospheric scatter circuit for use in primary trunk circuits in areas where geographic or economic conditions make difficult the building of links between main toll centers. Among the areas covered are trunk circuit growth, required channel capacity at the end of the amortization period, revenue potential optimum routing, choice of transmission method, and the optimum number of tandem tropospheric scatter-links.

1039. REICH, HERBERT J., et al. *Microwave Principles*. Princeton, N J., Van Nostrand, 1957. 427 pp.

Covers the fundamentals of microwave devices, and is designed for use in an advanced communications course.

1040. SANDRETTO, PETER C. *Electronic Aviation Engineering*. New York, International Telephone & Telegraph Corporation, 1958. 772 pp.

A recent and comprehensive coverage of telecommunication aids to air navigation which provides simple engineering explanations, gives examples of current engineering practice, and stresses practical problems that arise in operation. Covers all important international developments, and is a complement to Annex 10 of the ICAO International Standards.

1041. SCHWENZFEGLE, E. E. *A High-Volume, High-Speed Weather Information Distribution System* New York, Bell Telephone Laboratories, 1959. 7 pp. (Bell System Monograph No. 3496)

A detailed technical description of a weather information distribution system designed to meet present and future requirements.

1042. SHRADER, ROBERT L. *Electronic Communication* New York, McGraw-Hill, 1959. 937 pp.

A comprehensive coverage of the field of electronic communication for both commercial and amateur radio operators. It covers basic electrical theory, basic electronic circuits of radio transmitters and receivers, application of the basic circuits in communication equipment, and the necessary theory and practical information required to pass all radio license examinations.

### III. Public Opinion and Communication

1043. "Attitude Research in Modernizing Areas." *The Public Opinion Quarterly*. 1958, v. 22, no. 3, pp. 217-434.

An entire quarterly issue divided into an introduction and four major divisions. Research Experiences, Problems, and Methods; The Modernizing of Values, Images, and Attitudes; The Emergence of Popular Politics, and The Socio-economic Factors of Modernization.

1044. BERELSON, BERNARD, and JANOWITZ, MORRIS (editors). *Reader in Public Opinion and Communication*. Glencoe, Ill., Free Press, 1953. 611 pp.

A collection of more than 50 articles by social scientists on various phases of mass communications, grouped under the following headings: theory of public opinion, formation of public opinion; impact of public opinion upon public policy, theory of communication, communication media; structure and control, communication, communication audiences; communication effects, public opinion, communication, and democratic objectives, and methods in public opinion research.

1045. BUREAU OF SOCIAL SCIENCE RESEARCH, WASHINGTON, D.C. *International Communication and Political Opinion; A Guide to the Literature*. Princeton, N.J., Princeton University Press, 1956. 325 pp.

Stresses material dealing with international propaganda and emphasizes political approach. Lists books, journals, and public affairs magazines considered to be scholarly and responsible. Includes a few popular magazines and Government documents, and some unpublished and foreign language materials. Entries are fully annotated and many annotations amount to abstracts.

1046. BURTON, PHILIP WARD. *The Profitable Science of Making Media Work*. New London, Conn., Printers' Ink, 1959. 449 pp.

A textbook concentrating on the use of all types of advertising media, from broadcasting, newspapers, and magazines to billboards, brochures, handbills, and window displays.

1047. CODDING, GEORGE A. *Broadcasting Without Barriers*. New York, UNESCO Publication Center, 1959. 167 pp.

A study of the extent to which radio is used throughout the world to communicate information, and of ways of overcoming political, economic, and technological obstacles that impede its use. Describes broadcasting systems in various countries, broadcasting between countries, use of the radio spectrum, sharing of frequencies, the quest for better techniques, and the impact of television on radio broadcasting.

1048. KLAPPLER, JOSEPH T. *The Effects of Mass Communication*. Glencoe, Ill., Free Press, 1960. 302 pp.

Latest and most complete report to date on the ways various mass media change or reinforce opinion, and on the probable effects on children of TV programs showing crime and violence on escapist and "adult" material.

1049. LACY, DAN MABRY. *Freedom and Communications*. Urbana, Ill., University of Illinois Press, 1961. 93 pp.

Three lectures dealing with the growth and performance of mass communication industries in the United States, discussing needs for improvement and future developments in relation to freedom from government control and public responsibility.

1050. SANDAGE, CHARLES HAROLD, and FRYBURGER, VERNON (editors) *The Role of Advertising: A Book of Readings*. Homewood, Ill., Irwin, 1960. 499 pp.

Discusses the place of advertising in society, and analyzes its responsibility, appeals, function, and impact.

1051. SCHRAMM, WILBUR LANG. *Responsibility in Mass Communication*. New York, Harper & Bros., 1957. 391 pp.

Reviews the growth, philosophy, and ethics of mass communication, and suggests responsibilities for mass communications which must be assumed by government, by the media themselves, and by the general public.

1052. SIEBERT, FREDRICK SEATON, et al. *Four Theories of the Press*. Urbana, Ill., University of Illinois Press, 1956. 153 pp.

A scholarly analysis of relationships between government and journalism which analyzes and interprets four theories underlying operation of world presses; authoritarian, libertarian, social responsibility, and Soviet Communist.

1053. SMYTHE, DALLAS WALKER. *Space Satellite Communications and Public Opinion*. Urbana, Ill., Institute of Communications Research, University of Illinois, 1960. 39 pp.

A study of the gap between technical knowledge of space satellite communications and man's understanding of its social implications.

#### IV. Communications Research

1054. BLUM, LEEANOR. *Reference Books in the Mass Media*. Urbana, Ill., University of Illinois Press, 1962. 103 pp.

A general guide to publications useful in beginning a serious study of mass communication as a social science.

1055. CHAPIN, RICHARD EARL. *Mass Communications. A Statistical Analysis*. East Lansing, Mich., Michigan State University Press, 1957. 148 pp.

Brings together in one volume statistical information concerning mass communication industries in the United States. Tables presented are evaluated for their accuracy and completeness.

1056. DUPLEUR, MELVIN L., and LARSEN, OTTO N. *The Flow of Information: An Experiment in Mass Communication*. New York, Harper & Bros., 1958. 302 pp.

An attempt to trace the social networks through which information flows after delivery by the mass media. Discusses methods of research used, their validity, and the results of the experiment.

1057. FINK, DONALD G. (editor). *Television Engineering Handbook*. New York, McGraw Hill, 1957. No paging.

A handbook prepared by 33 experts in 20 special fields. Covers the entire field of television, and includes transmitting as well as receiving. Also treats monochrome and color systems as well as the systems and standards of the British, French, European (CCIR), and United States groups. In the particularly important field of television receivers, it provides detailed data for every portion of typical receivers in actual practice.

1058. JACKSON, LUCILLE (editor). *Technical Libraries: Their Organization and Management*. New York, Special Libraries Association, 1951. 202 pp.

Describes the function of special libraries in science and technology. The main activities of such libraries are discussed from beginning stages of

organization through more complex operations. Provides information for overall perspective as well as specific techniques for librarians, and contains extensive bibliographical information (primarily United States sources) for this type of library service. Considers such subjects as staff, budget, physical layout and equipment, books, periodicals, miscellaneous publications, administration of routing services, classification, and documentation.

1059. JACOBSON, HOWARD BOONE (editc.) *A Mass Communications Dictionary*. New York, Philosophical Library, 1961. 377 pp.

Guide to terminologies commonly used in references to the press, printing, broadcasting, motion pictures, advertising, and communications research.

1060. NAFZIGER, RALPH O., and WHITE, DAVID MANNING (editors) *Introduction to Mass Communications Research*. Baton Rouge, La., Louisiana State University Press, 1958. 244 pp.

Elementary statement of basic principles and research techniques related to mass media.

1061. OSGOOD, CHARLES EGFRTON, et al. *The Measurement of Meaning*. Urbana, Ill., University of Illinois Press, 1957. 342 pp.

Introduces an objective approach to the measurement of meaning in the "semantic differential," a technique now used world-wide in media research and experimentation.

1062. PRICE, WARREN C. *The Literature of Journalism: An Annotated Bibliography*. Minneapolis, Minn., University of Minnesota Press, 1959. 489 pp.

Historical and biographical approach to published books. Includes a small number of articles, pamphlets, and theses.

1063. SCHWARTZ, SEYMOUR (editor) *Selected Semiconductor Circuits Handbook*. New York, Wiley, 1960. 506 pp.

This handbook makes available to the semi-conductor circuit engineer a large selection of well-designed and reliable contemporary circuitry, as

well as a comprehensive design philosophy text, as an aid in the design of circuits for electronic equipment and systems. The emphasis is on "building block" circuitry. The pertinent characteristics of each selected circuit are fully described, and the general design philosophy preceding each group of selected circuits is set forth as a guide from which other designs can be formulated. Circuit groups described include direct-coupled amplifiers, low-frequency amplifiers, high-frequency amplifiers, oscillators, power converters, and switching, logic, non-linear-magnetic, and transistor circuits.

1064. "Submarine Cable. Oceanography, Marine Biology and Cable Mechanics," *Bell System Technical Journal* Sept. 1957, v 36, pp. 1047-1207.

Contains three papers: (1) submarine cable system environments, (2) performance of organic materials and cable structures under marine conditions, and (3) dynamics and kinematics of laying and recovery of submarine cable. Each paper has an extensive reference list.

1065. WOLSELEY, ROLAND E. *The Journalist's Bookshelf. An Annotated Selected Bibliography of United States Journalism* (7th ed) New York, Chilton, 1961.

Lists works covering all aspects of contemporary journalism and gives brief annotations of most items provided.

1066. WORK CONFERENCE ON CONTENT ANALYSIS, MONTICELLO, ILLINOIS, 1955. *Trends in Content Analysis*. Urbana, Ill., University of Illinois Press, 1959. 244 pp.

Criticizes and defends use of content analysis techniques in a variety of fields, including politics, psychology, psychotherapy, history of linguistics, literature, and folklore.

## Chapter 12.

### EXTERNAL ASSISTANCE AND INTERNATIONAL COOPERATION

#### I. Rationale of Foreign Assistance

1067. AMERICAN ASSEMBLY. *International Stability and Progress*. New York, Columbia University, Graduate School of Business, 1957. 184 pp.

Reports of panel discussions by leading Americans representing a wide range of interests, under the guidance of scholars and experts in international affairs. Provides comments on the objectives and instrumentalities of both the United States and the Soviet Union in their foreign aid policies. The rationales for development programs, the separation of military from economic aid, and the controversy over multilateral versus bilateral aid are some of the critical issues discussed.

1068. BERLINER, JOSEPH S. *Soviet Economic Aid: The New Aid and Trade Policy in Underdeveloped Countries*. New York, Praeger, 1958. 232 pp.

Describes Soviet bloc nations' policies and activities in foreign aid and trade programs. Comparisons are made with similar programs undertaken by the western nations, revealing evidence which explains the characteristics and rationale of Soviet aid. The author correlates the Soviet domestic productive capacity and potentials to the objectives and risks underlying Soviet economic aid.

1069. BLACK, ELGINE ROBERT. *The Diplomacy of Economic Development*. Cambridge, Mass., Harvard University Press, 1960. 74 pp.

Argues for a new brand of "development diplomacy" which circumvents the prevailing political and ideological antagonisms. Permanence of aid, international versus bilateral selection of priorities in allocating aid, and the domestic political priorities of developing nations are the emphasized topics. Like the underlying philosophy of the World Bank,

the author's criteria for evaluating the effectiveness of aid programs relies on the lasting working relationship between nations and tangible developmental results.

1070. CHICAGO, UNIVERSITY. RESEARCH CENTER IN ECONOMIC DEVELOPMENT AND CULTURAL CHANGE. *The Role of Foreign Aid in the Development of Other Countries*. Washington, D.C., U.S. Government Printing Office, 1957. 88 pp.

A comprehensive study which examines the types and magnitude of aid which can accelerate the economic development of low-income nations. The various levels of development that prevail, growth factors, and the effects of economic and technical assistance—direct and indirect, public and private—are discussed, in order to relate the aid giving capability of a national or international agency or firm to the needs and to the political, economic, cultural, and social conditions within the aid-receiving country.

1071. COUNCIL ON TENSIONS IN DEVELOPMENT, OXFORD UNIVERSITY, 1961. *Restless Nations: A Study of World Tensions and Development*. New York, Dodd, Mead, 1962. 217 pp.

Papers and selected comments from a conference held under the auspices of the Council on World Tensions. Discusses the nature of the tensions between donor and recipient nations involved in the worldwide effort toward economic development and the internal tensions of developing nations. Examines motives, country and regional attitudes, and variations in experience and types of problems. Emphasis is on the consequences of colonialists and on the accompanying problems of developing and maintaining democratic relations during the effort to speed up modernization and economic development.

1072. FINN, DAN HUNTINGTON (editor). *Management Guide to Overseas Operations*. New York, McGraw-Hill, 1957. 308

Based on conference sponsored by the Harvard School of Business Administration. Presents studies and papers, prepared by American and foreign businessmen and statesmen, which are focused on overseas business operations. Management problems and case histories in terms of small and large enterprises, executive personnel management, labor relations, distances and communications, and marketing and government policies are the core of this compilation of studies.

1073. GALBRAITH, JOHN KENNETH "A positive approach to economic aid," *Foreign Affairs*. Apr. 1961, v. 39, no. 3, pp. 444-457.

Reviews briefly the prevailing aid policies of the United States, pointing out that several essential elements of economic growth are left unaffected. These elements—high literacy and a highly educated elite, social justice and effective government, a realistic awareness and sense of purpose of development—overshadow capital and other material resources. The author advocates the formulation of a coordinated development aid framework which sets forth economic and cultural targets consistent with the most pressing economic, political, and social aims of the nation involved. He warns against the proliferation of programs, but urges adherence to principal objectives.

1074. HAVILAND, H. FIELD, JR. "Foreign aid and the policy process 1957," *American Political Science Review* Sept. 1958, v. 52, no. 3, pp. 689-724.

A case study of the 1957 reappraisal of foreign aid policy as elucidated through an examination of special legislative studies, executive branch reports, special Senate committee reports, administration proposals, authorization act, and appropriation act. Throughout each of these run the top themes dealing with (1) basic objectives, (2) level of expenditure, (3) continuity and flexibility, (4) financing, (5) criteria for aid, (6) balance between military and economic aid, (7) relationship of the aid agency to Government departments and agencies, and (8) use of multilateral channels.

1075. HIGGINS, BENJAMIN H. *United Nations and U.S. Foreign Economic Policy*. Homewood, Ill., Irwin, 1962. 235 pp.

An extensive discussion and analysis of the strategic factors in the process of economic development and of the issues centering on the uses of international organizations in providing capital and technical assistance. The United States foreign economic policy, as it pertains to development aid, is critically reviewed, and studies are made of the various instrumentalities and the relations evolving with international agencies; namely, IMF, IBRD, SUNFED, IFC, IDA, and the regional economic commissions. The author weighs the relative merits of multilateral aid against bilateral programs in an attempt to determine the criteria for selecting channels of aid. He points to the many problems involved in the implementation of aid measures—coordination, international trade, political stability—and concludes with procedural and substantive recom-

mendations regarding capital and technical assistance, economic stabilization, surplus commodities disposal, and institutional cooperation and coordination.

1076. JAFFE, ABRAM J. *People, Jobs, and Economic Development*. Glencoe, Ill., Free Press, 1959. 381 pp.

A deep and broad study of the effects of foreign aid on an underdeveloped country and of how a preliminary study of the natural geographic strengths of the country could make the direction of this aid more effective. The author is greatly concerned with the high birth rate of the uneducated masses and the lower birth rate among the more educated groups from which leadership might be expected. Experience from Puerto Rico is projected into a future aid program for Mexico.

1077. LISKA, GEORGE. *The New Statecraft; Foreign Aid in American Foreign Policy*. Chicago, Ill., University of Chicago Press, 1960. 246 pp.

A study in search of "consistency and coherence" in foreign aid policies. It is not, however, a purely conceptual intellectual pursuit, but an examination of the actual political, economic, and military instrumentalities utilized by donor nations. The economic and technological complexities of administering aid are avoided in order to devote space to the aid policymaking process in the United States, in relation to international security needs, humanitarian motives, and the political character of aid-receiving nations. In the context of the cold war, aid to "neutrals" and the extent to which the donor nation can act upon the domestic and foreign policies of the recipients are rigorously appraised.

1078. MORGENTHAU, HANS. "A political theory of foreign aid," *American Political Science Review*. June 1962, v. 56, no. 2, pp. 301-309.

A political analysis of the means and ends of foreign aid pointing to the apparent lack of differentiation between the types of activities that aid entails or the motives and objectives underlying these activities. The author distinguishes between transfer of capital, of goods or services, of weapons, and the humanitarian, military, economic, political, or prestige motives. He asserts that each transfer and the underlying motives require a policy and criterion appropriate to the objectives, or else aid programs to a country may counteract each other and possibly cancel out beneficial effects.

1079. MORISON, ROBERT S. "The university and technical assistance," *Daedalus*. Spring 1962, v. 91, no. 2, pp. 319-340.

At the 1961 International Conference on Scientific and Engineering Education held at the Massachusetts Institute of Technology, the author presented this essay in which he examines the causes and educational consequences of economic underdevelopment. He discusses the functions of western universities in introducing into developing nations the accumulation of centuries of technology, knowledge, and skills.

1080. PRICE, HARRY BAYARD *The Marshall Plan and Its Meaning*. Ithaca, N.Y., Cornell University Press, 1955. 424 pp.

The author, a former ECA official, describes the background, institutional framework, programs, and accomplishments of the European Recovery Program and other undertakings following World War II. He stresses the role of the OEEC in stimulating cooperation and initiative among the participating nations. He also comments upon the effects of the change in emphasis from economic to military-political objectives. The documentation, which substantiates much of the writings and the correlative comments on investment programs, internal financial stability, international trade, balance of payment problems, and monetary reserves, suggests the scope of programs that can be undertaken through international cooperation.

1081. STANFORD RESEARCH INSTITUTE. *Significant Issues in Economic Aid to Newly Developing Countries*. Menlo Park, Calif., 1960. 75 pp.

A synopsis of programs, trends, and issues involved in the formulation and execution of United States aid policies. These are (a) difficulties encountered by the U.S. Government in securing effective means to support the objectives of foreign aid, (b) the proliferation of aid programs—public and private, bilateral and multilateral—and the resulting awkward coordination process; and (c) enlisting private enterprise in the aid efforts.

1082. U.S. PRESIDENT'S COMMITTEE TO STUDY THE UNITED STATES MILITARY ASSISTANCE PROGRAM. *Composite Report and Supplement to the Composite Report*. Washington, D.C., U.S. Government Printing Office, 1959. 2 v.

The examination by a committee of senior citizens with experience in Government, business, and the Armed Forces, of the relative emphasis

which the United States should place on military and economic assistance. The features, magnitude, and administration of most types of aid—bilateral and multilateral—are considered. The conflicting domestic and international interests which endanger long range planning and the continuity of aid programs are considered in terms of the economic needs of developing nations. The annex consists of studies by experts which encompass most problems of U.S. aid, e.g., competition with Soviet aid, “soft” loans vs. “hard” loans, the sale of agricultural surplus commodities, the utilization of accrued foreign currencies, and the nonmilitary aspects of bilateral cooperation.

1083. U.S. PRESIDENT'S TASK FORCE ON FOREIGN ECONOMIC ASSISTANCE. *In Act for International Development: A Program for the Decade of Development Summary Presentation*. Washington, D.C., U.S. Government Printing Office, 1961. 185 pp.

The broad requirements of a “decade of development” to provide for the need of developing nations and to maximize the conditions for international security are the premises upon which the study is evolved. The more specific requisites of development and foreign aid—long term programs, priorities in budgeting and programming, the coordination of international efforts, the recognition of international trade problems—are some of the considerations underlying the many programs of aid described. Included is a brief review of the impact of economic assistance on the United States economy, namely balance of payment problems, long range planning, and international trade.

1084. WOLF, CHARLES. *Foreign Aid: Theory and Practice in Southern Asia*. Princeton, N.J., Princeton University Press, 1960. 442 pp.

An analysis of the relative contribution to domestic stability and economic growth made by military and economic aid. In searching for and defining criteria of optimum effectiveness of each type of aid, a complex approach to the evaluation of programs of assistance is provided by the author. He also analyzes in detail the interplay of motives, needs, and objectives underlying the determination of aid priorities and allocation by American policymakers.

## II. Program Development and Field Operations

1085. AMERICAN COUNCIL OF VOLUNTARY AGENCIES FOR FOREIGN SERVICE. *The Role of Voluntary Agencies in Technical Assistance*. New York 1953. 176 pp.

Explores the continuing role of American voluntary effort in the field of technical assistance with particular reference to the areas of agriculture, education, and health, and with analyses of programs in Africa, Burma, and Iran. Discusses those problems which were found to be common concerns of the various auspices of technical assistance programs and makes recommendations for improvements of current programs. Although the study was intended primarily for the information and use of American voluntary agencies and does not represent a comprehensive survey, it does give ideas, opinions, and information of value to persons outside the voluntary agency field.

1086. BOCK, EDWIN A. *Fifty Years of Technical Assistance: Some Administrative Experiences of U.S. Voluntary Agencies*. Chicago, Ill., Public Administration Service, 1954. 65 pp.

Summarizes the experiences of representatives of American voluntary agencies before technical assistance became a matter of national policy. Based on interviews of 55 persons of long experience in health, education, agriculture, and community development assistance programs, it offers many suggestions for planning which are especially applicable to small projects. The selection and formulation of projects and recruitment of personnel are discussed in terms of long versus short-term projects, and the degree of realizable self-help. The author emphasizes the need for understanding the psychological and cultural environment of foreign communities and gives priority to the community approach in development aid.

1087. FAYERWEATHER, JOHN. *Management of International Operations*. New York, McGraw-Hill, 1960. 604 pp.

The author explores the economic, political, and social problems with which business executives must deal when establishing and operating private enterprises abroad. Numerous case studies from foreign enter-

prises in Mexico, India, Turkey, and France serve as examples for comparative analyses of the tasks of managing, financing, organizing, and marketing abroad in social contexts different from those of the United States. Problems in marketing, advertising, import-export procedures, public relations—i.e. personal, community, and labor relations—and the role of government are extensively treated in a way which makes these relevant to issues in economic assistance.

1088. GLICK, PHILIP MILTON. *The Administration of Technical Assistance, Growth in the Americas*. Chicago, Ill., University of Chicago Press, 1957. 390 pp.

A study of the administration of technical assistance by international, private, and United States Government organizations. Latin America is chosen because of the diversities of scales and types of operations in technical cooperation. For specialists in technical and economic assistance and for administrators, this study reveals the complexities of project administration at the source and in the application of aid. Policy problems assume equal, if not greater, significance than administrative obstacles.

1089. JORDAN, AMOS A. *Foreign Aid and the Defense of Southeast Asia*. New York, Praeger, 1962. 272 pp.

The military and economic expertise of the author plus a field study on Southeast Asia are the basis for this study of the Mutual Security Program of the United States as applied principally in Pakistan and South Vietnam. Economic aid being correlative to military assistance in those countries, he discusses in detail the problems which arise over the utilization of local currencies, and over budgeting in the United States and the aid-receiving country because of competitive factors between defense aid and economic assistance. The trade barriers are considered, as well as the administrative and political obstacles in the transfer of resources. The author suggests alternative approaches to the operation of mutual security programs.

1090. LAVIS, WALTER HERMAN CARL, and THOMSON, CHARLES A. *UNESCO Purpose, Progress, Prospects*. Bloomington, Ind., Indiana University Press, 1957. 469 pp.

A chronicle of UNESCO which attempts to outline the scope and character of its program, the stages it has gone through, and the peoples and nations it has been served by in seeking to fulfill its control purpose of contributing to peace and security.

1091. MADDOX, JAMES GRAY. *Technical Assistance by Religious Agencies in Latin America*. Chicago, Ill., University of Chicago Press, 1956. 139 pp.

Against a background which illustrates briefly but concisely the cultural characteristics of Latin America, the author describes and analyzes the educational, medical, and agricultural programs of religious organizations working in Latin America. Thirteen case studies selected to provide a sample of the type of work accomplished by religious agencies bring the reader closer to the foreign setting. The results achieved are compared to the magnitude of efforts and resources expended, including the performance of the missionaries themselves. The two concluding chapters provide cogently stated recommendations.

1092. MICHIGAN STATE UNIVERSITY OF AGRICULTURE AND APPLIED SCIENCE. INTERNATIONAL PROGRAMS. *Technical Assistance Case Reports, Selected Projects in Nine Countries*. East Lansing, Mich., 1961. 212 pp.

A series of case reports or projects and programs dealing with some of the less developed countries of Africa, Asia, and the Middle East. They are not definitive but represent an attempt to find out what has happened in some specific projects established under bilateral agreements. Emphasizes the concept of "totality," that is, involvement of all social, political, and economic factors, in any attempt to transfer technology and knowledge to the underdeveloped nations.

1093. MONTGOMERY, JOHN D. *The Politics of Foreign Aid*. New York, Praeger, 1962. 350 pp.

Clarifies the issues of political principle that arise when American aid is offered to underdeveloped countries. Analyzes the domestic and international political experiences that have colored, altered, and determined the character of the aid program. Presents case studies of the practical problems in administration in Southeast Asia and recommends various ways to improve the flexibility and impact of the mutual-aid operations. Discusses fiscal and administrative reform, the relationship of local press and public information groups to the outcome of a given program, the role of the American Congress, and some of the difficulties encountered by the recipient nations.

1094. OPLER, MORRIS EDWARD. *Social Aspects of Technical Assistance in Operation*. Paris, France, UNESCO, 1954. 79 pp.

Summary of a joint conference sponsored by the United Nations, the Technical Assistance Board, and UNESCO on the social aspects of

technical assistance, with special reference to the functions of field missions and experts. Problems and methods, rather than theory and policy, are discussed by social scientists, field experts, and administrators. Long- and short term planning, timing, balance, priorities, and financial obstacles are examined with regard to objectives and techniques of assistance. The relationship of technical assistance to social structures and cultural patterns of the recipient countries is seen as of equally vital concern to donor countries in bilateral programs.

1095. SCIGLIANO, ROBERT. "They work for Americans: a study of the national staff of an American overseas agency," *American Sociological Review* Oct 1960, v 25, no 5, pp. 695-704.

A study of the national staff working with an American university group in Vietnam provides information regarding the possible sources of socio-cultural frictions between technical assistance personnel and their foreign colleagues. The composition of motives for seeking employment with the United States mission, and level of job satisfaction, are analyzed statistically and compared with expectations and incentives in their society and in relations with American personnel.

1096. SHARP, WALTER RICE. *Field Administration in the United Nations System*. New York, Praeger, 1961. 570 pp.

A massive study of the field operations of United Nations specialized agencies in economic, technical, and social functions within the context of substantive political questions in the U.N. proper. The author describes processes rather than static organizational arrangements in classifying field organizations, touching upon direct governmental and private programs of assistance. Problems underlying the expansion of field operations, such as the trend toward decentralization, difficulties in communications, logistics, and staffing are explored. The recommendations are relevant to bilateral programs and to international civil servants of the specialized agencies of the U.N. Suggests topics for further research.

1097. SYRACUSE UNIVERSITY. MAXWELL GRADUATE SCHOOL OF CITIZENSHIP AND PUBLIC AFFAIRS. *The Operational Aspects of United States Foreign Policy*. Washington, D.C., U.S. Government Printing Office, 1959. U.S. Senate, 87th Congress. Study no. 6, Document no. 24, pp. 555-633.

A broad analysis of the basic aims of United States foreign policy, integrating both country and regional policies in foreign aid. Considering

the rapidity and continuity of economic and political change, it suggests several approaches to international cooperation between the United States and less developed nations. One such approach is the "institutional" operation of aid. Another is the "disengagement" of aid from the cold war. A third is the decentralization of decision-making in program implementation. A fourth is to provide, whenever possible, increased and more diverse aid through international channels.

1098. TECHNICAL ASSISTANCE INFORMATION CLEARING HOUSE *Directory of American Voluntary and Non Profit Agencies in Technical Assistance Abroad*, edited by Wayland Zwyer. New York, American Council of Voluntary Agencies for Foreign Service, 1961. 217 pp.

A comprehensive compilation of American voluntary agencies engaged in assistance in the fields of agriculture, community development (rural and urban), health, education, industrial and business development, public administration, and research. Provides a one page profile of 98 agencies, data includes United States address, date of founding, executive staff, activities, technical assistance programs, finances, number and nationality of overseas personnel, and geographic areas of operation. For some of the larger agencies, more detailed information is provided pertaining to native organizations with which each works, local activities, and geographic areas within countries. Brief background of the Council of American Voluntary Agencies appears in the introduction. Indexed and cross-indexed by country and program.

1099. U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT. *Program Guidance Manual*. Washington, D.C., 1962.

A detailed statement of United States program policies and procedures regarding assistance to other countries.

1100. U.S. SENATE. *The Use of Private Contractors in Foreign Aid Programs*. Washington, D.C., U.S. Government Printing Office, 1957. 109 pp.

The use of contractors—engineering firms, management consultants, universities, foundations, labor federations, and voluntary service organizations—by United States overseas missions is evaluated in terms of comparable costs and efficacy if AID (ICA) directly provided the services. Problems in selection of contractors, in contract negotiation, of mutual relationships between contractors, the overseas mission, and foreign governments are described and remedial steps suggested to provide guidance in policy and procedures.

### III. Recruiting and Training Advisers

1101. CLEVELAND, HARLAN, et al. *The Overseas American*. New York, McGraw-Hill, 1960. 316 pp.

A comprehensive study in which a general theory of overseas service is tentatively formulated. The specific objectives of research were to reach tentative conclusions about the education, selection, and orientation of Americans sent abroad on government posts, religious missions, or business and private ventures. Measures of success in overseas services were determined from sampling the attitudes, education, and skills of Americans working abroad for the United States Government, industry, international organizations, and voluntary organizations. A loose but validated cluster of traits, skills, and attitudes desired of "overseas Americans" is assembled by the authors and other participants in the projects.

1102. ESMAN, MILTON JACOB. *Needed: An Educational Research Base to Support America's Expanded Commitments Overseas*. Pittsburgh, Pa. University of Pittsburgh Press, 1961. 46 pp.

The unparalleled scope and magnitude of current United States overseas activities, especially those aimed at assisting in the development of low-income countries, has not been supported by commensurate investments in research and education. The author outlines understandings which should be possessed by U.S. operational personnel overseas and proposes a strategy of training to develop these capabilities. He also proposes a major research effort to develop substantive knowledge relevant to specific problems involved in economic and social development.

1103. FARWELLATHI R, JOHN. *The Executive Overseas: Administrative Attitudes and Relationships in a Foreign Culture*. Syracuse, N.Y., Syracuse University Press, 1959. 195 pp.

A study of the psycho-sociological barriers which obstruct harmonious relations between American executives and their foreign colleagues. In a Mexican setting, the author analyzes the conflicts which arise and the administrative problems that ensue in establishing prosperous, self-sustained enterprises.

1104. FOSTER, GEORGE McCLELLAND *Traditional Cultures And the Impact of Technological Change* New York, Harper & Bros, 1962. 292 pp.
- Deals with the cultural, social, and psychological sides of technical assistance, especially as it relates to traditional rural communities. Author feels that many problems of American specialists overseas could be ameliorated by an understanding and utilization of social science, particularly anthropology.
1105. INTERPROFESSIONAL CONFERENCE ON TRAINING OF PERSONNEL FOR OVERSEAS SERVICE, CORNELL UNIVERSITY, 1959 *Interprofessional Training Goals for Technical Assistance Personnel Abroad* New York, Council on Social Work Education, 1959 198 pp
- A conference report of theoretical and empirical viewpoints on the rapid adaptation of knowledge and technology in agriculture, education, health, and social welfare in underdeveloped countries. The need to train specialists to become agents of change is recognized and the qualities desired, and expected idea of foreign experts abroad occupy a significant part of the report. A large part of the work consists of extensively documented background papers which consider in detail the human prerequisites and consequences of social change in relation to the various programs undertaken abroad.
1106. LANDAU, GEORGE D. "Considerations on an international administrative service," *Economic Development and Cultural Change*. Oct. 1959, v. 8, no. 1, pp 48-68.
- Reviews the history of the concept of an international administrative service and criticizes the United Nations program as potentially ineffective due to political limitations and cross-cultural misunderstanding. Proposes as an alternative the use of a "servicio," a special, semi-autonomous unit operating within the host government.
1107. WINSLOW, ANNE. "The technical assistance expert," *International Development Review*. Sept. 1962, v. 4, no. 3, pp. 17-24.
- A report derived from a conference in Rome at which the concepts and practices in recruitment, selection, and training of technical assistance personnel were discussed. Of particular interest are the brief comments and suggestions about the quantitative and qualitative aspects of training and orientation, alternatives for solving the problems of time in training, orientation, and language indoctrination.

#### IV. Oversea Training of Persons From the Developing Countries

1108. ADAMS, RICHARD N., and CUMBERLAND, CHARLES C. *United States University Cooperation in Latin America*. East Lansing, Mich., Michigan State University, Institute of Research on Overseas Programs, 264 pp.

A description of selected projects in Bolivia, Chile, Peru, and Mexico as part of a three year study of American universities' overseas affiliation programs. Recruitment, language training, and tours of duty abroad by professional American personnel are the principal staffing problems. These difficulties, coupled with conflicting objectives and long-distance communication, press upon the parent university such matters as transcending cultural differences, transferring and adapting methods and ideas to the host country, and establishing program priorities.

1109. COMMITTEE ON THE UNIVERSITY AND WORLD AFFAIRS. *The University and World Affairs*. New York, Ford Foundation, 1960. 84 pp.

A general study of the role of American universities in international affairs. The need for a national coordinating mechanism consisting of government, business, private foundations, universities and colleges, for the appraisal of educational needs of this and other countries is extensively discussed. Consideration is given to programs of academic value, as well as those of a practical nature. The planning and appraisal of international educational programs and their implementation are examined. Emphasis is placed on research, language study, and specialized programs for the foreign student.

1110. DUBOIS, CORA ALICE. *Foreign Students and Higher Education in the United States*. Washington, D.C., American Council on Education, 1956. 221 pp.

Analyzes the problems, potentialities, and goals of international education. Discusses the training of participants, the educational institutions, and the various private and public agencies operating in this area. The common problems of students entering a strange land are described, and policies to meet the students' goals as well as the goals of both sending and receiving countries are suggested.

1111. NEFF, KENNETH L. *Education and the Development of Human Technology*. Washington, D.C., US Office of Education, Department of Health, Education, and Welfare, U.S. Government Printing Office, 1962. 34 pp. (Document No. OE-10018)

A concise review of the factors that must be considered in programing implementation of the educational objectives of the 1961 Act for International Development. Assistance in developing "human technology" is considered the prerequisite for the elimination of illiteracy, for the establishment of programs of vocational and professional training, and for the development of bodies of educational theory peculiar to the country to which aid is given. The author cautions against the possible misuse of the skills of the pedagogic expert

1112. ROBINSON, MARY ELECTA. *Education for Social Change*. Washington, D.C., Brookings Institution, 1961. 90 pp.

Reviewing 10 years' experience in the establishment of institutes of public and business administration abroad through technical assistance contracts, the author considers training in business and public administration abroad as a task in institution development with high social and economic value. The principal considerations are the early planning and surveying, the role of both the American university and the recipient nation in setting priorities; the relationships among the respective governments, educational institutions, and other agencies; the many programs implemented, and the resulting contributions made to both the host country and to American administration. Specific recommendations are made regarding the orientation and extent of training, the need for research in cultural patterns, and the role of professional societies in international communications.

1113. WEIDNER, EDWARD W. *The World Role of Universities*. New York, McGraw-Hill, 1962. 366 pp.

A description and evaluation of the various types of student exchange, technical assistance, and international affiliation programs in which American universities are participating. The author comments upon the problems different national philosophies toward education create for international university programs. After describing and appraising several cooperative projects, he examines the implications of these and makes recommendations encompassing all known aspects of international multilateral and bilateral programs of higher education involving American universities.

## V. Internal Flow of Capital

1114. ASHER, ROBERT E. *Grants, Loans, and Local Currencies*. Washington, D.C., Brookings Institution, 1961. 142 pp.

A study of the theory and practice of grants, loans, and sales as these have evolved in bilateral and multilateral aid programs since World War II. The issues are economic rather than political, and the treatment given is general rather than technical. Attention is given to controversial subjects such as grants versus loans, aid and the balance of payments, project versus nonproject aid, the accumulation and use of "counterpart" currencies in terms of the legislative and executive authority and objectives in the United States.

1115. BRYSON, GEORGE D. *American Management Abroad, a Handbook for the Business Executive Overseas*. New York, Harper Bros., 1961. 240 pp.

Discusses the problems of establishing and operating business organizations in a foreign land. Although written as handbook for United States executives involved in or contemplating operations overseas, it contains helpful suggestions for anyone with a stable source of venture capital attempting to establish a business organization in a developing country.

1116. FRIEDMANN, WOLFGANG, and KALMANOFF, GEORGE. *Joint International Business Ventures*. New York, Columbia University Press, 1961. 558 pp.

Joint public and private business ventures designed to establish consumer and capital goods industries are seen here as a means of reducing economic and political dependence of low income nations. The author discusses in detail the productive potentials of such enterprises and the political and psychological obstacles that stand in the way of their realization. Based on case studies drawn from experience of joint ventures in Asian and Latin American countries which vary in their level of development, the author concludes that joint international ventures have been and can be a success.

1117. HOFFMAN, PAUL GRAY. *One-Hundred Countries, One and One-Quarter Billion People*. Washington, D.C., Albert D. and Mary Lasker Foundation, 1960. 62 pp.

Contrasting the rapid recovery of the European economy after 1945 at costs below statistical estimates, the author suggests that, similarly, the 1960-70 decade can mark greater growth at costs below expectations in developing countries. Considering aid as a moral and utilitarian imperative on the part of the prosperous nations, he sets a 2 percent per capita annual growth requirement in developing nations. This would require \$70 billion in external aid. To be successful and to be performed at the least possible cost, programs of aid must draw on the rich and pervasive experiences of international agencies, and must, when possible, be divorced from international and domestic politics. Such a program of aid presupposes long-term loans, liberal trade, and a high rate of growth in the few prosperous nations.

1118. JAVITS, BENJAMIN ABRAHAM, and KEYSERLING, LEON H. *The World Development Corporation A Giant Peace and Prosperity Plan*. Washington, D.C., Benjamin A. Javits and Leon H. Keyserling, 1959. 45 pp.

Proposes the establishment of a privately financed world development corporation operating as an independent agency of the United States Government. Basing their proposal on the need for large-scale investments in developing nations, the authors discuss long-term investment programs of \$13 billion a year from the proposed worldwide equity investment agency. Loans would be provided to both development projects and private enterprise outside the U.S., especially to the developing nations. The activities of the projected corporation are contrasted with those of the existing credit and aid institutions.

1119. KENEN, PETER B. *Giant Among Nations: Problems in United States Foreign Economic Policy*. New York, Harcourt, Brace, 1960. 232 pp.

The responsibilities assumed by the United States in world affairs and the resulting burdens on the national economy require the most efficient allocation of available resources and utilization of every opportunity for specialization in foreign trade. This raises questions about the effects of aid policies and practices on the American domestic economy. For example: How much savings can be allocated for foreign investments? How is capital to be raised in the lending country and through which institutional channels should the funds be transmitted? What criteria should determine the eligibility and needs of borrowing countries when

the latter's priorities are not compatible with American national interests? How can these conflicts be reconciled? Discussion of past and present experience suggests what can be avoided and attempted.

1120. NATIONAL PLANNING ASSOCIATION. *Case Studies of Business Performance Abroad*. New York, 1953-62. Nos. 1-11.

Eleven selected case studies which describe how United States business firms have contributed to raising the level of living in communities in Asia, Latin America, and Africa. No pretense is made that these are typical U.S. enterprises abroad, but rather that these could serve as models according to which foreign firms in low-income nations can accelerate the maturing process of these economies. These firms' activities are synonymous with most programs of technical and economic assistance engendering the creation of complementary enterprises, e.g., developing transportation and communications networks, establishing or expanding financial and commercial institutions, providing local and national employment and revenues, opening technical and administrative training centers, and promoting the growth of community institutions of a social character.

1121. ROBINSON, HARRY J. *The Motivation and Flow of Private Foreign Investment*. Menlo Park, Calif., Stanford Research Institute, 1961. 96 pp.

A concise but well-documented study regarding the factors that promote or impede the flow of private investments needed to provide the industrial diversification required by developing nations. Based on the survey of American, Japanese, and European firms operating outside their national boundaries, the determinants of choices of location, magnitudes, capital formation, and types of enterprises are compared with government policies which attract and deter investments.

1122. ROBINSON, RICHARD D. (editor). *Cases in International Business*. New York, Holt, Rinehart & Winston, 1962. 156 pp.

Presents a discussion centered around 12 case studies of firms doing international business, some in emerging nations. Problem studies include conflict of interest, financing, impact on local employment, negotiating strategy and financing, and local tax provision.

1123. ROSENSTEIN-RODAN, PAUL N. "International aid for underdeveloped countries," *Review of Economics and Statistics*. May 1961, v. 43, no. 2, pp. 107-138.

The basic thesis is that external capital in a development program is not directly to raise standards of living in the recipient country but to act as a catalyst in mobilizing a low-income nation's resources. On this basis, the author discusses the recipient nation's absorptive capacity in relation to the projects which require external capital. He defines the various types of aid—long-term loans, grants and "soft loans," sale of surplus agricultural products, and technical assistance—and sets forth a general proposal on how the burden of international aid should be divided among developed countries. He appends the proposal with extensive quantitative data concerning the capital needs of underdeveloped nations and foreign capital in-flow required during 1961-76.

1124. Viner, JACOB. "Economic foreign policy on the New Frontier," *Foreign Affairs*, July 1961, v. 39, no. 4, pp. 560-577.

Examines critically the economic foreign policy of the United States in relation to American foreign and domestic commitments. Discusses the resentment of agricultural and textile exporting nations to American agricultural surplus disposal arrangements. Points to measures that are necessary to restore international disequilibrium of inter-nation cooperation, and urges utilizing the IMF machinery for increasing liquid assets of trading nations.

1125. WHITMAN, MARINA VON NEWMAN. *The United States Investment Guaranty Program and Private Foreign Investment*. Princeton, N.J., Princeton University, Department of Economics and Sociology, International Finance Section, 1959. 91 pp.

A review of Investment Guaranty Program policies and administration by the Import-Export Bank and the Development Loan Fund. The author distinguishes between the actuarial basis of private guaranties and the political implications of United States Government guaranties to private American firms investing in developing nations. The shortcomings of attempts to reassure private investors, e.g., deferred tax payments, bilateral and multilateral tax treaties, "gradual" nationalization, and changing political climates, are contrasted with the role of U.S. private capital in the development of low-income nations. Weighing the advantages of private versus public capital flows, the author provides creative recommendations of a substantive and procedural nature.

1126. WOLF, CHARLES, and SUFRIN, SIDNEY CHARLES. *Capital Formation and Foreign Investment in Underdeveloped Areas; an Analysis of Research Needs and Program Possibilities*. Syracuse, N.Y., Syracuse University Press, 1955. 134 pp.

A study undertaken to prepare a selective inventory of research completed, dealing with capital formation and foreign investments in underdeveloped areas. The authors suggest that non-economic factors may be more vital to economic growth, but that programs of capital formation through domestic and international channels must aim at economically productive endeavors. Special emphasis is placed on South and Southeast Asia and the Near East with respect to these aspects of capital formation: entrepreneurship, technological alternative in utilizing external and internal capital, and foreign investments.

## VI. Agricultural Commodities Assistance

1127. HARDIN, CHARLES M. (editor) "Agricultural policy, politics, and the public interest," *Annals of the American Academy of Political and Social Science*. Sept. 1960, v 331, 188 pp

Essays aimed at reorienting American farm policy in view of present and anticipated international developments. Includes aspects of American agriculture that may contribute to economic development at low-income countries. Suggests possible policy alternatives and indicates why these are important. Includes an evaluation of governmental problems to dispose of surplus farm products abroad and an exploration of the possibilities and limitations of such program. Other authors examine the export of other types of capital as well as farm technology to economically needy nations. The role of universities in this endeavor in the training and orientation of youth for international agricultural service is discussed in terms of the human resource potential available to induce international cooperation. See, particularly, articles by Cochrane, Hill, Kellogg, Smith and Ackerman, and Johnson.

1128. KRAUSE, WALTER *American Agricultural Surpluses and Foreign Economic Development*. Iowa City Iowa, State University of Iowa, 1960. 36 pp.

Deals with the disposal abroad of United States agricultural surpluses as a national as well as international cause for unlimited debate. The authorization of a \$1.1 billion "food for peace" sale to an Asian state of surplus wheat and rice angered that country's former supplier and set off a near crisis in the latter's domestic and foreign affairs. Against this background, the author described the relation of "Section 402" and "Public Law 480" regarding agricultural surpluses to foreign aid. He presents the arguments supporting as well as those opposing disposal of surpluses abroad presenting an appraisal of the domestic and international implications of the program, and concludes with alternatives of action at the domestic and international levels.

- 1129 MINZIG, ELMIR L., et al. *Policy for United States Agricultural Export Surplus Disposal*. Tucson, Ariz., University of Arizona, 1962. 111 pp. (Technical Bulletin 150)

Briefly outlines the structure and importance of agricultural exports in the total export trade of the United States. Concentrates on studying the results of Public Law 480 and the Trade Development and Assistance Act, under which surpluses have been disposed of with government aid. This theme is explored by studying the history of U.S. proposals and programs to subsidize its agricultural products in world markets, examining the results of the Public Law 480 programs with respect to domestic agriculture and the agriculture of other countries, and noting the impact of subsidy programs on other domestic and foreign problems and their objectives. Contains an extensive bibliography of pertinent writings on the operation of Public Law 480.

1130. MORTENSEN, ERIK, et al. "Impact and implications of foreign surplus disposal on developed economies and foreign competitors," *Journal of Farm Economics*. 1960, v. 42, no. 5, pp. 1052-1083.

Four papers reflecting the personal, national, competitive, or international perspective of its author. Mr. Mortensen points to the depressing effect on world agricultural prices of surplus disposals through aid channels, urging greater consultation between the United States and the competitors involved. Dr. Ezekiel of the FAO advocates the judicious continuation of providing surpluses to finance part of economic development plans, and recommends careful study of the effect of the practice on farmers of recipient countries. Mr. Myers of the United States emphasizes the humanitarian and U.S. national priorities and the magnitude of the aid effort, while Mr. Kristjanson endorses this and Dr. Ezekiel's rationale of using surplus food as a partial substitute for capital in development projects.

## VII. Cross-Cultural Cooperation

1131. COLE, ARTHUR H. "The relation of missionary activity to economic development," *Economic Development and Cultural Change*. Jan. 1961, v. 9, no. 2, pp. 120-127.

Applies information theory to the activities of missionaries since the 1700's. Missionaries are found to have given significant stimulation to economic development, despite use of an ill-adapted communication system.

1132. ERASMUS, CHARLES J. *Man Takes Control Cultural Development and American Aid*. Minneapolis, Minn., University of Minnesota Press, 1961. 365 pp.

On the basis of experiences as an anthropologist observing United States aid programs in Latin America, the author examines broad questions of directing cultural change in search of a general theory of cultural development. He deals with cases that illustrate directed change which contrast with previously accepted theories and then explores the process of cultural development through specialization in which prestige motivation theories come into play; namely, conspicuous production and conspicuous consumption. Finally, he devotes a large section to the study of a dual economy—urban and rural in Mexico—as a basis for understanding the socio-cultural foundations of economic growth.

1133. JOSEPH, FRANZ M. (editor) *As Others See Us*. Princeton, N J., Princeton University Press, 1959. 360 pp.

A series of critical essays by prominent scholars, authors, journalists, statesmen from 20 nations which reveal the national character of their homeland and the image of the United States in their countries. Every principal region, ethnic group, or religion (except Eastern Europe and the U.S.S.R. and sub-saharan Africa) is represented. Some of the authors are better acquainted with the United States than others, who base their impressions on a single visit. All propose ways of bringing the economic, cultural, and political gaps which prevent reciprocal understanding.

1134. LACY, DAN MABRY "The role of American books abroad," *Foreign Affairs*. Apr. 1956, v. 34, no. 3, pp. 405-417.

Comments upon the limitations of government agencies in utilizing books as a means to transmit knowledge rather than as an instrument of political propaganda. He finds that certain non-political impediments restrict the flow of books aimed at various foreign reading publics; namely, high prices, dollar shortages of purchasing nations, insufficient publishing facilities, and low circulation of foreign books abroad. Since aid by foundations does not suffice, he urges government aid in translating relevant books and suggests means to promote the circulation of journals of professional societies to their foreign colleagues.

1135. MONTGOMERY, JOHN D. "Crossing the culture bars," *World Politics* July 1961, v. 13, no. 4, pp. 544-560.

Describes the principal American cultural patterns relevant to the success or failure of overseas operations. The American (or western) reliance on written agreements, fixed standards of measurement, norms in educational planning and individual incentives for performance, and convictions regarding the role of governments all are grounds for error and generalization. Warning against the obsession with omniscience in technical matters, he also points out the shortcomings of area training against the advantages of knowledge drawn from case studies.

1136. RAPER, ARTHUR F. *Some Points for Consideration of Technicians Working With Villagers*. Washington, D.C., International Cooperation Administration, 1960. 12 pp.

Concrete suggestions about working with people in rural community development. Among the points stressed: Be sure your presence in the village is understood; find a basis for common interest with the villagers; start where the people are and with what they want; note and respect the pace of the villagers, encourage individuals to assume responsibility and involve as many as possible, expect growing pains; and deal with the villagers as equals.

1137. SPICER, EDWARD HOLLAND (editor) *Human Problems in Technical Change, a Casebook*. New York, Russell Sage Foundation, 1952. 301 pp.

A casebook concerned with the social and cultural dynamics involved in the introduction of technological innovations. By presenting actual incidents, it aids in bridging the gap between technological specializa-

tion and the web of human problems it can cause. All of the problems presented deal with cultural change introduced by technological achievements in underdeveloped nations.

1138. TEAF, HOWARD MORRIS, and FRANCK, PETER G. (editors) *Hands Across Frontiers. Case Studies in Technical Cooperation.* Ithaca, N.Y., Cornell University Press, 1955. 579 pp.

A comprehensive selection of case studies by practitioners in the field of technical assistance. The cases were selected on the basis of (a) relevance to economic growth, (b) diversity of enterprise, geographical areas, and operating agencies, (c) transferability of experiences to other undertakings, (d) degree of completion of projects; and (e) completeness, reliability, and availability of data.

1139. USEEM, JOHN, and USEEM, RUTH *The Western Educated Man in India.* New York, Dryden Press, 1955. 237 pp.

Reports a study of the effectiveness of foreign education among Indian nationals. It has a twofold objective: first, to present the findings of the study in India of the consequences of a western education; second, to present proposals derived from the findings that may be of practical aid to policy problems and to administrators interested in exchange of persons between countries. Chapter 1 deals with the nature of the study; chapter 2 with changes in the character and outlook of the western-educated Indians, chapter 3 with the transfer of foreign training to the home country; chapter 4 with implications for international understanding; and chapter 5 presents the recommendations.

## Chapter 13.

### SCIENTIFIC AND TECHNOLOGICAL POLICIES

#### I. Research for Development

1140. BROOKINGS INSTITUTION. *Development of the Emerging Countries: An Agenda for Research*. Washington, D.C., 1962. 239 pp.

Contains seven papers on problems facing emerging nations. Topics include rural problems, technological change, education, and a suggested framework for analysis of economic and political change. Each paper considers current trends of analysis and suggests areas in which additional research is needed. Methods for conducting research are also considered.

1141. BUSH, VANNEVAR. *Science the Endless Frontier*, Washington, D.C., Office of Scientific Research and Development, July 1945. 184 pp. (reprinted 1960)

This report is in response to a request from President Roosevelt for recommendations for policy guidelines for national action in science. Considers major subjects of "The War Against Disease, Science and the Public Welfare, Renewal of our Scientific Talent; a Problem of Scientific Reconversion; and The Means to the End." The last section contains the basic recommendations and detailed proposals which resulted in the National Science Foundation. Illustrates how the United States began the development of policy for science and technology.

1142. INTERNATIONAL CONFERENCE ON SCIENCE IN THE ADVANCEMENT OF NEW STATES, REHOVOT, ISRAEL, 1960. *Science and the New Nations*, edited by Ruth Gruber. New York, Basic Books, 1961. 314 pp.

The product of a conference held in Israel at which experts from 40 nations contributed papers and discussed the problems and experiences of developing nations, focusing their attention on science, technology, education, and natural resources. Explores atomic energy, radiation

technology, and other factors which contribute to building viable economies. The contributions that advanced nations can make in science, technology, capital formation, and education through programs of international cooperation are heavily stressed.

1143. MEIER, RICHARD L. *Science and Economic Development: New Patterns of Living*. Cambridge, Mass., Massachusetts Institute of Technology Press, 1956. 266 pp.

Discusses possibilities of expanding the supply of carbohydrates, protein, and fats in view of techniques such as algae culture, pisciculture in fertilized ponds and lagoons, yeast culture. Briefly views the long-term prospects for meeting world food requirements. Selected references on protein sources, micro-organism culture, and nutrition.

1144. NATIONAL ACADEMY OF SCIENCES, WASHINGTON, D.C. *Recommendations for Strengthening Science and Technology in Selected Areas of Africa South of the Sahara*. Washington, D.C., 1959. 108 pp.

Suggests ways in which science and technology might be best used in specified areas. Considered in this report are education, medical and public health services, agriculture, natural resources, engineering, science, technology, and industry. In each subject area, describes the current status and makes concrete suggestions in both general and specific terms. Contains 12-page bibliography.

1145. STANFORD RESEARCH INSTITUTE. *Scientific Research and Progress in Newly Developing Countries*. Menlo Park, Calif., 1961. 48 pp.

Points out the inadequate research in applying Western science and technology to developing areas, and suggests ways by which known scientific advances may be utilized in developing nations. Suggests a network of cooperative links in basic and applied research between the developing and the more developed nations.

1146. U.S. NATIONAL SCIENCE FOUNDATION. *Basic Research, a National Resource*. Washington, D.C., 1957. 64 pp.

"Designed to convey in non-technical language the meaning of basic research in science and how important it is to the nation." Considers ways of establishing conditions favorable to basic research and of

achieving greater financial support, including emphasis upon more participation by non-Government sources. Specific examples of the productive role of basic research are cited.

1147. ———. *Proceedings of a Conference on Research and Development and Its Impact Upon the Economy*. Washington, D.C., U.S. Government Printing Office, 1958.

Reports the background data and conference discussion of a national conference which was primarily concerned with exploring some of the ways in which we must extend our thinking on the economic aspects of research and development and on the organizational processes upon which effective research and development depend. Explores the relative role of Government, industry, university, and foundation supported research and possible means to improve this balance.

## II. Scientific Methods and Approaches

1148. ACKOFF, RUSSELL LINCOLN. *Scientific Method. Optimizing Applied Research Decisions*. New York, Wiley, 1962. 464 pp.

Discusses planning or designing the use of science in the pursuit of objectives, with emphasis on rational planning. A scientific approach to scientific inquiry. With models, examples, and illustrations, investigates the procedures of science.

1149. BUNGE, MARIO. "Kinds of criteria of scientific laws," *Philosophy of Science*. July 1961, v. 28, no. 3, pp. 260-281.

Sets up criteria and classifies different kinds of laws from the standpoint of scope, precision, validity, etc.

1150. CONANT, JAMES BRYANT. *Science and Common Sense*. New Haven, Conn., Yale University Press, 1951. 371 pp.

An explanation of the methods of experimental science written for the non-professional. By utilizing case histories, describes the way in which scientists work and relates their efforts to progress in technology, agriculture, and medicine.

1151. FESTINGER, LEON, and KATZ, DANIEL (editors) *Research Methods in the Behavioral Sciences*. New York, Dryden, 1953. 660 pp.

Discusses with appropriate examples such aspects of research methodology as surveys, field studies, experiments in field settings and laboratory experiments, procedures for sampling and the methods of collecting and analyzing data. Extensive bibliographies.

1152. FRANK, PHILIPP (editor) *The Validation of Scientific Theories*. Boston, Mass., Beacon, 1957. 242 pp.

A conceptual and theoretical discussion of what the role of belief in science might be and why people have this idea.

1153. HEMPEL, CARL GUSTAV. *Fundamentals of Concept Formation in Empirical Science*. Chicago, Ill., University of Chicago Press, 1952. 93 pp.

Surveys fundamental principles of the general theory of definition as an important method of concept formation, analyzes the methods of introducing scientific concepts, and studies qualitative and quantitative concepts and methods in empirical science.

1154. HUMBLE OIL & REFINING COMPANY. *Yes, No—One, Zero*. New York, 1958. 15 pp.

An elementary guide explaining the binary number system; a system which uses two symbols, 1 and 0; and the idea of place value. The pamphlet also gives the essential elements of information flow charts and basic ingredients of computer language.

1155. LERNER, DANIEL, and LASSWILI, HAROLD D. (editors) *The Policy Sciences, Recent Developments in Scope and Method*. Stanford, Calif., Stanford University Press, 1951. 344 pp.

Social sciences can solve problems of human relations, and when applied to policymaking can contribute by clarifying objectives, reconciling conflicting basic principles, assessing forces at work in any set of circumstances, and determining the direction, intensity, and rapidity of change.

1156. LIKERT, RENSIS, and HAYES, SAMUEL PERKINS, JR. (editors) *Some Applications of Behavioural Research*. Paris, France, UNESCO, 1957. 333 pp.

Discusses methods and relevance of behavioral research. Reviews the "state of the science" in the mid-1950's in terms of practical applications to administrative leadership, leadership training, influence of groups, and projections of economic and political behavior based on psychological surveys.

1157. NAGEL, ERNEST. *Structure of Science Problems in the Logic of Scientific Explanation*. Burlingame, Calif., Harcourt, Brace, 1961. 618 pp.

Discusses the problems of the nature of explanation, laws, and theories in science. Treats mechanics, space, geometry, and determinism, and in the process discusses chance and causality. Considers the problems involved in reduction of one theory to another, analyzes methodological

issues relevant to the scientific claim of the social sciences, including control of relevant variables, subjectivity, value orientation, cultural relativity, and knowledge as a social variable; considers the major schools of sociology and contrasts science with historiography.

1158. NETT, ROGER, and HATZLER, STANLEY A. *Introduction to Electronic Data Processing*. Glencoe, Ill. Free Press, 1959. 287 pp.

A readable introduction to the history, theory, and operation of digital computing systems in terms of research approaches and needs of the researcher for understanding the resource which high-speed computers represent.

1159. PFEIFFER, JOHN E. *The Thinking Machine*. Philadelphia, Pa., Lippincott, 1962. 242 pp.

An introduction to the workings, accomplishments, and future possibilities of computers.

1160. TAUBF, MORTIMER. *Computers and Common Sense. The Myth of Thinking Machines*. New York, Columbia University Press, 1961. 136 pp.

Evidence concerning possible future existence of machines to translate language, learn (in the human sense), make decisions, and carry out "intelligent" operations.

1161. U.S. DEPARTMENT OF COMMERCE. OFFICE OF TECHNICAL SERVICE. *United States Government Research Reports*. Washington, D.C., U.S. Government Printing Office. 1946 to date.

Annotated bibliography of technical reports prepared by a governmental agency. Contains a detailed listing of technical publications and reports.

1162. U.S. NATIONAL SCIENCE FOUNDATION. OFFICE OF SPECIAL STUDIES. *Methodological Aspects of Statistics on Research and Development*. Washington, D.C., 1959. 132 pp.

A series of papers which deal with the compilation of data useful in analyzing the contribution of research and development.

1163. VOIGT, MELVIN JOHN. *Scientists' Approaches to Information*. Chicago, Ill., American Library Association, 1961. 81 pp.

A study of the means by which scientists obtain information, analyzing previous studies on the use of bibliographical references, abstracts, reprints from meetings, and other sources. Purpose is to aid information services in libraries and laboratories.

### III. Society and Science

1164. BARBER, BERNARD. *Science and the Social Order*. Glencoe, Ill., Free Press, 1952. 288 pp.

A sociological analysis of science, treating the field of scientific endeavor as a social activity with inherent political, cultural, and social implications.

1165. FELLOWS, E. W. "Social and cultural influences on the development of science," *Synthese* June 1961, v 13, no. 2, pp. 154-172.

Comments briefly on the ideological, socio structural, valuational, economic, cross-cultural, linguistic, demographic, and geographic factors which shape the development and character of science

1166. PIEL, GIPARD. *Science in the Cause of Man*. New York, Knopf, 1961. 297 pp.

Essays on the interrelations between science and technology, on the one hand, and political, economic, and social considerations, on the other. Includes an essay on the economics of underdevelopment which stresses the need for increased foreign economic aid

1167. STANFORD RESEARCH INSTITUTE. *Possible Nonmilitary Scientific Developments and Their Potential Impact on Foreign Policy Problems of the United States Report Prepared for the U.S. Senate Committee on Foreign Relations*. Washington, D.C., U.S. Government Printing Office, 1959. 100 pp.

Points out the uneven application of science and technology around the world, and indicates ways in which science can assist developing nations. Suggests ways in which the United States could assist underdeveloped nations to stimulate their scientific and technological progress.

1168. ZETTERBERG, HANS LENNART. *Social Theory and Social Practice*. New York, Bedminster Press, 1962. 190 pp.

Discusses the meaning, technique, and setting of applied social science. Considers consultation and the translation of pure scientific rules of sociology into useful advice.

#### IV. Government and Science

1169. CONFERENCE ON THE RESEARCH FUNCTION OF THE UNIVERSITY BUREAUS AND INSTITUTES FOR GOVERNMENT-RELATED RESEARCH, BERKELEY, CALIF. *The Research Function of University Bureaus and Institutes of Government-Related Research Report*, edited by Dwight Waldo. Berkeley, Calif., Bureau of Public Administration, University of California, 1960. 222 pp.

This conference dealt with the history of these institutions, their goals, and future development. Members proposed to enhance the value of their research through development of basic theory relevant to the functioning of government, and through the greater use and integration of social science data and concepts. Suggestions were made for closer cooperation and integration of both staff and programs with universities.

1170. DUPRI, JOSEPH STEPHAN, and LAKOFF, SANFORD A. *Science and the Nation, Policy and Politics*. Englewood Cliffs, N.J., Prentice Hall, 1962. 181 pp.

Discusses the impact of science on political and policy decision making, primarily from the United States view, but examples are cited for wider implications. Describes government and science in relation to industry, universities, armaments, and security. Cites actual experiences.

1171. KIDD, CHARLES V. *American Universities and Federal Research*. Cambridge, Mass., Harvard University Press, 1959. 272 pp.

Discusses the role of Federal financing of university research and its impact upon university financial status, teaching capacity, the organization of research, and university-governmental political and administrative relationships. Specific chapters include research goals of Federal agencies, functions of universities, Federal research funds, scientific fields, money and manpower, university research costs, terms and conditions, graduate study, faculty and teaching, university administration, university organization, university participation in Federal decisions, and conclusions which deal with the generalized crucial factors involved in these relationships.

1172. MAINZER, LEWIS C. "Scientific freedom in government-sponsored research," *Journal of Politics* May 1961, v. 23, no. 2, pp. 212-230.

A conceptual discussion of freedom in research written on American experiences with federally supported research. Argues that scientific freedom has not been unduly abridged through reliance on Federal funds, but rather that the range of choices has been enlarged through Federal support.

1173. PRICE, DON KRASHER. *Government and Science: Their Dynamic Relation in American Democracy*. New York, New York University Press, 1954. 203 pp.

The author seeks to put into proper perspective government and science in the United States in terms of history, democratic ideals of freedom and responsibility, security and publicity, and national policy.

1174. SKINNER, BURRHUS FREDERIC. *Science and Human Behavior*. New York, Macmillan, 1953. 461 pp.

Discusses the necessity and possibilities of a science of behavior, capable of predicting and controlling behavior of individuals and groups, and ultimately providing the basis for a more effective cultural design. Analyzes present controls on individuals, minimizing the inherence of free will.

1175. STOVER, CARL F. *The Government of Science*. Santa Barbara, Calif., Center for the Study of Democratic Institutions, 1962. 47 pp.

Discusses the contribution of science to society, and considers the relationships of government and science. Analyzes the impact of politics on scientific freedom, the need for professional responsibility, and various proposals for specific government organizations responsible for the area of science and technology.

1176. U.S. NATIONAL SCIENCE FOUNDATION. *Government-University Relationships in Federally Sponsored Scientific Research and Development*. Washington, D.C., 1958. 44 pp.

Considers the subject in two broad classifications: "The Evolution and Present Character of Federal Sponsorships of Research and Develop-

ment at Colleges and Universities"; and "The Recommended Principles and Practices for Future Federal Sponsorship." Particularly concerned with the role and growth of Federal sponsorship since 1940 and its implications for the future in terms of the national interest. Considers problems in government-university relationships as identified by universities and Federal agencies. Major recommendation is that the Federal Government reimburse universities for the indirect costs as well as the direct costs of supported research.

1177. WENGLERT, NORMAN IRVING. "Perspectives on government and science," *Annals of the American Academy of Political and Social Science*. Jan 1960, v. 327, 138 pp.

A special issue containing 15 essays on the "Perspectives of Government and Science," grouped under three headings: needs, problems, and opportunities; administration of government science; and government science and the universities. The issue was intended to set forth some scholarly analyses of major questions involved in defining a general policy framework for the upgrading and expanding of Government-financed and directed scientific research and training, essential to meet the challenges to the West implicit in the success of Soviet space programs. The conflict involved in a rapid and effective overhauling of our philosophies and practices in the area of scientific study, without serious or lasting impairment of our fundamental rights and processes, are brought into sharp focus.

1178. WOLFLE, DAEL LEF. *Science and Public Policy*. Lincoln, Nebr., University of Nebraska Press, 1959. 81 pp.

Contains three essays on science and public policy, science in the Federal Government, and education in a world of science. Maintains that decisions regarding government, industrial activity, and education must be based in part on technological aspects and in part on the more general fact that society is becoming increasingly dependent and affected by science and technology.

## V. Industry and Science

1179. AMERICAN MANAGEMENT ASSOCIATION. *Getting the Most From Product Research and Development*. New York, 1955. 149 pp. (Special Report No. 6)

Presents a series of articles dealing with the management of research and development in an industrial firm. Considers company organization and coordination, motivation, development, compensation, and coordination of the research program, and information flows to management and budgetary and cost controls.

1180. HILLIGAN, MARGARET P. (editor) *Libraries for Research and Industry Planning and Equipment*. New York, Special Libraries Association, 1955. 58 pp.

A group of articles relative to the planning of libraries, with photographs and examples of layouts of contemporary industrial and business libraries. Aims, purposes, spacing, and equipment are discussed briefly.

1181. KAPLAN, NORMAN. "The role of the research administrator," *Administrative Science Quarterly*. June 1959, v. 4, no. 1, pp. 20-42.

Points up instances of strain and potential conflict between the research administrator and the scientists in large-scale research organizations. The author sees the administrator as being caught between the conflicting demands of the scientist and those of higher authority within the organization. Suggests the need for additional study of the nature of administrative positions in research programs and of the kind of man best suited for this role.

1182. MEES, CHARLES EDWARD KENNETH, and LEERMAKERS, JOHN A. *The Organization of Industrial Scientific Research* (2d ed) New York, McGraw-Hill, 1950. 383 pp.

Presents an account of the history and development of industrial scientific research, the general principles of its conduct, and an analysis of the

methods actually used for the organization and operation of industrial research laboratories. Considers the development and role of university, industry, endowed and governmental research institutions, and discusses problems of location, organization, staffing, and direction of research within industry.

1183. PRINCETON UNIVERSITY CONFERENCE. *Industry and the Future of Basic Research. Proceedings of a Meeting*. Princeton, N.J., 1959. 49 pp.

Discusses methods to increase basic research, and considers the roles that industry, government, and the university could play in basic research activities.

1184. QUINN, JAMES BRIAN. *Yardsticks of Industrial Research. The Evaluation of Research and Development Output*. New York, Ronald, 1959. 224 pp.

Considers current methods of evaluating industrial research output for management purposes. Evaluative methods are presented and analyzed, and a theoretical "best" approach for evaluation is proposed. Suggests methods helpful to persons attempting to develop and administer evaluation techniques in industrial research.

1185. VAZSONYI, ANDREW. *Scientific Programming in Business and Industry*. New York, Wiley, 1958. 474 pp.

Explains the fundamentals of mathematical programming, followed by applications of this technique to specific business situations. Illustrates how production and management problems can be formulated in mathematical terms. Examines such techniques as dual theorism, convex and dynamic programming, and the theory of games. Statistical methods, inventory, and production control are discussed with special references to the utilization of these factors.

## VI. Research Administration

1186. AHLBERG, CLARK D., and HONEY, JOHN C. *Some Administrative Problems in Governmental Research*. Washington, D.C., Washington Research Office, Syracuse University, Maxwell School of Citizenship and Public Affairs, 1951. 115 pp.

A survey designed to benefit persons beset with problems of organizing and administering activities in scientific research and development. Various research activities of the Federal Government are described.

1187. BUSH, GEORGE POLLOCK. *Bibliography on Research Administration, Annotated*. Washington, D.C., University Press of Washington, D.C., 1954, 146 pp.

Emanated from a graduate course in research administration at the American University. More than 1,100 references, almost all dated after 1945, are included; and articles from periodicals are noted. Divided into eight sections, indexed by topic and author.

1188. CALIFORNIA UNIVERSITY (LOS ANGELES). INSTITUTE OF INDUSTRIAL RELATIONS. *Evaluating Research and Developments*. Los Angeles, Calif., 1953. 104 pp.

The annotated proceedings of a conference of research administrators devoted to evaluating research and its relationship to development.

1189. CONFERENCE ON INDUSTRIAL RESEARCH. *Research Operations in Industry*, edited by David B. Hertz. New York, King's Crown Press, Columbia University, 1953. 453 pp.

Presents a number of short papers and discussions of plans drawn from the first three Columbia Conferences on Industrial Research. Discusses the justification and philosophy of research in industry; and considers problems of research cost and financial control, the training and selecting of creative researchers, the planning and designing of research programs and facilities, research methodology and experimental design, operations research and problems of communication in progress.

1190. HEYEL, CARL (editor) *Handbook of Industrial Research Management*. New York, Reinhold, 1959. 513 pp.

A comprehensive survey of areas of technical research, including new techniques for technological advance such as computers and electronic machines. A special section is devoted to the administrative techniques that have arisen in new electronic fields of technology.

1191. LITTLE, (ARTHUR D.) INC. *Management of Industrial Research: A Selected and Annotated Bibliography*. Cambridge, Mass., 1950. 14 pp.

A partially annotated bibliography of selected writings useful to research management. Includes readings useful in administering, organizing, designing, and evaluating research and research organizations.

1192. PALMER, ARCHIE MACINNIS. *Nonprofit Research and Patent Management Organization*. Washington, D.C., National Academy of Sciences-National Research Council, 1955. 150 pp.

A detailed analysis of the structures, operating procedures, research, patent policies, and institutional affiliations of 104 research and patent management agencies. Suggests areas of research vital to a developing country.

1193. PELZ, DONALD C. "Some social factors related to performance in a research organization," *Administrative Science Quarterly* Dec. 1956, v. 1, pp. 310-325.

Reports the relationship between social environment provided medical researchers by an organization and their subsequent performance. Results indicate that scientists tend to perform more acceptably when they are closely associated with colleagues having a variety of values, experiences, and disciplines, and when supervisors provide frequent stimulation combined with autonomy of action.

1194. PRICE, DON KRASHIR "The scientific establishment," *Proceedings of the American Philosophical Society*. June 1962, v. 106, no. 3, pp. 235-245.

Discussion of the ways in which scientific groups in the United States have become enmeshed in government. The author sees them primarily as tools used by governmental bureaus or programs. Concludes that they are unable to set themselves apart from their functions as bureaus to protect their essential interests.

1195. RIEGEL, JOHN WALLACE. *Administration of Salaries and Intangible Rewards for Engineers and Scientists*. Ann Arbor, Mich., University of Michigan, Bureau of Industrial Relations, 1958. 105 pp.

Reports on the results of a study on vocational needs, goals, and motivations of engineers and scientists. Identifies the sources of job satisfaction and dissatisfaction in these groups. The study is based on interviews conducted in eight manufacturing and two public utility companies. Suggests, by implication, ways to promote personnel harmony and greater efficiency.

## Appendix A

This Appendix indicates some of the chapters and sections in this *Selected Reading List* that are directly relevant to the various conference sessions as listed in *United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas (Revised Information Bulletin, New York: United Nations, Feb. 1962, E/CONF. 39/INF. 1/REV. 1)*. Other sections, not listed here, may also be relevant. See the Table of Contents, and Section V of the Introduction for suggestions on how to find such additional readings. It should be emphasized that Chapter 1 is particularly relevant to all of the general sessions and provides essential background for all of the specialized sessions.

<i>Conference sessions</i>	<i>Directly related sections</i>
<b>A. NATURAL RESOURCES</b>	
General Session . . . . .	Chapter 3
A 1. Mapping and surveying practices adapted to use in less developed areas	3 I
A 2. Integrated river basin development in less developed areas	2 V, 3 II
A 3. Water resources	3 II
A 4. Energy resources	3 III
A 5. Mineral resources	3 V
<b>B. HUMAN RESOURCES</b>	
General Session	Chapter 4
B 1. Population trends	4 I, 4 II
B 2. Better utilization of human resources for economic development	4 III, 4 IV, 5 VI
B 3. Sound management and management development as a factor in technological progress	9 II, 9 I, 2 VII
B 4. Employment implications of the application of science and technology in less developed areas	4 V
B 5. The application of science and technology to conditions at the workplace	4 V, 9 I, 9 II
<b>C. AGRICULTURE</b>	
General Session	Chapter 8
C 1. Institutional and social aspects of agricultural development	8 II, 8 I, 8 VI, 7 II, 7 VII
C 2. Improvement in levels of nutrition	8 VII, 6 II
C 3. The development of land and water resources	3 II, 3 IV, 2 V, 8 I
C 4. Crop production and protection	8 III
C 5. Animal production and health	8 IV
C 6. Agricultural engineering and rural industries	8 V, 8 I, 8 VIII
C 7. Forestry and forest products	3 VII, 9 IX
C 8. Fishery resources and production	3 VIII

<i>Conference sessions</i>	<i>Directly related sections</i>
<b>D INDUSTRIAL DEVELOPMENT</b>	
General Session . . . . .	Chapter 9
D 1. Special factors affecting industrial development in less developed areas	9 I, 9 II, 1 II, 4 B I
D 2. Structural and locational problems of industry	9 I, 9 II, 1 V
D 3. Special operational problems	9 I, 9 III, 9 X, 3 VI
D 4. Food processing and preservation	9 IV, 8 VIII, 8 IV
D 5. Products of animal and vegetable origin and substitutes	9 V, 8 IV, 8 VIII, 9 IX
D 6. Textiles	9 VI
D 7. Iron and steel	9 VII
D 8. Non-ferrous metals	9 VII
D 9. Engineering techniques and organization	9 IX, 9 X
D 10. Engineering production	9 IX, 9 X, 9 II
D 11. Fertilizers	9 XIV, 8 III
D 12. Heavy chemicals	9 VIII
D 13. Building materials	9 IX
D 14. Building techniques	9 IX
<b>E TRANSPORT</b>	
General Session	Chapter 10
E 1. Factors in the development of national transportation policies	10 A I, 10 A.VI
E 2. Roads and road transport	10 A I
E 3. Railways	10 A III
E 4. Inland water transport and coastal shipping	10 A IV
E 5. Air transport and specialized uses of aircraft in less developed areas	10 A V
E 6. New techniques in the transport of fuels and perishable goods.	10 A.VI
<b>F. HEALTH AND NUTRITION</b>	
General Session	Chapter 6
F 1. The plan for the health services and the contribution of science and technology to its formulation and execution.	6 I, 6 II, 6 III, 4 I, 4.II
F 2. The control of disease in the light of developments in science and technology	6 II, 6 III, 6 V, 6 VI, 6 VII
F.3 The training of health personnel	6 IV, 6 I, 4 IV, 5 V
F 4. The role of medical research	6 IV, 6 I, 13 I
<b>G. SOCIAL PROBLEMS OF DEVELOPMENT URBANIZATION</b>	
General Session	Chapters 7 and 8
G.1. Rural development	8 II, 8 I, 7 II
G 2. Urbanization	.. 7 III, 7 V, 7 VII, 4 V
<b>H. ORGANIZATION, PLANNING AND PROGRAMMING FOR ECONOMIC DEVELOPMENT</b>	
General Session	Chapter 2
H 1. Methodology of planning for development	2 I, 2 II, 2 III, 2 V, 2 VI
H 2. Organization arrangements	2 VIII, 2 VII
H 3. Implementation	.. 2 VII, 2 VIII, 8 II, 9 II

<i>Conference sessions</i>	<i>Directly related sections</i>
<b>ORGANIZATION AND PLANNING OF SCIENTIFIC AND TECHNOLOGICAL POLICIES</b>	
<b>I. AND TECHNOLOGICAL POLICIES</b>	
General Session	Chapter 13
I.1 The application of scientific and technological policies to the acceleration of economic development	13 I, 13 II, 13 III, 13 IV, 13 V
I.2 Research programmes and economic development policies	13 VI, 1 I
<b>J. INTERNATIONAL CO-OPERATION AND PROBLEMS OF TRANSFER AND ADAPTATION</b>	
General Session	Chapter 12
J.1 Methods for stimulating technological change	12 II, 11 I
J.2 Techniques of diffusing scientific and technological knowledge	12 II, 12 VII, 5 III
J.3 International co-operation	12 I, 12 VII, 12 II
<b>K TRAINING OF SCIENTIFIC AND TECHNICAL PERSONNEL</b>	
General Session	Chapter 5
K.1 Planning policies for the acceleration of the development of scientific and technological cadres	4 IV, 4 III, 5 V, 5 III
K.2 The programming of science and technology within the educational structure	5 I, 5 II, 5 IV, 5 V, 12 IV
<b>L COMMUNICATIONS</b>	
General Session	Chapter 11
L.1 Unification and expansion through telecommunications	11 I, 11 III, 10 A V
L.2 Broadcasting and television in less developed areas	11 II, 11 I, 5 III
L.3 Problems involved in the development of national and international telecommunication networks	11 I, 11 II, 11 IV
L.4 Telecommunications in specialized fields	11 II, 11 IV, 5 III, 13 II
L.5 Recent major advances and current developments in the field of electronics of interest to developing areas	11 IV, 11 II, 13 II, 5 III

## Appendix B

### ACKNOWLEDGMENTS

Many individuals made invaluable contributions to the preparation of this reading list.

A review committee advised on what should be included, and helped to relate the variety of subjects and to organize the materials. This committee consisted of:

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In the final analysis, the authors often had to make decisions without time for further consultation. This means, of course, that the consultants cannot be held responsible for flaws in the final product.

SAUL M. KATZ  
FRANK MCGOWAN

PITTSBURGH, *December 13, 1962.*

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