FINAL REPORT

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THE INDUSTRIAL ECONOMY OF ISRAEL

Prepared for:

UNITED STATES OPERATIONS MISSION IN ISRAEL
AND MINISTRY OF COMMERCE AND INDUSTRY GOVERNMENT OF ISRAEL

STANFORD RESEARCH INSTITUTE

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Final Report

INDUSTRIAL ECONOMY OF ISRAEL

By: J. Knight Allen, William Bredo, Harry J. Robinson, Carl A. Trexel, Jr.

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PREFACE

This report was prepared by members of the staff of Stanford Research Institute at the joint request of the Ministry of Trade and Industry of the Government of Israel and of the Foreign Operations Administration of the United States Government. It represents an evaluation of Israel's growing manufacturing industry as it appears to personnel experienced with industrial operations but who are not involved in the day-to-day problems of Israel industry. Consequently the facts presented, their interpretation, and the conclusions expressed are, as was intended, entirely the responsibility of the authors and the Institute and not of the sponsors.

The authors benefited greatly from the knowledge and views of many private citizens of Israel as well as of officials of both governments. They had the further advantage of receiving painstaking and constructive comments from these officials on their selection and interpretation of facts and on their judgments and conclusions. They have necessarily reserved entirely to themselves the right finally to determine what was to be included in the report. It follows that neither of the sponsors has any responsibility for whatever questions of fact may appear nor for any of the interpretations and conclusions.

The statistical data cited in most instances refer to the year 1953 and in some cases to 1952; the nonstatistical observations reflect the situation as it appeared to the authors in mid-1954. Undoubtedly, some of the specific economic and other information cited in the report has undergone some change since that time. Other changes will occur with the passage of time. The Government of Israel indicates, for example, that manufacturing output, employment, and exports have increased during recent months. This illustrates the problems involved in evaluating any changing and growing economy.

FOREWORD

A. Genesis

The rapid industrialization of Israel during the few years since creation of the State in 1948 was made possible not only by the efforts of ardent supporters of the Zion movement but by liberal American financial aid, both Federal and private. In view of the large investments already made, and in the light of requests for more and larger Grants-in-Aid, the USOM in Israel decided in 1953 that the time had come for an objective appraisal of the status and prospects of the industrial sector of Israel's economy. It was further decided that this study should be made by a competent group not having a direct interest in Israel's industrial program. The Israel Government concurred in this decision and became a joint sponsor of the study under the FOA Technical Assistance Program.

B. Scope

This study is directed to Israel's central problem of developing and operating industrial enterprises on a sound economic basis. Beyond the all-embracing test of long-run financial profitability, the selected industries are examined in the light of their ability to improve the country's foreign trade position, to provide employment, to serve other domestic industries, to supply the needs of domestic consumers, to assist in utilization of local resources, and to promote the security of Israel among the nations of the free world.

In view of limited time and funds available, the covering contract for this study calls for concentration on four main divisions of industry. The fields specified in the contract are food processing, textiles, chemicals, and metals. These four industries represent a major part of the manufacturing activities of Israel. Appraisal of their operations inevitably includes some cognizance of general economic characteristics of the nation. However, it is clear that this report is not intended to suggest a general economic plan for Israel nor to indicate specific technical actions for individual enterprises. Rather, the study relates mainly to the economics of the four branches of industry selected for special attention. However, in order to give adequate meaning to the report, it is necessary to develop a brief exposition of a number of the characteristics of Israel's economy, including some general conclusions about these characteristics as they bear upon manufacturing in Israel, and particularly as they might affect private investment.

Pertinent provisions of the covering contract concerning the scope of this investigation, together with references to contract amendments, are presented in Appendix A.

C. Field Work

Following preliminary discussion and planning extending over several months, active work on this project began early in 1954. The project leader, after extensive briefings in the United States, arrived in Israel in late January. He was joined by three other members of the team who arrived in Israel in the latter part of April, and by the Institute's Director of Economics Research and International Research who spent a short time in Israel during August of 1954.

Before arriving in Israel, the members of the Institute team discussed the project problem with officials of several Israel embassies and consulates; economic offices of the United Nations; embassies, consulates, and missions of the United States; importers of Israeli products; international economic experts; and prominent Zionists. Cities in which such discussions were held include San Francisco, Oakland, and Los Angeles, California; Washington, D. C.; New York City; London; Paris; Rome; Athens; and Istanbul.

Field work in Israel was substantially completed by the end of August 1954. A preliminary draft of this report was delivered to the USOM in Israel and to Israel's Ministry of Commerce and Industry in September. After extensive discussion of the draft with representatives of the USOM, the Government of Israel, and industry leaders, the final draft was prepared at Stanford Research Institute.

D. Plan of the Report

A general summary of the report, Section I, preceding the main discussion, presents in a few pages the fundamental characteristics of the economy of Israel, the special problems of the food, textile, chemical, and metal industries, and the major conclusions and suggestions of the study. In the interest of brevity, the summary omits detailed reasoning and factual support upon which suggestions are based; the details appear in subsequent sections.

Section II discusses certain characteristics of the economy of Israel which were found in the study of the four selected industries to affect significantly the conduct of business and industrial enterprises. A limited amount of background material is presented, not only to aid the reader who may be unfamiliar with Israel, but also to serve as a partial basis for the main conclusions and suggestions.

Sections III through VI, dealing with the four branches of industry selected for examination, constitute the more intensive portions of the report. These Sections describe the current status of the industries and assess their relative importance to the economy of Israel, comment on their probable financial destiny and develop guide lines for improving their economic results to the end that the industries may eventually become self-sustaining without aid from foreign sources.

The appendixes contain economic and social statistics pertinent to this study, and copies of selected documents of special importance to each industry.

E. Acknowledgements

Stanford Research Institute acknowledges with appreciation the assistance received from many individuals and groups during the course of this study. In Israel, some 200 industrial establishments were visited by the project team for the purpose of making detailed inspections of operations and of holding discussions with managers about the nation's business and economic problems. Many conferences were held with representatives of the Government of Israel, including officials of the Office of the Prime Minister and the Ministries of Commerce and Industry, Finance, Agriculture, and Development. These agencies of the Government, as well as trade associations, banks, consulting experts, and scientific and educational organizations, provided much useful information and statistics.

In the Office of the Prime Minister, Mr. Theodor Kollek, Director General, and Mr. Ralph Goldman followed the progress of the study with helpful interest and assisted greatly in the coordination of the study with the programs of various branches of the Government and with industry groups. The Economic Advisory Staff of the Government supplied much information and spent many hours in reviewing and discussing the findings of the study with members of the Stanford group.

Mr. Joseph M. Wirguin, Deputy Director, Industrial Division of the Ministry of Commerce and Industry served as the official representative of the Government of Israel to the project team. His wide knowledge of Israel's industries was most helpful and is much appreciated by the Stanford Research Institute. Dr. Norbert Gallia, Dr. Ernst Markowicz, and Dr. J. Ilany Feigenbaum of the same ministry gave valuable expert information and counsel. Mr. Michael Rosner aided greatly in the reviews and discussions of the first draft of the study report.

The members of the project team are indebted to the persons assigned by the Ministry of Commerce and Industry to make arrangements for visits to industrial establishments and to collect data needed for the study. This group, under the direction of Mr. Moshe Shiff, consisted of Mr. Elkanan Bulkind for food processing, Dr. Joseph Schwarz for textiles, Mr. Yehoshua Levy for chemicals, and Mr. Garshon Neuschueler for metals.

In addition to the assistance rendered by officers of many Histadrut industries which were observed by the research team, a number of high officers of the Histadrut furnished information and explained policies and operations of their organizations. Likewise, The Manufacturers' Association of Israel made its facilities available and arranged many valuable plant visits and consultations.

Without exception the officers and staff of the United States Embassy and the USOM in Tel Aviv cooperated fully in giving the team valuable briefings, furnishing factual data, and explaining the conditions peculiar to the economy of Israel. In addition, they provided excellent office facilities and stenographic service. Finally, the generous but impartial assistance given by Dr. Lincoln B. Hale, Director of the USOM in Israel, and by his predecessor (Mr. Bruce McDaniel, during whose term of office the study was conceived and largely conducted), as well as by Mr. Frank C. Elliott, Chief of the Industry Division and Mr. Roswell Whitman, Economic Advisor of the USOM in Israel, is acknowledged with special appreciation.

F. Staff and Administration

The study leading to preparation of this report was conducted by the following members of the staff of the Economics Division, Stanford

Research Institute, which division is under the administrative direction of Dr. Weldon B. Gibson:

1. Mr. Harry J. Robinson - Textiles
2. Dr. J. Knight Allen - Metals
3. Dr. William Bredo - Food Processing
4. Mr. Carl A. Trexel, Jr. - Chemicals

Mr. Harry J. Robinson served as project leader throughout this study. Dr. J. Knight Allen supervised preparation of the project report. The project was carried out as a part of the International Research Program of Stanford Research Institute, also under the administrative direction of Dr. Weldon B. Gibson.

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Section I

GENERAL SUMMARY

A. Israel's Objectives

The spectacular development of Israel's economy and its present complex condition can best be comprehended in light of the special objectives of the new State. Briefly, these are to (1) provide a permanent homeland for Jewish immigrants; (2) achieve military and political security; (3) settle immigrants throughout the country as a basis for agricultural and industrial development; (4) develop available natural resources; (5) achieve self-support as a Western-type industrial economy; and (6) maintain standards of living comparable to those in highly developed nations.

These objectives are parallel as they relate to national security and political stability. They are somewhat divergent, particularly during the growth period, so far as economic self-sufficiency along Western lines is concerned.

B. Bold Development Program

Withdrawal of the British from Israel in late 1947 and early 1948 brought a sudden end to certain influences which had retarded economic and industrial development for many years. Although the new State of Israel was soon involved in military action with neighboring Arab nations, the country quickly launched a bold new economic development program. One gauge of the attainments by the nation during recent years is the current rate of industrial production at about 150 million dollars per year. A second indication of success is that a substantial part of Israel's requirements for manufactured products is now produced or assembled within the country. These products include, for example, many food items, textiles and clothing, building materials, household equipment, automobiles and trucks, fertilizers, pharmaceuticals, paper, sewing machines, and many other items.

Although the country does not yet produce sufficient meat, cereals, edible oils, deciduous fruits, and certain other commodities to meet domestic needs, it has attained or is working toward self-sufficiency in many staple foods. This position has been achieved despite the separation of about 900,000 Arabs since 1948,[1/] most of whom were farmers, and their replacement by approximately 700,000 Jewish

1/ State Department, "Background, Israel," December 1954, p. 18.

immigrants among whom there were few farmers. Israel produces citrus fruits far beyond her domestic needs and now enjoys a large export business in citrus and related products.

These and other achievements are tangible expressions of the dedication of the Jewish people in Israel as well as in other parts of the world to the building of the Jewish homeland. This dedication has produced a remarkable situation that perhaps is unique in modern world history. There are few, if any, examples in national economic development in which so much progress has been made from similar starting conditions in such a short period of time. One important contributor to this accomplishment has been and is the high intellect and energy of Jewish people, both in Israel and abroad.

C. Faith and Economic Aid

Although vital in Israel's development, faith and dedication alone could not have attained the results that have been achieved. Financial assistance from other countries, notably the United States, has been indispensable to the type and scale of development undertaken in Israel. The major sources of American aid include the Government economic assistance programs, the United Jewish Appeal, and direct personal gifts. More recently, German Reparations payments have added about 65 million dollars per year to the economy of Israel from a projected total of around 800 million dollars, spread over a 12-year period. Immigrants brought in considerable capital during the early 1930's. However, a majority of the later arrivals came without capital. Even so, it is evident that a substantial amount of capital has been brought to Israel by some of these newcomers.

The extent of Israel's dependence upon foreign assistance is indicated by the current need to import over 300 million dollars worth of goods and services each year. At the same time, the nation has been able to export at a rate of only about 70 million dollars per year including services furnished to tourists.

These facts would not be particularly noteworthy were it not for certain structural, functional, social, political, and economic problems now confronting the nation in addition to those imposed by geography.

D. Political and Social Problems

This report is concerned only with economic matters. However, mention of a few political and social problems is pertinent in appraising the economic situation.

The boundary problem in Israel is troublesome to say the least. The original United Nations partition scheme has never been implemented. Incidents along the borders with Arab States occur frequently. There is no indication as to when the nation will achieve a stable situation in this respect.

The understandable immigration policy is a source of considerable economic difficulty. The new arrivals create a further strain upon the nation's small territory and meager resources. The absorption of immigrants during recent years constitutes a major achievement. There remains a question as to the extent and type of immigration that can be continued without adversely affecting the economy of Israel.

There are many races and cultures now included within the Jewish population of Israel. It was inevitable that the forging of national unity would encounter many problems based upon differing beliefs and customs.

There are in Israel many political parties and factions. The present Government is a coalition between the majority party (Mapai-labor socialist), the General Zionist, and a number of other smaller parties. Approximately fifteen political groups are represented in the Knesset (Israeli Parliament) including a few representatives of Arab factions and even a few members of the Communist Party. Among all of the political and economic influences in the country, three groups or combinations play a major role. These are the coalition Government, the Histadrut with its affiliated economic and labor organizations, and the Jewish Agency with its foreign gift program.

Perhaps the principal significance of this situation, so far as this report is concerned, is that foreign investors seeking opportunities for economic investments often view with some concern the sum total of political and social problems present in Israel.

E. Elements of Economic Strength

As indicated earlier, notable progress has been made in Israel in producing goods which were previously imported. Promising beginnings have been made in exporting some manufactured products.

The over-all volume of industrial production in Israel has, until recently, shown a steady increase since the beginning of the State in 1948. This indicates ability of the country to increase output when economic and other conditions are favorable.

The citrus industry is founded upon a high-quality product. For the most part, citrus production is carried out on an efficient basis. Promising experiments are now under way that could lead to successful agricultural operations on such products as peanuts and bananas. Total irrigated acreage could perhaps be tripled in Israel through one of the more conservative plans for water utilization.

Certain chemicals, such as potash from the Dead Sea and phosphates from the Negev, are on the way to becoming significant industries with promising export possibilities, assuming that competitive cost conditions can prevail. Other chemicals from the Dead Sea offer promising potentials in the more distant future. Pharmaceuticals production has already been established and should prosper in domestic and export markets.

Textile manufacturing has reached large-scale proportions in Israel relative to the size of the country. The textile industry can meet domestic needs for the most part. Its future in world trade in competition with other countries depends upon many factors including further attention to quality and production costs.

Diamond cutting has become the major export industry in Israel, outside of the agricultural field. Based largely upon foreign-trained craftsmen, its outlook is favorable if trained replacements are available when needed.

The outlook for production and sale of products in the fine mechanics field is promising and depends, to a great extent, upon an ever increasing group of highly skilled personnel. However, it must be recognized that one or two generations or more may be required for Israel to develop as a leading world factor in fine mechanics.

Tourism and the related souvenir industries offer substantial promise for the future. Israel is one of the world's richest nations in tradition, historical sites, and archeological assets. The country has a certain natural beauty, and its climate is, for the most part, temperate. The nation represents one of the great social experiments of modern times with collective farms, large cooperatives, labor-owned industry, and a Western culture in a Middle East setting.

Israel is already an established factor in certain lines of manufacturing and assembly, e.g., steel; cement-coated, aluminum, asbestos, and steel pipe; automobiles and tires. The country may benefit particularly in these and other lines by virtue of its location at the eastern end of the Mediterranean.

Although labor productivity in Israel is perhaps only about 50 percent of that in many industrial nations, and probably in the vicinity of 25 percent of productivity in the United States, the nation does have a certain advantage so far as hourly wages are concerned. Money wages in Israel amount to less than 50 percent of hourly wages in the United States. In those cases where productivity can be brought up to more than one-half that of the United States, industry in Israel can attain certain advantages over some of the nations with which she must compete in international trade.

The very fact that certain types of foreign aid are flowing into Israel constitutes an element of economic strength over the long run. While the future of intergovernmental aid may be uncertain, there is no reason to expect that World Jewry will not continue to send substantial sums of money to Israel so long as prosperity prevails in the several countries, particularly the United States. In addition, the German Reparations payments to Israel are scheduled to continue for another nine years at about the present rate of 65 million dollars a year.

Another advantageous feature in the Israel industrial economy is the 1950 Law for the Encouragement of Capital Investment. This legislation seeks to attract both foreign and domestic money to needed investment projects through a series of privileges, concerning such matters as transfer of profits, amortization, lower income tax rates, and exemptions from local taxes and certain duties.

Although Israel has no hydroelectric developments, several engineering studies indicate the feasibility of generating electric power by bringing water from the Mediterranean Sea into the Dead Sea. This could produce power for about one-half the present cost based on imported fuels. Previously, consideration had been given to harnessing the Jordan River in its fall to Lake Kinneret (Galilee). One of the great hopes in Israel is that oil will be discovered in the Negev, thereby giving the nation a much needed source of energy and income.

There are, of course, many other elements of strength in the present economy of Israel. The above are among the leading ones. Along with these favorable factors, there exist a number of problems, or perhaps weaknesses, when viewed entirely from an economic standpoint. It must be noted, however, that economic self-sufficiency is only one of the main objectives of the State of Israel.

F. Economic Problems

The economic problems of Israel are highlighted by the nation's trade deficit and the tremendous drive now being made to reduce or eliminate this deficit before any possible decline in foreign aid. The movement to develop domestic resources, thereby reducing the need for imports, contributes greatly to the national security objective. Another course taken to reduce the trade deficit is the encouragement given to industries that can earn some foreign exchange through importing, processing, and re-exporting. This has produced a series of difficult problems.

Israel has found it necessary to place great reliance on international trade by means of bilateral trade agreements and barter exchanges. The benefits obtained from these arrangements are often limited, and at best offer only temporary relief. They depend more on currency maladjustments than upon competitive superiority of products or services.

One of the problems or weaknesses in Israel's economy is simply that the drive to obtain foreign currency through international trade and to save currency by domestic production has apparently resulted in the encouragement of some industries beyond the point of economic feasibility over the long run.

Trade barriers of many types and kinds affect Israel's orderly development in both domestic and international trade. The Arab boycott is perhaps the most serious. Some of the restrictions applied by the Israel Government in an effort to control currency and improve the trade balance place major barriers to trade. Although application of these barriers is understandable, the problem remains.

One of the characteristics of the industrial economy in Israel is the existence of a high proportion of small-scale producing units, together with a few large cooperative organizations. The small unit size is one of the causes of high-cost operations. Another characteristic is that the marketing function is not strongly organized, especially in the international field.

In some international markets, e.g., Turkey, Israel industry has gained a reputation for high-quality products. Unfortunately, in some markets, the nation's reputation is not too high. This apparently arises from the general lack of emphasis within industry on standards and quality control. Any weaknesses of this type in the export field are aggravated by the general lack of aggressive market representation in foreign countries.

Israel's trade problems are perhaps the result of a Western-type economy being developed suddenly in an area lacking such industrial assets as proven mineral deposits, developed power resources, ample water, timber, and adequate availability of industrial workers and experienced managers, and above all, financial resources.

If a nation is to compete successfully in international markets, or produce goods for domestic needs which are available in world markets, it must have some basis for economic superiority. There are relatively few raw materials available in Israel. Therefore, the country must develop a superiority on the basis of location, low cost, or efficiency in production. At the present time, Israel has no particular superiority in location. Most of the Middle East markets are closed. Although the nation's industrial productivity is improving, many problems are yet to be solved before an element of superiority can be achieved. Among these problems are major improvements in management practice, increased capital availability for plant modernization, an increase in desirable and healthy competition, and an ever increasing freedom for normal industrial operations. Dramatic increases in industrial productivity have occurred in several instances in Israel. Nevertheless, the view is widely held in the world, and even in Israel, that an artificially high standard of living, supported in part by gifts and subsidies, has placed Israel labor in an economically untenable competitive position. The situation is aggravated by the volatile tie between wages and living costs. Living costs move upwards as industry must look to domestic markets for subsidy to support losses on sales abroad. Foreign exchange is created in the process, but other problems are generated.

The Federation of Jewish Labor in Israel (the Histadrut) is a large and important organization in many fields. It maintains relatively high wages and social benefits for its members, who account for approximately 85 percent of the total labor force. Through ownership and operation of enterprises, the Histadrut controls upwards of 20 percent of industry and business in the nation.

Unemployment in Israel is high but perhaps is no more of a burden on the economy than the public works projects which according to modern construction standards often utilize labor in an inefficient manner. Many thousands of immigrants still live in settlement areas and draw relief from the Government or the Jewish Agency.

Complaints against alleged excessive bureaucracy are frequently heard within Israel industry. There is evidence that many managers of small firms are unable to cope with governmental requirements. It is true that almost all import, export, currency, and capital transactions require some action by the Government. Even though necessary, these controls can slow down industrial effort.

The Government's shortage of cash has led it to defer payment of local current obligations. At the same time, income taxes are being collected in advance. Various forced loans and capital levies are sometimes used to provide revenue. Many of these practices have come in the wake of devaluation of the Israel pound. The result is that widespread financial stringency exists within industry. Bank credit is severely restricted by government action in an effort to curb inflation. As a result, many companies have been forced to borrow money through brokerage services at exorbitant rates in order to obtain working capital.

Longer-term loans available to Israel industry in connection with governmental aid programs are not being utilized too extensively; the reason is that through the application of an "escalator clause" repayment in most cases must be based upon purchasing power which prevailed as of the date of the loan.

According to some observers, agricultural maladjustments are the basis for most of Israel's economic problems. This is an over-simplification of the real problems. Although imports of some basic staples are required, many foods are available domestically in adequate amounts; and the citrus industry is notably successful in the export market, providing nearly 50 percent of all commodity exports.

The exact amount of money devoted to the defense program in Israel is not known outside the Government. The published amount--30 million dollars annually--together with visible evidences that the rate may be higher, would indicate that military requirements constitute an important drain on the Israel economy.

The inflationary pressure caused by the defense program, when added to that caused by an ambitious development plan, means that further inflation may occur in Israel unless government controls are effective.

G. Economic Emphasis

The principal economic objectives in Israel during the past several years have been:

1. To develop agricultural and industrial capacity so as to accommodate the growing economy.

2. To increase production for home markets so as to reduce imports, particularly from hard-currency countries.

3. To increase production for export markets, so as to gain foreign exchange.

The major emphasis in Israel's economic development from 1948 until perhaps two years ago was on the first two of these objectives. The major emphasis at the present time seems to be on the first and third objectives, at least so far as actual events would indicate.

There is no question that the above objectives are the correct ones for Israel's long-range development. However, there may be some question on emphasis at the present time. It appears that in approaching the export objectives, the nation may be attempting to move too rapidly from a limited domestic base. The result is that in case after case investments are being made in industries and companies for which export markets are limited or even nonexistent. Many of these operate at a loss in export markets and consequently raise prices in the domestic market. Furthermore, over 70 percent of all commodity exports have been going to soft-currency countries. A fundamental problem is that productivity and product quality in Israel at the present time do not permit efficient operation by many industries in export markets.

A general conclusion of this study is that Israel might well shift somewhat the present emphasis in economic development. Perhaps emphasis during the next few years should be along the following lines:

1. A continuation of the economically sound portions of the development program, such as charting and proving natural resources and developing basic supporting facilities which in due time will provide the basis for a healthy domestic as well as export trade.

2. A greater emphasis for a few years on reducing imports by increasing production for home markets where such production is practical.

3. An accelerated drive for increased productivity and product quality in Israel's industries supported by the increased capital investment necessary to accomplish these objectives.

4. A more cautious build-up of existing and new export industries based on a rising level of productivity together with increased attention to development of export trade on those products for which Israel can obtain and hold a long-term economic advantage.

It is in the light of these points of emphasis that the following program of action is suggested.

H. A Program of Action

The economic problems in Israel are well known to most governmental and industrial leaders. Many of them are inevitable in the light of the objectives of the State of Israel. Perhaps, however, there are a number of guide lines to policy which, if carried out by all concerned, would enable Israel to attain economic self-sufficiency in the most efficient manner. Some of the more important of these guide lines from the standpoint of industrial development are as follows:

1. Emphasis in industrial development. The need for an industrial development program in Israel as part of the drive to economic self-sufficiency suggests that some general scheme of preference in investment action must be established. There are, in effect, several such plans in use in the nation today. Perhaps, the nation's long-run interests might best be served by adoption of an over-all plan along the following lines in descending order of importance.

a. Industry based upon proven domestic resources and both domestic and foreign markets. Agriculture and agriculturally based industries should receive primary emphasis for some years to come.

b. Improvements to existing industrial establishments of all types, particularly those industries possessing a sound base for long-run financial success. The major emphasis here should be upon investments that will increase productivity and quality of production in Israel.

c. Industry primarily supplying domestic markets with necessities at reasonable cost. The order of preference might well be along the following lines:

(1) Industries that will reduce hard-currency imports.

(2) Industries that will reduce soft-currency imports.

(3) Industries having promising possibilities in international trade in amounts over and above domestic needs and particularly those making products which have relatively high added values from the production process.

(4) Other industries providing relatively high rates of employment per unit of capital investment.

d. Industry based upon exports of high added value to hard-currency countries but which depends upon imports for re-export. The order of preference might well be along the following lines:

(1) Products relying on imports from soft-currency countries.

(2) Products relying on imports from hard-currency countries.

Although industry based upon imports for re-export is listed last because it is not of great immediate promise, in the long run it may become of primary importance, if soundly developed, in solving the foreign exchange problem of Israel.

The general scheme presented above is concerned specifically with investments for production and not with investments needed to support over-all development of the economy, e. g., transportation network, power development, communications system, water programs. Comments on development plans and needs of these types appear in Section II of this report.

2. Economic and industrial practices. There is presented in Section II of this report a discussion on various characteristics of the industrial economy in Israel. A number of suggestions for possible action, or at least further study, appear in that section. Some of the more important are summarized below:

a. Bank credit. There is a definite shortage of credit available to business and industry in Israel, at least at reasonable interest rates. Although credit is restricted as one of the means for controlling inflation, it has resulted in curtailed production. The benefits flowing from additional production made possible by selective extension of credit would probably more than offset any inflationary pressure from the increased credit. So long as available working capital is inadequate, the Government may find it necessary to assist in relieving the credit shortage.

b. Exchange rates. Multiple exchange rates now used in Israel interfere with the nation's international trade and weaken the standing of the Israel pound in foreign markets. The Government has

made marked progress during recent months toward achieving a unitary rate of exchange. This objective should be attained at the earliest possible date, and in harmony with other related adjustments.

c. Controlled competition. One objective of the Government of Israel is to develop a Western-type economy. This implies the encouragement and regulation of competition and adequate protection for both consumers and smaller business operations. The Government is now giving some consideration to development of legislation which will encourage even further competition, yet protect against possible harmful business practices. This initiative is a step in the right direction and should be accelerated.

d. Industrial management. There is a major need in Israel for further application of recognized principles of industrial management within industry. Some of the functions requiring early attention are production engineering, cost accounting, quality control, personnel management, and marketing. Perhaps, in the short run, this need can only be met through limited technical assistance programs. The need in the long run should be met through further training in schools and colleges and within industry.

e. Vocational training. Training of workers for industry, agriculture, and clerical functions should be extended and accelerated in public schools and in industry with public financial assistance.

3. Four industrial groups. This study was devoted in the main to four industrial groups in the Israel economy, namely, food processing, textiles, chemicals, and metalworking. The four industry groups are discussed in Sections III through VI. A number of comments and suggestions on development of the industries are presented in each section. Some of the more important, particularly in the light of the economic emphasis and guide lines of development noted above, are:

a. Food processing. In general, the agricultural program now under way in Israel is sound from the standpoint of emphasis on over-all economic development. It stresses expanding agriculture on many fronts based upon an intensification through irrigation and the production of crops providing the basis for the food processing industries. In order to reduce imports, a need exists to expand production and processing of such commodities as meat, fish, industrial crops, wheat and barley. For an expanding export trade, production and processing should be stimulated on such commodities as citrus and other fruits and vegetables, particularly tomatoes, cucumbers, peas, and cauliflower, and specialty fruits. Perhaps the greatest opportunities in this respect lie in concentrates from various fruits.

b. Textiles. The major emphasis in development of Israel's textile industry is now directed to export markets. The manufacture of specialized items which are less competitive in international markets and which have distinctive style appeal and outstanding quality should be stressed because there are few natural markets for ordinary textile products in foreign fields. The industry is hampered by high-cost production, low productivity, and in many cases by inadequate product quality. For the next several years increased emphasis should be given to productivity and quality improvements. There should be a more methodical and cautious build-up for export markets, particularly until production costs are reduced through modification or abolishment of those restrictive government regulations that increase production costs.

c. Chemicals. The chemical industry in Israel now emphasizes production of sulphuric acid, hydrochloric acid, phosphoric acid, nitric acid, ammonia, chlorine, and caustic soda. Production should be encouraged for those chemicals now imported in substantial amounts and for which manufacturing cost in Israel is no higher than that for competitive products from abroad. Examples of these are soda ash, pigments, auxiliary products for textiles and leather, and raw materials for the pharmaceutical and essential oil industries. In order to increase exports, production should be encouraged for those products having certain quality and cost advantages in international markets. Examples of these are cement, cosmetics, essential oils, paints, pharmaceuticals, glass, and rubber tires.

d. Metals. With the exception of automobiles, the major emphasis in development of metalworking and mechanical industries in Israel is on production of items needed for the domestic investment program, especially for agricultural, irrigation, and construction projects. Industries should be encouraged which:

(1) Produce articles using a relatively high percentage of skilled and semiskilled labor in proportion to capital investment and costs of imported materials. Examples include household equipment of various types; builders' supplies and good-quality hardware; specialized agricultural, food processing, and industrial equipment; valves and fittings; pumps; truck and bus bodies; bicycles; and fine mechanics.

(2) Render specialized economical services to other industries. Examples include plating, galvanizing and enameling; tool and die making; sand conditioning; nonferrous ingot melting; testing; and metallurgical analysis.

This program of action seeks to advance the laudable national aspirations of Israel with a minimum retardation in the speed with which they truly may be fulfilled. Reflection upon the economic and industrial characteristics of Israel discussed in the following pages, it is believed, will show the desirability—even the necessity—of the right balance between constructive impatience, on the one hand, and on the other hand, orderly progress. Industrial enterprise—private and collective—which proves its economic soundness more or less as it grows should be a guiding rule. Any other approach may turn out to be disappointing to a people whose hope, faith, and dedication in an economic undertaking has probably never been excelled.

Section II

ECONOMIC CHARACTERISTICS OF ISRAEL

A. Introduction

The objective of this section on general economic characteristics of Israel is to present background material necessary to an understanding of the manufacturing industries in Israel. The information is discussed in such a manner as to show the relationship of the geographical and social environment of the country to the status and prospects of the industrial sector of the economy.

Following centuries of hope for and faith in the establishment of a homeland for Jewish exiles, the withdrawal of the British from Palestine in 1948, together with arrangement of the partitioning plan by the United Nations, released the pent-up energies of a dedicated people to the task of building the State of Israel. World Jewry, greatly assisted by funds from the United States Government, has attempted to develop an advanced economy in Israel in a short period of time.

The phenomenal growth of Israel's industrial economy since the first full calendar year of statehood, i.e., 1949, may be illustrated by a few representative examples. Electric power sales during the 1949-53 period more than doubled. Cement production almost doubled during the same period. Flour production now stands at about 2.5 times the 1949 rate. The output of preserved vegetables more than doubled during the six-year period. Even the output of consumer products increased markedly. For example, production of beer increased by around two-thirds of the earlier rate.[1/]

Construction activities since 1948 have been and still are extensive. Approximately 300,000 additional rooms have been built, most of them residential. In the agricultural sector of the economy, vegetable production doubled during the 1949-53 period. Israel now is capable of

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1/ The actual figures in these examples for the years 1949 and 1953 are: electric power sales in 1,000 kwh, 96,807 to 206,736; cement in tons, 241,303 to 464,755; flour in tons, 96,814 to 238,993; preserved vegetables in tons, 2,432 to 5,727; and beer in liters, 8,900,000 to 14,000,000. The electric power figures are for sales to industry.

producing a substantial surplus above domestic needs not only of many fruits and vegetables but also in refined petroleum, pharmaceuticals, cement, plywood, tires, refrigerators, stoves, most textiles, automobiles (assembled in Israel), and many other products.

The economical and industrial accomplishments in Israel since 1948 are even more striking when an immigration of about 700,000 Jewish people, the majority of whom were refugees, during the same period is taken into account; these new immigrants make up about 40 percent of the nation's present population. This rapid industrialization and assimilation of immigrants is an achievement that is unique in the history of the world. It is an accomplishment to which the nation may point with justifiable pride.

Inevitably, under any economic and social plan, such a development would create a number of economic and industrial problems. It is essentially with these problems with which this study deals. In considering each subject in this report the accomplishments of the people of Israel must be kept in view, and in particular the difficult circumstances under which the nation was formed and has grown should be recognized.

Israel has now developed a place among the free nations of the world; in this one of her long-standing aims has been achieved. There is a need now to look to the future, and where possible for Israel to adopt such measures as will strengthen her industrial economy and thereby contribute to the major objectives of the State.

It is difficult in any country and particularly in Israel to separate national economic and industrial problems from those based upon political, social, military, and even religious considerations. However, this study attempts to deal only with the former and takes no position with respect to the type of government or political philosophy under which Israel might best pursue her announced objectives and develop added strength within her economy.

Israel's new economy although in a Middle Eastern setting is being developed along Western lines. Higher standards of living, created through decades or centuries of progress in some other countries, have been instituted quickly in Israel. Perhaps, in some cases insufficient attention has been given in this process to the country's ability to support these standards in the long run. The immediate objective, however, was to create a home for Jewish immigrants numbering some 700,000 who have arrived in Israel since 1947. They came to escape persecution (or the fear of it) to attain the goal of living

in Zion, or to enjoy an expected improvement in living conditions. To carry out a program to take care of the influx, it has seemed imperative to set up in Israel a full-grown economy so as to keep the immigrants from the status of public charges supported mainly by financial and material aid from the United States.

However, from a purely economic standpoint, industrialization which develops ahead of profitable markets usually results in a shift in the burden of direct personal relief to an indirect form of relief through industry. Indirect aid of this type tends to give a false impression that the population is being maintained almost entirely by economically productive work. This seems to be the case in Israel, as in some other countries, where various subsidies lower the nominal price of consumer goods and services and at the same time enable otherwise uneconomic firms and industries to continue operations.

The geographical endowments of Israel consist mainly of a semitropical though arid climate, a light fertile soil, limited water resources, certain undeveloped mineral and chemical deposits, and a maritime location at the western entrance to the Middle East. Compared with many western nations, Israel is relatively lacking in water and power resources and in industrial raw materials. The nation is comparatively remote from important sources of raw materials as well as from the largest markets of today and the near future. Manpower resources include many energetic, intelligent, professional, and commercially inclined people as well as artisans and hard working laborers. Although the situation is improving, the nation's population does not yet contain a sufficiently large proportion of able-bodied workers who understand and relish modern agriculture and industry.

In view of the suddenness with which the State of Israel was finally launched, the strongest organized groups on the scene assumed the task of provisional government. Foremost among such groups were the Mapai, or labor socialist party, and the General Zionists. The former is the largest party in Israel and is closely identified with the General Federation of Jewish Labor in Israel (Histadrut) which represents about 85 percent of the workers in the country. The influence of this group is enhanced by virtue of its own industrial and agricultural enterprises which make it the largest economic interest in Israel as well as the largest employer. Both of the major political parties and several smaller ones are united and dedicated advocates for building a greater Israel. However, influence and jurisdiction among these parties are divided to such an extent that the two main parties and their economic affiliates often seem to resemble states within the State.

The provisional government under the inspired leadership of David Ben Gurion was established when the State of Israel was proclaimed on May 14, 1948. This marks the time when the War of Independence with the Arabs began in earnest. After the armistice, the Knesset, or parliament, was formed to represent all parties on a proportional country-wide basis in a republican form of government. The maximum time between general elections is four years. Since no single party has had a working majority, a coalition government has prevailed during the postarmistice period.

It is entirely understandable that the present Israeli economy was hastily built, often without the application of conventional economic tests; this was made possible by large amounts of outside aid. However, there is little indication as yet that usual economic considerations will in the future guide the attainment of national objectives which seem to be the very soul of Israel. Perhaps, more time is needed for the formative stage. Meanwhile, the economic and industrial development program is still supported to a great extent by foreign aid. Furthermore, operations of many new enterprises that cannot show a profit, at least at the present time, must be provided with external support.

B. Objectives of the State of Israel

Israel's national objectives center on a five-point program in which there is general concurrence by the major and most of the minor political groups. These objectives, with some differences in viewpoint mostly about means to these ends, are strongly supported by leading business and agricultural interests within Israel. There is also enthusiastic support of the objectives by world-wide Jewry. The program may be summarized as follows:

1. To establish a national homeland for all Jewish exiles.

2. To maintain political sovereignty and military security for the State of Israel.

3. To settle immigrants throughout the country in order to foster agriculture and regional industrial development, and to relieve the pressure of population in crowded cities.

4. To develop the natural resources of the country.

5. To achieve as soon as possible the economic self-support of Israel as a western-type industrial economy, with living standards comparable to those in some of the more highly developed nations.

It is not the purpose of this study to question the importance or propriety of any of these national objectives. However, from a purely economic standpoint, the prime question raised by such a program is whether or not the nation can "pay its own way" in the foreseeable future and at the same time continue to pursue all of the national objectives as presently conceived.

C. Problems of Economic Self-Sufficiency

1. Population and limited resources. The influx of 700,000 Jews, which doubled Israel's population in about five years, placed a severe strain on the meager resources of the nation. It was impossible at the outset for the community to support itself in any major respect, such as food supply, housing, or manufactured goods. After six years of statehood, the physical requirements are now more nearly being met by local means; but the State is far from being economically self-sufficient. This analysis should in no way detract from the tremendous achievements of recent years. It is merely a statement of fact about present conditions.

There are still marked deficiencies in domestic supplies of foodstuffs and farm products, notably cereals, grains, and concentrates for livestock, edible oils and fats, meat, and sugar. Pending a possible discovery of oil and the development of water power, the country must obtain its energy supply almost entirely from fuel purchased abroad. Large amounts of the material and equipment connected with development and industrialization (including all lumber) must necessarily be imported. Capital expenditures on the scale followed in recent years can be financed out of earnings only to a small extent and largely by domestic currency, since net earnings on export trade are small. (See Appendix Table 1.) In many branches of industry exports are sold at a loss with financial protection coming from subsidies or profits on domestic sales.

2. Foreign currency account. The extent of Israel's dependence upon foreign aid is reflected in the fact that about 74 percent of the nation's foreign currency expenditures for the fiscal year ended March 31, 1954 was received from sources other than earnings. As shown in Table 1, the major sources of foreign currency, in order of amounts received, were Jewish institutions, exports, German Reparations, United States Grants-in-Aid, and sales of bonds abroad. The major changes in this pattern during recent years are the addition of the large Reparations payments, the declining rate of Grants-in-Aid, and the increasing rate of bond sales.

Table 1

STATE OF ISRAEL FOREIGN EXCHANGE ACCOUNT, 1953-55
(In Thousands of Dollars)

Income	12 Months Actual April 1953-March 1954	Percentage	Proposed Budget April 1954-March 1955	Percentage
Exports	$ 66,173	20	$ 78,000	23
Dollar exports	16,003	5	18,000	5
Pound Sterling exports	13,443	4	25,500	8
Trade agreements 1/	33,662	10	32,000	9
Barter	3,065	1	2,500	1
Invisible exports and services	10,162	3	10,800	3
Dollar service	5,177	1	5,000	1
Pound Sterling service	2,714	1	3,300	1
Trade agreements 1/	2,271	1	2,500	1
Personal transfers and remittances, etc.	14,333	4	26,200	8
Dollar remittances	7,664	2	9,500	3
Pound Sterling remittances	3,404	1	11,700	4
Capital (in kind)	3,265	1	5,000	1
Jewish institutions	92,515	28	65,500	19
Dollar contributions	36,276	11	54,000	16
Dollar (refunding) 2/	25,250	7	(30,000)	
Pound Sterling contributions	2,381	1	3,000	1
Contributions in kind	28,608	9	8,500	2
Bond proceeds	36,865	11	32,000	9

1/ Estimated breakdown of combined total.
2/ Consolidation of short-term loans.

Table 1 (Continued)

Income (Continued)	12 Months Actual April 1953-March 1954	Percentage	Proposed Budget April 1954-March 1955	Percentage
German Reparations 1/	$ 60,168	18	$ 59,500	17
Imports financed out of exports	11,497	3	-	
U.S. Grant-in-Aid 1/	43,486	13	74,000	21
Total	$335,199	100%	$346,000	100%
Expenditures				
Imports for consumption	$185,060	55	$177,000	51
International services and defense	52,375	16	48,500	14
Fuel	31,634	10	36,000	10
Maintenance and repair	10,209	3	10,500	3
Health and education	5,628	1	6,500	2
Food and raw materials for food production	54,478	16	48,000	14
Material for agricultural production	12,360	4	10,250	3
Industry for domestic consumption	18,376	5	17,250	5
Imports for investment	56,701	17	81,500	24
Agriculture and irrigation	24,506	8	24,000	8
Power and industry	13,916	4	27,000	8
Transportation and communication	3,946	1	21,000	6
Commerce and services	383	-	1,500	-
Housing	13,950	4	8,000	2

1/ Import licenses plus import releases.

Table 1 (Continued)

Expenditures (Continued)	12 Months Actual April 1953-March 1954	Percentage	Proposed Budget April 1954-March 1955	Percentage
Grant-in-Aid for investment in industry and metals	$ --	--	$ 6,500	2
Imports for exports	47,782	14	41,000	12
Reserve for debt and miscellaneous	45,656	14	40,000	11
Total	$335,199	100%	$346,000	100%

Source: United States Operations Mission in Israel.

A complete summary on foreign aid since the State of Israel was formed is revealed in Table 2. The funds raised by the Jewish institutions, such as the United Jewish Appeal, Hadassah, and others, are derived, to the extent of about 80 percent, from individuals and organizations in the United States.

No other nation, during the past five years, has received as much economic (nonmilitary) assistance per capita from the United States Government as has Israel. This is in addition to the funds which accrue to Israel from the Jewish institutions and from German Reparations--sources not enjoyed to the same extent by any other nation of the world. Of course, great assistance has been needed to provide productive facilities for the immigrants, most of whom were near destitution.

The opportunities for Israel to reduce foreign currency expenditures are narrowed, in the short run at least, by the large share of imports made up of consumption goods not producible in Israel. Most of these goods are essential in order to maintain reasonable living standards. Israelis enjoy better living conditions than people in many part of the world. However, by comparison with the more advanced western nations, living standards are modest. There is hope for a greater self-sufficiency in foods through increased domestic production. This would relieve the major strain upon foreign currency. Improved political conditions in the Middle East and the discovery of oil in Israel would greatly reduce the need of foreign currency for defense purposes and for fuel.

Imports for domestic investment in Israel have amounted to something less than the annual Reparations payments being made by Germany. Since a large proportion of Reparations payments and United States Grants-in-Aid are devoted to economic development, it may be stated generally that most other forms of foreign income over and above earnings from exports are applied to consumption and to servicing debts. Therefore, if there is to be any immediate reduction in reliance on foreign funds to sustain consumption, investments for development will need to be curtailed to release funds for consumption needs. However, even complete suspension of development would not make the country independent of the need for foreign aid on a substantial scale. The remaining aid requirement would perhaps be 225 million dollars per year exclusive of debt payments. If imports made for the purpose of exports are also deducted, as well as imports for capital investments, the net unearned foreign currency deficit is about 175 million dollars annually. The added value which is contained in all exports in excess of the imports for re-export has been approximately 20 million dollars per year. This is derived largely from the export of citrus products.

Table 2

ESTIMATE OF FOREIGN AID RECEIVED BY ISRAEL
May 1948 to June 1954

Source	Dollars
United States Grants-in-Aid	186,228,000
United States Technical Assistance	3,710,000
United States Export-Import Bank 1/	125,000,000
United Nations	1,470,000
German Reparations 2/	94,380,000
Jewish Institutions, IL. 274,000,000 3/	600,000,000
Bonds due in dollars 4/	350,000,000
Gifts, personal remittances, etc. 5/	150,000,000
Total	1,510,788,000

1/ Amount outstanding of original long-term loans aggregating 135,000,000 dollars.
2/ Excluding commitments for ships and floating dry-dock to be delivered in the future.
3/ Conversion into dollars based on general estimate by Stanford Research Institute.
4/ Assumed to be held largely outside Israel.
5/ Estimated at about 25 million dollars annually.

The outlook for increased exports and reduced imports is discussed in later sections of this report. It should be noted here that there is more promise in the near future for reduced imports through additional local production than there is for increased exports which can earn a business profit in world competition. It is noted with some concern that about 70 percent of Israel's exports of last year were sold to soft-currency countries, while 50 percent of all exports were accomplished under trade agreements and barter.[1/] Such trade is often undependable and in many cases entails unsatisfactory or indeterminate price terms. However, these difficulties are usual in a stage of transition such as Israel is passing through. In the more distant future a substantial export economy may be developed.

D. Food and Agricultural Resources

1. Agricultural economy. The problem of self-sufficiency in food in Israel should be viewed in the light of recent history. Palestine under the British mandate consisted of two separate economies: one Jewish and the other Arabian. The Arabs produced practically all of their own food except sugar. The Jewish community supplied only about one-half of its own food requirements. Jewish agriculture was of a mixed farming type based upon the production of milk, eggs, vegetables, and fruit. The Jewish economy depended upon Arab agriculture throughout the Middle East for its grain supplies. Up to 1946-47, the Jews in Palestine imported nearly all of their requirements for wheat, sugar, and oil seeds, and also large quantities of dairy products, meat, and fish.

The separation of some 900,000 of the largely agrarian Arab population during hostilities in 1948, and their replacement mostly by nonfarming Jews, had a profound effect on the agricultural economy and the food supply-consumption position of the new nation.[2/] The cut in livestock production by about one-half seriously reduced the supply of domestic animal protein. Large-scale deterioration of the citrus groves abandoned by the Arabs resulted in a substantial decline in foreign exchange earned by this important export crop. The production of potatoes, vegetables, fruits, citrus, and olives decreased by more than one-half, and the production of wheat, barley, and durra decline to one-sixth of former levels.

2. Land utilization. The land resources of Israel comprise about 20.5 million dunams (about 5.1 million acres), of which 12.3 million dunams are not usable for agricultural purposes. The cultivated area in 1953-54 consisted of some 3.7 million dunams which cannot be expanded

1/ Commodity exports only.
2/ Op. cit., p. 2.

economically beyond 4.0 million dunams. The present irrigated area of 800,000 dunams is capable of being expanded to a maximum of about 2.5 million dunams. Approximately 900,000 dunams may be suitable for afforestation. About 2.1 million dunams are potentially suitable for grazing of which around 400,000 dunams are being used at present; the balance of about 1.3 million dunams is usable for agriculture only with great difficulty. (See Table 3.)

With a climate similar to that of Southern California, Israel raises the same general types of crops. However, the combination of soil and climate in Israel is not entirely favorable to deciduous fruits and certain specialty vegetable crops. In the year 1953-54, nearly 2.0 million dunams were planted in nonirrigated field crops. Irrigated fodder and grain crops occupied 290,000 dunams. Of the balance, 475,000 dunams were in fruit plantations (including 125,000 dunams of citrus), and 270,000 dunams were planted in potatoes and vegetables. Fishponds occupied 35,000 dunams. Another 30,000 dunams were in peanuts; about 136,000 dunams were in miscellaneous crops; and the balance of about 464,000 dunams was lying fallow or was in green manure. (See Table 4.)

3. Agricultural development plans. Since the armistice with the Arabs, the Israel Govemment has taken positive steps to expand the agricultural sector of its economy and to settle more people on the land. For many reasons, the program has not been an unqualified success; the proportion of gainfully employed Jewish persons engaged in agriculture rose from 12.6 percent in 1947 to only about 16.0 percent in 1953.

With the support of the Government, certain changes in agricultural organization have been in progress. In 1948, about one-half of the Jewish rural population lived in the "kibbutzim," the collective settlements. By 1952, the proportion in the kibbutzim had declined to one-fourth; meanwhile the "moshavim," the cooperative villages, had grown much more important. In addition, the Government has established large-scale farms for more economical operation and for demonstration purposes.

Rapid strides have been made in closing the gap left by departure of the Arabs. Jewish agriculture, having lost the Arab-country source of most of its fodder supplies, understandably set about producing its own feed grains for the intensive livestock economy. Cultivated land increased from about 1.7 million dunams to about 3.7 million dunams between 1949 and 1953, a growth of approximately 120 percent. Irrigated cropland doubled from 290,000 dunams to 580,000 during the same period.

Table 3

ACTUAL LAND-USE IN ISRAEL, 1953-54
AND LAND-USE CAPABILITIES
(In 1,000 Dunams)[1/]

	Land-Use 1953-54		Land-Use Capabilities	
	Dunams	Percent	Dunams	Percent
Irrigated or irrigable	800	4	2,500	12
Unirrigated	2,850	14	1,445	7
Cultivable, not cultivated	295	1		
Cultivable, with very severe limitations	1,292	6	1,292	6
Potential grazing land, used	400	2	2,119	11
Potential grazing land, not used	1,719	9	--	
Potential forests, planted	40	0	878	4
Potential forests, not planted	838	4		
Desert, badlands, lakes, built-up area	12,280	60	12,280	60
Total	20,514	100	20,514	100

1/ 1 dunam = 1,000 square meters = 1/4 acre.

Source: United States Operations Mission in Israel.

Table 4

DISTRIBUTION OF CROP AREA IN ISRAEL
1948-49, 1953-54, and 1960 PROGRAM
(In Thousands of Dunams)

	1948-49	1953-54	Plan 1960
Total area under crops	1,650	3,650	3,950
Irrigated portion thereof	290	800	1,850
Unirrigated field crops	1,066	1,950	1,480
Irrigated fodder	65	260	384
Vegetables	49	234	210
Potatoes	20	36	40
Peanuts		30	290
Cotton		3	70
Sugar beets		3	95
Irrigated grain crops		30	841
Citrus	90	125	213
Other fruit plantations	230	350	359
Fish ponds	15	35	39
Fallow and double cropping	+35	+464	-343
Miscellaneous	80	130	272

Source: United States Operations Mission in Israel.

The lost livestock population has been replaced. However, the new agricultural economy was oriented toward livestock based upon grain feeding rather than the former basis of grazing. The original Arab sheep and goat pastures covering about 1.8 million dunams remain relatively unused.

During the 1952 crop year, Israel agriculture produced only 27 percent of the calories, 42 percent of the vegetable proteins, 53 percent of the animal proteins, and 16 percent of the fats consumed in the country. This weakness in the agricultural economy has been recognized and a considerable planning effort has been made to determine ways and means for correcting the imbalance. The Ministry of Agriculture is now working under a program published in October 1953, which is designed to achieve by 1959-60 a balance between exports from agriculture and foreign exchange requirements for food and farm production. The purpose of the plan is to indicate direction and to fix development and production goals so as to obtain maximum food production with the lowest possible new investment and within the shortest possible time. Additional details on the features of the plan are presented in Section III, but the major aims are as follows:

a. To intensify production of field crops by extending irrigation to 1.3 million dunams, thereby increasing the irrigated area per capita from 0.363 dunams to 0.925 dunams.

b. In general, to restrain development of livestock production, except for the proposed rapid expansion of sea fisheries,[1/] and of sheep and beef cattle production on grazing lands not now fully used.

c. To expand production of industrial crops, including sugar, edible oil crops, olives, peanuts, cotton, flax, and other fibers.

d. To encourage extension of agricultural export industries, particularly citrus, bananas, grapes, raisins, early vegetables, and tobacco.

The program is expected to increase the real value of annual farm production from 173 million Israel pounds in 1953 to 405 million in 1960. Of the expected increase in real value of farm output (i.e.,

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1/ In Israel, fishery production is included as a part of livestock production.

232 million Israel pounds) about 155 million pounds would come from production of food for direct human consumption, about 36 million from citrus exports, around 20 million from fodder production, and about the same amount from miscellaneous products. (See Table 5.) Domestically produced calories are expected to increase from 207 to 1,850 per capita. Execution of the agricultural plan will require an investment of approximately 295 million Israel pounds and about 170 million dollars.

Not only is agricultural production to be increased by expansion in area, but by improved methods of farming as well. The Government already maintains a number of agricultural research stations in various parts of the country, an animal husbandry station, sea fishing and fish breeding research stations, several vegetable raising experimental farms, and regional field crop stations. The research and educational program might well be expanded with a two-fold aim: to train farmers in proper techniques, and to insure that crops and farming methods are selected on an economically sound basis.

Further information on irrigation aspects of new agricultural developments in Israel appears in a subsequent part of this section dealing with water development projects.

E. Mineral and Chemical Resources

Although Israel's farm lands are now its most productive natural resource, future developments may swing the balance toward mineral and chemical resources. Phosphates, potash, limestone, gypsum, marble, ball clay, glass sand, and salt are now being produced in significant quantities. The future, however, holds varying degrees of promise for possible production on a sizable scale of magnesium, iron, copper, manganese, bromine, and—in the event of discovery—petroleum. Bromine was produced from Dead Sea waters until a few years ago, when the plant was destroyed by the Arabs. Copper and iron evidently were produced in the remote past. Table 6 lists the known minerals of Israel with data on estimated production.

1. Minerals with best prospects of successful exploitation. Undiscovered and uncharted minerals may possibly prove to be "bonanzas" to Israel at some future time; however, these cannot be reckoned in assessing the resources of Israel today. On the basis of known facts the exploitation of phosphates, potash, bromine, ball clay, manganese, and glass sands seems to offer the best promise for economic success within the next five or six years. Additional substantial investments in plants and service facilities, such as transportation, power, and water, will be needed to convert these resources into the form they must have

Table 5

ANTICIPATED AGRICULTURAL PRODUCTION IN ISRAEL
1952-53 and 1959-60

Agricultural Production	1952-53	1959-60
Total value of production based on world prices in 1952-53	$96 million	$225 million
Food for human consumption	62 million	149 million
Fodder	15 million	26 million
Export of citrus fruits	19 million	39 million
Export miscellaneous	-	11 million
Calories consumed	207	1,850

Source: Ministry of Finance, Government of Israel, Data and Plans Submitted to the Jerusalem Conference, October 1953, p. 119.

Table 6

EXTRACTION AND PROJECTED EXTRACTION
OF MINERALS IN ISRAEL, 1951-59 1/
(In Thousand Metric Tons)

Minerals	1951	1952	1953	1954	1955	1956	1957	1958	1959
Ball clay	2	4	5	7	9	12	17	24	35
Bromine 2/									
Copper 2/									
Feldspar	0	0	0	0	1	3	4	5	7
Glass sand (inc. quartz)	4	11	12	13	15	22	27	35	40
Gypsum	n. a.	40 3/	56 3/	4/	4/	4/	4/	4/	4/
Iron 5/									
Limestone	n. a.	90	100	4/	4/	4/	4/	4/	4/
Magnesium 6/									
Manganese 5/									
Marble	n. a.	n. a.	2 7/	4/	4/	4/	4/	4/	4/
Phosphates	0	17	32	50	100	100	300	300	300
Potash	0	0	4	30 8/	100 8/	135 8/	135 8/	135 8/	135 8/
Salt	10	12	21	4/	4/	4/	4/	4/	4/

1/ Average production 1938-44 was: bromine, 1; gypsum, 6; potash, 89; salt, 20; sulphur, 1.
2/ Equipment has been ordered for 1,000-ton-per-year bromine plant and 4,000-ton-per-year copper plant. No estimate available as to starting date of operations.
3/ Ground gypsum stone for cement production.
4/ No estimate available.
5/ No plans for commercial production, although further exploration may prove existing deposits.
6/ No plan for commercial production, but preliminary investigation is being made.
7/ Estimated by the Jewish Agency; about 5 times the production of 1948. In thousands of cubic meters.
8/ Estimated by Stanford Research Institute.

Sources: For period from 1938-44, Department of Statistics, Statistical Abstract of Palestine, 1944-45, (Nov. 15, 1946), Government Printer, Palestine. For period from 1951-53 (actual extraction) and 1954-59 (estimated production), compiled by Ministry of Commerce and Industry, Government of Israel.

for profitable sale and consumption. Production and investment problems pertaining to minerals are discussed more fully in Sections V and VI on the chemical and the metal industries.

In addition to the minerals which seem destined to contribute a much greater benefit to the economy in the near future, there are some for which moderate success seems assured, such as limestone, gypsum, marble, quartz, feldspar, and salt. Production of these products may be expected to be consumed mostly within Israel.

2. Minerals with uncertain promise of successful exploitation. There are in Israel deposits of low-grade iron ore and medium-grade copper ore. Except for about 10,000,000 tons of copper ore, however, reserves are largely not proven. Based upon present technology, the mining of copper ore for export appears to be out of the question because of high transportation costs and the relatively small quantity of ore available. With respect to the refining of the ore, this operation requires low-cost power and fuel, abundant water, and a high capital investment. Here again, the medium quality of local ores and the small scale of operation anticipated accentuates the unfavorable position in which Israel finds itself with respect to the refining of minerals.

The smelting of iron ore does not lend itself economically to small-scale production. The requirements for iron and steel within Israel are not sufficiently great to warrant an integrated steel industry, and least of all a blast furnace for smelting iron ore; the local demand for pig iron would not be large. Therefore, economical production of iron would seem to depend upon exports. However, exports would be handicapped by the high transportation costs on the incoming coke and fuel and on the outgoing iron. Only if the greatest emphasis is given to temporary self-sufficiency could iron production be justified in Israel. If coke or fuel supplies were for some reason cut off, there could be no production after exhaustion of stockpiles.

In view of the abundance of concentrated magnesium chloride in the Dead Sea, and an even more concentrated by-product supply created in the potash operation, production of magnesium seems to present attractive possibilities. This subject is treated at some length in Section V on chemicals. By way of summary here, it should be noted that the lack of low-cost power, the uncertainty of future markets, and competition from other materials suggest caution in venturing into this field in competition with the large chemical companies of several other countries where surplus capacity exists. So long as fuel must be imported into Israel for power generation, any net gain in foreign exchange through magnesium exports would be limited. Production at high unit costs solely for domestic use would not justify the large capital investment.

According to a study of potential oil fields in Israel, made in 1950 at the request of the Government, oil possibilities are not promising in two of Israel's eight geologic provinces; they are fair to good in two, and good in the other four provinces. The provinces in which signs are favorable for oil discovery cover about 75 percent of the entire country.

Exploration for oil received an impetus from the enactment in 1952 of the Israel Petroleum Law and Regulations patterned somewhat after legislation in the United States. Seven different groups supported by capital from the United States, Canada, and Israel have been granted exploration rights embracing collectively parts of all of the petroleum districts. These concessions cover a major part of the area of Israel. Two groups have commenced drilling operations in the Negev.

Although there are evidences that oil may be present in Israel, especially in the Dead Sea area and in the Negev near the Gaza strip, there are negative signs as well. It is too early to speculate on the outcome of the search for oil. It would seem unwise, therefore, to construct economic plans now based upon local production of petroleum. Even if oil is found, it must be shown that reserves are of sufficient size to warrant exploitation. Although undoubtedly capital would be forthcoming in the event oil is discovered in Israel, subsequent development for economical production would be slow. However, existence of the well-located refinery at Haifa would prove to be a distinct advantage. Since petroleum constitutes the largest single commodity import into Israel, development of a domestic oil supply is greatly to be desired. Moreover, a large oil industry would solve the foreign exchange problem for an indefinite time, would provide a source of tax revenue, and would stimulate other industries to some extent. It may be noted, however, that other oil-rich countries sometimes are quite backward industrially.

F. Water Development

In view of Israel's need to provide for the influx of population, water supplies and irrigation facilities are of immediate concern. A high premium is placed on irrigation because of the nation's combination of fertile soil and light precipitation. The latter is poorly distributed seasonally and geographically.

1. Water resources. The main characteristic of the water situation is that the northern part of the country has a surplus, which, if properly conserved, could be conducted to good land in the southern area where rainfall is scarce and underground and surface waters are

meager. However, the largest single source of surface water in Israel—the Jordan River—is international for most of its course; therefore, international agreement is necessary for its development. The United Nations' plan for division of the water resources of the Jordan Valley Region would give Israel 394 million cubic meters (MCM), a year, Jordan 774 MCM, and Syria 45 MCM. This would provide irrigation for about 416,000 dunams in Israel, 490,000 dunams in Jordan, and 30,000 dunams in Syria. Estimates of the maximum amount of surface and underground water available in Israel for agriculture vary between 2,400 MCM and 3,000 MCM per year.

2. Recent water and irrigation developments. Prior to establishment of the State of Israel, waterworks and irrigation were mainly local because of the dispersion of Jewish land holdings. The few regional projects, together with local ones, served only about 230,000 dunams with irrigation water, mostly for citrus plantations. This constituted only 0.18 dunams of irrigated land per capita. The fact that irrigated land has been increased to about 800,000 dunams, or 0.47 per capita, in spite of the large growth in population, indicates that water developments have proceeded at a rapid pace. However, the need for more irrigated land is so serious that a long-range program is being fostered.

3. Irrigation program. The over-all irrigation program of the Government of Israel is composed of a number of independent projects, which, although scheduled for completion at various times, eventually are to be integrated. Development of ground-water resources will continue for another two years in an effort to add about 100 MCM annually. At the same time, construction will proceed on four major projects to be completed by 1957. These projects—the Huleh Lake, Kishon River Valley, Yarkon River diversion to the Negev (first stage), and Yarkon-Negev (second stage)—will be based on the firm flow of the rivers, some ground water, plus treated sewage effluent from Tel Aviv. Together these four projects will add 400 MCM a year. Certain parts of the Jordan River diversion project are to be put into operation in the period 1954-60, adding another 220 MCM a year. A further supply of 200 MCM will become available by 1961 from construction of the main conduit and the Sahl Battauf reservoir in upper Galilee. By 1957, the total annual water supply available from all sources in Israel will be about 1,330 MCM, compared with the present total of about 830 MCM a year. With further additions, the supply should reach 1,750 MCM by 1961. To accomplish these objectives, capital investments of about 516 million Israel pounds, including imports valued at about 134 million dollars, will be required.

Another proposal which now seems to have little international support is diversion to Israel of part of the water in the Litani River, the natural course of which is confined to Lebanon. Under this plan, Israel's water supply might be more than double the 1,730 MCM mentioned above.

G. Power Development

1. Steam-generated power. Regional agreement on the use of water resources is a prerequisite not only to irrigation development, but also to hydroelectric power generation in Israel. Lacking fuel resources, Israel now generates electricity by steam from imported fuel oil. This import in recent years has been largely from Venezuela because of Egyptian blockade of the Suez Canal and the Iraqi refusal on oil transmission over the pipeline leading from the Mosul field to the refinery at Haifa. Recently, some crude oil has been obtained from Russia in exchange for citrus fruits. As mentioned earlier, purchases of petroleum constitute the largest foreign currency expenditure by Israel for a single commodity—about 35 to 40 million dollars a year.

By 1953, the annual use of electric power in Israel was about 800 million kilowatt hours, of which approximately 20 percent was used for agriculture, 27 percent for industry, and 53 percent for other purposes, mostly domestic. This energy is being supplied by a generating capacity of 230,000 kw, the largest installations being located at Tel Aviv and Haifa. The Government estimates that about double this capacity will be needed by 1957.

The entire territory of Israel is served by the Palestine Electric Corporation. It charges industrial consumers on the average about 1.3 cents per kwh and irrigation consumers a little less. Industrial rates compare favorably with those in other industrial countries, but the irrigation rates are relatively high. Exact power generating costs computed by recognized accounting standards are not available.

2. Hydroelectric power and irrigation. Power requirements for Israel's irrigation program are expected to be 250,000 hp by 1957, of which only about 35,000 hp will become available from projected hydroelectric power developments. It appears, however, that the demands of irrigation developments on the power grid of the country during peak periods will not increase appreciably. Generation of 25,000 kw on the Jordan River diversion project, plus independent prime movers at the major pumping stations, will result after 1957 in relatively low peak power requirements from the grid for irrigation.

Reduction in the flow of the Jordan River resulting from its diversion for irrigation purposes would lower the level of the Dead Sea. To offset this, it has been proposed that Mediterranean Sea water be conducted to the Dead Sea to maintain the latter's level and to provide a net power generating capacity of about 115,000 kw after using about 23,000 kw for pumping. Several estimates by independent engineers indicate that this project would be economically feasible, although it would require substantial capital. Obviously, this project is contingent upon amicable international settlement on division and development of the waters of the Jordan Valley.

H. Transportation and Communication

The relatively sudden introduction of a western-type economy into Israel soon pointed up the serious inadequacy of the nation's transportation facilities and of the telephone system. Faced with a shortage of capital equipment and qualified personnel of many types, the Government of Israel, with the aid of the USOM in Israel, inaugurated a five-year over-all communications development program. This resulted in expenditures of about 18.5 million Israel pounds and 9.5 million dollars of United States Grant-in-Aid by April of 1954.

1. Railroad system. Considerable effort has been concentrated to date on rehabilitating and extending the railway system in Israel with the aim of making it serve for at least another generation. At the end of this time it is expected that the system will be uneconomical in competition with other forms of transportation. Meanwhile, the railway network will relieve the traffic load on the overcrowded highways, thus partly alleviating the need for a greater road construction program. The roads of Israel are particularly congested near the larger cities.

The railroad program includes the adoption of diesel locomotives and the development of fast passenger and freight trains operating on frequent schedules. For the lighter passenger runs, diesel rail cars will be employed.

Railroad lines are being extended to the sources of heavy, bulky commodities so as to provide economical transportation to factories and to the Mediterranean ports. The older sections of track are being rebuilt to accommodate heavier loads.

It is expected that improvement of the railroad system will reduce import requirements for petroleum, expensive equipment and repair parts, and rubber for tires used in highway transportation.[1/]

2. Highway transportation. Acquisition of automobiles has been restricted by the Government in Israel in order to conserve foreign exchange and to divert traffic to buses and trains. In an effort to reduce vehicle requirements, buses are being rerouted and the fare structure is being changed to discourage unnecessary travel. Much effort is going into bringing the bus companies up to modern standards of operating efficiency. More than 20 percent of the buses are constantly under repair and out of service as contrasted with about 5 percent in the United States. This low utilization results in high investment costs and reduced earning capacity. Action is being taken to install efficient operating and maintenance procedures, including the establishment of a model repair shop for training purposes.

Improvement of the highway system is being accomplished by reconstructing and extending the arterial roads and connecting the agricultural settlements with the general road system.

Taking into account the planned relationship of rail and truck transportation, it is estimated that new capital requirements for the road transport fleet in the period 1954-60 will total about 35 million

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1/ The railroad program includes: (1) Completion of the line to the Negev from Na'an through Beersheba, to Kurnub—the site of the phosphate mines, and to the Mediterranean seacoast at Sukrier near Ashkelon; (2) Building and renewing a single main line connecting Haifa, Tel Aviv, Lydda, and Jerusalem (scheduled for completion in 1954); (3) Construction of a new "hump" type of marshaling yard outside Haifa, with basic changes in receiving and customs yards; (4) Construction of additional sidings and storage for freight in the Kishon area near Haifa; (5) Introduction of self-propelled passenger coaches for fast, frequent service between Haifa, Tel Aviv, and Jerusalem; (6) Acquisition of additional rolling stock to improve mainline operation, and shunting to speed up service, provide bulk transport of minerals, and to provide workshop and line-maintenance equipment; (7) Introduction of modern signaling equipment to increase capacity and safety of the lines; (8) Construction of a cable way to transport potash from the Dead Sea near Sodom to the future railhead at Kurnub.

dollars, distributed as follows: 18.4 million dollars for trucks and commercial vehicles, 5.9 million for buses, 7 million for special vehicles, 2.6 million for private cars, and the balance for taxis and motorcycles. In midyear 1953, there were in Israel 41,828 vehicles composed of 15,386 trucks and commercial vehicles, 12,252 private cars, 9,565 motorcycles, 1,721 buses, plus 2,904 miscellaneous vehicles.

The use of motor scooters, which could be produced locally under licensing agreements with foreign makers, and of bicycles now manufactured in Israel, should be encouraged. A small, economical engine for motorizing bicycles might be developed to provide cheap individual transportation. Streets could be planned with bicycle traffic lanes. High taxes and prohibitive duties might well be removed from these economical means of transportation.

3. Ocean shipping. The foreign trade of Israel is mostly seaborne, with annual volume of imports and exports estimated at 1.5 million metric tons. Over one-half of the international passenger traffic of Israel is also seaborne, the remainder being carried by airplanes since the borders are virtually closed to land travel. Lack of foreign exchange has prevented faster growth of the merchant fleet which has been built up by private shipping companies. The development program of Israel envisages the addition of new vessels to replace the unprofitable old ships. This would necessitate the acquisition of 18 ships to bring the fleet up to 35, with a carrying capacity of 2,000 passengers, 175,000 metric tons of general cargo and 36,000 tons of tanker cargo. The estimated cost of this program is about 37.5 million dollars. It could save and earn about 11.0 million dollars annually, according to estimates of the Ministry of Communications.

4. Port facilities. An extensive program is under way for reorganizing, modernizing, and extending port facilities, particularly in the Haifa area where cargo handling capacity has been increased to 1.5 million metric tons annually. During 1954, two new wharves will add 400,000 metric tons of handling capacity, and a grain silo will add 100,000 metric tons to the port facilities. The development at nearby Kishon will bring eventual capacity to 2.5 million metric tons. The Kishon development will establish an auxiliary port near Haifa where port expansion is hampered by lack of land. The project will provide accommodation for an expanded fishing fleet, increased area for industrial development, and additional storage and warehouse space. The first stage of this project is completed; enlargements can be made as the need arises.

Plans have been made to enlarge the less important lightering ports of Jaffa and Tel Aviv. These are to be consolidated and made more economical and efficient for handling materials by the use of mechanical means. There are plans for providing certain port facilities at Eilat on the Red Sea so as to permit movement of mineral resources from the Negev and Dead Sea areas to the Orient. Also, there are plans to construct ship loading facilities at Sukrier on Israel's Southern Mediterranean seacoast.

5. Air transportation. There is a ten-year plan for the development of airports in Israel. The Class B International Airport at Lydda is being lengthened and improved, and the terminal is being renovated. The Haifa, Tel Aviv, Jerusalem, and Eilat airports are also to be improved, mostly to accommodate domestic air transportation. The estimated cost of this program to bring airfields to suitable modern standards is 7.8 million Israel pounds and 1.2 million dollars. El Al Israel Airlines is adding a number of new Super Constellations to its fleet. By 1959-60, it expects to add six four-engine aircraft at a cost of about 18.0 million dollars.

6. Telephone system. The Ministry of Posts in Israel has been engaged for some time in restoring domestic telephone services disrupted by the War of Independence, expanding and improving the international telephone and telegraph network, and developing an entirely new independent international communication system with New York and several western European cities. At midyear 1953, there were 41,767 telephones in use in Israel of which over 37,000 were automatic. A program is under way to increase the number of truck lines and to extend the use of automatic dialing.

7. General observations. In view of their far-reaching effects upon industry, some general observations may be appropriate concerning communications facilities in Israel.

a. It is desirable that industrial enterprises in any country be well-located with respect to transportation costs and services. Since establishment of the State of Israel a number of industrial enterprises have been located in out-of-the-way places with perhaps insufficient attention to long-run economic considerations. In a number of instances the problems resulting from plant location are obvious. From a purely economic standpoint and wherever possible, industrial plants should be well-located not only with respect to raw materials but also markets. This is desirable so that handling and other costs may be kept within a competitive range.

b. It is essential, particularly in meeting foreign competition, that means be found in Israel to reduce the exorbitant costs of truck transportation. High maintenance costs might be reduced by permitting additional imports of equipment and spare parts. One of the more effective ways of bringing about lower costs might be to introduce or permit more competition in the trucking industry and to stimulate competition between the trucking industry and the railroad system. This would point up the necessity of reducing and controlling costs and improving services. An expensive common-carrier trucking service encourages shippers to establish their own private service, thus aggravating the diseconomies of the present transportation system.

c. The competitive position of Israeli industries based on heavy, bulky, and relatively low-priced commodities may depend upon the early completion of adequate and low-priced railway transportation, unless truck service is heavily subsidized. It is important that railroad service be extended to the phosphate and potash deposits as soon as possible so as to reduce the prohibitive costs of the long truck haul to Haifa. This may deserve a higher priority than development of a sea outlet for these products at Sukrier. The real justification for the latter appears to rest on a volume much higher than seems possible within the near future.

d. The competitive position, and even the development of certain new export industries in Israel, may depend on provision of dependable, relatively low-priced air transportation. Certain commodities, such as pharmaceuticals, artificial teeth, diamonds, and high-styled textiles, are already being shipped from Israel by air freight. For these commodities, price competition is of less importance than speed and dependability of delivery. A further possibility for exports by air in the near future may be the quick shipment of out-of-season and highly perishable fresh fruits and vegetables to certain European markets.

e. Port fees should in most situations be based upon the cost of services rendered to importers and exporters, and should not be used primarily for generating government revenue. Every effort should be made to keep commodity handling costs at seaports as low as possible by introducing cost-reducing methods which at the same time will provide quick and dependable service. More attention might be given in Israel to safeguarding and preserving the conditions of goods in transit. Wherever possible, reduced costs should be passed on to shippers in the form of lower tariffs.

f. A quick, reliable, and economical internal communications system with good service to other countries is essential for effective modern business operations. The main telephone lines in Israel are overloaded, causing extensive delays in long-distance service. The quality of the signals and of the service is distinctly inferior to that in a number of other western countries. Personnel might be given more thorough training, and automatic switchboards and dial systems should be installed as soon as possible. General service to the public could be extended, especially during the shortage of private stations, by the installation of additional public stations, of which there are very few at present.

g. In view of the obsolescence of the railroad transportation system in Israel, any new investment should be made with caution and with due consideration for getting more use out of the existing system within the next few years.

I. Industrial Structure

The rapid development of industry in Israel in recent years has been criticized in some quarters as having been forced through without adequate planning. However, before voicing criticism one should indicate whether the term "planning" refers to social, political, economic, or military considerations, or some combination of the four. Perhaps, industrial planning in Israel during recent years has given greatest emphasis to social, political, and military factors rather than to purely economic factors. Bearing in mind that the major objectives of the State discussed in Subsection B above do constitute a general plan, certain industrial ventures which seem to have a doubtful economic foundation, such as automobile production and some textile lines, can best be explained as efforts to gain or save foreign currency. This objective has assumed great importance in Israel. However, only a few concerns have been able to earn a business profit in the export trade. Also, the effort to gain foreign exchange has led frequently to neglect of profits in terms of Israel pounds.

Another general explanation of the presence of many concerns with limited prospects for long-run financial success is the influence of building and construction upon an economy in a stage of rapid growth. Many industries vital in the construction stage of development have less importance when growth slackens or ceases. Industries in the building field are particularly vulnerable to changes in the rate of growth of the economy. Such enterprises abound in Israel. Their plight is unrelieved by any substantial export possibilities particularly

in view of prevailing high costs, low volume, absence of quality standards, and lack of effective marketing organizations.

Perhaps the outstanding characteristics of Israel's industrial structure, aside from its rapid growth, are the number and diversity of small establishments along with the predominance of a few large organizations of the cooperative or institutional type. Important among the latter are establishments in the Histadrut or labor-owned sector of the economy. Furthermore, participation by the State is prominent in public utilities and financial institutions as is true in many European countries. In addition, institutions of World Jewry hold most of the land, many of the buildings, and participate extensively in agricultural and business enterprises. It should be noted here that much of Israel's development has been financed by sources, such as the Jewish institutions, that do not necessarily operate on the basis of earning a business profit.

1. Industry in relation to national income. The contribution to the national income made by industry in Israel is estimated at about 27 percent of the total national income, as indicated in the following estimate prepared by the Central Bureau of Statistics and Economic Research.

ANALYSIS OF NATIONAL INCOME OF ISRAEL, 1953
(In Millions of Israel Pounds)

Branch of Activity	Amount	Percent
Agriculture	110	10.5
Industry and handicraft	280	26.7
Building and public works	60	5.7
Communications and commerce	450	42.9
Finance and local authorities	150	14.2
Total	1,050	100.0

Although the country was mostly agrarian 15 years ago, the proportion of the national income arising from industry today compares favorably with about 33 percent for Italy and 30 percent for the United States, to cite two examples. A comparable measure of the importance of industry to the economy of Israel is the relative number of workers employed. (See Table 7.)

Table 7

NUMBER OF ESTABLISHMENTS AND NUMBER OF PERSONS ENGAGED BY SIZE OF ESTABLISHMENT AND INDUSTRY GROUP IN ISRAEL, 1952

	Size of Establishments—Persons Engaged										
	Total	1 - 4	5 - 9	10-14	15-19	20-29	30-49	50-99	100-299	300+	Not Specified
	Number of Establishments										
Total	20,301	15,967	2,435	776	343	322	188	105	65	17	83
Minerals	48	15	9	5	5	5	4	2	1	--	2
Food	1,759	781	576	189	60	79	22	25	25	3	--
Textiles	1,264	819	253	71	37	28	19	8	10	2	17
Clothing and footwear	6,375	5,808	324	108	43	33	23	10	--	--	25
Metal	2,493	1,979	295	83	48	40	23	12	4	2	7
Machinery	771	537	124	47	31	10	13	3	4	1	1
Elec. appliances	721	560	84	28	13	9	9	9	2	--	7
Wood	3,052	2,633	278	75	22	22	8	5	4	--	5
Leather	582	518	40	13	4	3	3	1	--	--	--
Printing and paper	757	506	133	44	21	25	17	4	3	--	4
Chemicals	392	228	87	27	19	12	6	6	2	1	4
Stone and cement	564	311	119	51	21	26	11	8	7	3	7
Diamonds	103	7	25	14	14	15	20	8	--	--	--
Misc. (incl. power stations)	1,420	1,265	88	21	5	15	10	4	3	5	4

Table 7 (Continued)

	Total	Size of Establishments—Persons Engaged									Not Specified
		1 - 4	5 - 9	10-14	15-19	20-29	30-49	50-99	100-299	300+	
	Number of Persons Engaged										
Total	100,275	27,511	15,783	8,955	5,721	7,492	6,953	7,084	9,953	10,823	
Minerals	823	45	69	64	82	117	146	182	123	--	--
Food	18,926	2,405	3,794	2,178	1,004	1,742	816	1,645	4,155	1,187	--
Textiles	9,173	1,612	1,620	830	629	691	726	550	1,283	1,232	--
Clothing and footwear	14,480	8,004	2,075	1,236	715	778	837	732	103	--	--
Metal	11,793	3,855	1,898	957	795	956	830	803	686	1,013	--
Machinery	4,819	1,033	793	554	521	224	516	201	665	312	--
Elec. appliances	3,563	1,061	544	335	213	197	343	615	255	--	--
Wood	9,346	4,607	1,756	858	365	515	286	348	611	--	--
Leather	1,542	813	268	157	62	80	110	52	--	--	--
Printing and paper	4,556	1,059	859	504	351	591	612	258	322	--	--
Chemicals	3,530	548	579	315	313	289	224	427	254	581	--
Stone and cement	6,981	678	759	566	345	588	440	552	996	2,057	--
Diamonds	2,194	21	185	167	240	365	734	482	--	--	--
Misc. (incl. power stations)	8,544	1,770	584	234	86	359	333	237	500	4,441	--

Source: Central Bureau of Statistics and Economic Research, Government of Israel, Statistical Bulletin of Israel, June 1954, p. 188.

Reported business profits earned by industry in Israel are indeed modest. For the year 1952-53, all corporations paid only about eight million Israel pounds for income taxes and individuals other than workers paid only about 17 million. Individual taxpayers, as the term is used in Israel, include all partners and sole owners of businesses, all farmers, professional people, and investors taxable in the country. Since the tax rate on corporations was 50 percent of profits and the average rate paid by individuals was almost as high, this would seem to indicate that private enterprises, from a profit standpoint, have not been too successful. By comparison, workers paid income taxes of about 32 million Israel pounds, and all others, including businesses, farmers and investors paid only about 25 million Israel pounds.

In this reckoning, some allowance must be made for tax avoidance by business; however, subsidies of many varieties tend to offset this factor in relating reported profits to actual economic profits. The reported profits are only about as much as a modest business return on capital equal in value to the foreign aid received in one year. Business conditions in Israel have been adverse since the change from a sellers' to a buyers' market. Also, paper profits from inflation have slowed down since the time of the latest currency devaluations in 1952.

2. Census of industry. The striking fact revealed in the recently completed Census of Industry for 1952 is the high proportion of small establishments in the country. As Table 7 shows, about 80 percent of all establishments in the industrial category employ no more than four persons each, including working owners and working members of their families. This extreme situation is due in part to the inclusion of repair establishments and artisans in the industrial category. However, in all Israel there are no more than 100 industrial concerns that employ more than 100 people each. Of these larger enterprises there are more in food processing than in any other field.

The corporate form of ownership with public sale of securities is not used extensively in Israel. In 1952, there were only 60 "public limited companies"; at the same time there were 605 cooperatives in industry and over 19,000 private businesses, partnerships, and "private limited companies." Only about 11,000 of the total 100,000 persons engaged in industry worked for corporations. As will be shown in greater detail in Sections III through VI dealing with specific industries, the scale of most manufacturing operations in Israel is so small as to make economies of operation difficult.

Inspection of numerous plants in several industrial categories has revealed an exaggerated tendency in Israel to diversify the products of a single establishment. This seems to come from the opportunism which characterizes an industrial community in which business on a small scale is an important feature of the economy. Few concerns are sufficiently large or well enough organized to produce a large quantity of any one product on a high-quality basis at a reasonable price for foreign markets.

3. Industrial capacity in relation to domestic consumption. Apparently, a comprehensive estimate of the capacity of industry in Israel in relation to domestic needs has never been attempted. A precise expression of this sort would not be feasible without defining "needs" in terms of a common unit. This is impossible except as a financial expression. However, with respect to specific industries or products, a few rough estimates have been prepared and are presented in Sections III through VI. Facilities in excess of current needs now appear to exist in the metal trades, tire manufacturing, certain weaving phases of textiles, cement manufacturing, in several types of pipe manufacturing, and in nearly all food processing branches of industry.

In a general way, it may be stated that the value of exports is a partial measure of capacity to produce certain products beyond domestic requirements. In 1953-54, Israel's manufactured exports were valued at about 30 million dollars. Excess capacity is also suggested by idle plants and unemployed workers who were formerly employed; but this evidence is not conclusive because the idleness may actually be caused by shortages of certain equipment, skilled workers, materials, or money.

Shortage of capacity (capacity being defined as including all the elements of production) is more accurately reflected in imports than is excess capacity reflected in exports. In this context "needs" mean "purchases." Taking imports as an indicator of needs that cannot be met by local industry, it appears that Israel may be lacking in industrial capacity (excluding foods and articles mainly unmanufactured) valued at about 140 million dollars annually. (See Appendix Table 2.)

It does not follow from these statements that it would be desirable to produce in Israel all manufactured goods now imported, even though with few exceptions this might be physically possible. Actually, there is evidence, as presented in Sections III through VI, that many efforts to date to produce manufactured articles locally are uneconomic. At any rate, the needs for manufactured articles not met

locally, and which represent the highest value, are, in descending order, machinery, iron and steel, transportation equipment, chemicals, cotton and woolen yarn, ceramic and glass products, paper and paper products, and nonferrous metals and products. Some items are produced in surplus in Israel; there are sizable exports of polished diamonds, automobiles (assembled in Israel), textiles, fruit juices, cement, tires, and plywood. (See Appendix Table 3.)

J. Management of Industrial Enterprises

Many manufacturing concerns in Israel, both large and small, are managed by men with executive experience, usually obtained a number of years ago in Central or Eastern Europe. Many more companies are operated by men with little or no previous experience in the kind of business now being pursued. But, whether experienced or not, the managers face problems that are not often equaled in other countries. Even the ablest managers who have had experience abroad as well as in Israel are working under new and perplexing conditions. It has been only about two years since the sellers' market, with rising prices and an assured sale for almost all goods produced, was replaced by a buyers' market in which there are many products competing for customers with limited purchasing power. Foreign competition has become more serious with each passing month of the last two years. Hence, the real test of managerial ability and economic soundness of industry in Israel may have begun. Not until many subsidies, governmental grants to industry, and certain controls over currency and trade are substantially reduced will the final testing occur.

A statement often heard in Israel is that there are few business bankruptcies. Such a situation could mean that the penalties for inadequate management have not been too severe. The artificial support received by industry through direct and indirect means may have obscured some fundamental weaknesses. Even though bankruptcies have been few, the profitability of business has not been high. In recent years, hundreds of establishments have been liquidated, consolidated, and replaced by others. Yardsticks of managerial competence other than profits—e.g., high productivity, low costs, quality products, dependable service—have not always been flattering to local business managers.

1. Managerial needs. Inquiry into the operations and management of about 200 industrial firms in Israel during the progress of this study has revealed variations in the effectiveness of management such as might be found in any other country. Certain management needs in this country, however, seem so pronounced as to deserve special comment as follows:

a. There is a marked limitation in the number and ability of foremen, supervisors, and junior executives. This is sometimes termed a deficiency in middle management. It arises in Israel because of inadequate financial incentives, lack of professional and internal training, and in some cases individualism of top executives accompanied by lack of attention to organization of managerial functions.

b. There are too few specialists in administration such as production engineers, cost accountants, and marketing experts. Many companies lack the size and volume of business to justify full-time employment of these specialists, while others may not fully appreciate the contributions such specialists can make to a business concern.

c. The organizational structure for factory management is sometimes vague or confused. Many firms are too small to employ full-time people to plan production programs, develop the routing of the work (especially for job-order plants), handle the scheduling of machines and equipment, dispatch the jobs, inspect the finished product, and enforce control of quality. Yet, these are the elements of factory control which must be recognized whether they become the responsibility of specialists or are handled by others.

d. Top management in Israel often does not seem to understand fully or perform the fundamental functions of management. There is a general failure to observe such time-tested principles of good management as clearly defined objectives, delegation of responsibility with appropriate authority, and coordination of the major functions of the business.

e. Schools and colleges in Israel do not offer sufficient courses in management functions. The deficiency is especially noteworthy in formal training for general management. The custom of training lawyers and engineers for business careers should give way, in part at least, to professional management training. More training abroad in schools of business administration would be beneficial. The simpler functions of business, such as accounting, statistics, and office practice, should be more generally taught in public schools to those who may not go to college.

f. Professional management societies in Israel should be strengthened. There should be equivalents of such groups as the American Management Association, the National Association of Cost Accountants, the American Marketing Association, and other non-profit organizations whose mission is to foster improved management and increase the supply and skill of management specialists.

2. Technical assistance. It is appropriate for a new and rapidly developing country to receive at least temporary assistance from specialists of more industrialized nations. This idea has received recognition in Israel's development. Lasting contributions in technical aid have been made by experts of the United Nations. The Productivity Institute, now under cooperative sponsorship of the Israel Government, industry, and educational institutions, was established with assistance from the United Nations. The Institute is rapidly gaining the ability to carry on, entirely with Israeli personnel, the work of improving managerial practices and the performance of industry. The services of this institution could be more widely used. Some of the improvements in production performance following studies and advice of its experts have been dramatic.

Technical assistance rendered by the United States has proven to be of great value. Additional emphasis is needed on general management, marketing, and factory operation. The first priority might be to train a relatively small number of Israeli citizens to become teachers of others in the management fields. Practical experience for Israeli managers through temporary employment in factories in the United States and England might well be expanded. The cost for this training should be a good investment for larger companies needing the added experience. Smaller enterprises would need external aid for such a program.

Aside from training in the more general aspects of management, the educational opportunities available in Israeli colleges and research institutes for the professions of particular value to business appear to be very good. The supply of graduate engineers is about equal to the current demand in Israel, and the training is of a high quality.

The general shortage of professionally qualified managers may be offset to some extent by the use of private consultants, of which there are a few successful ones in Israel. As their work has a chance to demonstrate its merits, there may be a marked increase in the use of management consultants.

3. Foreign business affiliations as an aid to management. One of the more effective means for a nation to utilize the "know-how" of other countries is to establish international business connections. Operation of some businesses in Israel as foreign subsidiaries or branches is one way in which to obtain many types of assistance, including financial. Another feasible plan would be to develop more arrangements in which foreign concerns could be part owners in Israel,

or even licensors or licensees of products or processes. Similarly, close ties by Israeli firms with marketing concerns in countries where such "know-how" is well advanced might be appropriate. These concerns would have a direct interest in transmitting knowledge and ideas which could make Israeli exports more salable. In other instances Israel-made products could participate in the benefits of an established foreign market.

4. Influence of financial agencies on good management. It is much easier to state principles of good industrial management than to place them into operation. However, improvement in management practices in Israel could be accelerated through further stimulation from the agencies that furnish the funds upon which industry operates. Banks and other lending agencies in many countries deserve much credit for insisting on adequate and recognized accounting procedures, clear formulation of plans which can stand critical business scrutiny, and performance in accordance with commitments. Particularly when available funds are limited as in Israel, it seems appropriate to allocate them first to applicants whose firms are well managed. This approach deserves much more emphasis in Israel than it has received in the past when grants and loans have often been made on a basis of equality among applicant firms.

5. Research and product development. Fundamental research is the accepted province of universities, large or specialized foundations, and institutes, and to some extent well-financed business enterprises. There is no reason for a different approach in Israel. However, since the resources for research are limited in the country, it is suggested that, where feasible, fundamental research be directed along lines that may produce new scientific information of later use in applied research on chemicals which abound in the Dead Sea and crops which are or might be grown in Israel. As a possible aid to industry, considerable concentration on basic scientific problems, such as selection and improvement of varieties and cultural practices affecting fruits and vegetables and the so-called industrial crops, would seem to be justified.

Applied research is the natural responsibility and opportunity of industry. However, during Israel's period of growth and transition toward a mature economy it is expected that public funds, perhaps including some foreign aid, will be needed to stimulate applied research. Here again, as in the case of fundamental research, it would seem advisable to concentrate on technical problems in which Israel has a special interest differing somewhat from those of other countries.

Practical economics research is needed urgently in the fields of domestic and foreign marketing, on industrial costs, and particularly on cost reduction and on product quality. These research efforts may be more rewarding at the outset if centered on quality improvements, production design, and solution of other production problems rather than on development of entirely new products. Furthermore, in most cases greater amounts of capital are required to develop and sell a new product than are required to improve and increase production and marketing of existing products.

K. Marketing and Trade Problems

In the foregoing parts of this section on the economy of Israel, primary emphasis has been upon the resource and production problems of the country. Only a few references have been made to the marketing function. However, the marketing and trade problems in Israel are no less perplexing and challenging than those of production; furthermore, less attention has been given to their solution. Influential groups most concerned with Israel--its own Government, the Jewish institutions, the Histadrut, the United Nations, the United States, as well as local businessmen--have for several years been concerned first with increasing production. This approach was encouraged by the world shortage of materials and by inflation. Only with the turn of events culminating in world surpluses of some goods and commodities and in more stable currencies in leading industrial countries did various groups recognize that Israel's marketing problem may be as troublesome as her shortage of foreign currency.

In the foreign field, Israel's sales are hampered by high costs, variable quality and service, and sheer lack of industrial representation. The domestic market in Israel is severely limited. The nation is now in a period of adjustment from detailed government controls to relatively free markets. Under the highly regulated economy, markets were allocated and prices fixed; even raw materials were allotted in accordance with assigned and assured customers for finished products. The new conditions have for the first time placed many, but not all, manufacturers under the rigors of price and quality competition.[1/]

1/ Price controls apply to rice, washing powder, noodles, meat, cheese, glucose, oil, cakes, bread, salt, margarine, soap, semolina, denatured alcohol, flour, pulses, coffee, cocoa, jam, chocolate, yeast, tea, and milk products. Rationing applies to sugar, flour, jam, margarine, meat, coffee, rice, cocoa, tea, poultry, and eggs.

1. Domestic markets. Limitations in the Israel market include many factors that are amenable to control, although some are destined to remain unchanged perhaps for generations. The following paragraphs discuss limiting characteristics of the local market that are of such concern as to warrant detailed study by the nation's economists and industrialists.

a. Population. There are in Israel about 1,700,000 people comprising many heterogeneous groups with differing needs and buying habits. The purchasing power of most Israeli people is low; per capita income per year is only about 600 Israel pounds (330 dollars) and the average earnings of a full-time factory employee amount to about 2,000 Israel pounds (1,100 dollars). Bank savings accounts plus accounts in cooperative societies stand at only about 20 Israel pounds (11 dollars) per capita. These figures, however, understate the actual savings because of the custom of hoarding.

b. Market restrictions. Manufacturers in Israel usually enjoy a high degree of protection from competing imports. However, the Government has discretionary powers in this respect which often disconcert local producers. Furthermore, imports of merchandise by immigrants and investors create some disturbing influences. The greatest restriction on free marketing is the existence of organizations, including private enterprises as well as those under Histadrut control, which combine to fix prices, divide markets, and control bids.

c. Domestic prices. High domestic prices in Israel result from some apparent price-fixing practices, efforts to recoup in the home market losses taken on exports, high import duties and embargoes, high purchase taxes, the tie between wages and living costs, and general inflationary pressures. For reasons described in a later subsection dealing with finance, the increase in the means of payment in Israel has not been keeping pace with price rises on the market in recent months.

d. Merchandising methods. Merchandising in Israel quite generally falls below the standards one might expect to find. The degree of attractiveness, cleanliness, and sanitation in Israeli stores is perhaps more typical of the Middle East than of the West. Packaging and handling of food products are in need of considerable improvement, as are merchandising displays, advertising, and customer service. These conditions will undoubtedly be altered under the influence of more intensive competition.

e. Quality standards. Both consumer and industrial goods in Israel suffer from a general lack of uniformity in quality. Although

this problem is dealt with elsewhere in this report, it is especially important in marketing because goodwill and customer acceptance greatly reduce costs of distribution and encourage expansion of sales.

2. Foreign trade. The general features of Israel's international trade position are discussed earlier under "Problems of Economic Self-Sufficiency." The gap between annual imports of some 300 million dollars worth of merchandise and services and annual exports of about 60 million is attributable mainly to the influx of immigrants beyond the immediate capacity of the country to provide for them. Imports could be reduced by many tens of millions if capital expenditures designed to increase productive capacity were reduced. This would be an important contribution to balancing the foreign trade account for the present, but it probably would delay eventual ability of the country to become economically self-supporting. Without changing the general program for industrial development, a number of policies, practices, and administrative measures affecting foreign trade might well be modified with good effect.

a. Import regulations, duties, and taxes. Import licensing in Israel is an essential part of the task of managing scarce foreign currency. It is also needed as a means of directing purchases to Germany under the Reparations Program and to the United States for Grant-in-Aid materials. A further purpose is to channel purchases to trade-agreement countries in an effort to offset imports under such agreements. Finally, the licensing power is used to restrain those who would purchase foreign commodities even though they might be obtained from domestic producers. When imports are for re-export, a licensee must guarantee to export goods in an amount equal to the value of the imports.

Business and industrial representatives point out that the procedure for obtaining import licenses in Israel is cumbersome and time-consuming. However, there is an Open General License which permits imports for the use of the Government, personal effects not subject to customs duties, and certain approved commodities brought in by immigrants.[1/] Rather than to bring in foreign currency which is

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1/ An immigrant may transfer under Open General License commodity imports up to a value of 1,400 Israel pounds. The approved commodities under this arrangement are machinery, foodstuffs, industrial products, chemicals, textiles, leather, shoemakers' accessories, paper, office equipment, rubber, medical articles, transport equipment, and other miscellaneous specified articles.

exchangeable only at official rates, many immigrants acquired and brought in commodities to be sold at much higher Israel pound prices than the equivalent foreign currency could legally obtain in Israel. Also, conversion of cash into commodities was the only means of getting capital out of some countries and into Israel. Certain gifts of minor value may enter the country periodically without specific license.

Most imports into Israel are regulated by Specific Import License issued by a cognizant agency of the Government after review and release by the Ministry of Finance in accordance with availability of foreign currency.[1/] The respective agencies issuing the licenses are guided by the foreign exchange budget described above under the heading "Problems of Economic Self-Sufficiency."

Application for an import license must be accompanied by an order for the goods desired. Granting and release of the license from the Ministry of Finance is usually conditional upon the opening of a letter of credit with a bank within one month after approval of the application.

The right to import goods is strengthened by ownership of foreign currency credits. However, there have been many restrictions preventing the transfer of such credits. An owner of foreign currency can sell it only to the Ministry of Finance at the official exchange

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1/ Import licenses are issued by the following agencies and for purposes indicated:

1. Ministry of Finance for diamonds, fuel, tobacco and tobacco products, alcoholic beverages, and playing cards.
2. Ministry of Agriculture for agricultural machinery and tools, irrigation pipes, chemical fertilizers, agricultural seeds, and dairy and poultry farming equipment.
3. Ministry of Communications for automotive vehicles and parts, ships, boats, airplanes and parts, railway equipment, and tires.
4. Ministry of Labor for materials used in public works implemented by the Public Works Department and for building materials used in government-sponsored building schemes.
5. Ministry of Health for patent medicines, fine chemicals for pharmaceutical production, and hospital equipment.
6. Investment Center for imports required in implementation of approved investments.
7. Ministry of Commerce and Industry for all other goods.

rate. This relieves an exporter, with no occasion to import, of a frozen asset and at the same time provides exchange for needy importers to facilitate their business transactions. There is under discussion in Israel a modification of this plan. The scheme provides for foreign balances (so-called pamaz accounts earned by Israel exporters) to be transferred at the free rate of exchange to certain importers who may be engaged in export manufacturing or other activities that the Government wishes to encourage. This would be a step in the direction toward ultimate freedom of currency exchange; but it should not be taken without careful review of the entire currency problem.

There are three aspects of the import procedure which trouble most businessmen in Israel: (1) freedom to buy where and when they wish in the quantity and at the price they choose is, for understandable reasons, largely denied; (2) delays and man-hours involved in getting applications approved are excessive; and (3) financing terms place a strain on limited working capital. Perhaps, these are difficulties that must be accepted, more or less, until the nation's foreign currency gap is narrowed. However, the profitability of many businesses in international competition would appear to depend upon a more realistic approach to the problem of high-cost materials arising from enforced purchases of domestic products or of imports from nations making grants or cooperating on trade agreements with Israel. Also, administrative procedure could be altered to speed up the processing of import licenses and to avoid the need, real or fancied, for top executives to plead their cases in person in Jerusalem, which for most industrialists is many miles from their places of business. Finally, the financing terms could be modified without undue inconvenience to the Government. This problem is treated more fully in subsequent paragraphs on financial and fiscal problems.

Customs duties and excise taxes have the dual role of raising revenues and regulating trade. There is no pretense that duties and excises exacted by the Government in Israel are assessed on the basis of an orderly, comprehensive, economic plan. Apparently, they result from piecemeal measures instituted from time to time over a long period to meet exigencies of the moment. A thorough overhauling of customs and excise tax regulations is needed. However, such a change is unlikely so long as revenues from income and other taxes are inadequate to meet national needs.

Some of the more questionable levies include those on raw materials and other items not produced in Israel or produced in insufficient quantities such as grains, fodder, steel, bicycles, and dyes; taxes or duties on foods which are subsidized, price controlled, or

rationed such as tea, sugar, glucose, and chocolate; duties at such low rates as to amount to less than the collection costs; excises on new Israel products (such as paper) purely to replace revenues that were derived from duties on former imports.

Israel manufacturers who import for processing and re-export must pay duties and excises upon receiving the imports; later these levies are usually rebated. Meanwhile, needed capital is tied up to the disadvantage of the producer. The importer in such cases might be allowed to furnish some form of guarantee in lieu of advancing cash.

In many cases the rates of excise or duty are so high as to be prohibitive, especially when added to a general purchase tax (7.0 percent based on value) collected from manufacturers. These high rates cannot fail to add to the already high costs of production in Israel.

b. Export regulations. Control of exports through the licensing procedure is needed in Israel because of the terms of bilateral trade agreements. These bind Israel to certain amounts beyond which exports can be refused by the country of destination; they also place restrictions upon re-exports so that Israel cannot disturb the market of the country of origin. Also, through the licensing power, Israel may require exporters to direct goods to a trade-agreement country or to a hard-currency country as occasion dictates in the interest of the nation.

As a means of reducing the administrative burden, the Government sometimes issues "global" or "bulk" licenses to cover certain exports to hard-currency countries for a period of six months. Although this device may be widely used by larger firms, it is not generally known or at least understood by smaller companies.

c. Currency control. Procedures to regulate imports and exports are an integral part of currency control in most countries, and indeed they stem largely from the problem of foreign currency shortage. The outlook in Israel is for a continued foreign currency shortage for a number of years—at least until the time when the nation can become economically self-supporting.

One feature of control in Israel, namely, multiple rates of exchange, has undergone simplification in recent months. Multiple rates are considered so objectionable in some quarters that one of the conditions of membership in the International Monetary Fund is a single

rate of exchange in the member country. The official rate of exchange is one Israel pound for one United States dollar. Through the use of official premiums, the prevailing actual official rate is 1.80 Israel pounds per dollar.1/ Certain limited exchanges of blocked Israel currency can be made with official sanction at the rate of 2.02 Israel pounds per dollar. The unofficial or black market rate applicable to illegal exchanges is said to be about 2.4 Israel pounds per dollar.

In converting into Israel pounds certain soft currencies earned through exports, the Government deducts what it terms an agio which may amount to as much as 10 percent. This tends to discourage exports. However, it is rationalized as being a compensation for the Government since the latter has to allocate hard currency, mostly dollars, to the exporter for raw materials imports.

d. Trade agreements. The trade agreements which exist between Israel and some 13 other countries reflect the inability of both parties to carry on effective international trade. Usually the countries with trade agreements are short of foreign currency but possess a surplus of certain commodities that cannot be sold at a profit in the free world market. The problem of inconvertible currencies of which trade agreements is symptomatic has restricted the trade of many nations in the postwar years.

1/ The rate of one Israel pound per dollar applies to imports of diamonds, books, phonograph records, newspapers and periodicals, and to exports of diamonds. A premium of 0.3 Israel pounds per dollar applies to foreign currency received from fund drives, contributions by foundations, institutions, organizations, etc. A premium of 0.5 Israel pounds per dollar applies to wheat imports used in baking standard bread. A premium of 0.8 Israel pounds applies to all other official currency transactions except for certain sales of blocked accounts which may be made at market rates.

Prior to August 1, 1954, the rate of one Israel pound per dollar was applied to imports of grains, flour, meat, meat animals, milk products, eggs, fresh fruit and juices, nuts, vegetables, and other foods; asphalt and tar pitch; industrial sand and stones; fuel articles, including beta gas and unrefined oils; oil seeds, carobs, fodder and raw materials for edible oil extraction; organic manure and fertilizers; and sulphur, pyrites, insecticides, drugs and medicines. A premium of 0.8 Israel pounds per dollar now applies to this list. However, the Government pays a direct subsidy of the same amount to nullify the effect of the premium.

Israel's exports have not been widely distributed among countries of destination or by commodities in significant volume. In 1953, about 50 percent of Israel's total exports, valued at 57 million dollars, went to the United States and the United Kingdom. Polished diamonds made up about 85 percent of exports to the United States and citrus fruits and juices constituted 90 percent of exports to the United Kingdom. Most of the balance of the exports went to trade-agreement countries, notably Turkey and Finland, and consisted mainly of automotive products, citrus fruits, and textiles, including raincoats. Only about 30 percent of Israel's exports in 1953 went to hard-currency countries. (See Appendix Tables 2 and 3 for details of trade in principal commodity groups by leading countries of source and destination.)

Israel's increasing reliance on trade agreement exporting has disturbing but perhaps unavoidable implications. It postpones adjustment to a free-currency type of trade and at the same time fosters transactions based on general currency positions and bargaining power rather than upon the price and quality merits of products. Since trade agreements govern imports as well as exports, they tend in some cases to force upon reluctant purchasers, prices and quality which are far from ideal. This is accomplished by the licensing mechanism described earlier. Markets under trade agreements are often uncertain; they depend upon considerations far beyond the control of exporters, such as the position on total exports or imports between the two countries of a given agreement. The prices paid or received for articles traded under agreements may not reflect free market values. Finally, the trade agreement, when tied to a strict licensing law, restricts importers and exporters in selecting markets. It seems advisable, therefore, for Israel to use trade agreements only where absolutely essential. In many instances there is little economic justification for establishing or expanding an industry that depends primarily upon exports to trade-agreement areas.

3. Marketing organization and methods. Certain inherent problems in Israel which make marketing difficult have already been mentioned, particularly the small, nonhomogeneous population possessed of low purchasing power, and the long distances and limited communications to the larger world markets. Perhaps, for the next several years, the successful Israel businessmen must adjust to these conditions that are largely beyond their control. Even the economic planners and administrators of the Government can do little to alter these difficulties except over a long period of time. However, within the existing economic framework, there are many opportunities to improve marketing performance.

An overriding influence which aids the attack on uneconomic marketing practices is keen competition. Without added stimulus along this line, there may not be any marked change in merchandising in Israel. Under competitive conditions the best method is usually selected, and the more efficient marketers are able to grow and distribute benefits to producers and consumers alike. This process is based upon a lower price higher volume policy.

Greater emphasis on training in schools and colleges in the fields of merchandising, advertising, and foreign trade would fill an important need in Israel. One of the impressions often gained by foreign visitors to Israel is the contrast between the large and successful Jewish merchandising organizations in other countries and the small and frequently mismanaged shops found in great numbers in Israel. Even the better stores in Israel do not command particular praise from experienced merchandisers. There is evidence of much ill will between customers and merchants. This type of friction works against economic efficiency. At least until the day when there are more outstanding examples of good marketing practice in Israel, the situation provides a special challenge to teachers of marketing and to the associations of Israeli merchants and advertisers. Observations of marketing practices in other countries by carefully selected trainees or executives should receive as much attention as other types of technical assistance.

The major need in Israel in foreign marketing is to reduce costs and improve quality. Other measures will, to a considerable extent, be ineffective in the long run unless these two problems are solved.

Exporting is a specialty requiring wide knowledge of many markets in a world under changing conditions. Few companies in Israel can afford to maintain their own export specialists. Therefore, there might well be more pooling of efforts to enable one specialist to serve a number of producers. This applies not only to the specialist or private broker who must reside in Israel, but also to his counterpart in other countries. The latter need not be an Israeli. Contacts with foreign representatives can be established through exporters in a few of the leading exporting nations, such as the United States, Great Britain, and other European countries. Trade missions, perhaps under the sponsorship of technical assistance groups manufacturers' associations, or marketing groups, could be of real assistance initially and perhaps later by traveling to countries having potential markets for Israel products. The purpose should be not only to explore trade opportunities but also to establish arrangements for trading in specific articles.

Existing export associations and similar groups may need some revitalizing in Israel. They should be made aware of the economic changes which may challenge the very existence of many companies in Israel unless dependable trade can be established in foreign markets. They should be thoroughly imbued with the importance of cost and quality considerations. Additional appropriations would seem justified to extend the activities of commercial attachés of Israel. Increased participation in fairs, and displays of Israel products in large cities in other countries would be worthwhile.

The Israel Government, especially during recent months, has given considerable aid to the export business in the form of subsidies, bonuses, exchange premiums, import licenses, and approval of investments which can enjoy privileges under the Law for Encouragement of Capital Investments. To some extent there has been financial assistance by way of loans. In this respect, it is possible that Israel exporters need the facilities of an Export Bank which could make both long- and short-term loans to exporters at low rates of interest. Perhaps investment of Government capital would be necessary for creation of such a bank under present conditions. Some of the types of assistance given to the export business by governments of leading industrial countries of Europe are compared in Appendix B.

Establishment of high standards of quality and service should be the main immediate objective for Israel exporters. National pride in this connection should be encouraged. As a foundation for a worldwide reputation in this respect, a good example must prevail at home in Israel.

One means of fostering improved quality is to organize industry committees to formulate quality standards and to develop and carry out a program of quality enforcement. Self-control by industry is suggested as the best means of achieving fair and knowledgeable treatment of problems in a prompt, effective, and nonlegal manner.

L. Industrial Financing and Fiscal Policies

Current financial and fiscal conditions in Israel are both a cause and an effect of some of the more deep-seated problems of the nation's industry. More adequate financing can improve the lot of manufacturing concerns; likewise, improved performance in industry can alleviate much of the problem arising from the present shortage of money. To attack the money shortage alone by the usual direct methods would not be wholly effective so long as the causes for the scarcity remain.

1. Unusual needs for capital in Israel. An urgent need for capital is inevitable in any country that begins with limited resources and rapidly develops so as to take care of hundreds of thousands of new people, most of whom lack capital. The double problem of providing sustenance on a fairly high scale and simultaneously attempting to build up an industrial economy and expand agriculture increases the draft on financial capital—in Israel's case derived largely from foreign sources. Many new projects in such an undertaking cannot return borrowed capital for years; some industrial projects of a public nature may not be expected to return their capital investment directly at any time.

2. Causes of capital scarcity in Israel. Certainly, a prime cause for capital scarcity in Israel is the absorption of funds by the nation's expanding economy. It appears that for many years to come imports will exceed exports in value terms by several times, thus creating a heavy demand for foreign funds.

These conditions of scarcity are aggravated by the nonbanking habits of the people. Savings deposits do not aggregate much more than the capital funds of all banks combined. (See Table 8.) Middle East custom is responsible in part for this situation, and this custom appears to many citizens as being eminently wise. Deposits have been used as arbitrary evidence to justify tax collection; more than a few—for necessary reasons—have been blocked. It is not only custom which explains the lack of savings deposits, but also the sheer lack of personal income above pressing subsistence needs.

Various governmental measures, deemed necessary to alleviate fiscal problems, have in general diminished working capital of business enterprises. The combined effect of capital levies, forced loans, advancing the date of income tax collections, slow payment by the Government on its current obligations, down payments required on imports far in advance of delivery, prepayment by processors of refundable excises and duties, climaxed by blanket restrictions on bank loans to industry, is creating a condition that appears to be hampering production.

A contributing cause of capital shortages is the tendency for prices to rise continually even though the volume of money is not increasing proportionally. This unusual relationship is explained by the tie between wages and the cost-of-living index—an inflationary force which feeds upon itself and, curiously, which retards production by soaking up working capital.

Table 8

SUMMARY OF STATEMENTS OF LOCAL AND FOREIGN BANKS AND CREDIT COOPERATIVE SOCIETIES IN ISRAEL
March 31, 1954[1]

	Israel Pounds
Liabilities	
Total	586,335,999
Capital paid up[2]	17,837,562
Reserve fund[2]	5,778,845
Debentures[2]	48,238
Balances held for[3]	
Other local banks, subsidiary companies and other correspondents	24,253,371
Other banks abroad (incl. head offices and/or branches abroad)	14,758,713
Credit cooperative societies	13,676,085
Sundry creditors	2,557,406
Current and deposit accounts of customers:	
Repayable on demand	229,803,614
Repayable within 6 months	9,152,439
Repayable after 6 months	28,213,536
Deposits for exchange rate adjustments and import under the Reparations Agreement[4]	6,756,549
Government deposits for granting of loans	61,521,918
Special deposits for granting of loans	12,134,783
Third party deposits	6,671,314
Bills payable	5,635,232
Advances from banks and other institutions	25,641,113
Acceptances on account of customers	8,889,057
Confirmed documentary credits	68,532,007
Guarantees, endorsements, and other obligations on account of customers	23,490,670
Other accounts	20,983,547

1/ Does not include mortgage banks.
2/ Local banks only.
3/ Includes balances held for mortgage banks.
4/ Thereof: Reparations in February IL. 4,441,163.

Table 8 (Continued)

	Israel Pounds
Assets	
Total	586,335,999
Currency, gold and silver bullion	16,456,800
Balances with:	
Other local banks, subsidiary companies, and other correspondents	58,887,416
Other banks abroad (incl. head offices and/or branches abroad)	42,800,302
Sundry debtors	1,159,329
Treasury bills	13,360,000
Bills discounted	24,688,405
Loans to:	
Subsidiary companies, other banks, and credit cooperative societies	11,534,850
Other customers:	
Repayable within 1 year from date of statement 1/	162,806,102
Repayable after 1 year from date of statement 1/	33,075,073
Loans for exchange rate adjustments and import under the Reparations Agreement 2/	6,756,549
Loans from Government deposits and from special funds	62,861,920
Third party loans	6,671,003
Investments	
In local subsidiary companies	4,252,414
In local securities:	
Government	18,769,051
Others	2,427,131
In foreign securities	236,069
Premises and offices	4,350,043

1/ For credit cooperative societies payment of loans is classified according to two-year-periods.

2/ Thereof: Reparations in March IL. 4,793,989.

Table 8 (Continued)

	Israel Pounds
Assets (Continued)	
Liabilities of customers:	
For bank guarantees	8,889,057
For confirmed documentary credits (as per contra)	68,532,007
For guarantees, endorsements, and other obligations (as per contra)	23,490,670
Other accounts	14,331,808

Source: Central Bureau of Statistics and Economic Research, Government of Israel, Statistical Bulletin of Israel, June 1954, p. 175.

The most disturbing cause of capital scarcity—one which strikes directly at the working-capital or life-blood of Israel's enterprises—is losses from operations. As indicated earlier, there is only a modest amount of business profits in the aggregate in the whole of Israel. This suggests that many industrial enterprises are probably suffering losses. When the time comes to replace capital assets at the prices current at that time, a real test of a given firm's ability to stay in the business without government aid will be faced.

3. Short-term loans. It is normal for manufacturing firms to rely extensively upon short-term bank loans, and upon suppliers who also borrow from banks. Other sources of short-term credit are often inclined to operate at high interest rates. In Israel, banks have been under a blanket order since April of 1953 to maintain liquidity at (1) no less than 50 percent of deposits held prior to March 31, 1951, (2) 75 percent of net additions to deposits between March 31 and December 31, 1952 (or at option of the bank, March 31, 1953), and (3) 90 percent of net additions thereafter. With Government approval, banks can lend beyond the rate permitted by the liquidity ratio. This power to grant exceptions gives the Government a certain measure of qualitative control over bank credit during the present period of credit shortage. In addition to the strict liquidity requirement, a limitation on total credit was imposed in February 1954, so that banks can not increase their loans beyond the total registered on November 30, 1953. In August 1954, this rule was relaxed to permit the combined banks to increase loans by an additional three million Israel pounds a month, each bank using the same proportion of the addition as its total loans bear to the total for the combined banks. The additional credit is to be divided equally between agricultural and industrial borrowers, with new settlements and exporting firms to be given special priority. This relaxation seems advisable; whether the additional loans will be sufficient is doubtful.

Meanwhile, business firms resort to nonbanking sources of credit at high interest rates. Banks generally charge prime commercial customers about 11 percent including commissions. Other lenders, often negotiating through the banks and using so-called "third party deposits," obtain rates of 20 to 25 percent per annum, and sometimes as high as 36 percent. It is more out of desperation than out of the promise of high business profits that borrowers obtain funds in most of these instances.

It should be noted that the interest rates charged by banks, although high, are much below rates charged by other lenders. The banks are not earning large profits. Their operating costs are high, and their methods are relatively cumbersome.

4. Financial assistance by and through the Government. This report contains many references to the administrative, fiscal, and financial burdens which business in Israel bears as a result of Government action. Some of these burdens spring from the Government's efforts to assist business. There is a considerable program of state aid through subsidies, preferential exchange rates, tax exemptions, development programs, community facilities, and general social benefits to workers and other citizens. One form of practical and direct assistance is financial aid. The Government makes some direct investments in enterprises, the development of which are highly desired and which would be handicapped without government aid. The State also makes loans to industry from special funds, sometimes with financial participation by the United States Operations Mission, and sometimes through appropriations in special budgets such as that for economic development. It may be that a more liberal regulation of credit in lieu of direct loans by the Government would provide greater assistance to Israeli industry, especially where loans of short term are concerned. For longer-term loans, it would seem desirable to establish a permanent financial institution that could operate on the revolving-fund principle, rather than to depend upon year-to-year appropriations from the Government.

In the administration of Grants-in-Aid and German Reparations, as well as in other instances where long-term credits are employed, the Government is attempting to require borrowers to agree to repay on the basis of purchasing power existing at the time of the loan. This is objectionable to borrowers who want to know at the time they borrow money how many pounds are required at repayment time. The Government insists on this provision, known as the escalator clause, so as to recapture profits accruing to borrowers purely as a result of inflation. The same objective might be achieved through taxation. Such a change would remove a virtual impasse which now prevents many firms from using government credit to buy equipment coming into Israel from the United States and Germany without cost to the Government.

Israel has enjoyed a favorable position with respect to aid from abroad. Funds from Jewish institutions have been transmitted to the nation in substantial amounts for many years, especially since the State was formed in 1948. The Export-Import Bank of the United States made large loans for development before the present American programs of Grants-in-Aid and technical assistance were set up to supply additional tens of millions of dollars each year. Finally, the Reparations Agreement with Germany commenced its program of payments about two years ago. The aid programs of foreign governments may perhaps be concluded a few years hence; however, there is no apparent

reason why assistance from Jewish institutions should not continue indefinitely. Regardless of the outlook for foreign aid, a determined effort should be made to attain the goal of economic self-sufficiency as soon as possible. This might mean, first of all, moving more cautiously in the development program and subjecting any new capital expenditure to orthodox tests of economic justifiability. Many informed Israeli believe that such a cautious course will not be taken with real conviction until foreign aid is severely curtailed. There are many who feel that the desired adjustment will be less painful if begun now on a wide front rather than 5, 10, or more years later.

5. Factors affecting private investment in Israel. All of the economic conditions concerned in this report have some effect upon any thoughtful investor who may consider placing money into industry in Israel. It is interesting that a catalog of leading problems encountered by American companies investing abroad lists some of the situations found in Israel. In approximate order of importance, the problems in the world at large were found to be as follows:[1/]

Export or import quotas
Limitation on remittance of profits
Control of capital movements
Burden of social security legislation
Lack of trained native personnel
Lack of adequate roads, railroads, harbors, or storage facilities
Multiple exchange rates
Inadequacy of housing, recreational, and shopping facilities for employees
Inadequate power facilities
Foreign restrictions on importation of personnel from home country
Instability of government
Lack of health and sanitary facilities
Nationalization and expropriation
Special taxation of foreign enterprises
Undeveloped banking system or other credit facilities
Inability to recruit personnel in the United States
Restriction of foreign investment to certain fields
Inability to deal with responsible government officials
Required local participation
Discriminatory enforcement of tax laws
Unequal treatment before the law with respect to property holding and conveying, contract enforcement, right to use local courts for redress, etc.
Requirements for reinvestment of earnings

1/ National Industrial Conference Board, Inc., The Economic Almanac 1953-1954, New York, 1953, p. 578.

In this long list, it must be admitted, are many problems which do not exist in Israel. This fact offers hope that by overcoming a few difficulties which remain in the way of foreign investors, an increased flow of investment funds may result. Of the deterrents listed above, Israel should be mainly concerned with restrictions of imports and exports, limitation of remittance of profits, control of capital movements, the burden of social security legislation, lack of trained native personnel (especially in the management skills), multiple exchange rates, and inability to recruit personnel in the United States and other industrial nations to emigrate to Israel.

One constructive piece of legislation in Israel for attracting investments, both foreign and domestic, is the Law for the Encouragement of Capital Investments, enacted by the Knesset in 1950. Its main provisions give foreign investors in approved undertakings (those deemed beneficial to the development of Israel and to improvement of foreign trade) certain tax advantages and privileges with regard to foreign exchange. Its main attraction is the reduction in income tax rates to a maximum of 25 percent upon profits distributed to owners. This same limitation or something similar might also be extended to retained corporate profits, now taxed at 50 percent. Foreign investors are, of course, attracted by the privilege of withdrawing annually, on approval of the Government, of up to 10 percent of the capital originally invested. It is advocated in some quarters that there should be no limit on withdrawal of profits actually earned after appropriate taxes. Abatement of local taxes and duties on capital goods purchased, as well as accelerated amortization of facilities, are other leading features in the 1950 investment law. Since this law was enacted, investments have aggregated about 175 million dollars and about 100 million Israel pounds in approved undertakings of over 700 enterprises, in about 600 of which foreign funds were invested.

Even though the foreign investment law is a sound piece of legislation, its effect will be limited so long as the Israeli economy is far from being able to support itself. Most long-term investors view with considerable caution any foreign situation where business is subject to a great extent to the vagaries of government aid, substantial subsidies, and the existence of powerful local business. Furthermore, political and military tension, such as exists between Israel and the Arab States, is a serious deterrent to private investment. Regardless of all this, the situation in Israel calls for more examples of consistent business profits, verified by sound accounting principles consistently applied. Otherwise, the new private corporate investments in Israel from foreign sources may continue to be sporadic and in small amounts.

M. Labor and Immigration

Distribution of the working force in Israel among various sectors of the economy is indicated by Table 9. The industry and crafts group comprises the largest segment, but it is followed closely by agriculture and by commerce and finance. Of some 100,000 people gainfully employed in the industry and crafts group in 1953, about 25,000 were self-employed. (See Table 7.)

Reference is made earlier to replacement of the agrarian Arabs by Jewish immigrants largely without farming experience. The latter came to Israel usually for reasons other than to become farmers. However, through actions by the Government and the Jewish Agency, many were persuaded to take up farming.

The following paragraphs outline the Israeli unemployment situation, and describe the pattern of immigration and its effect upon industry. Organized labor activities and social security measures are reviewed briefly. Finally, wage policies and the productivity of labor are discussed.

1. Unemployment. In most industrial sectors of the Israeli economy, there is excess capacity and some unemployment. No accurate measure of either is available. On the basis of about 200 plants visited during the course of this study, it appears that there is idle factory capacity of about 30 percent in the metal trades and food processing industries and about 25 percent in the textile industry. Idle capacity is higher in many types of small chemical and plastics manufacturers and in petroleum refining but is lower in pharmaceuticals and in some of the heavier chemical fields.

The daily average in number of persons registered for employment in the entire country was only about 20,000 for December 1953. Most of these were unskilled workers. Many are not registered because they do not choose to accept the type of work or locations available. It seems probable that many thousands of the 100,000-odd people living in camps and ma'abarot (temporary settlements) are not registered as seeking work. Many of these immigrants work on small or sporadic tasks pending transfer to permanent agricultural settlements. Certain measures in Israel to reduce unemployment are discussed later under organized labor activities.

2. Immigration. The influx of Jewish immigrants to Israel began to increase markedly in the middle and late 1930's. Central and Eastern Europe supplied most of the immigrants. The rate of immigration

Table 9

GAINFULLY EMPLOYED JEWS AND NON-JEWS OF ISRAEL BY BRANCH OF ECONOMY, MID-YEAR, 1952 AND 1953

Branch of Economy	1952 1/		1953	
	Jews	Non-Jews	Jews 2/	Non-Jews 3/
Agriculture	75,000	30,000	85,000	33,000
Industry and crafts	120,000	7,000	121,000	7,000
Building and public works	50,000	8,000	38,500	6,000
Transportation and communication	38,000	2,000	41,000	2,000
Commerce and finance	90,000	5,000	99,000	5,500
Liberal professions	45,000	1,000	49,500	1,000
Public services	62,000	2,000	60,000	2,000
Other services	55,000	5,000	56,000	5,500
Total	535,000	60,000	550,000	62,000

1/ Source: Jewish Agency for Palestine, Israel Economic Survey July - December 1952.
2/ Source: Jerusalem Post, July 20, 1954.
3/ Source: United States Operations Mission in Israel.

was sharply retarded during and immediately after World War II. Following establishment of the State of Israel in 1948, the annual inflow exceeded 100,000 for four consecutive years. (See Table 10.) During recent months, there has been virtual stability of immigration and emigration, with few arrivals and departures.

It may be noted in Table 11 that immigrants to Palestine before the State of Israel was formed were mostly of European origin, whereas in later years less than 50 percent came from Europe. The change came about as a result of increases in immigration from Asia and Africa. Recent European immigration has come mostly from Eastern Europe, especially Rumania. There has never been any large population movement to Israel from the Western Hemisphere.

The Asiatic and African countries from which a large proportion of recent immigrants came do not have any appreciable industrial economy. It is not surprising, therefore, to find few industrially trained workers among the new arrivals. It is unusual, therefore, to find among them such a low percentage of farm workers and unskilled laborers. Unfortunately for Israel, a high percentage of immigrants declare that they are tradespeople, professional and clerical workers, or without occupation. On the other hand, many claim to be artisans, and many say they are production workers. Regardless of former skills, the younger immigrants can, in due time and with proper training, adjust themselves to industrial occupations.

A policy of selective immigration, such as has been followed by the Jewish Agency during the past year or two, seems desirable from an economic standpoint. Under this plan, persons with needed skills and in proper physical condition may outnumber the untrained, sick and handicapped, reversing the experience of the past. Selective immigration need not go so far as to exclude any Jew needing a haven to escape persecution or unreasonable hardship or with a genuine desire to live in Zion; but it would seem economically unsound to invite and encourage immigration of the aged and sick when their care can be arranged more economically in the countries where they now reside.

Although the rate of immigration has declined markedly in recent years, there are still over nine million Jews outside Israel. These are distributed about as follows: 1/

1/ Estimate of the Jewish Congress.

United States	5,100,000
Russia	2,000,000
United Kingdom	400,000
Argentina	400,000
French Morocco	270,000
France	250,000
Canada	210,000
Rumania	190,000
Brazil	120,000
Union of South Africa	120,000
Tunisia	100,000
Turkey	45,000
Poland	40,000
Total	9,245,000

It is expected by Israel that in the near future the major sources of large immigration will be French Morocco and Tunisia where there is now some racial tension. Potentially, Russia is the largest source of additional Jewish immigrants should there be persecution and at the same time permission to leave the country. It is not possible to assess these potentialities.

The Immigration Department of the Ministry of the Interior in Israel, working closely with the Jewish Agency, plans to stimulate immigration with the aim of settling about 50,000 additional persons in Israel before October 1955. The Ministry expects to spend about 100 million Israel pounds for this purpose. The plan provides that about one-half of the immigrants will be "rescue" cases and the other one-half will conform to a selective pattern. This latter group must include one breadwinner per family, and should not include indigent cases. Two-thirds of the new arrivals are to be sent directly to new development areas, and the balance are to be placed on farms. The development areas are Galilee, Beisan, Migdal Ashkelon, the Jerusalem Corridor, Beersheba, and the Negev. Such a program may increase somewhat the strain on Israel's resources; however, it should cause no appreciable increase in unemployment.

3. Organized labor activities and social security. The labor union movement in Israel is practically synonymous with the General Federation of Jewish Labor in Israel (Histadrut), which represents about 85 percent of all the nation's gainfully employed. Its scope is so broad as to include a large proportion of professional workers as well as skilled and unskilled laborers. The Histadrut's charter states that the organization

Table 10

JEWISH IMMIGRANTS
BY COUNTRY OF ORIGIN
1919-1952

Country of Origin	1919 to May 14, 1948	May 15, 1948 to Dec. 31, 1952	1919 to Dec. 31, 1952	1952
All countries	452,158	707,576	1,159,734	23,375
Asia	40,776	244,161	284,937	6,701
Turkey	8,277	34,647	42,924	353
Iraq	7,994	124,225	132,219	961
Iran	3,536	25,971	29,507	4,187
Yemen	14,566	45,127	59,693	87
Aden	1,272	3,320	4,592	53
Other countries	5,131	10,871	16,002	1,060
Africa	4,033	103,020	107,053	10,024
Tunisia, Algeria, and Morocco	994	52,565	53,559	7,560
Libya	873	32,130	33,003	1,187
Union of South Africa	259	638	897	17
Other countries	1,907	17,687	19,594	1,260
Europe	377,487	337,603	715,090	6,131
U.S.S.R.	35,806	6,271	42,077	156
Lithuania, Latvia, and Estonia	16,544	1,639	18,183	42
Poland	170,127	106,727	276,854	615
Rumania	41,105	121,536	162,641	3,627
Bulgaria	7,057	37,703	44,760	450
Yugoslavia	1,944	7,737	9,681	93
Greece	8,767	2,176	10,943	67
Germany	52,951	8,350	61,301	193
Austria	7,748	2,671	10,419	67
Czechoslovakia	16,794	18,811	35,605	84
Hungary	10,342	14,517	24,859	218
United Kingdom	1,574	1,948	3,522	159
Netherlands	1,208	1,163	2,371	115
France	1,637	3,120	4,757	133
Italy	1,554	1,321	2,875	41
Other Countries	2,329	1,913	4,242	71
America and Oceania	7,579	4,015	11,594	516
Not stated	22,283	18,777	41,060	3

Source: The Central Bureau of Statistics and Economic Research, Government of Israel, Statistical Abstract of Israel, 1952/53, p. 28.

Table 11

JEWISH IMMIGRANTS
BY OCCUPATION ABROAD AND BY SEX
1950 and 1951

Occupation	1950			1951		
	Total	Males	Females	Total	Males	Females
All immigrants	169,405	84,347	85,058	173,901	84,311	89,590
Gainfully occupied	49,404	41,423	7,981	46,977	41,410	5,567
Professional, technical, and related workers	4,477	3,217	1,260	3,500	2,576	924
Managerial, administrative, clerical, and related workers	7,646	6,303	1,343	6,738	6,113	625
Sales workers (merchants, agents, and other)	7,777	7,616	161	10,631	10,511	120
Farmers, fishermen, plantation and forestry workers	2,435	2,228	207	2,659	2,390	269
Workers in mines and quarry occupations	9	9	--	4	4	--
Workers in operating transport occupations	1,352	1,338	14	1,164	1,159	5

Table 11 (Continued)

Occupation	1950			1951		
	Total	Males	Females	Total	Males	Females
Craftsmen, production process workers	18,815	14,634	4,181	14,265	11,772	2,493
Laborers, unspecified	3,706	3,266	440	4,871	4,271	600
Building workers	1,192	1,181	11	1,041	1,032	9
Service workers	1,655	1,359	296	1,849	1,358	491
Unidentifiable or not known	340	272	68	255	224	31
Not gainfully occupied	97,849	31,872	65,977	114,464	38,891	75,573
Source of income not stated	22,152	11,052	11,100	12,460	4,010	8,450

Source: Israel Publications Ltd., The Israel Yearbook, 1952/53, p. 38.

is designed to include "all workers subsisting on the earnings of their own work and not exploiting the labor of others." This organization began about 1920 with a membership of some 4,000 of the Jewish labor minority of that time. It has grown vigorously and has extended its activities to nearly all branches of labor and to business enterprise, as described earlier in the discussion on "Industrial Structure." A close affiliation with the Mapai political party gives the Histadrut a major influence in governmental affairs.

One of the main principles of the Histadrut is that it favors the cooperative form of economic organization as contrasted with private capitalism, keen competition, and personal profits. So strict are these principles in the operation of its affiliated kibbutzim that hired labor generally is not permitted. However, the Histadrut owns, and shares ownership in, business corporations which operate much after the fashion of capitalistic enterprises. The partners of Histadrut in these ventures are often individual investors who receive or hope for dividends as would stockholders in any privately owned corporation. However, Histadrut exercises a dominant influence on the management of any enterprise in which it has a financial interest.

A more general instrument for labor participation in business management is the system of labor-management councils that have been set up in about 170 plants. A council, comprised usually of five management and five labor representatives, shapes policy on matters of labor productivity, wage payment plans, and other affairs of joint interest between management and labor. Partly out of abdication by management, and partly out of vigorous leadership from labor, these councils often have been carried along by labor initiative and enthusiasm.

The strike procedure has not been used as freely in Israel as in most countries undergoing rapid growth or shifts in economic and social philosophy. This may be due to several causes, such as the fact that the Histadrut is the largest employer in Israel, its policies of cooperation in economic affairs, and its ability to achieve the needs of labor through means other than strikes. The linking of wage rates to the index of the cost of living is a case in point. This automatically avoids much of the cause for strikes prevalent in many other countries.

In two other respects the activities of the Histadrut are unusual. One is the operation of labor exchanges, and another is the management of social security funds. Labor exchanges or hiring halls are found in many parts of the world, but usually their scope is confined to a specific trade. The Histadrut covers most fields of work in the 58 exchanges which it operates throughout the country. Labor contracts almost always

specify that all hiring must be handled through the exchanges. The Israel Government pays about 70 percent of the costs of these exchanges. Moreover, government funds to finance unemployment relief work are distributed through the exchanges. It might, therefore, be appropriate for the Government of Israel to operate the labor exchanges. In so doing it could remove any provision or practice that favors members of the Histadrut unions, such as the point system in hiring preference which credits additional points for union membership.

Social security in any economy is a problem with ramifications far beyond labor organizations or business firms. It is suggested that in Israel social security might be placed entirely under governmental administration following the lead of the provisions in the National Insurance Act, effective April 1, 1954. The plan of joint contributions by workers and employers is, of course, appropriate. However, occasions may arise in which these contributions will prove to be inadequate; in such instances, government will have the responsibility for supplementing social security funds. The prime reason for having social security administered by government is that the scheme should represent the highest order of financial security and public interest in the country. This suggestion in the case of Israel carries no implication that the Histadrut custodianship has so far been ineffective or inefficient.

The new National Insurance Act provides for government administration of funds for old age, survivors, maternity, and employment injury insurance, formerly handled by the Histadrut. Management is the sole contributor to employment injury insurance, for which premiums range between 0.5 and 3.0 percent of employees' gross pay, depending upon hazards of each occupation. Premiums for the remaining types of insurance are paid on workers' wages at the rate of 1.9 percent by employers and 1.4 percent by workers.

Medical benefits are provided by the Histadrut through Kupat Holim to which the Government makes contributions to supplement those of workers and employers. At the same time, the Government maintains a similar medical service organization. More efficient operation might be attained if the services were combined and administered by the Government to all Israeli workers.

The collection of so-called social charges is not uniform in Israel. In some industries these charges amount to as much as 60 percent of wages, although 35 percent may be more typical. Even under average conditions, the charges may be beyond Israel's real capacity. If Israel is to compete effectively with other countries in the export field, it behooves management, labor, and government to maintain social charges at a reasonable and practicable magnitude.

Both as to scope and proportions the Histadrut activities are without close parallel in any other country. Accordingly, their place and functions are easily misunderstood. This is especially true where international investors are concerned. Local opinions in Israel on the subject are far from unanimous. Therefore, it would seem appropriate that a comprehensive and thoroughly objective study should be undertaken of the Histadrut in relation to the aims and progress of the economy of Israel. A select group to make the inquiry might be made up of labor, economic, and social experts from Israel, from principal investing countries and customer countries abroad and from countries with various types of labor, social, and governmental organizations. The members of such a study group should be of high standing and acceptable to the Histadrut, the Government of Israel, the General Zionists, and—in view of the large and active financial support from the United States—to the United States Operations Mission in Israel; the study should be jointly financed by these same agencies. This approach to the subject would probably produce findings which would be accepted at their true value whether or not they confirm preconceived notions about the Histadrut.

Among other things which the study group might deem pertinent, attention should be directed to the pioneering and venture investments of the Histadrut enterprises in relation to investments of others; the best balance between the efficiency of organized or controlled markets under Histadrut influence and markets free from such influence; the effect upon the health of the Histadrut enterprises arising from their integration compared with the side effects of this integration upon other enterprises, present or prospective; the comparative merits of social security and provident fund management by the labor organizations and by government; the policies and operations of employment offices under Histadrut management compared with those under government. All of these and other characteristics of the problem should be viewed in the light of their net effect upon the economic health and growth of Israel.

4. Wage policies and productivity. Israel's general level of wages is the highest in the Middle East. It exceeds that of most European countries.[1/] Recent comparisons may be found in the following sections dealing with specific industries. In general, it appears that productivity per dollar of labor cost in Israel is not over 50 percent of that in most countries with which she attempts to compete or must compete in international trade. It is evident that Israel is not favorably situated in this respect. So long as the national policy is to keep living standards high,

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1/ When wages are compared by official rates of exchange.

even while the country is far from being economically self-sufficient, there are limited opportunities for a complete solution to this problem.

Progress has been made in the past two or three years through the efforts of productivity councils, efficiency experts, and industrial managers in increasing productivity through incentive methods of payment that reward improved performance; but this is only one of the important remedies for high labor costs. In many cases, the entire organization of a factory must be reoriented. Improved layout, more efficient flow of materials and work, better foremanship, modern methods of processing, and careful cost accounting are examples of other means that will contribute to lowering the wage bill.

Section III

FOOD PROCESSING INDUSTRIES

A. Economics of the Food Industry

1. Consumption and nutritional levels. Israel has a comparatively high food consumption rate in relation to its per capital income. Caloric consumption is just under the level of the Mediterranean-European countries. The food consumption pattern is approximately similar to that of Italy. Consumption of a little over 2,700 calories per person per day in 1952-53 represented a gain of about 100 calories since 1948. Climatic conditions favorable to the production of fruits and vegetables are important in the particularly high consumption of these foods which equals the levels attained in France, England, United States, and Denmark. Fat consumption is relatively low in Israel and approximates the level for Italy and Greece. Per capita milk consumption exceeds that for France but is a little lower than in Denmark and England. Sugar consumption is comparatively low in Israel; but the high consumption of cereals and legumes is characteristic of the consumption pattern of the Mediterranean countries.

Cereals and cereal products accounted for 53 percent of the calories consumed in 1952-53, a slight increase over the last four years. (Table 12 and Appendix Table 4.) Three-fourths of the calories consumed, approximately 2,000, consisted of cereals, sugars, and fats; these are the largest of the food categories, and also the major foods in which the country had a shortage. In 1952-53, Israel produced only 9 percent of the wheat, 12 percent of the fats, and none of the sugar required. During the last fiscal year these commodities cost the nation approximately 35 million dollars in foreign exchange.

The Israel diet is especially low in animal proteins. The proportion declined from 39 percent to 31 percent of the proteins consumed over the last four years. Only about 42 percent of all proteins and 53 percent of the animal proteins consumed are produced domestically.

2. Import-export situation. In 1953-54 and 1954-55, the national food budgets allocated 55 million dollars and 48 million dollars, respectively, for importing foods and raw materials for the food industries. The expenditure pattern for the two fiscal years is very similar. Imports of food grains and flour comprise about 40 percent of the total budget, followed by imports of oil seeds of about 15 percent. Together with sugar, imports of these two commodity groups account for two-thirds

Table 12

FOOD CONSUMPTION AND NUTRITIONAL VALUE
PER CAPITA, ISRAEL, 1952-53

Commodity	Kg. Per Year	Grams Per Day	Calories Per Day	Source of Calories (percent)	Protein Per Day (grams)	Source of Protein (percent)	Fat Per Day (grams)	Source of Fat (percent)
Cereals and products	151.0	413.8	1,450	53.0	48.2	56.6	6.2	9.0
Potatoes and starchy foods	31.3	85.7	66	2.4	1.4	1.6	0.1	0.1
Honey and sugar	21.1	57.8	223	8.1	-	-	-	-
Oil seeds and pulses	7.3	20.1	77	2.8	4.3	5.1	2.9	4.2
Vegetables	17.8	322.7	69	2.5	3.2	3.8	0.3	0.4
Fruits 1/	18.3	324.0	102	3.7	1.6	1.9	1.0	1.5
Meat	10.3	28.2	48	1.8	3.8	4.5	3.6	5.3
Eggs 2/	12.0	32.9	47	1.7	3.6	4.2	3.4	5.0
Fish	13.8	37.8	27	1.0	4.5	5.3	0.9	1.3
Milk and products	97.7	267.6	209	7.6	14.2	16.7	9.8	14.3
Fats and oils	16.0	43.8	352	12.9	0.1	0.1	39.7	57.9
Miscellaneous	7.7	21.1	68	2.5	0.2	0.2	0.7	1.0
Total			2,738	100.0	85.1	100.0	68.6	100.0

1/ Including watermelons and sugar melons.
2/ Including dehydrated eggs.

Source: Central Bureau of Statistics and Economics Research, Statistical Bulletin of Israel, June 1954, Table 5, p. 161.

of the total budget. The general shortage of domestic animal proteins is reflected in the fact that about 20 percent of the total food budget was devoted to livestock products, including meat, fish, poultry, and milk products. (Table 13 and Appendix Tables 5 and 6.)

Whereas considerable domestic shortages of certain food products exist, exports of other foods are the most important source of foreign exchange for Israel. Fresh and processed food products earned 25.4 million dollars in 1953, or 44 percent of the value of all commodity exports. (Table 14.) In view of the small foreign exchange investments for machinery and raw materials required by exporting food industries compared to other exporting industries, the contribution of exports of food products is even more significant measured in terms of the value added. Approximately two-thirds of total net foreign exchange earnings come from food exports.

Fresh citrus alone accounted for over 85 percent of all exports of food products. Processed food products represented the balance, and included citrus and other fruit juices, tomato juice and puree, preserved fruits, pickled and canned vegetables, olives and olive oil, confectionery products, and alcoholic beverages. Citrus and citrus products contributed 93 percent of total export earnings from fresh and processed food products.

3. Agricultural plans and goals. As early as 1949, the Government of Israel began preparation of over-all development plans, including agriculture. The latest agriculture plan, published in September 1953 and accepted by the Planning Council, is the work of the Joint Planning Center of the Ministry of Agriculture and the Jewish Agency.[1/] The basic aim of the program is to bring into balance the foreign exchange expenditure for agricultural production, exports of foods and agricultural products, imports of foods and raw materials for food processing plus raw materials and capital investments in agriculture.

A fundamental assumption of the program is to maintain the daily per capita nutrition level of 2,600 calories; 75 grams of fat, and 82 grams of proteins, including 25 to 30 grams of animal proteins. Some consideration has been given in Israel to the question of altering the dietary pattern to make it more like that of neighboring countries. This would result primarily in less intake of animal proteins, and

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1/ Black, A. G., Report to the Government of Israel on National Agricultural Plans and Programs, Food and Agricultural Organization of the United Nations, Rome, September 1953, FAO Report No. 61.

Table 13

FOREIGN EXCHANGE BUDGET FOR FOOD PRODUCTS, ISRAEL
FISCAL YEARS 1953-54

Items	1953-54		1954-55	
	Thous. Dollars	Percent	Thous. Dollars	Percent
Grain and flour	22,400	40.7	20,000	41.7
Oil seeds	8,760	15.9	6,630	13.8
Sugar	4,200	7.7	4,240	8.8
Meat	4,560	8.3	3,000	6.2
Fish	3,960	7.2	3,730	7.8
Poultry and dairy	2,660	4.8	2,180	4.5
Raw materials, food industry	1,270	2.3	900	1.9
Nonalcoholic drinks	3,330	6.1	3,435	7.2
Miscellaneous	3,860	7.0	3,135	6.5
General reserve	--	--	750	1.6
Total food and food raw materials	55,000	100.0	48,000	100.0
Total, including soap raw materials	56,700		49,720	

Source: Ministry of Commerce and Industry, Government of Israel.

Table 14

EXPORTS OF FOOD PRODUCTS FROM ISRAEL BY CLASS AND MAIN COMMODITIES, 1953

Commodities	Unit	Quantity	Value (dollars)	Percent
Class I - Food, Drink, and Tobacco				
All citrus fruits	Case	5,407,417	21,596,101	85.1
Oranges, Shamuti	Case	3,869,281	15,433,600	
Oranges, Valencia	Case	593,429	2,500,126	
Grapefruit	Case	932,745	3,610,639	
Lemons	Case	11,962	51,736	
Oranges in gift parcels	Ton	249	55,112	.2
Citrons	No.	31,469	97,927	.4
Bananas	Ton	556	115,881	.5
Fruit juices	Ton	3,429	2,004,254	7.9
Concentrated juices, unsweetened	Ton	2,310	1,668,276	
Single strength juices, unsweetened	Ton	1,086	326,001	
Fruit juices, unsweetened	Ton	33	9,977	
Tomato juice and other tomato products	Ton	371	129,374	0.5
Fruits, preserved	Ton	587	121,775	0.5
Olive oil, edible	Kg.	141,759	128,251	0.5
Cauliflower and cucumbers	Ton	211	40,765	0.2
Chocolates and sweets	Kg.	283,285	318,074	1.2
Chocolates	Kg.	72,639	76,138	
Chewing gum	Kg.	114,747	187,790	
Various sweets	Kg.	95,899	54,146	

Table 14 (Continued)

Commodities	Unit	Quantity	Value (dollars)	Percent
Spiritous liquors	Liter	199,432	126,342	0.5
Other articles in Class I			298,679	1.2
Total			25,032,535	98.7
Class II - Raw Materials		--	--	--
Class III - Manufactured Articles				
Essential oils	Ton	82	336,070	1.3
Class IV - Live Animals			1,428	--
Grand Total			25,370,033	100.0

Source: Central Bureau of Statistics and Economic Research, Government of Israel, Statistical Bulletin of Israel, February 1954.

greater consumption of bread grains than heretofore. Such a program has been discarded for a number of reasons, including the difficulty of changing dietary habits, the belief that a reduction in present consumption levels might endanger health and working capacity, and that maintenance of present dietary standards is considered necessary as an inducement to further immigration.

The main features of the long-term agricultural program have been discussed in Section II. The major objectives of the program are: (1) intensify production of field crops by extending irrigation an additional 1.3 million dunams; (2) obtain a rapid expansion of offshore fisheries, and expand production of sheep and beef cattle on under-utilized grazing lands; (3) expand production of industrial crops including sugar, oil, and fibers; (4) encourage the expansion of agricultural export industries, particularly citrus and other fruits, leafy vegetables, and tobacco. Detailed features of the plan are presented in Appendix C.

The over-all agricultural plan seems optimistic as well as its assumptions respecting productivity and production goals. It is estimated that the gap between imports and exports for food and agriculture can be reduced to 10 million dollars by 1960 from the present annual net expenditure of 48 million dollars. (Table 15.) The fundamental weakness of the plan is that it does not appear to be based upon an extensive analysis of what Israel agriculture can produce and what farm products the domestic and export market can absorb in the face of the prices and the alternative opportunities that may be expected to prevail. A further evaluation of the production goals for the many commodities that compete for Israel's present and potential land resources seems to be in order. Fortunately, such an analysis is now under way, supported jointly by the Ministry of Agriculture and the United States Operations Mission. The Mission is providing assistance in training technicians primarily in agricultural research, education, and extension; in developing, managing, and improving field crops, ranges, and livestock; and in improving animal health.

The balance between domestic production and total consumption of food in Israel for 1952-53, and as planned for 1960, is presented in Table 16. It is anticipated that Israel will be self-sufficient in all major food groups except bread grains.

It is of significance to note that planning of the food and agricultural economy of Israel has recognized the importance of the relationship between agriculture and the food processing industries. The most recent agricultural program puts special emphasis upon the production of industrial crops as a means of increasing the domestic supply of

Table 15

FOREIGN CURRENCY BUDGET OF AGRICULTURE IN ISRAEL
1953-54 and 1960
(In Millions of Dollars)

	1953-54 1/	P
Expenditures		
Farm supplies	28	30
Depreciation	5	8
Interest	5	10
Sea fishing supplies	-	2
Food industry supplies	-	4
Food imports	48	17
Total	86	71
Income		
Citrus exports	35	40
Miscellaneous exports	3	11
Raw material, local textile industry	-	10
Total	38	61
Deficit	48	10

1/ Estimated.

Source: Ministry of Agriculture, Government of Israel.

Table 16

PROPORTION OF DOMESTIC PRODUCTION OF FOOD SUPPLY IN ISRAEL

1952-53 and 1960

Commodity	Unit	1952-53 Total Consumption	1952-53 Domestic Production Total	1952-53 Domestic Production Percent	Plan 1960 Total Consumption	Plan 1960 Domestic Production Total	Plan 1960 Domestic Production Percent
Bread grains	Ton	330,000	30,000	9	300,000	125,500	42
Potatoes	Ton	63,900	55,400	87	120,000	120,000	100
Sugar	Ton	46,900	--	--	48,000	57,000	120
Legumes	Ton	6,600	900	14	20,000	20,000	100
Vegetable oil	Ton	25,000	3,000	12	28,000	30,000	107
Vegetables	Ton	203,000	203,000	100	200,000	240,000	120
Fruits, excluding citrus	Ton	33,200	33,200	100	109,500	142,000	130
Milk	Ton	225,000	147,000	65	301,000	301,000	100
Eggs	1,000	385,000	385,000	100	410,000	410,000	100
Meat and poultry	Ton	16,900	9,700	57	18,000	18,000	100
Fish	Ton	22,600	7,600	34	30,000	30,000	100

Source: Ministry of Agriculture, Government of Israel.

vegetable fats and oils, and of providing a source of raw materials for the domestic textile industry.

4. Character of the food processing industry. The latest available data on the structure and composition of the Israel food processing industry are for 1952. The industry is composed of about 1,760 establishments employing nearly 19,000 persons out of the 100,000 employed in industry. This report is concerned with a group of food industries that employed approximately 9,000 persons. (See Table 17.)

While the average plant in the food industry employs about eleven persons, the average for all Israel industry is no more than about five; only the stone and cement industry and the diamond industry have a higher average number of employees per establishment. Median employment per plant in the food processing industry is between five and nine persons and more than three-fourths of all plants have less than ten employees. Yet it is important to observe that the food processing industry has a higher proportion of large plants than any other industry.

More than one-third of the food processing plants are concentrated in the Tel Aviv metropolitan area, and over 60 percent of all enterprises are located in the metropolitan areas of Tel Aviv, Haifa, and Jerusalem. Nearly one-half of the plants are privately operated, and about 20 percent are partnerships. Cooperative enterprises comprise about 7 percent of the total. The balance is made up of limited companies, including a few public companies.

Some idea of the managerial and technical status of the food processing industry may be gained from a comparison between establishments having more than ten employees each with those having less. The larger plants average one technical person each, but there is only one technical person for every twelve of the small enterprises.

About 40 percent of the food processing enterprises in Israel were founded prior to the establishment of the State; and around 30 percent came into being prior to World War II.

Of food industry groups discussed in this report, the fruits and vegetables processing industry was the largest, employing 2,450 persons. Those next in numerical importance were the milk industry with 1,690 persons, the edible oil industry with 1,630 persons, the confectionery industry with 1,440, the alcoholic beverage industry with 1,150, and the ice industry with 1,080 persons.

Table 17

NUMBER OF PERSONS ENGAGED IN FOOD INDUSTRIES IN ISRAEL, 1952

Industries Discussed in Report	
Fruit and vegetable products	2,446
Milk products	1,064
Frozen milk products	519
Processed cheese	106
Edible oil, excluding margarine	1,179
Margarine	424
Oil by-products (mayonnaise and techina)	23
Ice manufacturing	1,078
Sweets and halvah	729
Chocolate	708
Carbonated beverages	725
Alcoholic beverages, excluding wine and beer	522
Beer	374
Wine	255
Flour milling	511
Fish processing	188
Meat and sausage	151
Feed mills	91
Bone and fish meal	42
Subtotal	11,135

Table 17 (Continued)

Other Food Industries	
Bakeries, less than 10 persons	2,407
Bakeries, more than 10 persons	2,384
Alimentary paste	513
Biscuits and waffles	342
Unleavened bread (matzot)	191
Cigarettes	1,128
Tobacco, pipe and snuff	40
Cigars	33
Food packaging	290
Grinding, coffee, pepper, etc.	262
Coffee substitute, powdered soup, etc.	61
Spices	33
Starch	16
Baking powder	10
Miscellaneous	31
Subtotal	7,741
Grand total	18,876

Source: Adapted from Central Bureau of Statistics and Economic Research, Government of Israel, Census of Industry, 1952.

5. Cost structure. The cost structure in the Israel food processing industry differs considerably from that of the United States. In Israel, labor costs were about 19 percent and raw materials and supplies averaged 56 percent of sales, according to a 1950 census of manufacturing enterprises in the agricultural settlements, the only data available. In the United States, labor costs averaged 12 percent and materials costs 80 percent of sales in the food and beverages industry, based on the 1947 Census of Manufactures.

These same sources indicate that Israel labor costs are characteristically a higher proportion of the value added in manufacturing compared to the United States.[1/] Labor costs averaged 51 percent of value added in the food processing industry in the Israel settlements compared to 29 percent including production workers only and 42 percent including all workers in the American food and beverages industry. These differences reflect the much lower investment of plant and equipment per worker in Israel. It is of interest to note that the two censuses cited indicate an investment per worker of about 5,600 dollars (1950) for Israel and about 10,900 dollars (1947) in the American food processing industry. Compared to the average investment of about 3,500 dollars (1950) per worker in all industries and handicrafts in the settlements, the food industry has a relatively high rate of investment.[2/] The pattern was rather similar in the United States where the rate of about 8,600 dollars invested per worker in all manufacturing industries was also lower than in the food processing industry.

It is recognized that these data are not representative of investment rates and cost conditions in the entire food processing industry of Israel. Yet it is believed that the general relationship outlined is correct.

According to statistics of foreign trade, imports of food machinery into Israel were valued at 834,000 dollars in 1953 and came from four supplying countries; Switzerland and the United States each supplied 34 percent, the United Kingdom was the source of 27 percent, and France provided the remaining 5 percent. Including parts, total imports of food machinery amounted to 1,122,100 dollars compared with total industrial machinery imports of 28.7 million dollars.

1/ Value added in manufacturing is defined as the value of sales less the cost of materials, supplies, fuel, electricity, and contract work.

2/ The investment per worker of 2,033 Israel pounds in the chemical industry was only slightly higher.

B. Description and Recommendations Pertaining to the Food Processing Industries

The major segments of the food processing industry discussed in this study are milk, meat, fish, edible oils, fruits and vegetables, citrus fruit, beverages, flour milling, ice-making and refrigeration.

1. The Milk Industry

a. Description of the industry. Milk animals occupy a most important place in the Israel livestock economy. Estimates as of January 1954, placed cattle numbers at 104,800 head, of which 48,000 head were milk cows. In addition, there were about 85,000 sheep and 25,000 milking goats. (Appendix Table 7.) Milk from sheep and goats is not marketed in fluid form; but sheep cheese, especially brindza, is an important dairy product.

Milk and milk products in Israel supply more than half of all animal protein and one-sixth of all proteins. Consumption of all milk and milk products was estimated at 268 grams per person daily in 1952-53, a rate approximately one-third that in the United States. Domestic cows' milk supplied about 75 percent and sheep's milk about 10 percent of the milk products consumed.

During the last few years, milk production has increased rapidly at the rate of 10 to 12 percent annually. Production in 1953 was 88 million kilograms. Heavy season flush production begins in March and ends in June. Daily production in April at the seasonal peak is around 50 percent above the low point in November. Sufficient milk for fluid consumption is produced only in the months of peak production. Generally, skim milk powder is reconstituted in every month except April and May. In the 1954 season, skim milk was not used from March through July. Of the 85 million kilograms of standard milk sold in 1953, reconstituted skim milk powder provided 10 million kilograms. At the present rate of increase of production, there may be sufficient milk for fluid use from domestic sources in the next two to three years without reconstituting skim milk powder.

About 85 percent of domestic cows' milk is sold for drinking; 10 percent is processed; less than 3 percent is sold as fluid cream; and the balance is lost. The milk processing industry ingeniously manufactures fluid cream and a wide variety of cheeses from skim milk and whole milk powders and butter. Most of these products have been obtained from surplus American stocks of powder and butter. (Appendix Table 8.) Manufactured products mainly include white lean and

fat cheeses, salty sheep's cheese, processed cheese and hard cheeses. Tnuva (the large agricultural marketing cooperative affiliated with the Histadruth) produces virtually the entire supply of sour milk drinks, leben and lebenia. Only a small amount of butter is produced in Israel.

The milk processing industry consists of 55 plants. The eight Tnuva plants handle about 72 percent, and the Milk Producers' Association handles most of the balance of the whole milk produced in Israel. Tnuva sells about the same proportion of the standard fluid milk and 86 percent of the cream,and manufactures 60 percent of the milk products. The small independent milk plants do not have access to fresh milk from the farms,and concentrate on manufacturing milk products, especially cheeses.

Milk is delivered by producers to milk collection stations, where it is weighed, cooled, tested,and graded. Producers receive an allocation of cattle feed and a subsidy based on the quantity of milk delivered.

As a rule, manufactured milk products reach the consumer by way of the wholesaler and the retailer, or directly through retail outlets. Plants without bottling equipment are not permitted to make cream, therefore only the better equipped plants sell cream. Fluid milk has not been sold in bottles. As noted above, cows' milk of about 3 percent butterfat content is combined with a solution of skim milk powder most of the year and standardized to 2.3 percent butterfat, the minimum permitted. Some milk is sold through stores, but most of the pasteurized and cooled milk is sold in cans to retail milk deliverymen who make their rounds on motorcycles or tricycles The advantage of pasteurization is lost in this unsanitary distribution system, and milk must be boiled before being used. With the support of United Nations International Children's Emergency Fund, five fluid milk bottling facilities are being installed, four in the Tel Aviv area, and one in Haifa. These facilities are expected to be in operation by late 1954. The program introduces a much needed change in the Israel milk distribution system.

It has been the policy of the Government to stimulate production and consumption of milk. Farmers receive a subsidy of 0.034 Israel pounds based on a farm price of 0.250 Israel pounds per liter of 3 percent fat milk. The consumer price is approximately the same for standard 2.3 percent fat milk. The marketing margin of 60 prutot per liter of standard milk is covered in part from the sale of cream obtained by standardizing the milk and from a subsidy of about 40 prutot per liter. It appears to be the aim of the Government and the

larger milk companies to make Israel self-sufficient in producing requirements for fluid cream, and to reduce dependence on imported milk powders required for manufacturing milk products. Subsidization of producers and consumers is part of the program designed to increase milk production and to increase the consumption of fluid milk for nutritional reasons.

b. Suggestions for the milk industry. The following observations and suggestions concerning the milk industry are designed (1) to increase its contribution to the nutritional status of the people; (2) to achieve an economic and effective utilization of domestically produced milk; and (3) to develop a suitable economic balance between the utilization of domestic fresh milk and of imported milk powders and butter used for reconstituting fluid milk, fluid cream, and manufactured milk products.

General policy. It has been pointed out that the Isreal Government is making efforts to expand the use of the range area with the aim of increasing domestic meat production. But the long-range government plan recognizes that Israel agricultural resources are definitely limited, and that there are economic hazards in maintaining too large a livestock industry based on domestically produced or imported grains. (Appendix C .) Keeping this context in mind, there is reason to believe that the Government may be over-stimulating the growth of the domestic dairy industry.

Current subsidization policy encourages intensification of the dairy industry, which tends to divert more land to the production of feeds, milk cows, and domestic meats. If this policy is the consequence of the belief in the future uncertainty of a cheap supply of American milk powder and butter, it may be unfounded in view of large American stocks and current policies which should assure cheap surplus milk products to needy countries at least for a number of years.

Even if milk powders were to be imported at normal world prices, it may be well for Israel policy to aim at less than self-sufficiency in all milk products in this critical period of its history. It would appear to be in Israel's interest to base the milk manufacturing industry primarily on imported milk powders. To eliminate reconstitution of fluid milk entirely in the seasonal low production period by maintaining a higher level of milk production would probably result in consumers paying an unnecessarily high price for milk, and the diversion of expensively produced domestic whole milk to low-valued manufactured products.

An important feature of milk policy might be to increase the consumption of milk solids rather than milk fat. There seems to be a widespread view in Israel that more prestige is associated with the use of high fat fluid milk, and insufficient recognition of the fact that high fat milk is expensive milk, and the fats obtained from vegetable sources are much cheaper. Fortunately Israel does not prohibit the reconstitution and standardization of milk. The low minimum fat requirement of 2.3 percent is also desirable because of the relatively high price of milk compared with cheaper vegetable fats. The Israel milk industry has an opportunity to develop a market for cheap skim or low fat fluid milk products, made directly by reconstituting skim milk powder or by admixture with fluid skim milk. In addition, it should give consideration to developing a consumer market for skim milk powder reconstituted in the home.

It is, therefore, suggested that future policy may include the following objectives: (1) avoid over-extension of the Israel dairy industry which might result from subsidizing feed and milk production; (2) remove or greatly reduce the consumer subsidy on milk, possibly retaining it for a time in the ma'aborot and other low income groups; and (3) encourage the milk industry to provide cheaper fluid milk products such as plain and flavored skim milks.

Excess capacity and organization. The milk manufacturing industry has ingeniously manufactured a wide variety of milk products with few and simple raw materials; but the industry consists of a large number of small, relatively inefficient plants. Some lack even the basic elements of sanitation. As an indication of the small scale of operations, it may be noted that recent monthly allocations of skim milk powder to 48 plants, excluding Tnuva, averaged 150 kilograms per plant daily. These plants often work at only a fraction of capacity.

Inadequate and irregular raw material supply has caused acute unemployment in the industry; yet, earnings appear to have been enough to keep numerous self-employed owners from seeking employment elsewhere. An essential first step in improving the industry should be to insist on higher minimum standards of sanitation. This might, of course, force out some of the more unsanitary establishments. An effective and impartial method of eliminating excess capacity in the industry would be to free the market so that competition for supplies and markets can eliminate the more inefficient enterprises. This may be an essential step in shaking down the economic structure of the milk processing industry so as to attain a sound price structure and an efficient milk utilization pattern.

Certain portions of the milk industry are definitely overbuilt, and perhaps have an excess of expensive machinery; but, in general, equipment is meager and methods of operation are crude, particularly in milk manufacturing. Quality control practices are seldom used. Most plants are engaged in diversified operations covering a wide range of milk products. There is insufficient specialization, and many plants are making small amounts of butter and cheese. On the other hand, many lack certain items of essential equipment. Consolidation of plants could result in a better utilization of equipment and improvements in sanitation.

The Tnuva cooperative is in control of the bulk of the domestic milk supply and the milk manufacturing business. It has made important contributions by its initiative and pioneering. A further element of strength is the substantial financial resources behind it. Nonetheless, it may be wise to strengthen other segments of the industry by assisting enterprising, financially sound small- and medium-sized enterprises with credit for equipment and working capital. There are a number of small firms under good management that have accumulated financial resources in spite of devaluations and the tight credit policy. Perhaps they deserve some encouragement and credit to purchase urgently needed equipment and to make plant additions. An industry usually makes more technological progress when a number of strong firms are in competition. The suggestion is not to weaken Tnuva but to strengthen the healthy members of the industry, and to avoid the stagnation that sometimes results from insufficient competition.

Fluid milk bottling program. An important problem of the UNICEF milk bottling program is that of efficiently locating facilities in order to obtain a low-cost milk bottling and distribution system. If implementation of the program is not too far advanced, it may be well to investigate certain aspects of the problem further. Such an analysis should consider (1) suitable location of plants with respect to main areas of milk supply and consumption; (2) costs of assembling milk from farmers and costs of transporting to milk consuming centers; (3) size of the bottling operations of the various plants.

At present, use of the glass bottle would save foreign exchange compared to the paper container, and it may also be the cheaper system for Israel. In setting up these facilities, the Government and the milk industry may want to keep in mind the possibility that the one-trip disposable container may become feasible in the future. Use of the paper container results in somewhat higher packaging costs at present, but the economies in transportation are substantial. It is not clear whether economies would be important over the relatively

short distances of Israel; but if economies from the use of paper containers should turn out to be significant, there would be an argument for concentrating production in fewer plants. This would provide economies from large-scale bottling and from serving a larger territory.

Fluid milk distribution. The UNICEF fluid milk bottling program raises some important distribution problems having a bearing on the quality of milk provided to consumers and the efficiency of the distribution system. The absence of refrigeration in many homes makes it necessary for householders to have convenient and frequent access to a source of fluid milk. In general, direct home delivery of milk is an expensive distribution system. In a low-income country, consumers should be permitted to economize by picking up milk themselves from stores or central depots. However, before a decision is made, it may be well to consider the London system of home distribution which uses electrically operated wagons of 500-pint capacity distributing from well-located refrigerated depots. An important feature of a future Israel distribution system will be the need for locating refrigerated milk storage facilities near consumers from where the milk may be picked up or from where it may be distributed by deliverymen. Such a system should require a relatively low capital investment. The big danger will be that the industry may underestimate the need for adequately refrigerating milk while in transit to consumers. Should refrigeration be neglected, consumers will need to continue boiling their milk, or it will become a menace to public health and the need of a fluid milk bottling system will be superfluous.

Concentrated milk. It is suggested that consideration be given to the possibility of using the evaporating equipment of the citrus processing industry—which is idle in May while milk production is flush—to produce evaporated and concentrated milk products. It seems that citrus concentrating equipment would do well for this purpose. It is recognized that the use of low-temperature high-vacuum equipment might be more costly than specialized equipment. On the other hand, if no capital charge is assessed against milk processing and only operating costs are considered, the use of this equipment may be quite feasible. A number of products could be produced, such as evaporated milk and plain and sterile concentrated milk. The products might be bottled instead of being canned. It is understood that the Noga milk company at Kfar Shmaryahu is already bottling a sterile milk product. There should be opportunities for developing a small market for these products. In view of the small volume of domestic whole milk that will need to be processed for only a brief period annually, the milk and citrus industries may want to cooperate in solving this problem. Of course, the industry will also consider the

relative merits of converting surplus milk into cheeses compared to the alternative of manufacturing evaporated and concentrated milk.

Utilization of seasonal milk surpluses. The rising level of milk production is creating a problem of effectively utilizing milk surpluses in manufactured products during the peak period in April and May. A subsidy for manufacturing skim milk cheese was paid in 1954.

The suggestion has been made that milk production may be leveled out seasonally by raising the price of milk to farmers in the fall season. Efforts to change the seasonal production pattern substantially by contraseasonal pricing have not been successful in the United States. Some seasonal price differential may be desirable, but research has indicated that seasonal price differentials have a limited effect on the seasonal production pattern. Since wide differentials can result in very expensive milk, this does not appear to offer a valid solution to the seasonal milk problem.

Ices and ice cream. The ice cream industry, like most of the Israel milk manufacturing industry, is based on imported milk powders and margarine or butter. The industry is distinct from the milk industry. Ice cream in bulk is manufactured on the spot in retail stores. Novelty ices and ice cream products are manufactured in a few factories. Considering the high cost of domestic milk and the relatively low price of imported powdered milk products and domestic edible vegetable oils, it is desirable that no impediments be put in the way of this industry in the use of raw materials so long as its products are of high quality. The industry can provide consumers with low-priced forms of milk proteins.

Use of milk wastes. Study should be given to the possibility of obtaining a more complete utilization of milk wastes. Cheese whey in particular is wasted in most plants. There may be opportunities in feeding whey directly to poultry and calves. Experiments are under way for converting cheese whey to alcohol. Study should be made of the possibilities of using whey in the manufacture of dried feeds, casein, casein paint, yeast, and antibiotics. In the United States, in areas where a sufficient volume exists, whey is sold to manufacturers for a nominal price so as to facilitate disposal and further use.

2. The Sausage and Meat Industry

a. Description of the industry. Considering the level of per capita income, Israel is on a very low meat diet—10.3 kilograms per

person per year in 1952-53. About 5.1 kilograms were fresh and frozen beef; 4.6 kilograms undressed poultry; and 0.6 kilograms calf, mutton, kids, and lamb. The Arab-Jewish conflict in 1948 resulted in the loss of about half the livestock from the present area of Israel and conditions since then have cut off the Middle East as a source of supply. Beef has been imported primarily from Argentina, Uruguay, Canada, Denmark, France, Yugoslavia, Eritrea, and Abyssinia. To save foreign exchange during recent months, beef has been obtained mostly from the two African countries which have supplied a lean, bony, and poor quality meat. Approximately one-half of the meat supply comes from the domestic poultry industry. The 1954-55 budget provides an allocation of 3 million dollars for the purchase of 6,000 metric tons of boned frozen meat.

Some have estimated that until quite recently about 90 percent of the meat consumed in Israel moved through the "black market." The increase in the poultry supply has since reduced this volume, but the "free" prices are about double the controlled meat prices. Farms and settlements are selling livestock on the "black market" at prices reported to be 3 to 5 times the market price. An undetermined amount of livestock is smuggled in from Arab countries.

The slaughtering and sausage making industry in Israel is operating at only a fraction of former levels. Live cattle are no longer imported for slaughtering, and the industry depends upon poultry, culls from dairying, and perhaps some smuggled sources. Outside of the black market supply, sausage makers depend upon the trimmings of the butchers. These are distributed every 4-6 weeks whenever a sausage ration is announced.

There are 41 sausage making plants in Israel. In the Tel Aviv area there are 350 butchers and 12 sausage plants. The 11 kosher plants in Tel Aviv obtain their supply, consisting mostly of suet and some meat, from 80-odd butchers. A nonkosher sausage plant is run by the kosher sausage makers using the nonkosher portions of the beef carcass, in addition to hogs, geese, and turkeys. During the last year, the kosher establishments were operated about 35 days, whereas the nonkosher establishment operated frequently three shifts a day. Public registration indicates an 85-percent preference for kosher meat, but the bulk of the sausage business is nonkosher in Tel Aviv.

Strong pressure from the Knesset and from municipalities has practically resulted in the demise of the hog raising industry, particularly in southern Israel. At the present time, the only export

of the livestock industry is a small volume of goose liver flown to Strassburg.

b. Suggestions for the meat industry. Need for freeing market. The condition of the sausage making industry is not good from an economic or a public health standpoint. The butchering and sausage industry is overcrowded with small and often unsanitary and inefficient establishments. It may even be a menace to the public health. The black market is extensive, and government enforcement of controls appears to be ineffective. It would appear that the best solution is to return to a free market as soon as possible, since most of the market today is on a black market "free" basis.

Increasing domestic supply. The major problem in the industry is to increase the domestic supply of meat available to the population. There are two main approaches to this problem: (1) to obtain a more extensive utilization of industrial and household wastes usable as feed by the livestock industry; and (2) to obtain a more complete utilization of the grazing lands now unused or only partially used.

Feeding industrial wastes. Industrial wastes from the brewing, milk, and other food processing industries could be fed to poultry, beef calves, and hogs in order to obtain a cheap meat supply. It would appear that the people of Israel might give further serious consideration to the question of permitting the hog industry to operate in Israel. It could make available a type of meat desired by a large section of the community, Jewish as well as Christian. It would increase the meat supply during the present period of extreme shortage, and it would accomplish this purpose by more fully utilizing waste and by-products of the food manufacturing industries.

Fuller use of grazing lands. The Government is already cognizant of the possibilities of obtaining fuller utilization of grazing lands for meat production in order to augment the domestic meat supply. "Operation Cowboy," a large-scale grazing project in the Galilee, is a step in this direction. There would appear to be considerable opportunities for expanding the beef cattle and sheep industry in the Negev and Galilee areas. It should be recognized, too, that there are real limitations in raising livestock entirely on natural pasturage. A small amount of supplemental feeding of irrigated alfalfa and even a limited amount of grain feeding is an economical procedure. Some limited feeding on the irrigated lands of the settlements is also a means of preventing the livestock from coming on the market at the same time in the fall of the year. It should prove to be economical to keep calves on the range six to twelve months, then put them on supplementary

feed for a short time in the settlements and sell them at light weights as a desirable grade of veal and baby beef.

3. Fish Processing Industry

a. Description of the industry. Because fish protein is relatively cheaper, the Government has favored the importation of fish over livestock meats. The 1954-55 budget provides for fish imports of 14,200 metric tons valued at 3.73 million dollars. (Appendix Table 5.) An assumption of a normal domestic catch of 7,500 metric tons, as in 1953, results in a per capita fish supply of 13.2 kilograms per year. Imports during the current fiscal year will consist mostly of filet, frozen fish and herring, and some Bakala and canned fish. Of the domestic fish catch in 1953, about 4,500 metric tons came from ponds, and only 1,200 metric tons came from offshore fishing. The sardine is the principal offshore fish. Some imported feed is used to produce the carp grown in the domestic fish ponds which comprise 35,000 dunams.

Prior to decontrol there were 44 fish processing plants in Israel, but the number of plants has since declined. The industry includes four canning plants. The rest of the industry includes 24 pickling, salting, and smoking plants and 16 pickling plants. The plants are very small, mostly little more than home industry, and output per plant is extremely low. Some fish canning is done in fruit and vegetable canning plants. The domestic fish catch, excluding carp from the fish ponds, is the main source of raw material for the canning industry. About 2,000 metric tons of imported fish are pickled, salted, and smoked by the industry.

Fish meal and fish oil are produced by a number of very small plants using crude processing equipment and methods. The quality of the meal and the oil produced is low and often adulterated. The raw material consists of fish canning wastes, spoiled fish, and some fish too small or too large for canning. Most of the raw material is obtained from the domestic canning industry, but additional supplies are obtained irregularly from abroad.

b. Suggestions for the fish industry. Increasing domestic supply. One of the most pressing questions is the possibility of economically increasing the domestic supply of food fish and fish waste. Success in this effort would materially reduce the foreign exchange now required for the importation of food fish and fish meal. Fish meal is an important ingredient used by the Israel livestock feed-mixing industry. Increasing the supply of food fish and fish waste would tend to bolster the proportion of animal protein in the Israel diet.

Offshore fishing. So far, the efforts to expand sea fishing have not been too successful. Expansion should be on the premise that supplies can be obtained competitively with the cost of fish from foreign sources. More "know-how" may be needed for fishing in distant sea and ocean waters, probably in the Atlantic, where the fleet may eventually have to go because of the scarcity of fish in the Mediterranean. Should the heavy trawlers now on order for Atlantic duty prove a success, further investments may be warranted in this industry.

Fishponds. As far as the domestic fishpond industry is concerned, there appears to be a need for evaluating carp production from the standpoint of alternative land use and feed requirements versus the cost of fish imports. It is recognized that much of the land now in fishponds has no higher alternative use. Attention might be directed toward the possibility of using agricultural processing wastes and low-grade culls of farm products instead of imported feeds as a source of cheap feed for the carp industry.

Condition of canning industry. Even with a considerable increase in the supply of sea fish over other types, there is sufficient plant capacity in Israel to preserve available supplies. Because of the seasonal nature of the fish supply, fish processing plants are turning to canning and preserving fruits and vegetables. Conversely, canners of fruits and vegetables also preserve fish. There is ample justification for such diversification as a means of reducing costs by getting a greater year-round utilization of plants. It would seem wise to discourage the entry of new firms into the fish canning industry for some time to come.

The fish processing industry operates under extremely low technological conditions using much hand labor and inefficient methods. On the other hand it would certainly be unwise to overmechanize in view of the limited supply situation. Some additional items of equipment are needed for sterilization (autoclaves) and sealing, as well as for cutting and cleaning fish. Loading machinery may be necessary when the industry is working at higher capacity. Standards of sanitation and quality need much improvement. Every possible effort should be made to improve and increase the technical "know-how" of operators whose knowledge is based on limited experience. Direct contact with an efficient industry abroad would seem to be fruitful.

The fish processing industry is operating under depressed economic conditions. Besides the problem of supply the industry appears to be hampered by competition from foreign canned fish purchased with "scrip"

sent by foreign benefactors to Israel residents. There are also some apparent inequities in the present pricing system.

Fish wastes and fish meal. There would seem to be an important place in Israel for a small fish meal processing firm with efficient machinery, high standards of operation, and integrity in producing high-quality fish meal and fish oil. Such a firm could also provide for efficient collection of fish wastes and for importing spoiled fish, fish wastes, and dried fish.

There is need for an examination of the possibilities of obtaining waste fish products from other countries on a long-term basis, which would be suitable for processing into meal and oil. Turkish and Eritrean industries may be possibilities. Desirability of obtaining meal from Turkey versus obtaining it from other sources should be investigated carefully in view of the alleged poor quality and high price of the Turkish meal.

4. Vegetable Oil Extraction Industry

a. Structure of the industry. The vegetable oil extraction industry in Israel consists of nine plants with an approximate daily three-shift capacity of 125 metric tons of refined edible oil and 365 tons of oil cake. Another plant has a daily capacity of 10 metric tons of castor beans and 1.5 tons of linseed. Three large diversified plants have two-thirds of the total capacity of the industry. About 100 plants press olive oil. Forty-six plants, including seven of the large plants manufacturing vegetable oils, produce laundry and toilet soaps, and synthetic powdered as well as liquid detergents. The diversified vegetable oil plants also produce glycerine as a by-product, as well as a wide array of toilet articles. The industry produced 16,900 metric tons of vegetable oil in 1953. About 2,500 tons of olive oil were produced of which 140 tons were exported. Of the 38,100 metric tons of oil cake distributed to the livestock industry, 8,800 metric tons were imported as such, and 29,300 metric tons were processed or reprocessed by the domestic oil industry. Three margarine plants, with a capacity of 160 metric tons per day, produced the 13,800 metric tons of margarine consumed during the year. Production of soaps and detergents amounted to 19,100 metric tons, of which only 26.8 metric tons of laundry soap were exported at a value of 19,900 dollars. (Appendix Table 9.)

With minor exceptions, the oil extraction industry in Israel depends upon foreign raw materials. During 1953, the nation imported

54,900 metric tons of oil-bearing raw materials, consisting primarily of 14,000 metric tons of Philippine copra, 13,800 metric tons of Turkish sunflower seeds, and 18,200 metric tons of American soybeans. Smaller quantities of cottonseed, sesame seed, linseed, and castor beans were imported mostly from the Middle East and northern Africa. The Government also imported 14,000 tons of oil cake from Turkey for reprocessing. The local industry supplied nearly 500 metric tons of safflower seed and 19 metric tons of corn germ. Small amounts of domestic cull peanuts were being processed in 1954, for the first time.

An important feature of the seven-year program of the Ministry of Agriculture is to stimulate and expand the production of industrial oil and fiber crops. From the standpoint of yield, plantings, and outlets, production of Virginia-type peanuts is proving a phenomenal success. The planted area has been expanded from 1,000 dunams in 1949 to an estimated 60,000 dunams in 1954, about 10 percent of the irrigated land of Israel. High quality has resulted in a ready export market for shell peanuts in Europe.

Progress in cotton production is indicated by the planting of 3,500 dunams in 1954, unusually high yields, and production of a good-quality middling 15/16 inch staple. A small gin with a capaity of 500 kilograms daily is in operation, and a much larger modern ginning plant is on order.

Production of flax on 9,000 dunams of dry land in the South is proving that flax of high-quality seed and excellent fiber is obtainable. Production is sufficient for about one-fourth of Israel's linseed oil requirements. A small retting and fiber-processing plant is in operation. It is planned to construct a modern plant capable of handling the present crop. Flax fiber is being exported experimentally. Problems of flax fiber processing are discussed in Section IV.

Production of castor beans is just beginning in Israel. Safflower seed and sesame seed are of excellent quality but high-priced. Olives, also, are of high quality but expensive. They may be a good export possibility as edible olives. Although some olive oil is exported, Israel oil meets difficult competition from that produced in Italy, Greece, and Spain.

b. Suggestions for the vegetable oil extraction industry. Function of the industry. Export earnings by the Israel vegetable oil extraction industry have so far been nominal. The primary function of the industry has been to save foreign exchange by eliminating most imports of

refined vegetable oils and reducing those of oil cakes. The following measures are suggested as means of improving the competitive position of the industry and of improving its contribution to the economy.

The most difficult problem of the Israel vegetable oil industry is the serious lack of domestic raw materials. Every effort should continue to be made to increase the production of oil crops indigenous or adaptable to Israel, as well as to reduce costs of production so that refined oils can be made available at world prices. The special qualities of domestic oil crops, the requirements of the economy, and competitive prices will be factors determining the use of domestic oil crops.

Domestic oil raw materials. With the introduction of ginning equipment, cottonseed from the expanding cotton crop should make an important contribution to the supply of raw materials providing it can be made available at competitive world prices. Linseed oil, a by-product of the flax fiber industry, will supply about 10 percent of the needs of the paint industry. Safflower seed is grown in sufficient quantity to meet one-fourth the requirements of the paint industry. However, edible safflower seed oil is higher priced than the oil used for paint. With care in selection of varieties, castor beans may have good prospects in Israel. Sesame production is expected to expand, but production costs are very high. Improved varieties and introduction of modern harvesting methods should result in making sesame a more competitive crop. At present high prices, halvah and techina are the most favorable outlets for sesame seed.[1/] The problem of producing olive oil in Israel competitive with oil from other crops or with olive oil from other countries is serious, in view of the subsidization of the industry in Italy and Spain. Reducing olive harvesting costs is also a very important and challenging problem. Soybean production has not been successful because of poor yields.

Israel requirements of oil cake for the livestock industry are 2.5 times as great as domestic consumption of edible oil. For this reason, higher cake-yielding oil seeds, such as soybeans and cottonseed, are preferable to peanuts and copra (which have higher yields of oil), assuming that returns and costs of processing and of raw materials are comparable. In developing the peanut industry in

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1/ Halvah is an oriental confection and techina is a paste used for salad dressing.

Israel, the intent was to produce essential raw materials for the edible oil industry; but the peanuts turned out to be of such high quality as to command a premium as shell peanuts in the British market. Great care in sorting and selecting high-quality shell peanuts will help to assure development of the export market. It is possible, thereby, that cull peanuts can be made available to the domestic oil industry in competition with foreign oil seeds. However, the supply of peanuts made available in this way will not be sufficient to meet the raw material demands of the edible oil industry. Another possible source of foreign exchange from this crop is the development of the market for premium peanut oil that exists particularly in Switzerland and Sweden. The revenue earned from the export of shell peanuts and of peanut oil should contribute materially toward the costs of cheaper imported raw materials for the industry, particularly soybeans from the United States. Exports of premium-quality refined Israel olive oil will contribute toward the same end.

Domestically produced cottonseed should become available to the oil extraction industry in sizable quantities in 1955, from the ginning of the crops of 1953, 1954, and 1955. This new cottonseed supply will fit in with the large oil cake requirements of the new country.

Reprocessing of Turkish oil cake. The edible oil processing industry obtains a large proportion of its raw materials under the Turkish trade agreement. This may be economically unsound in the long run as the Turkish oil seeds are of poor quality and are high-priced compared with the prices and returns from American soybeans. Turkish oil meal of 8 to 10 percent oil content is reprocessed and the oil content reduced to a 1-percent level suitable for the feed-mixing industry. The processing margin is narrow and the domestic value added is small; moreover, in view of the possibility that improved oil extraction facilities will be established in Turkey in the near future, the Turkish source of supply might be cut off.

Raw material procurement. The Oil Crushers Pool, composed of six large firms, purchases and allocates raw materials with the approval of the Government. Raw material prices are an uncertain factor to the buying firms who are cut off from the world market and have had no opportunity to engage in hedging operations. In addition to price uncertainty, group buying has resulted in low plant inventories and operation on a hand-to-mouth basis. Without suggesting complete freedom in trading at this stage, it may be that specific amounts of foreign exchange can be allocated to members of the industry for the importation of raw materials. Granting processors free choice in

selection of raw materials is necessary in the long run so that they can buy at lowest cost and coordinate procurement with production. This should contribute to solution of the general problem of reducing production costs.

Surplus U. S. commodities. The Government should assess carefully the impact on the industry and the economy of importing relatively low-cost or gift-surplus commodities from the United States. For example, the sale of low-cost American butter in Israel during the early summer of 1954 substantially reduced the consumption of margarine, and to the same extent reduced the demand for refined vegetable oils used in manufacturing margarine. Plant layoffs occurred as a result, and imports of oil meal and cake may need to be increased. Rumored additional acquisition of American cottonseed oil under the same conditions could have similar effects. It might be preferable for the United States to make available cottonseed instead of cottonseed oil so as to prevent dislocation in the Israel edible oil industry.

Condition of industry. The great variety of raw materials processed by the edible oil industry has resulted in development of plants with adaptable machinery which can be easily shifted from one raw material to another, sometimes as often as once every four weeks. The industry is similar to that of Western Europe, in contrast to the specialized American industry, but is subject to higher costs of operation. High operating costs are also due to the cost-plus system based on the cost accounting of the biggest mills. The ratio of office staff to total work force is large (15 percent in one plant), and is sometimes ascribed to the huge amount of paper work required for the Government. The maintenance force (about 12 percent in two large plants) is also very large; however, this is often characteristic of Israel industry.

Limited but sound incentive wage schemes are being used, and other efforts to increase productivity are under way. Greater specialization and a more even flow of raw materials would aid in reducing labor costs. Further use of incentive schemes and more cost reduction consciousness would greatly benefit the industry.

Plants have grown rapidly during recent years. Excess capacity is considerable, the degree depending on the raw material used. Furthermore, by putting certain equipment in operating condition to eliminate numerous minor bottlenecks existing in all plants, capacity could probably be increased considerably.

New products and markets. The oil extraction industry is conscious of the need for quality control; the large firms maintain quality control laboratories and research staffs. Success in development of detergents in the Israel market is indicative of the trend in the industry toward greater dependence on chemical and allied research. The industry is now on the threshold of the synthetic chemical field so far as developing new products and by-products is concerned. This course will need to be pursued with great energy in the future as a means of broadening the market both at home and abroad; but it can be pursued with success only by a few firms. Some members of the industry have wisely obtained patent licenses from companies abroad which have given them new products and markets. This is an economical way for a small country with limited research resources to keep itself abreast of technical developments.

5. Fruits and Vegetables Industry (Excluding Citrus)

a. Description of the industry. Consumption of fruits and vegetables is at a very satisfactory level in Israel, being as high as in nations having the world's highest levels of per capita consumption. Consumption of 236 kilograms per person in 1952-53 was divided about equally between fruits and vegetables. Fruit consumption included 61 kilograms of citrus and 34 kilograms of melons and watermelons. (Appendix Table 4.)

The volume of fruits and vegetables marketed in Israel has been increasing, and small domestic surpluses of a number of commodities have been appearing over the last two to three years. Fresh fruits and vegetables valued at 128,000 dollars were exported in 1953 with bananas accounting for all except 22,000 dollars of the total. Exports included small quantities of tomatoes, onions, carrots, garlic, certain fruits, and potatoes. While exports are still small, they indicate that it has been possible to reduce or eliminate some food imports, such as potatoes. Potatoes represented 15 percent of the 182,000 metric tons of vegetables marketed in 1952-53; tomatoes comprised 20 percent; and cucumbers, carrots, and cabbages accounted for approximately 10 percent each. (Appendix Table 10.) Compared to fresh use, the volume of fruits and vegetables canned and preserved is small--about 9,400 metric tons in 1952-53. Total exports of less than 400 metric tons

were 30 percent lower than for the previous year. Marketings of noncitrus fruits amounted to 35,000 metric tons, and about 4,900 metric tons, including olives, were canned. (Appendix Table 11.)

Exports of processed fruits and vegetables, excluding citrus, were still small in 1953, comprising 587 metric tons valued at 188,000 dollars. The bulk of the exports consisted of tomato juice and puree, amounting to 137,000 dollars, and canned vegetables, mostly cucumbers and cauliflower, valued at 48,000 dollars. Almost all exports went to four countries: United Kingdom, 155,000 dollars; Finland, 87,000 dollars; United States, 33,000 dollars; and Belgium, 14,000 dollars.

The peak period in processing fruits and vegetables, including the large citrus crop, is in March and April when the citrus and pea canning seasons coincide. The period of low production is in November and December. The seasonality of Israel canning crops is distributed approximately as follows:

December	Citrus
January	Citrus, cauliflower, carrots, green tomatoes
February	Citrus, cabbage
March-April	Citrus, cabbage, green peas
May	Green peas, cucumbers, carrots, apricots
June	Cucumbers, tomatoes, carrots
July	Cucumbers, tomatoes, carrots, melons, plums
August	Grapes, tomatoes, carrots, peppers
September	Tomatoes, peppers, olives, grapes
October	Peppers, olives, tomatoes
November	Peppers, olives
January-December	Jams

Storage of some products for further processing later in the season is undertaken to some extent. For example, concentrated orange juice and lemon juice are processed into drinks during the balance of the year following the citrus season. Similarly, grape juice concentrate obtained from the August harvest is converted primarily into wine. Some plums are barreled in sulphur dioxide in July and processed into pulp and compote during the later slack season.

According to the latest figures, 73 plants were processing fruits and vegetables, including jams, juices, and syrups. These included 12 plants processing citrus and tomato by-products. Of the

diversified plants, jams were produced by 44 plants, canned fruits and vegetables by 27 plants, and fruit juices by 13 plants. An additional 18 plants specialized in canning, and 11 other plants made juices or syrups or both.

b. Suggestions for the fruits and vegetables industry (excluding citrus). Export of fresh products. Fresh and processed fruits and vegetables would seem to have considerable promise in the export market. Much attention should be devoted to developing the out-of-season export market for fresh products. During the last year, trial shipments of early strawberries and fresh table grapes were made by air transport to the European market. With proper management, including good selection of merchandise and reduction in the costs of transportation and production, there would seem to be real opportunities for developing the high-priced out-of-season market in the western European countries. Experience gained in this venture should serve as a valuable guide, so far as quality selection is concerned, toward eventually moving into the frozen food business.

Condition of processing industry. There are perhaps too many small, poorly equipped and unsanitary enterprises in the canning business. There is considerable excess capacity at the present time. Many firms are duplicating equipment and manufacturing the same products because of the understandable tendency to get into many lines as a means of more fully utilizing plants. On the other hand, some firms need critical pieces of equipment necessary for complete operating lines. Certain careful investments in this respect would be desirable in order to increase quality and productivity.

Working capital. Shortage of working capital, which is a general industry problem, is a special problem in the canning industry. To service the export market, it is important to have stocks on hand during the off-season. Sufficient and low cost credit is needed for storing processed foods. Even if adequate credit were obtainable today, high interest costs of 9 to 18 percent per annum mean that storage costs tend to be prohibitive.

Lengthening the operating season. Because of the short harvesting season for many commodities, canning firms have entered many lines of production to achieve a greater utilization of plant, workers, and equipment. There are opportunities for lengthening the season by coordinating processing and production of vegetables and small fruits through contracting and by direct integration of farm and factory operations. Considerable control by the processor over the variety and the timing of planting is essential. Lengthening the season has the beneficial effects of (1) reducing the highly seasonal

character of employment; (2) reducing costs of operation by permitting a greater use of equipment and permanent labor; and (3) reducing the costs of maintaining large stocks in reserve for off-season orders.

Production by contract. Contracting with growers has begun in recent years and is developing rapidly. In the experimental stages there have been complaints by growers that processors have not accepted all of the crop offered by growers when the price was low, and processors have complained that in times of high prices, growers have diverted some of their supplies to the higher-priced fresh market. As more experience is gained more workable contracts will be written, and both growers and processors will get to appreciate the advantages of the contract system to a degree that they will be more inclined to abide by agreements.

Another essential feature of the contracting system is the provision of short-term credit by the processor. With adequate short-term credit, the processor is able to provide seed, fertilizers, fumigants, and other supplies, and sufficient working capital to farmers during the production season.

Improving varieties. An improvement in varieties and in costs of producing fruits and vegetables is essential. The problem is illustrated by tomatoes. Next to citrus, tomato products (especially tomato puree) appear to have good prospects as an important export outlet. The British canning firm, Heinz, would have purchased 2,000 metric tons of puree from Israel this year but could obtain only a firm 500 metric ton contract. The Ministry of Agriculture is subsidizing the production of tomatoes at 40 Israel pounds per metric ton for a grower price of 105 Israel pounds per metric ton. Some processors supplying this export market are losing up to 150 Israel pounds per ton[1/] just to obtain and hold the market Obviously, this can be only a short-term proposition. Two approaches are possible to maintain this new-found market. One is to find immediate means of reducing the costs of producing tomatoes. With some additional care, crop yields could easily be increased quickly and substantially, especially in the newer settlements, by improving cultivation of the land and other improved cultural practices.

Integration of research and extension. The other approach is to speed up selection and development of a high-yielding, firm-fleshed tomato, with a high solids content, that can be sold with little loss in the fresh and processing markets. Research on development of new tomato varieties is well advanced. Promising possibilities of doubling

1/ Costs are computed on the assumption of a requirement of seven tons of tomatoes for one ton of puree, and include depreciation expenses.

the solids content from 4 to 8 percent could reduce processing costs substantially.

There is urgent need to integrate current research and extension programs, to coordinate farm and factory operations for improving the quality of raw materials, and to reduce costs of production and processing. An important need is to keep farmers and plant managers fully informed on progress in developing new varieties. This should assist in obtaining earlier utilization of promising new varieties.

Quality standards. Lack of technical "know-how," unscrupulous competition, and oftentimes apparent indifference appear to be responsible for the inferior quality of much of the canned and preserved fruit and vegetable products processed in Israel. Promising steps are being taken to improve the situation. The association of citrus processors has recognized the situation. It has led the way, with government approval, by inspecting the quality of export goods. The Standards Institute is developing suitable standards for canned and preserved goods. The canning association is planning educational measures. This sort of voluntary regulation of quality is much to be desired.

So far as the processing end of the problem is concerned, proper timing of harvesting and processing, and adequate sorting and sizing of products are essential. Mechanization of the sorting and sizing operations would seem to be especially desirable in preparing products for the export market.

Frozen foods. There is a strong desire among members of the industry to engage in freezing fruits and vegetables. For this to succeed it is essential to make further progress in controlling size and quality, in developing suitable varieties, and in reducing costs of farm production. A few firms operating with an integrated farm, or a good contracting system, may be in the best position to make the first successful advance into this market. The approach by interested firms should be cautious because of the importance of maintaining superior quality and the even more challenging problem of developing satisfactory channels of distribution. On an industry basis there is the grave danger that a very competitive situation could lead to excessive investment before a firm market has been established.

A frozen food industry should be designed to produce for the export market. Facilities for distributing frozen foods would be expensive to establish in Israel in relation to the small potential market. Frozen foods are expensive to process and market and would create a demand for resources Israel now can ill afford, especially since cheaply

distributed fresh fruits and vegetables are available a high proportion of the year. Some of the problems faced in selling frozen foods in the export market are discussed in connection with the citrus by-products industry.

Export market. Next to citrus processing, the fruits and vegetables canning and preserving industry would seem to be a bright hope in the export market. Small quantities of certain categories are now being exported, and the quantities can be enlarged very materially. Most promising are likely to be peas, grapefruit segments, olives, figs, and green and wax beans.

There should be opportunities in developing the specialty food market abroad, especially in the British, Swiss, and American markets. These might include candied citrus peel and citrons, candied fruits, spiced apricots, and sour cherries, as well as certain preserved fruits, jams and jellies. Canned vegetable soups have not been well developed so far and should also present opportunities. Fruit and vegetable baby foods might be salable in the domestic market and should have excellent export possibilities. Development of these and similar products should be given a rather high priority. Dried and dehydrated products, especially fruits, would seem to have export possibilities that should be investigated as the volume of domestic production continues to grow.

Bottle problem in the export market. Manufacturers for the export market need special consideration in obtaining suitable containers, especially bottles and jars. Success in the export market frequently depends on the use of transparent and attractively shaped bottles and jars. One of Israel's best opportunities in preserving fruits and vegetables may be to cater to the small, but fast-growing, high-priced prestige food market in the United States and Western Europe. A potential exporter would require a relatively small number of bottles of a given design. The help of the bottle manufacturers is needed in designing an attractive container and label, since eye-appeal is more important in this market than price. The Israel bottle industry is presently geared to produce large quantities of simple standardized shapes, but it is not equipped to provide much assistance on design. Companies not now in the exporting business, but who have orders or the expectation of orders, will need some assistance in procuring the type of bottles desired in the foreign market.

6. Citrus and Citrus By-Products Industry

a. Description of the industry. Fresh citrus fruit and citrus by-products occupy a dominant place in the export position of Israel. Exports of citrus products represented 42 percent of the entire earnings of foreign exchange in 1953 from the sale of commodities. Other fresh and processed foods added only 2 percent more to total exports. Exports of all citrus products amounted to about 23,977,000 dollars of which fresh citrus fruit was valued at 21,541,000 dollars, citrus by-products at 1,990,000 dollars and essential oils at 336,000 dollars.

In the 1953-54 crop year, the citrus crop utilized an area of 129,000 dunams, of which 68 percent was in Shamuti oranges, 15 percent in Valencias, 9 percent in grapefruit, 3 percent in lemons, and 5 percent in miscellaneous citrus fruits. Considerable progress has been made in rehabilitating the 35,000 dunams of groves abandoned by the Arabs.

The 1953-54 crop of 428,000 metric tons was considerably higher than the previous three-year crop average of 320,000 metric tons. This is attributable largely to an unusually favorable increase in yield, notably for Valencias. Indications are that the 1954-55 crop will be lower.

About one-half to two-thirds of the citrus crop over the last six years has been exported as fresh fruit. Of last season's bumper crop, 68 percent was exported as fresh fruit, 21 percent was supplied to factories for processing, and 11 percent went into the fresh domestic market. During the previous three years, only about one-half of the crop was exported fresh. A considerable price differential existed for the fresh and by-products markets. (Table 18.)

Exports of fresh citrus to the United Kingdom have approximated 60 percent of the total but dropped to 48 percent last season, probably because of the bumper crop. (Appendix Table 12.) Orders from the Ministry of Food for subsidized distribution of citrus juices have been declining and may be discontinued in the near future. Sales into private channels in the British market have been hampered to some extent by import restrictions. On the other hand, trade to other western European nations was liberalized during the past year. Significant is the greater share of citrus exports taken by West Germany, France, Sweden, and Denmark as well as the conspicuous increase in exports to Russia and Poland. Exports this last season faced unusually serious competition occasioned by the subsidy on United States exports

Table 18

DISPOSITION OF CITRUS CROP AND PRICES
PAID TO PACKERS IN ISRAEL, 1953-54

	Metric Tons	Israel Pounds per Metric Ton
Supplied to Factories for By-Products		
Shamuti	76,000	32.500 1/
Grapefruit	9,000	32.500 1/
Lemons	4,000	45.000
Valencias	1,000	32.500 1/
	90,000	
Local Consumption		
Shamuti	27,000	100.000
Grapefruit	4,000	100.000
Lemons	2,000	175.000
Valencias	5,000	120.000 2/
	38,000	
Other Citrus (Local Consumption)	10,000	n.a.
Fresh Exports	290,000	n.a.
Total Crop	428,000	

1/ Price of ungraded fruit for juice and segments. Larger size fruit for segments only cost IL 65.000 per ton.
2/ Approximate.

Source: Citrus Marketing Board. Based on information available August 15, 1954.

to the United Kingdom and the European continent. The Israel export business was favored by serious frost damage to the Spanish citrus crop.

Exports of citrus by-products from Israel have gone largely to one customer—the United Kingdom—to which shipments have averaged 90 percent of the total during recent years. Remaining exports were divided among 21 countires. (Appendix Table 13.) The British market absorbs almost all the orange juice, about 88 percent of the pasteurized juices, 73 percent of the essential oils, 85 percent of the fruit cells, and 72 percent of the canned slices and segments. Sales of by-products from the last crop amounted to 889,530 pounds sterling (2,491,000 dollars) during the period January 1 to August 1, 1954. The distribution of exports by country of destination is typical of recent years, but there is an increasing diversification of products. The most valuable citrus by-product is orange concentrates valued at about 503,400 pounds sterling per year, followed by orange, grapefruit, and blended juices at 183,045 pounds sterling; and orange, and grapefruit slices and segments at 78,335 pounds sterling. Essential oils from orange, grapefruit, and lemons added 67,560 pounds sterling, while lemon and grapefruit concentrates, citrus cells and peels in brine contributed another 56,515 pounds sterling. (Appendix Table 14.)

The major competitors of Israel citrus industry during the Israel citrus season [December through April] are Italy, Spain, and North Africa. The South African crop reaches the European market largely between July and October. Most of the competing export countries, Spain, Israel, Lebanon, Greece, and the United States, have subsidized exports.1/

Citrus by-product exports have been made under some handicap, especially in sales to trade-agreement and barter countries, where the industry is subject to an agio payment of 10 percent to the Israel Government.

Recent citrus plantings have been substantial in Florida and in the Mediterranean countries. Rapid expansion is continuing in

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1/ The United States subsidy for the 1953-54 crop year was 40 percent of the f.a.s. value, and grapefruit was included in addition to fresh and processed oranges and fresh lemons. The United States has subsidized exports since 1946. Competition of United States citrus increased in the past season owing to the acceptance of payment in local currencies.

French Morocco particularly along with some in Greece.[1] Plantings in Israel started again in 1953 and are proceeding at a considerable rate.

The Citrus Marketing Board of Israel is the exclusive agency for marketing citrus fruit on behalf of growers and contractors at home or abroad. The Board determines marketing quotas, the rate of marketing, prices paid by packers and processors, and the distribution of earnings. A separate pool is maintained for each variety of fruit. All packers are members of the Board; growers are "linked" to member-packers who are responsible for packing the fruit.

More than one-half of the citrus fruit is packed in central packing houses, some with a capacity of more than 100,000 cases per season. However, packing is still spread over nearly 200 packing houses, many handling only small quantities of fruit.[2] There is much discussion in Israel on the merits of increasing the proportion of fruit packed in central warehouses which is favored by some to obtain economies of large scale and greater standardization of the fruit sold in the export market. Plants are inspected for sanitation, and the fruit is inspected for quality and standardization prior to export.

The Citrus and Canned Products Association, composed of 12 of the leading manufacturers of by-products, has the approval of the Government for marketing the products of its members and for the import of raw materials. The Association maintains a Central Research and Control Laboratory in Rehovot, supported in part by the Government, with the function of investigating technical problems of the industry and of checking the quality of products exported by members of the Association and others.

b. Suggestions for the citrus industry. Integration of supply and markets. Planting of new citrus groves was resumed in 1953. In addition, rehabilitation of groves over the last five years has added to the dunams of citrus. Expansion of citrus groves has been growing apace in the other Mediterranean countries. The development of frozen concentrated orange and lemon juices rapidly expanded the United States market for these products. Rising income levels and liberalization of trade are likely to open up the West European market for these products

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1/ Food and Agriculture Organization of the United Nations, The State of Food and Agriculture: Review and Outlook, 1952. Rome, Italy, October 1952.

2/ Ophen, I. D. "Citrus Industry in Israel." Economic News. Tel Aviv, Israel, April 1954, p. 51.

also. While the development of expanded markets creates opportunities, the situation is subject to problems as well. Markets must be developed and, once developed, effort is needed to hold them. Competition is keen and new technological progress must be maintained in processing and marketing. A growing proportion of citrus will enter the processed market. It is very essential that the expansion of production should be coordinated carefully with developments in marketing.

Lengthening production season. It would seem that the citrus marketing season could be extended safely another month in Western Europe before incurring serious competition from the Union of South Africa and the United States. The citrus processing season is of good length extending to a maximum of 100 to 120 working days a year. The expensive juice extraction machinery stands idle the balance of the year. Citrus concentrating machinery, which is also used to process tomatoes for two to three summer months, is idle to a lesser extent but could be used further to produce grape juice and other fruit juice concentrates. A vigorous research program should be successful in developing an orange that will lengthen the citrus processing season.[1/] Another approach to the problem of more fully utilizing equipment by developing additional products is discussed below.

Product quality and standards. Standardization of size and quality of citrus fruits and by-products directly affects packing costs. High-quality standards and uniformity of the packed fruit with respect to size and quality are of utmost importance to the industry. Israel has some of the best citrus fruit in the world. However, the industry receives numerous complaints from European buyers because of nonuniformity of the pack, inferior quality, and mislabeling. Some buyers of fresh Israel citrus in the British market have found it necessary to regrade and repack Israel fruit at considerable expense. Hand sorting which is often used should be replaced as soon as possible by mechanical sorters (of which suitable Israel-made products are available) in order to obtain greater product uniformity and to increase worker productivity. Mechanizing the sizing and sorting of fruit would increase the scale of output and may hasten the trend toward centralized packing houses. These developments should reduce the present high costs of packing.

1/ The growth of late Valencia plantings is hampered by the Mediterranean fruit fly. It is expected, therefore, that an early variety of orange may be developed to extend the season, possibly with such types as Hamlins and Washington navels.

Packing fresh citrus fruit. Importation of wood for citrus packing cases has been a major foreign exchange expenditure by the citrus industry. It amounted to 1,769,000 pounds sterling in 1953. Before establishing a box factory in Israel, as the Palestine Economic Corporation is planning to do, it may be well to investigate further the possibility of adapting certain recent developments in California to Israel.[1/] The California industry is now shipping almost the entire lemon crop (and is beginning to handle oranges the same way) in 20 kilogram paper cartons lined with diphenol impregnated paper, thus eliminating individual wrapping and hand-packing, and reducing packing as well as container costs.[2/] The Citrus Association has already contracted with a new carton factory in Ramat Gan for Israel-made cartons at the same price as Finland-made cartons. It should be possible to prepare cartons of sufficient strength to meet the rigors of ocean transport.[3/]

Some members of the Citrus Association have been pressing, quite wisely, for more specialization in citrus processing plants. Certain beginnings toward specialization are significant. One firm now produces pectin; another is beginning the production of sugar syrup; still another is producing frozen concentrated orange juice and chemical by-products. There is some specialization in processing citrus peel for feed. Further opportunities for specialization should appear from time to time. Such steps to avoid duplication and toward integrating the use of facilities among plants are commendable efforts from the standpoint of keeping down costs, particularly in a country with a limited market.

Use of concentrating facilities. As a means of more fully utilizing capacity and avoiding investment of duplicate facilities, it is suggested that the citrus processing industry investigate the possibility of manufacturing concentrated milk products during the surplus period. Between the citrus and tomato seasons, from the middle of April to the middle of June, the concentrating facilities are idle. Evaporators

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1/ The Histadrut firm is planning to make crates for next season (but at a loss in Israel pounds) in order to save foreign exchange.

2/ The 20 kilogram size is more convenient to the retailer than the old 40 kilogram size. Importers in England prefer the smaller container.

3/ The principal British buyer of fresh citrus has pointed out that considerable cost is involved in opening Israel wooden packing cases wrapped with willow strips.

for concentrating juices and tomato puree could be used to manufacture certain milk products, such as evaporated milk and concentrated milk products. Only homogenizers, representing a nominal investment, would be necessary in addition to present equipment. The proximity of the two industries in the Tel Aviv area makes low transportation costs possible. Utilization of the existing facilities by the milk industry would be more economic than to establish new ones.[1/] Such cooperative integration with the milk industry might be looked upon as a temporary arrangement until such time as the citrus industry can expand its array of concentrated fruit and vegetable juice products in the spring low point of production.

Frozen concentrated orange juice. One citrus manufacturing firm is making small trial shipments of frozen concentrated orange juice.[2/] The product is designed for western European markets equipped to distribute frozen foods. This development seems competitively appropriate in view of the current construction of a modern factory in Spain for the manufacture of concentrated frozen citrus juices. Production is beginning in Italy. However, Israel firms should be cautious about getting into the production of these new products. The size and nature of the European demand for concentrated frozen citrus juices has not been determined. Problems affecting quality production need further research. Distribution channels still need to be established. This is an instance where it would definitely pay to undertake early research on marketing channels and consumer preferences. Such a preliminary step would be very helpful in getting this new product firmly and successfully established in the European market in competition with United States and Mediterranean frozen concentrated orange juice.

New frozen products. Success with frozen concentrated orange juice should open up possibilites for producing other frozen products and the development of a frozen foods industry in Israel. Frozen concentrated lemonade (lemon squash) and grape juice may also be successfully marketed in Europe.

In view of current economic conditions in Israel, the frozen food products should be designed for foreign markets with suitable distribution systems. However, prerequisites essential to a

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1/ See discussion under Suggestions for the Milk Industry above.

2/ The pilot plant has a capacity of six metric tons per day and can be operated for about 80 days during the 1954-55 season. Hence, an adequate tryout can be undertaken.

successful industry must be achieved in Israel. First and foremost, only a limited quantity of Israel fruits and vegetables will be suitable for freezing from a quality standpoint until such time as a better selection of varieties and increased production is attained. Secondly, as yet only a few firms have the requisite "know-how" and the conviction to produce the superior quality products demanded in the frozen food market.

Other new products. The citrus by-products industry should pay close attention to the recent development of a powdered orange juice that reconstitutes into a liquid product comparable to the high quality of the frozen concentrated orange juice.[1] Certain technological difficulties to large-scale production still must be solved, but commercial production is beginning in the United States. Processing costs are higher than for freezing, but the product has the two advantages of (1) substantial economies in transportation because of its light weight and small bulk and (2) ease of distribution because special refrigeration is not needed. For these reasons, this product should have unusual opportunities for development in Israel, considering the great distance from markets and the comparative difficulty in distributing frozen products where ocean transportation is involved.

Research now under way indicates the technical feasibility of powdering the juice of tomatoes, grapes, plums, prunes, and other fruits and vegetables. Partial dehydration and freezing in the so-called dehydro-freezing process has some promise for Israel if the right conditions of product quality, adequate supply and markets are fulfilled. These technical developments have a special interest because they indicate possibilities for a more extensive utilization of the evaporating equipment of the citrus and preserving industries. Adaptation of these technical innovations should result in time in greater over-all diversification of these industries, in lengthening the processing season, and in obtaining a fuller use of plant, equipment, and workers throughout the year.

Research emphasis. The citrus industry in Israel has been conscious of the importance of product quality and technical research. This is shown by the existence of several plant laboratories and a central research laboratory concerned with improving product quality and processing techniques.[2] In addition the citrus production research is conducted in the Experiment Station at Rehovot.

1/ Developed by the Western Regional Laboratory of the United States Department of Agriculture at Albany, California.

2/ The laboratory is supported partially by the Government.

Considerable opportunities and problems appear to be in prospect in the western European market. The region is on the verge of a considerable liberalization of trade. The market in the United Kingdom appears to be moving from government channels into the hands of private buyers. For this reason the quality of juices and concentrates marketed directly to retail and institutional users is a matter of considerable concern to the Israel industry. The time is not far distant and the situation is urgent in view of increasing competition, when the Israel industry will want to consider undertaking market research to determine consumer tastes and preferences concerning citrus products in the buying countries. The industry should be on the alert to discover the nature of the demand of foreign consumers and to manufacture the type of product desired.

The Israel citrus industry has adapted itself unusually well to the new and higher technological levels demanded of the industry in the postwar period. Some means will need to be developed for continuing close contacts with technical developments in citrus processing and indeed in all food technology in the United States and in the other countries leading in the development of new techniques and products. Continued support of research by the processors, growers, and the Government is desirable. Certain individuals in the industry are in close contact with foreign developments and are making important contributions to the advancement of the domestic by-products industry. However, this information is not as widely diffused as it might be.

This raises the whole question of the amount and the kind of research that should be pursued in Israel on the citrus industry. Since the industry is one of the best established and makes the major foreign exchange contribution to the economy, it rightly deserves to be backed up by a substantial investment in research. It is difficult to say how much this should be. In general, however, it would be wise for the industry to let well-endowed countries lead as innovators of products and techniques, and to emphasize adaptation and application to local conditions.

Shifts in industry location. There are indications that the area of citrus production in Israel is moving south along the coastal plain toward Ashkelon. If this continues, it is conceivable that some new investments in citrus processing facilities will need to be made during the next several years so as to overcome the rising costs of transportation resulting from longer hauls. It would seem logical to expand existing plants now canning and preserving fruits and vegetables rather than to start new plants specializing in citrus products. However it should be kept in mind that the distances from which fresh

citrus products are assembled can be quite great before it pays to set up new processing facilities, because of the advantages of increased economies and improved product quality associated with larger scale of operation.

Re-use of containers. The current regulation requiring the return of all empty bottles, cartons, and boxes used in the domestic trade creates a costly collection and transportation problem. Weakened paper cartons cause breakage as well as expensive repair work. Cleaning old bottles frequently by hand is an additional expense. The industry often expresses dissatisfaction with the bottles it is required to use from the Israel glass industry. Some have stated that (1) the bottles are not sufficiently strong and that the tops chip and break; (2) nonuniformity in bottle size causes extra inspection as well as breakages in washing and filling, which reduce the capacity of the machinery;1/ (3) color is neither uniform nor satisfactory; and (4) the bottles are difficult to close hermetically. It is recognized that re-use of bottles may be necessary at this time.2/ On the other hand, use of unsatisfactory containers causes the loss of some export markets.3/ Uniqueness of bottle design is often an important factor in competing in the preserved foods markets of Western Europe and the United States.

7. Confectionery Industry

a. Description of the industry. Chocolate manufacturing in Israel is handled by seven firms of which three are comparatively large; all are diversified and, in addition to chocolate, also make candies, wafers, and oblats. In contrast to the chocolate manufacturers, the candy manufacturers operate on a small scale. About 90 plants specialize in the production of candies and 22 diversified plants make wafers, oblats, ice cream cones, and biscuits. The oriental confection, halvah, is made in 15 plants of which two are specialized. Of the diversified halvah plants, four make techina; nine more make candy; and one makes peanut butter. Two firms specialize in manufacturing techina. There are 1,000 workers in the chocolate industry alone.

Compared to citrus by-products, exports of confectionery products are small. Chocolate, cocoa sweets, halvah, and chewing gum exports in 1953 totaled 431,000 dollars. Exports of chewing gum

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1/ In one plant, the bottle washer and filler were observed to be working at 40 percent of capacity because of nonuniformity of bottles.

2/ A clearing house for sorting bottles has been suggested as a solution.

3/ One firm reports that it had to give up exporting marmalade to the United States because of bottle breakage.

and chocolate were valued at 201,000 dollars and 92,000 dollars, respectively. Nearly all exports of chocolate and candy went to the United States and Canada. Most of the chewing gum was exported to the United Kingdom, Finland, and Yugoslavia. The United Kingdom took practically all the halvah. Cocoa powder and blocks valued at 147,000 dollars were exported to Finland. Exports of chocolate have been hampered of late by the high price of raw materials.

Almost all of the important raw materials for the confectionery industries are imported; the main items are sugar, glucose, cocoa beans, and cocoa butter. Glucose is also manufactured in Israel in declining amounts. (Appendix Table 15.) The 1954-55 hard-currency budget provides for the importation of 40,000 metric tons of sugar valued at 4,240,000 dollars. More than one-half of the 1953 imports of 54,000 metric tons came from Spain. Most of the balance was imported from Haiti and the United Kingdom.

Nearly all the 1953 glucose imports of 507 metric tons (valued at 76,000 dollars) were obtained from the United States. Imports of cocoa beans, cocoa butter, and cocoa blocks came mostly from the United States, the United Kingdom, British Africa, Italy, and Holland. Domestic sugar production, based on a refinery now under construction at Afula, is expected to save 150,000 dollars of foreign exchange annually by reducing sugar imports. The other important raw material, milk powder, originated in the United States. Peanuts for the manufacture of peanut butter and halvah are produced domestically; and most of the sesame for the manufacture of techina and halvah is also produced in Israel.

Sugar, glucose, and raw cocoa products have been imported directly by the Government, and by confectionery exporters (subject to an import license) using their own foreign exchange to buy raw materials within the limits of their earnings. Exporters have been permitted to procure raw materials for processing into products sold in the domestic market, so long as the raw materials necessary for export production are replaced.

Since December 1, 1953, the price of sugar to manufacturers has been set at 750 Israel pounds per ton, with two exceptions: (1) sugar used for the chocolate ration to children has been priced at 250 Israel pounds; (2) sugar for the jam ration has been kept at 150 Israel pounds per ton. As a result of subsequent changes, there are now three customs duties on sugar: (1) 10 Israel pounds per metric ton on the ration of sugar products; (2) 200 Israel pounds per metric ton applicable to sugar for production of fruit juices or canned fruit;

(3) 500 Israel pounds to sugar for all other manufacturing purposes. The glucose duty is 360 Israel pounds per metric ton. Import duties were raised to these high levels so as to restrict consumption. The wide price differentials for different uses and the possibility of importing sugar below the established price have provided inducements to black marketing. It has given a competitive advantage to manufacturers using lower-priced sugar and has caused a shifting of sugar from low-priced to high-priced uses. Evidence of this situation is indicated by the drop in the black market sugar price from 1,000 to 680 Israel pounds per metric ton, i.e., a drop below the Government sugar price of 750 Israel pounds per ton. Exporters of confectionery products have always obtained a duty drawback; they buy sugar on the world market with foreign exchange earnings. The initial outlay for the high duty has made major credit demands on importers who are required to pay 5 percent down in cash and 50 percent based on bank credit, with a postponement of the balance.

There is considerable seasonality in confectionery plant operations in Israel. Consumption of halvah falls off sharply during the warm months, and the plants often close altogether during July and August. The chocolate market declines during the summer months and plants reduce employment accordingly. Thus, the candy market is the mainstay during the summer months.

b. Suggestions for the confectionery industries. Condition of the industry. The sweets industry is overdeveloped for the low-income Israel economy. Illustrating the problem is the fact that 118 plants received a sugar allocation somewhat less than two metric tons a month, or less than 80 kilograms per working day during the first half of 1954. Such a small-scale operation can be maintained only by an assured allocation of raw materials and the high demand for sweets that exists under conditions of rationing. The industry has been in a depressed condition over the last two years. Firms are operating at one-fourth to one-half of capacity. A free market now exists for sweets. Freeing the market for raw materials should hasten the process of eliminating the inefficient plants which are now being driven to the wall.

The unsanitary conditions in many plants are inexcusable. Measures to introduce higher standards of sanitation for protection of the public also could have a salutary effect on the quality of products designed for the export market. Strict enforcement of improved sanitary conditions, insofar as it results in higher operating costs, would tend further to eliminate inefficient and unsanitary operators.

Candy manufacturers, other than makers of chocolates, operate on a smaller scale and a lower technological level than chocolate manufacturers. Of the two, chocolate manufacturing methods in Israel are relatively modern and more sanitary. The balance of the industry appears to lack the "know-how" for competing in a first-class foreign market so far as product quality, packaging, consumer acceptability, and knowledge of economic environment are concerned. It does not have laboratories for developing and testing products and for designing them to suit the tastes of consumers.

The chocolate industry is the best developed of the confectionery industries. Chocolate products are of high quality and reputedly are comparable to the best produced anywhere. Nevertheless, competition on the American market is severe.

Raw materials. Some glucose is permitted to be imported by producers for export. American glucose is considered best, and much of the sweets industry is dissatisfied with the quality of the domestic product. Measures should be taken to facilitate administrative procedures so that the export segment of the industry, which has its own foreign exchange account, can purchase its raw material in the free market.

Sugar is not yet available from a domestic source. The Afula plant, now under construction, is expected to produce sugar within the next few months. It is anticipated that domestic sugar will be priced above the world market price. It is also doubtful that the output will be comparable in quality with imported sugar. When domestic sugar becomes available, care should be taken to safeguard the export market of the confectionery industry, small though it may be. The industry needs the highest quality raw materials, made available at competitive world prices, to establish and to maintain itself in the world market.

Export market. Some firms in the chocolate industry are producing cocoa powder and cocoa blocks for export to Finland. The added value of domestic inputs is small, and the market probably would not exist in the absence of a trade agreement with Finland. It appears to be a tenuous basis on which to develop an export industry.

There is eagerness in the confectionery industry to export; yet the industry is having difficulty in establishing contact with the export market. Limited resources and insufficient information concerning the foreign market are handicaps. In view of the small and unequal size of firms in the chocolate industry, the best export

procedure may be to operate individually through private agents and brokers. In the balance of the candy industry, which has a totally different organizational structure, a trade association along the line of the Citrus Concentrates Producers Association might best perform the selling functions for those firms interested in the export market.

Packaging. Some enterprises recognize the need for attractive packaging for the foreign market. Chocolate manufacturers have made most progress in this field. Members of the confectionery industry established in the foreign market, and those seeking to gain a foothold, must be concerned with developing convenient and attractively designed packages with appealing labeling. The smaller plants lack the skilled personnel needed to deal with this complicated problem of modern merchandising. Here is an opportunity for an Israel firm of commercial artists and merchandising consultants to render a useful and rewarding service to Israel industry.

Working and investment capital. Devaluations of the Israel pound have been especially burdensome to the exporting portion of the industry. The capital gains tax, levied on inventories purchased with foreign exchange, also reduced the cash available for operating purposes. Simultaneously, customs duties on sugar, glucose, and cocoa products have risen to exorbitant levels and require additional cash or credit for financing.

Negotiations and often disagreements with the Government over amounts of refunds or drawbacks of duty on raw materials used in exported products often tie up funds for long periods of time. Specific as well as general solutions to the credit problem will need to be found.

Exporting firms are in a more favorable position than are nonexporters in getting capital for investment purposes; the former can use foreign exchange accumulated in excess of foreign raw material imports for buying machinery and parts. With the objective of developing a vigorously competitive economy, it would be well to encourage additional investments in medium-sized firms having aggressive and enlightened managements capable of meeting foreign competition and to avoid any bias favoring a few large confectionery establishments.

8. Beverage Industry

a. Description of the industry. Beer and wine manufacturing are the principal segments of the beverage industry in Israel. In addition, there is a growing market for nonalcoholic beverages based on fruit juices.

Prior to 1952, the Palestine Brewery, Ltd. (Nesher), located at Rishon-le-Zion was the only beer producer in Israel. National Beer, Ltd. (Abir), near Natanya started selling beer in July 1953. Nesher formerly marketed 20 million liters of beer annually; its production has averaged approximately 19 million liters during the past 3 years. About 80 percent was lager beer and the rest was malt beer. (Appendix Table 16.) The combined capacity of the two breweries is in excess of domestic market demand. The companies are reported to have agreed to avoid cutthroat competition and have fixed minimum prices and divided the domestic market, with the older firm getting 65 percent of the lager and 90 percent of the malt beer market in Israel.1/

Abir is owned by a well-established brewer in the United States. The company has recently begun exporting beer to the United States, and the American connection should be helpful in building up an export market for beer in the United States.

Nesher began marketing beer in 1936. The company now operates two additional breweries. The Rishon and Bat Yam plants have a capacity of 130,000 and 235,000 hectoliters, respecitvely, of lager beer per year. The Ramat Gan plant, acquired in 1946, has a malt beer capacity of 40,000 hectoliters. The modern bottling facilities at the main plant have a capacity of 5,000 bottles per hour. The Abir brewery has a bottling capacity of 4,500 bottles per hour.

The malteries, constructed at the request of the Israel Government, started operations in 1953. A suitable brewing barley has not been developed in Israel, but experiments are under way. The industry formerly bought American West Coast hops and American and Canadian barley. Currently, both barley and hops are being obtained from Germany under Reparations payments.

The Rishon-le-Zion and Zichron Yaakov wine cellars of the Societe Cooperative Vigneronne des Grandes Caves Rishon-le-Zion and Sichron Jacob, Ltd., produce 90 percent of the wines and 50 to 55 percent of the spirituous liquors in Israel. The first Zionist vintner cooperative was established in 1882 with the aid of Baron de Rothschild, who gave the cooperative the wine cellars in 1906.

The area in wine grapes in Israel has been expanded rapidly since 1949, from 14,500 dunams to 33,000 dunams. The industry crushed 9,249 metric tons of wine grapes in 1953 and produced nearly 3.9 million liters of wine. This was about one-half the 7.5 million liters produced in 1951, the best production year since 1948. (Appendix Table 16.)

1/ Jerusalem Post, July 13, 1954.

Production of spirits other than beer and wine in 1953 amounted to 2.1 million liters. The industry extracted 5.5 million liters of grape juice, of which 90 percent was used for wine and spirits, and a small undetermined amount was sold directly to consumers as juice.

It has been reported that Tnuva is planning a new winery with seven million liters annual capacity by 1957. This would increase the capacity of the industry to 20 million liters.

Exports by the wine industry in 1953 amounted to only 5 percent of production. About 60 percent of the wine exports of 103,000 dollars went to the United Kingdom, and nearly 20 percent were shipped to the United States. Most of the balance went to western European countries. One-half of the brandy exports valued at 36,000 dollars was sold to the United States.

Yekev Rishon has a plant in London which bottles mostly sacramental wine for the British market. Rishon is a joint owner of a new company registered in New York State to import wines to the United States for distribution by a widely known distillery. This is the first real effort to merchandise Israel wines in the United States. Yekev Rishon used to have a big export market in Europe before the second World War and in the Middle East before the Arab-Israel war. New markets are now being built up; the American market may have good prospects.

b. Suggestions for the beverage industry. Malting problems. Malteries were established in Israel so as to save foreign exchange. Apparently, there was a belief that suitable domestic malting barley in the required volume would be available on the completion of the facilities. However, all of the 70,000 metric tons of barley produced in 1953 was fed to livestock, mostly poultry, and even more had to be imported. Furthermore, suitable malting barley has not yet been produced in Israel. This indicates a miscalculation that perhaps might have been avoided had there been more technical consultation with the brewing industry in Israel and elsewhere, and further consideration of the problems and possibilities of Israel agriculture.

Construction of the malting plants has put a severe financial strain on the two breweries. The breweries are handicapped because they are required to buy German barley and hops under Reparations which are higher priced than barley obtainable elsewhere. The cost of malt produced locally is higher than the import price. The industry has little or no control over malt supplies, including price, quality, and time of delivery.

There would appear to be opportunities to produce suitable malting barley in the Negev. The Gaza area, in the twenties, exported 50,000 metric tons of barley annually. The adjacent Negev area has a climate similar to the areas growing malting barley in California. Considering the large amount of barley required by the livestock industry, it is still doubtful whether the breweries will be able to pay an adequate premium for malting barley to encourage the diversion of enough land to produce the malting barley required.

The malting facilities might be made into a greater national asset by permitting the industry more freedom in procurement. It may be desirable to permit them to purchase cheaper barley in the United States and Canada, and to use German Reparations for capital investment rather than for raw materials.

Labor problem. The breweries and wineries in Israel have labor problems which appear to have an important effect on their costs of doing business. The problems arise to some extent from the wage structure negotiated between the Histadrut and the Manufacturers Association, over which the industry has no control; but more important is the impact of labor conditions which are not a part of labor contracts. These include: (1) absence of a retirement age or other provisions in the agreements that would permit the industry to lay off people for incapacity--an important problem in old established firms; (2) insistence on pensions for layoffs when no provisions for pensions exist in labor contracts; (3) difficulties in transferring men from one work place to another though working conditions may be similar; and (4) difficulties in transferring machines between plants in the face of the workmen's concept that the tools "belong" to the men who use them. Business management of the Histadrut might well consider the effect of these matters upon the efficiency of plant operation and of their impact on production costs. Provisions of labor agreements could permit plant management more freedom to use the work force effectively. To develop a healthy industry in a competitive market, means should be found for eliminating from the individual enterprise as many conditions inhibiting production as possible. Labor conditions are an important factor influencing prospective investors of foreign capital.

Technical staffing. Yekev Rishon and the Nesher plants are relatively old firms so far as Israel is concerned, and both have the problem of aging business enterprises; that is, of aging personnel. Both have the problem of taking younger people into the enterprises who are well trained in business administration and in the technology of the industry. Since the alcoholic beverage industry is confined to a small number of companies, this problem is quite difficult. Additional

attention should be given to this matter during the next few years as technological demands upon the industry increase arising from the necessity of developing a fuller utilization of raw materials for the benefit of domestic and export markets.

Repairs and maintenance. In common with many other firms engaged in processing food products, the beer and wine industry is confronted with the problem of obtaining many repair parts from abroad. Difficulties arise from the unavailability of foreign exchange and the associated difficulty of obtaining import licenses. Such difficulties (in many instances involving trivial expenditures) have on occasion caused considerable losses to the industry. Unavailability of spare parts, or the great difficulty in obtaining them, has resulted in keeping large maintenance crews, as high as 10 to 12 percent of total employees in some cases.

Government control. The beer and wine industry is also subject to the burdens associated with extensive governmental controls. This appears to be particularly burdensome for top management, which is frequently called upon to deal with many time-consuming details. Every effort should be made by the Government to streamline the machinery of control and to eliminate those features that could be turned over in one way or another to the industry. Fortunately, decontrol appears to be under way.

Bottle problem. The beer and wine industry has had much difficulty in obtaining the type of bottle considered essential to the development of the domestic and export markets. The problem is especially serious for the wine industry selling in the export market. Wine bottles have been imported from the United States because the bottles available from local factories are unsatisfactory. Compulsory return of bottles has resulted in the accumulation of tremendous inventories of old bottles which the firms cannot use even in the domestic market. Returned bottles lacked uniformity in size, shape, and color. This makes it difficult for the industry to appeal to consumer preferences. For example, the public usually associates beer with an amber bottle and looks with some disfavor on a clear glass bottle. The importance of an appealing bottle in selling wine cannot be overstressed; ignoring this factor in the foreign market may lead to real difficulty. Good packaging is a feature of prime importance in creating a market for a prestige product such as wine.

Nesher brewery indicates it has been unable to export beer because of the bottle problem. This arises from the difficulty of proper sealing which affects the keeping quality of beer. The problem

results in part from the lack of uniformity of bottles obtained from different batches supplied by the glass factory, and in part from the inferior domestically-produced crown cork tops which are unequal in size and made of low-quality materials.

Some of the difficulty in the bottle problem may arise from the fact that most of the bottle business is in the hands of one firm. This makes it possible to stipulate conditions in supplying the product that would not be considered if there were more competition. These conditions have to do with the scheduling of bottle shipments and terms of payment which can impose unnecessary hardships on buyers.

Another condition of importance to the industry is the high percentage of breakage (3 to 4 percent) in hauling bottles in sacks from the factory to the plants. The bottle return requirement results in high costs for sorting, hand cleaning, and checking bottles prior to filling. In filling there are frequent breakages and time-consuming adjustments to filling machines, which seriously reduce productivity.

Coordination of planting and markets. During the past five years, the area in Israel planted to wine grapes has doubled, and there are prospects for further growth. One problem is that there has not been sufficient coordination between producers and wineries in planting grapes, particularly in selecting varieties most suited to the market. The full effect of this mistake will not be felt for a while.

Expansion in the supply of wine grapes should not be allowed to induce overinvestment in processing. The fact that the wine industry is largely in the hands of one organization may create problems that tend to induce others to consider entering the business. There is no reason, however, why a flexible organization cannot overcome these difficulties and undertake real leadership. Thus, the need for an additional firm and additional capacity as projected by Tnuva should be clearly established before any action is taken to create another group. Present wineries can easily handle a much larger grape crop without adding materially to the present stock of equipment except for minor investments to relieve critical points.

Export market. The basic problem is that production of wine grapes has been growing much more rapidly than markets. The foreign market for Israel wine is small in volume. Prospects will not change radically in the near future, unless the increasing supply of wine grapes results in lower prices for raw materials with a consequent improvement in the competitive position of the industry. The principal

foreign market to date has been based on sacramental wines and the sentimental appeal of wines produced in the Holy Land.

So far the wine exports to the American market have been handicapped in competition because the Israel wine is higher priced than comparable American sacramental wines. If costs of production in Israel cannot be reduced to permit competition on a price basis, the only remaining appeal will be the land of its origin. In general there would seem to be reasons for pessimism regarding the export prospects for Israel wine in the near future.

The Israel wine industry is also in the unfortunate position of being able to trade only in relatively new wines. Old wine stocks were sold off for the most part to take advantage of the high prices of the period immediately after World War II. Thus the industry must build up its old stock during a critical period of Israel's history. These circumstances are an additional weakening factor in the prospects of the export market.

New products. The wine industry is exercising initiative in developing new products that should increase the utilization of the expanding crops of grapes as well as other fruits. Within the last year, the industry has introduced single-strength and concentrated grape juice to the market. Limited sales of pure grape juice are finding a ready acceptance in the domestic market. Another promising product is a carbonated wine or imitation champagne (mesek or spritz) recently placed on the domestic market. Orange wine was discontinued a year ago by order of the Government after 500 metric tons were produced. Honey wine (met) is a Polish product that has been introduced to the Israel market. There are indications that there may be a domestic market for a variety of wines produced from other fruits, such as apricots and cherries.

The industry must use real imagination to develop fully the domestic market by exploiting new products and to develop them to high standards of quality that will create acceptability in the export market. Concentrated grape juice would seem to be a logical product for the overseas market. If the success of the frozen concentrated orange juice venture is demonstrated in the European market, it might be desirable to try out a frozen concentrated grape juice in the same market. It is possible, however, that the varieties of grapes now grown are not the best suited to this potential market, and that a closer coordination of plantings and market requirements will have to be undertaken. These are only examples of prospects for the industry. With even greater aggressiveness and broadening of horizons that seem to

be under way, it should be possible to develop grape utilization to the high standards achieved by the Israel citrus industry. It is possible that the industry may have a much greater future export market for grape juices (single strength, concentrated, frozen concentrated, or powdered) than for wine.

Nonalcoholic beverages. In recent years there has been a growing market for nonalcoholic beverages in Israel. Orange drinks are very popular. Orange juice is concentrated in season and held for the production of drinks during the rest of the year. A similar market may be established for concentrating grape juice. Production of carbonated beverages is just beginning. With new beverages coming on the market, it would seem that the quality of orange drinks will need to be improved by reducing the water content and perhaps by homogenizing the product to cut down pulp sediment. With the growth of the fruit juice and beverage market in Europe, there would seem to be a potential expanding market for concentrated orange, lemon,[1] and grape juices.

9. Flour Milling Industry

a. Description of the industry. It was indicated earlier that more than one-half of the Israel diet consists of bread-grain products. This is coupled with a large domestic deficiency in the production of bread grains. In 1953, 30,000 metric tons of wheat were produced, but only 13,000 metric tons were made available for food use. Therefore 96 percent of Israel's requirements of 318,000 metric tons were imported, requiring 25 million dollars of foreign exchange. Forty percent—20 million dollars—of the 1954-55 budget of 48 million dollars is planned for the purchase of grain and flour, consisting almost entirely of wheat and a little rye to be imported mostly from the United States and Canada. Last year a considerable amount of wheat was imported under the Turkish trade agreement.

There are 23 flour mills in Israel, about one-half of which are located in the Tel Aviv area and one-fourth in the Haifa district. The industry has a monthly capacity of 33,264 metric tons of wheat. Mill capacity ranges between 350 and 4,000 metric tons per month. The mills produce mostly a standard flour with 87 percent extraction, some white flour with 74 percent extraction, and rye flour with 65 percent extraction. On a three-shift basis, the industry now has 20 percent excess capacity. Taking into account some enlargement and renovation now in progress, and the relatively small population increase expected, milling capacity appears to be adequate for a number of years. Several mills are nowconstructing silos to increase

1/ Most likely in the form of lemonade.

storage capacity for increased efficiency in handling and for national security.

A high proportion of the flour mills are relatively new, having been constructed since World War II; and for this reason the equipment and technology of the industry is surprisingly modern. Most of the equipment in the industry is European. Technical direction of the mills is also entirely in the hands of men with European experience.

Wheat supplies for the mills are imported by the Government. Prior to August 1, 1954, grains (including wheat) entered the country at the rate of one Israel pound to one dollar. The effective rate is now 1.800 Israel pounds to one dollar for white flour and 1.500 Israel pounds to one dollar for standard flour. Direct subsidies reduce the price to the level that prevailed before August 1, 1954. Subsidization is designed to keep down the cost of living.

Wheat is ground into flour under government contract for a fee depending on changes in the cost of living. The present fee is 10.420 Israel pounds per metric ton. As a result, the flour milling industry is one of the few Israel food industries not troubled with a shortage of working capital. This may account for the considerable amount of renovation, construction of silos, and additions to plants now in progress, which would appear to reflect some accumulation of investment capital.

The millers have no control over the importation of raw materials; and they do not have a problem in selling their products, since bakers are assigned to certain suppliers in their areas.

b. Suggestions for the flour milling industry. Report of FAO expert. An extensive study of the Israel flour milling industry was recently completed by Dr. Max Milner, an expert from the United Nations Food and Agriculture Organization.[1] His recommendations are now being reviewed by the Israel Government. The major recommendations include:

1. Introducing improvements in the wheat purchasing program.

2. Improving administrative and technical controls pertaining to the industry.

3. Taking measures for improving the quality of flour and bread.

1/ Preliminary typewritten report prepared in summer of 1954.

4. Additional fundamental research on various grain problems.

5. Specific actions on a number of special problems, such as artificial maturing of flour and storage of flour in bulk.

In view of the comprehensive nature of the FAO study, only certain features of the situation in the industry that appear to need especial emphasis are discussed below.

Effects of the regulatory program. Dr. Milner has stressed the weakness of quality control by indicating that not a single mill in Israel has a program for controlling quality. It is important to note that the administrative control program is such that members of the industry have no incentive to improve the quality of flour.

The millers are operating under contract with the Government on a cost-plus basis, and have no control over the quality of wheat furnished them for milling. Under the linking system, designed for control purposes and to obtain transportation economies, bakers are linked to certain mills from which they are obliged to obtain their flour. Since the bakers have no alternative in the event the quality of the product delivered is unsatisfactory, there is no competitive pressure on the millers to improve quality. It is very important, therefore, to initiate changes in the regulatory program to the end that competitive forces can again come into play. Besides improving quality, competition should also tend to squeeze the milling margin.

Improving competitive conditions. The problem can be seen as composed of a number of features, which can be handled separately in a regulatory program.

The Government could maintain contract milling but permit the bakers freedom of choice in obtaining their flour. This step could have salutary effects upon improving the quality of flour. As a second step, the cost-plus contracting system could be eliminated, and millers would be permitted to buy wheat directly from Government warehouses. With competitive pressure from the bakers upon the flour millers, the latter would have an incentive to order wheat with higher milling qualities, a development that would tend to force the Government importing agency to import higher quality milling wheats. Such a control program would be simple to enforce. The milling and handling margin would be controlled by maintaining the bread price ceiling and the price at which wheat is sold to millers.

A further step, to permit private rather than government importation of wheat, in whole or in part, should not be out of the question. It is quite possible that there could follow from this step further improvements in the quality of wheat imported, as well as in the quality kept in storage as a reserve. Under a free system of milling and trading, subsidies could be used to maintain ceiling prices on flour, bran, etc., as desired and when needed. Because the Israel milling industry is composed of a number of small firms, there may be economies in some foreign buying of wheat through an aggressive governmental agency or an importing firm, but the larger firms may prefer to do their own importing.

Plant quality control programs. Moving in the direction of a free market should stimulate the setting up of plant laboratories and establishment of programs for turning out more uniform and higher quality flour. It would tend to encourage ways and means of improving sanitary conditions within the plants by controlling rodents and insect pests; but reliance on competition as a means of control is not likely to be enough. Positive approaches are necessary in the form of education and setting up and enforcing minimum standards of plant sanitation.

Variable quality of imported wheat. Dr. Milner has correctly emphasized the serious problem of the highly variable quality of the wheat supply. Most of the criticism is directed against Turkish wheat, which is very dirty. He points out the difficulty of buying American hard wheats for milling quality by specifying the usual market grades. Proper blending of hard and soft wheats to obtain uniform and high-quality flour is a difficult problem at best under present conditions in Israel. The quality of the supply is highly variable, laboratory facilities are inadequate, handling methods are faulty, and knowledge concerning good quality control programs is limited.

Personnel training. There is a serious problem in the industry in training personnel to improve and maintain the production of high-grade flour products. The problem at the present time is that the master millers are mostly older men who tend to be old-fashioned and jealous of their position, and who are not training assistants. The difficulty is that a flour mill needs only a very small qualified staff, and it raises problems of obtaining well-trained replacements. It is easier in the family-operated enterprises where there is a stronger incentive to train the successor.

10. Cold Storage, Ice, and Warehousing Industry

Description of the industry. Considerable strides have been made in expanding commercial capacity for cold storage in Israel. Storage capacity doubled between 1951 and 1954. As of June 1954, storage space estimated at 111,810 cubic meters represented capacity for about 40,000 metric tons of food in Israel. Construction is under way on another 15,000 cubic meters and is expected to be completed by the middle of 1955.

Over one-half of the space for cold storage is located in the Tel Aviv district, somewhat less than a third in Haifa, and about one-tenth in the south. There are less than 2,000 cubic meters of space in Jerusalem and only 1,700 cubic meters in the entire northern Galilee area. An additional 8,000 cubic meters of space are expected to be completed in Jerusalem in 1954.

Present storage space is distributed among 466 warehouses. Average capacity per plant is approximately 300 cubic meters in the Tel Aviv district and about 200 cubic meters in the Haifa district, with per plant capacity lower in the other areas.

In addition to the commercial cold storage plants, 68 small storage plants with one to two storage rooms and a total capacity of 5,000 metric tons are located in agricultural settlements distributed over the country.

Geographically, cold storage warehouses are distributed approximately in accordance with population. However, additional warehousing space is needed in Tel Aviv and Haifa to serve the ports in these cities. The Galilee area has practically no cold storage space available.

A study of feasible storage temperatures in the existing cold storage plants indicates that about three-fourths of the space can be maintained at temperatures below freezing. About 15 percent of the space can be held at temperatures of -12 to -18 degrees Centigrade, conditions required mostly for the preservation of meat, fish, and butter. It is estimated storage space for 20,000 metric tons is required for these commodities, or about 40 percent of total space requirements of 50,000 metric tons.

The seasonal distribution of meat, fish, and butter storage is practically uniform. Citrus storage, which demands about 10 percent of the storage space, is required during the months of March to

June, primarily for fresh citrus used in the domestic market. Potatoes require 60 percent of the space, but the bulk of potato storage is required during the period from June to November. Carrots, beets, and other vegetables need about another 10 percent of the space and are stored during July to September. Thus, there is a considerable seasonal peak in cold storage requirements during the hot summer months. Storage space during this period is not adequate, and additional space is needed to take care of the seasonal bulge in requirements.

The production of ice has increased rapidly in Israel during the past few years. The serious shortage that prevailed earlier encouraged the entry of many new producers and the addition of considerable capacity for making ice. As a result, during the summer of 1954, there was much excess capacity in the industry. There seem to be no special aspects of the ice manufacturing industry that need attention at this time.

C. General Problems in the Food Processing Industries

1. Underemployment and Excess Plant Capacity

The food processing industry in Israel is operating at much less than full capacity, and much of the labor force is underemployed. In part, the situation is due to general overinvestment, but other factors are also of considerable importance. Besides weak management, underemployment often results from delays in getting allocated raw materials and spare parts from abroad, from production bottlenecks, and from provisions of the labor contract that make it expensive, undesirable, or impossible to lay off workers. Finally the most important reasons for the existing excess capacity and underemployment are the shortage of working capital and the limited allocations of raw materials.

2. Credit and Working Capital

Liquid capital of exporting firms was seriously reduced by the devaluations of recent years which worsened the terms of trade by making foreign goods more expensive, and by the associated capital gains tax on inventories which depleted foreign exchange in the hands of enterprises. The tight money policy of the last year has made it difficult to borrow money for operating purposes. Besides, the cost of borrowed money is very high. Interest on borrowed money from commercial banks usually ranges from 11 percent upwards including commissions and service charges. Cooperatives can get credit more cheaply from agricultural banks for 6 percent. Money from private lenders may cost from 24 to 36 percent per annum.

Inadequate working capital has caused operation below capacity and partial unemployment by restricting procurement of raw materials, hiring of more workers, and the use of funds for enlarging and developing the market. The effects on the food processing industry have been serious. It is recognized that the problem of inflation is in the forefront; but it would seem that a limited addition to the money supply for the purpose of improving the working capital situation would lower production costs by permitting better use of plant facilities and labor. It should be possible to increase employment in the factories and force down the price of foods. It would seem advisable to couple such a credit policy with the introduction of more competition in trading of raw materials and in merchandising finished commodities.

3. Industry Organization and Competition

The Israel food processing industry can be classified approximately into two groups on the basis of industry organization and technical development. One group including milk manufacturing, meat and fish processing, candy manufacturing, and canning and preservation of fruits and vegetables, is characterized by (1) many plants of small scale operating relatively inefficiently at a low technological level, (2) very litte plant specialization, and (3) excess plant and equipment capacity and underemployment of labor. In the other group are such industries as citrus processing, alcoholic beverages, flour milling, and chocolate manufacturing, which characteristically have a small number of comparatively large and technologically superior factories.

The inefficient industries are primarily domestically oriented. The important exception is the flour milling industry. In the Israel economy, which is so severely short of investment capital and has a comparatively large supply of unskilled labor, it is advisable to establish plants based on a relatively high ratio of labor to machinery costs. In some lines the requirements of the domestic market are so small that it is preferable to have a small number of plants using simple technology and relatively more labor than a single plant with complex and expensive machinery.

In its investment program, the Government will need to keep in mind the possible effects of its policy on the competitive situation in industry. Industries overcrowded by small and inefficient plants may be strengthened by having investment policy support in various ways independent medium-sized establishments as a means of creating a better industrial organizational balance. It is important to develop more specialization as a means of obtaining the benefits of larger

scale organization and to avoid overinvestment in inferior operating equipment. It is conceivable for a group of firms to operate in the same food industry group but with each one having a different emphasis in a situation that may be described as "overlapping competition."

4. Relation of Domestic and Export Markets

Israel food manufacturers will need to recognize that a sound export business is usually closely integrated with and based upon a sound domestic market. One of the most important concerns of the potential exporter is to manufacture a high-quality product. Another is the development of appealing packages, convenient and economical to handle. And finally, the exporter must be able to compete price-wise. Survival in the competitive arena of the domestic market is the first essential test of a potential exporter. To grow and prosper in the domestic market represents a testing of production techniques, organization of factory resources, product packaging, and quality of the product. Premature attempts to sell on the foreign market prior to an adequate testing period at home may well bring failure to the manufacturer and discredit to the products of Israel.

5. Quality Control and Product Standardization

Only the larger food processing plants maintain laboratories for controlling quality. Middle-sized plants undertake less sophisticated laboratory testing during production. In small plants, processing equipment and methods often do not lend themselves to maintaining uniform production conditions. Food products sold in the domestic Israel market are generally of inferior quality. This condition has been sustained by the existence of a seller's market, producer indifference, lack of technological knowledge, and some instances of unscrupulous competition.

The foreign market is more demanding as far as quality is concerned. Israel firms selling in the foreign market are competing with organizations supported by large and competent research staffs. Israel firms generally do not process according to commonly accepted standards of quality. The citrus processing industry is an outstanding exception. The quality problem is one of the most important issues facing the canning industry today. Grade and quality standards will need to be established particularly with the foreign market in mind.

The Standards Institute is doing good work and cooperating with industry in establishing minimum standards. The last session of the Knesset gave the Ministry of Agriculture authority to establish

grades and standards on processed agricultural products. It is important to obtain early implementation of this legislation. At the same time voluntary cooperative action on the part of industry is also very much to be desired. In addition, the Israel Government should seriously consider legislation modeled after the Food and Drug Act of the United States for the purpose of safeguarding the health of the consuming public.

6. Research and Development

Few food processing plants have true research laboratories concerned with development of new products and improved techniques and methods of production. Apparently only about half a dozen firms are engaged in research, and they are confined to the citrus by-products, vegetable oils, and chocolate manufacturing industries. Of course, the trial-and-error method of manufacturing products is practiced. The real problem is encountered in those areas where there is a need for moving into new scientific and applied frontiers. That will continue to be a problem in Israel for some time to come. The pressing and achievable goal is to produce commodities for the world market for which the know-how is available. Companies operating in the export trade will find it is necessary at a minimum to have the skill and the facilities necessary to manufacture uniform standard products, and to draw up the production design for new products already developed elsewhere.

Another essential approach to the development of satisfactory products and merchandising methods is to test consumer preferences and adapt products to the tastes of consumers. No evidence was found that Israel enterprises consistently make taste discrimination tests and consumer preference studies as first steps in product development and merchandising. Apparently no market research is undertaken to test the acceptability of the product to consumers before launching large-scale production. The testing of consumer preferences and adaptation of the product to consumer preferences would seem to be particularly important in preparing products for the foreign market.

A basic question is how much research on development of new products and production techniques should be undertaken by Israel with its limited financial and technical resources. A reasonable approach would be to take the position of a follower rather than a leader in research in adapting and using rather than in developing, as many small countries are doing today. To maintain this approach will require scientific skills of a high order. It will require substantial investments in applied research to maintain the present position in

foreign markets and to achieve a position of limited leadership in certain areas. Constant efforts will need to be taken to push ahead on promising fronts in developing products for the domestic and foreign markets.

7. Maintaining Technological Progress

It is important for the future of the Israel food- and agricultural-processing industry--and Israel industry generally--to maintain and foster close ties with the leading countries of the world as a means of sustaining the flow of advanced technological information and ideas. This applies to the whole problem of research and development of products and markets. While many achievements in applied scientific fields will occur indigenously, in the long run, if Israel is to become an important exporting nation, it must draw primarily upon foreign sources for major developments in industry. The quickest way of getting the essential know-how in many fields is through foreign capital that combines know-how with investments. Or a license to manufacture a patented product or to use a process may be obtained subject to payment of a royalty or some other form of compensation. An important feature of these methods of obtaining superior know-how is that they frequently provide access to foreign markets, as a result of which the benefits of prior market development are obtained as well.

In addition to these direct means of keeping abreast of developments, it will be extremely important for Israel businessmen and educators to maintain direct contact with counterparts in their respective fields in foreign countries through associations and conferences.

To compete in the foreign market today, it is a fundamental necessity to achieve a high level of general literacy and to provide intensive university training for the gifted young men and women who will eventually manage industry and staff the civil service. Israel is today at the stage of development when it is imperative to have many well-trained young people equipped to take over management in its industries. There is the danger that they will not be available when needed to replace the men in these roles today who are getting old and whose technical information is dated. Steps will need to be taken to upgrade the level of industrial management and operation in the food processing industries by (1) training food technologists in technical plant management and research, and (2) training managers in business and economics. Strong contacts with leading foreign schools will be essential features of such a long-time program.

8. Governmental Regulation

While the Government of Israel, especially the Ministry of Commerce and Industry, has been following the policy of liberalizing trade over the last year and a half, there are still some onerous features of the regulatory system which are restraining the most effective utilization of plant, machinery, and manpower in the food processing industry. Foreign exchange is rationed by allocating raw materials and issuing import licenses. For a long list of commodities, Government agencies import raw materials and distribute supplies according to a predetermined priority list. In other cases, import licenses are issued to private traders who may often use their own holdings of foreign exchange derived from exports. The allocation procedure is resulting in much uneconomical use of resources in the food industries. Supplies are insufficient to keep plants fully employed. Plants with high costs of operation, and many with unsanitary operating conditions, continue to operate when undoubtedly they would be eliminated in a free market. Administration of import licenses is subject to criticism because of long delays (often as long as three to four months), capricious handling, waste of the time of high company executives, and delays in getting raw materials. Inefficient handling of imports of machinery repair parts in case of breakages often causes large operating losses. It should be possible to introduce improvements into this cumbersome system. Fortunately the administration is moving rapidly in the direction of less market regulations.

9. Joint Planning of Production and Processing

In this study a number of instances were observed of the need to appreciate the importance of integrating farm production plans with the market necessities and plans of the processors of food and agricultural products. The problem arises in properly selecting crop varieties from the standpoint of the characteristics desirable for processing and marketing. To an important degree it is affected by the rate of planting of orchard crops, particularly citrus and grapes. In some instances, the question depends on whether certain crops can be used economically or satisfactorily as a raw material by industry. The question of timing the production of crops with the availability of processing facilities is of considerable importance, seasonally in the case of commercial vegetable crops and over longer periods in the case of tree and vine crops.

An example of the importance of integrating production and processing requirements is the construction of malting facilities for malting domestic barley. At this date it is not yet known with certainty

as to whether a suitable malting barley can be grown domestically. Domestic production of malting barley in adequate quantities still appears to be some years in the future. In the meantime, the industry is malting imported barley.

As far as domestic cotton is concerned, there is still some doubt concerning the use of domestic cotton lint in the textile industry. It depends above all on costs. Suitability of the domestic lint from the standpoint of variations in quality is not yet proven. Comparative smallness of the crop and fluctuations in yield from year to year are other uncertainties. Should domestic lint prove to be unsatisfactory to the domestic textile industry, cotton may prove to be an unprofitable crop. It is recognized, however, that on some land, production of cotton may possibly be better than other crops. In any case, the cottonseed can be used in the Israel oil extraction industry, even if it should sometimes be necessary to export the lint in certain years when it does not come up to the quality standards of the textile industry.

Similarly, it would be well for the Government to consult with industry concerning the industrial oil crops which are now being promoted, and to coordinate agricultural production with the industrial program. A similar problem is developing in the wine industry, where large-scale planting of certain varieties of grapes is insufficiently coordinated with the requirements of the wine cellars for wines, brandies, and juices in the domestic and export markets.

Perhaps, the most serious problem of this kind exists in the production of fruits and vegetables, especially the latter. Here the most pressing issue is selection of superior varieties suitable for processing, a problem for which it may take a number of years to solve the most critical phase. Selection of varieties is closely associated with the lengthening of the canning season in order to obtain a fuller utilization of plant capacity and workers. Still in the developing stage is the system of contracting with growers for the production of the amount and the variety required by processors. An important feature of the contracting system is to provide adequate investment and working capital at reasonable rates of interest. Credit institutions will need to be developed for financing the processor so that he can advance seed, fertilizer, and other raw materials required by the farmers. Under a freely operating economy, the contracting system will be the most effective method by which the processor can control the production of the industrial crop most suitable for his processing techniques and his market.

D. Suggestions for Investment Policy

In making new investments to strengthen the competive position and contribution of the Israel food processing industries, the following objectives might well apply:

a. Increase domestic production with the goal of reducing imports;

b. Expand exports of processed foods;

c. Achieve greater utilization of by-products and waste materials;

d. Attain more efficient utilization of labor, capital, and plant facilities;

e. Orient foreign trade so as to reduce the dollar gap.

There must be an acute awareness that investments made from the point of view of solving short-run problems can have important and perhaps undesirable effects on Israel's economy in the long run. In investment policy to date, there has been overemphasis from time to time on the concept of added value. In its simplest form, the concept has been used to designate the excess of exports over imports. In a more complex form it has taken into account indirect raw material imports. Even in the latter form a positive added value for an enterprise may not be a complete justification for a given investment. As now used the concept emphasizes only the aspect of an enterprise concerned with foreign trade, and it neglects the value of investments that might have been made (using the same foreign and domestic funds) in other enterprises where the benefits may have been greater in providing goods, services, and employment.

The following policies are suggested for guiding investment in the food processing industries in Israel. These should be interpreted in the light of the objectives stated earlier. They are arranged approximately in order of importance, but it is obvious that the problem of closing the foreign trade gap and of meeting the other objectives must necessarily be pursued simultaneously because of the interdependence of the various aspects of the problem.

1. Domestic Agricultural Base

An important investment objective in Israel is to stimulate the development of a strong domestic base for the production of agricultural

raw materials. Agricultural resources constitute the greatest natural resource of Israel and should be developed as rapidly as available funds permit. Further development of agriculture should:

a. Reduce imports by increasing the domestic supply of fresh foods used directly by consumers and by increasing the supply of raw materials available for the processing industries.

b. Expand exports of fresh unprocessed agricultural produce as well as of processed food and fiber products. Investments in agriculture should be made with the aim of developing an industry that can produce in competition with goods imported. These steps should tend to reduce living costs for Israel consumers and should provide raw materials to the food industries that will enable them to compete successfully in foreign markets.

2. Coordinated Farm Production and Processing

The principal objectives in promoting the coordination of farm production and the processing of foods and fibers should be to:

a. Reduce farm production costs;

b. Encourage factory contracting and integrated farm and factory operation;

c. Increase the amount of research and emphasize agricultural extension services; and

d. Coordinate the timing of agricultural developments with construction of processing facilities.

These objectives are all interrelated aspects of the same problem. Investments required in these activities will be small in amount in relation to results that may be achieved. Success will be largely dependent on education, coordination of activities of various groups, speeding up the development of new crop varieties, dissemination of technical information, and adoption of new cost-reducing techniques. Considerable impetus could be given to this program by increasing the availability of credit, at least on a selective basis.

3. Food Exporting Industries

Strong support should be provided for food exporting industries built upon an adequate supply of domestic agricultural raw materials. In

addition to supporting industries having well-developed markets, emphasis should be placed on new investment planned to prepare other industries for the export market. This should be done by increasing the supply and improving the quality of agricultural raw materials and by coordinati[illegible] [illegible]rm and factory production.

A leading candidate for further investment is citrus industry by-products. There appear to be good opportunities for developing markets particularly in Western Europe for by-products as well as for fresh citrus fruit. More than a proportionate expansion probably should be undertaken in the by-products field. There are many opportunities for new citrus products, such as frozen concentrates and perhaps powdered orange juice. Canned and preserved fruits and vegetables also appear to have good future possibilites. The more promising include tomatoes, cucumbers, peas, cauliflower, and certain specialty fruits. Success in this direction depends in large part upon overcoming a number of quality-control and processing problems.

New items that should have considerable promise for Israel include concentrated tomato and grape products such as tomato puree, juice, and ketchup, and fresh and frozen concentrated grape juice. There appear to be good opportunities for frozen fruits and vegetables, assuming that adequate quality and grading practices are introduced. There also may be added markets for dried and dehydrated products of various types.

4. Industries Using Imported Raw Materials

There is a need to strengthen the economic position of those food industries using imported materials primarily but not making significant exports. These industries are important because they can reduce expenditures of foreign exchange and increase added value based on the use of domestic labor and other resources. During the present period of economic stringency, production must obviously be confined to essential commodities. These industries can best be supported by making available domestic raw materials from agriculture. It may be unwise to expand these industries within Israel by building up high-priced domestic supplies of raw materials. It is cheaper to import the necessary raw materials needed to supplement the domestic supply. Industries in this category are milk, meats, fish, edible oils, flour milling, and beer.

These industries should be able to compete with alternative products from abroad. Investments should be designed to reduce costs

and improve the competitive position of firms in this part of the food processing industry.

5. Waste Materials

There would seem to be opportunities for utilizing to a greater extent the wastes from food processing. Some can be fed directly to livestock. Others may require further processing to make them usable or to put them in a desirable form. Additional processing must be approached with caution; increased costs of the processed product must be offset by cost-saving advantages, such as improved storage, better and cheaper handling, easier and cheaper collection and transportation, and greater benefits from utilization. The possibilities of collecting and processing wastes and coordinating production with needs must be examined carefully.

By a vigorous approach, it should be possible to increase the supply of animal feed from domestic sources which could serve to reduce imports of feed and increase the supply of domestically produced meat. Examples are the utilization of cheese whey, pea vines, peanut vines, citrus peel, sugar beet pulp, beet tops, fish meal, low-grade culls of potatoes, and tomatoes. Other products may provide raw materials for industrial uses. As technological progress continues, there will be further opportunities for making higher-valued by-products from waste materials of the food processing industry.

6. Selective Investments for Productivity

Selective investments should be made with considerable care by choosing aggressive, technically competent, and well-established firms so as to obtain cost reductions and improvements in the quality of output. These investments should be directed toward the acquisition of equipment for breaking bottlenecks seriously retarding worker productivity, and that would make possible substantial improvements in the quality of products. Emphasis in the future might well be put on supporting medium-sized firms with considerable potential for effective development and expansion. In the past, the Government has given much financial help to the semipublic enterprises of the Histadrut, which already had extensive financial backing. As a result, there has been a tendency to create a top-heavy industrial structure. Technological progress may be speeded up and competition increased by strengthening the middle-sized group of firms. These are well-suited to the small-scale Israel economy and will provide the stimulation that might be absent in an industry dominated by a single organization.

In making investments in machinery considerable judgment will need to be exercised in view of the need to obtain the optimum benefit from the short amount of foreign exchange available. The basic objective is to establish an industry that can compete with imported products as well as in export markets. This makes it important to raise productivity by increasing the investment per worker. Israel wage rates are high in relation to productivity, but they are still low compared with those in the Unites States, so that it sometimes pays to maintain a relatively high ratio of labor costs to equipment costs. For this reason, much care must be taken in the selection of equipment. This will often be an argument against the latest type of automatic machinery designed for highly mechanized countries having comparatively high wages.

7. Plant Specialization and Interdependence

Some investment should be undertaken to increase specialization in the food processing industries. The great amount of excess capacity, underemployment, and extensive diversification of Israel food industries have been stressed. Limited beginnings toward increasing specialization have been noted. Financial support should be extended to promote increased specialization. Firms in the same industry can be encouraged to use certain facilities and services by contract arrangements instead of building duplicate facilities. The constant threat of possible further investments in a given activity should have the effect of keeping down prices and the cost of services. In this way, it will be possible to obtain a degree of overlapping competition and greater integration and interdependence in the food processing industry.

8. Improving the Foreign Exchange Balance

Greater efforts will need to be made to obtain a reorientation of foreign trade by reducing imports from and increasing exports to the United States, and to increase the proportion of raw material imports from soft currency countries. So far as the food sector of the economy is concerned, Israel has a considerable sterling surplus and a dollar deficit based on commodity trade. The situation pertaining to food manufacturing machinery indicates the nature and possibilities of the problem. In 1953, imports of machinery and parts for the food industry were valued at 1.1 million dollars, of which one-fourth came from the United States. Investments in equipment result in an outmovement of foreign exchange for a period of years after purchase. The present study indicated that much of the Israel food industry is getting satisfactory results from European equipment. Reparations payments will

increase the proportion of German equipment in the food economy. Investments in equipment from European countries should be emphasized in order to reduce dependence upon American machinery imports. The study also indicated possibilities in reducing machinery imports by using many items of Israel-made machinery.

So far as exports are concerned, there appear to be opportunities for increasing exports to the United States in a number of food industries, and investments should be made to promote them. Among the more promising industries are alcoholic beverages, confectionery products, and canned and preserved fruits and vegetables.

E. Summary of Suggestions for the Food Processing Industry

The following suggestions are considered essential to the healthy development of the food processing industry and for increasing its contribution to the Israel economy. They are not a comprehensive summary and should not be considered apart from the context of this report. For convenience the suggestions have been classed into government and industry responsibilities even though joint action is usually necessary to put them into effect.

In implementing suggestions for the betterment of the food processing industry, there must be a basic recognition that the agricultural resources of Israel are its most important natural asset, and that achievement of full benefits from the production and the processing of farm products necessitates an integrated approach to the use of these resources in order to increase domestic food supplies, to increase exports, and to provide raw material supplies for processing and farm production.

1. General Suggestions Requiring Government Action

The following suggestions for governmental action and assistance indicate some of the principal ways in which the economic soundness of the food processing industry may be improved.

a. Establish and enforce higher standards of sanitation in the industries processing, packing, and handling food products, to protect consumers and to provide products of improved quality for the competitive foreign market. Adoption of provisions equivalent to those of the United States Food and Drug Act would be a desirable move in this direction.

b. Foster and aid the establishment of acceptable grades and standards for fresh fruit and vegetable produce. Where appropriate, undertake government inspection of products moving into the export market as a means of establishing the high quality of Israel products and the integrity of Israel producers.

c. Continue efforts to coordinate production and processing of fruits and vegetables, to improve varieties, and to carry the results of research quickly to growers and processors as means of improving quality and reducing costs of production.

d. Provide selective credit with reasonable terms for operating and investment purposes to encourage the development of promising new products for export and replacement of imports; to make technological improvements for increased productivity; and to encourage the growth of promising medium-sized private enterprises; and at the same time, avoid overexpansion.

e. Take measures to maintain technological progress in the industry by emphasizing applied research, by maintaining close contact with technological developments in the leading countries, and by careful investments in research projects deemed to be of particular significance to the future of Israel.

f. Stimulate local production of food processing machinery where economies equal to those on imports appear possible.

g. To minimize disturbance to domestic producers, exercise care in importing gift commodities obtained from scrip and United States aid and commodities obtained from German Reparations.

h. Encourage establishment of private or cooperative importing and exporting firms able to provide services that small manufacturing firms cannot afford by themselves.

i. Discontinue allocation of raw materials in the food industries generally as soon as feasible. Turn over to private concerns as soon as possible the procurement of raw materials in the vegetable oil, chocolate, beer, and flour milling industries.

j. While procurement and allocation of raw materials must be maintained, government efforts should be directed toward obtaining products of high quality, uniform grades, and dependability in supply and price.

k. In the administration of import and export licenses, aim to streamline procedure to minimize the degree of anxiety on the part of businessmen and to aid in raising industrial productivity.

2. Suggestions for Specific Food Processing Industries

The following suggestions for obtaining improvements in the competitive position of the food processing industries for the most part require action by private enterprise for implementation.

a. Aim at less than national self-sufficiency and avoid overexpansion of domestic milk production. Base milk manufacturing primarily on imported milk powders and butter oil, and reconstitute these into cheeses, cream, and low-fat fluid milk products. Obtain fuller utilization of flush season milk production by increasing consumption and by producing sterile packs of such concentrated milk products as evaportated milk, condensed milk, and sterile concentrated milk. Develop fuller use of cheese whey by further processing and by feeding directly; and avoid skim milk losses in the flush milk production season. Establish a sanitary low-cost system for bottling and distributing fresh milk.

b. Continue present agricultural policy designed to increase production of animal proteins by putting into use extensive potential pasture lands; and consider fattening baby beef in the settlements for brief periods on grains and irrigated pasture.

c. Continue efforts to develop an offshore fishing industry by improving fishing methods and by trying out Atlantic fishing grounds, but keeping in mind that the cost of the catch should be comparable to foreign supplies. Develop a dependable supply of fish for the fish canning industry.

d. Obtain more extensive utilization of industrial and household wastes usable as feed by the domestic livestock and poultry industry. Develop cheap and reliable sources of fish wastes based on the domestic fishing industry and foreign sources. Establish a small but productive modern plant processing fish meal and fish oil of good uniform quality for the mixed feed industry.

e. Develop dependable sources of oil crop raw materials for the vegetable oil extraction industry. Increase production of domestic oil crops competitive with foreign supplies. Reduce production costs by improving varieties and harvesting methods and by raising yields. In the future the industry will probably depend for raw materials on

domestic and imported cottonseed, domestic cull peanuts, and domestic linseed. Make persistent efforts to reduce production costs of indigenuous oil crops such as sesame seed, safflower seed, castor seed, and olives.

f. Use raw materials in the vegetable oil industry that will contribute a significant net added value from processing. Reduce costs of processing by increasing plant specialization and by obtaining fuller utilization of equipment. In future, emphasize scientific quality control, research, and product development to produce new products for the domestic and the export market.

g. Make voluntary efforts to establish uniform grades and standards acceptable to the canning industry and growers, for the protection of Israel and foreign consumers.

h. By improved planning of contracts with growers, and by the development of new and better varieties, extend the canning season and otherwise increase productivity by obtaining a better utilization of plant facilities and working force. Plant varieties best suited to the requirements of the market, particularly in the case of tomatoes and grapes, canned fruits, and vegetables.

i. Continue to promote with vigor the development of new and promising products, particularly for the export market. Frozen concentrated orange juice and lemon squash appear to have good opportunities in the European market. Use experience in the production of frozen citrus products in developing other frozen foods for the export market to ensure the development of high quality products. Continue experimentation in concentrating grape juices from more suitable varieties of grapes, and consider production of frozen concentrated grape juice. Investigate newly developed methods of producing powdered juices of oranges, grapes, tomatoes, and other fruits, and dehydrated products, having in mind the need to keep down transportation and refrigeration costs in shipping to distant foreign markets. Utilize market research to evaluate and develop more effectively the foreign market for new products. Continue to make trial air shipments of out-of-season fresh produce to the European market.

j. Devote more attention to packing food products in more suitable containers, stressing especially more appealing design as well as utility and ease of bottling, packing, and handling. Develop centralized citrus packing houses and improve methods of sorting, grading, and packing.

k. Reduce the cost of raw materials used by the beer industry by growing domestic malting barley or importing high quality malting barley. These measures should enhance possibilities for beer exports.

l. Make efforts to increase productivity and reduce production costs in the wine and confectionery industries to make their products competitive in foreign markets. Segments of the confectionery industry must make special efforts to improve plant sanitation.

m. Locate refrigerated warehousing space over a greater geographical area particularly to provide facilities in Galilee. Develop a greater amount of sub zero storage in anticipation of the development of a frozen food industry.

Section IV

TEXTILE INDUSTRIES

A. Structure and Economic Position of the Textile Industry in Israel

Growth of the textile industry in Israel has been strongly influenced by the skill and professional background of the European immigrants, particularly those coming from Poland and Czechoslovakia. Though there were numerous textile and clothing manufacturers in Palestine during the British Mandate, the total number of establishments has doubled since the creation of the State of Israel in 1948. During this latter period, employment in textile mills increased 33 percent, and in clothing and footwear concerns, 44 percent.[1] (See Table 19 for number and size of establishments.)

The textile industry rates high in its contribution to the national economy of Israel. First, it provides jobs for approximately 10 thousand workers, and offers the opportunity to use the knowledge and skills of the immigrants who had special experience in the large European textile centers. Second, it establishes means for increasing exports of commodities with an added value of from 25 to 40 percent.[2] Third, it reduces imports of finished products. Fourth, it contributes to the national security of the country by supplying essential commodities. Fifth, it offers special services to other industries, such as upholstery for automobile and furniture companies, cotton cord for tires, belting for machine shops, nets for fisheries, and rope for a multitude of miscellaneous undertakings. Sixth, it is in a position to support the growing of textile fibers, even though the present high costs attached to raising fibers might handicap the competitive position of Israel's textile exporters in international markets. Seventh, it is in a position to assist in development of other industries; though dependent upon the import of machinery, equipment, and dyes, textile manufacturers are able to provide work for machinists engaged in spare-part production, and dyers and finishers consume locally manufactured chemicals such as sodium hypochlorate, hydrochloric acid, sodium sulphate, ammonia, and soap.

1/ Statistics compiled by the Central Bureau of Statistics and Economic Research do not classify clothing concerns separately.

2/ Defined as the excess of the value of exports over imports.

Table 19

TEXTILE ESTABLISHMENTS IN ISRAEL - 1952

Classification	Number of Establishments	Workers
Spinning mills - cotton and wool	29	2,126
Winding and twisting mills	78	278
Rope manufacture	3	78
Canvas weaving	3	7
Dyeing, printing and finishing	45	857
Fabrics - wool and cotton	334	2,188
Fabrics - silk and rayon	23	252
Fabrics - upholstery, rugs, carpets, blankets	80	239
Fabrics - towel, tablecloth, prayer shawls	31	115
Fabrics - knit, including jersey, charmeuse	90	266
Fabrics - knit clothing	299	1,229
Ribbons - including plaiting	47	303
Hosiery	59	573
Netting - curtain and network	19	68
Cotton wadding	14	51
Artificial leather	9	76
Miscellaneous	101	467
Total	1,264	9,173

Source: Ministry of Commerce and Industry, Government of Israel.

1. Scale of operation. Textile establishments in Israel are small, approximately 60 percent of the 1,264 organizations listed in the 1952 Census being family enterprises. In 1952, 85 percent of the so-called "textile mills" employed an average of three people each; the average for 97 percent of the clothing and footwear establishments was less than two. In view of their size these enterprises may be considered as workshop operations. The remaining 15 percent of the textile mills and the 3 percent of the clothing and footwear companies employed approximately 34 and 20 people each, respectively. (Table 19 classifies the number of textile establishments in 1952 and the number of persons employed.)

The total labor force engaged in the various phases of textile production surpasses employment in any other type of industry. On the basis of the 1952 Census compiled by the Government's Central Bureau of Statistics and Economic Research, 9 percent of all industrial workers were employed in textile manufacture, while 14 percent were engaged in the manufacture of clothing and footwear. Neither the number of establishments nor the labor force has changed materially since 1952.

The Ata Textile Company situated near Haifa is the largest textile plant in Israel, employing over 1,200 people, operating 21,000 cotton spindles, and 290 looms. In addition to manufacturing cloth, the company is engaged in making men's and women's cotton clothing.

2. Small versus large companies. There are perhaps too many small enterprises engaged in textile manufacturing in Israel. Though competition and free enterprise is to be encouraged, the desirability of supporting such a large number of concerns may be questioned, especially since many are proving to be inefficient high-cost producers, and a large proportion lack proper equipment to manufacture a standard product suitable for export. Care should be taken to see that domestic retail prices are not governed by the production cost of these small enterprises which once received some protection through the Price Equalization Fund.

Many of the larger companies, including those engaged in the export business, produce textile lines similar to those manufactured by the smaller concerns. However, the exporters may be required to sell from 20 to 60 percent of their products on the local market at prices sufficiently high to support their export trade since a large percent of the textiles are sold abroad at prices below actual production cost. The balance which they must maintain between local and foreign sales becomes one of the major factors limiting their production to between 60 to 70 percent of their capacity when calculated on a two-shift base, since local demand for most of the textile lines manufactured is

insufficient to absorb Israel's total production capacity. Such excessive competition in a field where many "workshops" are present retards the rate of turnover of textiles sold in Israel, prevents the reduction of overhead costs which would normally result from full-scale operation, and limits the effectiveness of the exporter's working capital position.

Smaller textile companies could improve the status of the textile industry were they to concentrate on better quality and styling. It is recognized that there are certain factors beyond their control which are partially responsible for the low-quality cloth they now manufacture. Nevertheless, their products help to set the local market standards, permitting the larger companies to sell to the public at comparable prices their "seconds" which are not suitable for export. In some cases these "seconds" represent over 30 percent of total production by some of the larger manufacturers. Increased competition from smaller companies arising from improved quality and better styling should force the larger producers to raise their own production standards. The limited number of designs to be found in textile cloth manufactured in Israel restricts the marketing field; were the smaller manufacturers to develop more individuality in designs and color, the diversity on the market would increase the salability of their cloth and lessen the present demand for imported material.

3. Production capacity and consumption. Cotton spinning and weaving represents the largest segment of Israel's textile industry. 1/ Yet, the total number of cotton spindles in Israel is only equal to that found in an average-size textile mill in many other countries; the combined total number of looms in place in four average-size mills in the United States would equal the total number of cotton looms in the entire State of Israel.

1/ Israel's textile production capacity as of July 15, 1954:

Spindles		Looms		Knitting Machines	
Cotton	58,000	Cotton	2,500	Tricot	6,000
Woolen	15,761	Wool	500	Tricotage	1,000
Worsted	5,556	Rayon	380	Hosiery	650
Rayon	3,000			Nylon stocking	38*/
Flax (tow)	1,600			Curtains and network	60
				Warp looms	60
				Jersey	370

*/ Includes 14 for export manufacture.

Source: Ministry of Commerce and Industry, Government of Israel.

Israel's annual textile production on a two-shift, 300-working-day base is large enough to meet local consumption requirements plus an excess for export. Table 20 shows that excess production capacity for cotton and wool spinning is 17 and 47 percent respectively; excess production capacity for cloth and knit goods is about 70 percent.

4. The export market. Textile manufacturing is one of man's oldest industries and is to be found in varying stages of development throughout the world. For many years the highly competitive position of textiles in international trade created "price wars" between such large manufacturing nations as England and Japan.

Since World War II, the international market structure has been gradually changing because of expanding textile industries, particularly in India, China, and South America. Other trade areas which had formerly been fought over are now starting to manufacture their own commodities; thus dependence by one country upon the textile production of another is rapidly diminishing, narrowing the export field.

The establishment of a textile industry is one of the first steps in the industrialization of an underdeveloped area because it furnishes one of the basic requirements of the population. Whereas the degree of development through the use of modern machinery and improved technique formerly had a direct correlation with the social and economic status of a country, this comparative measure need no longer apply. International development programs provide technical assistance and offer means of procuring highly mechanized machinery and equipment essential for rapid industrialization. It is now possible to find modern textile factories in areas that still may be regarded as underdeveloped in other respects.

Israel's textile development and expansion into an export industry has taken place without the support of local fibers, with the exception of small quantities of raw wool, which is of a coarse variety suitable only for rough fabrics and carpet manufacture. Since the woolen cloth manufactured in Israel requires a fine count yarn, approximately 80 percent of the 150 tons of raw wool produced in Israel in 1953 was exported. The growing of cotton, sisal, and flax is in an experimental stage. There appears to be little promise for developing a sound export market for textiles made from these locally grown fibers unless the present high production costs can be reduced materially or unless some form of subsidy is established.

For the textile industry to be self-supporting without the backing of locally produced raw materials, imports of fibers should be financed by exports of finished products. (Table 21 classifies the main textile

Table 20

CAPACITY OF TEXTILE INDUSTRY IN ISRAEL
AND QUANTITY AVAILABLE FOR EXPORT
July 31, 1954
(In Metric Tons)

Branch	Capacity 1/	Estimated Local Consumption 2/	Quantity Available for Export	Percentage of Capacity for Export
Fundamental Industries				
Spinning				
Cotton, rayon, staple, and tow flax	5,150	4,250	900	17
Wool	2,715	1,430	1,285	47
Jute	1,000	1,000	--	--
Sisal	3,500	1,000	2,500	71
Total	12,365	7,680	4,685	
Elaborating Industries				
Weaving	11,250			
Cotton, vistra, linen, wool	10,600			
Rayon	650			
Knitting	8,660			
Tricot	4,200			
Tricotage	2,600			
Hosiery	580			
Nylon stockings	50			
Curtains and net work	360			
Warp looms	360			
Jersey	330			
Hygienic articles	180			
Total	19,910	6,020	13,890	69

1/ Two shifts.
2/ Per capita consumption in kilograms for cotton and rayon, 2.5; wool, 841; cotton, wool, rayon cloth, and knit goods, .2; total, 3.541.
Source: Ministry of Commerce and Industry, Government of Israel.

commodities exported in 1953 by quantity and value.) However, for a number of reasons the marketing structure does not lend itself readily to the development of a large over-all export trade.

First, there are no trade areas near Israel that offer an encouraging market potential for the immediate future. In view of the present international tension between Israel and its neighboring Arab states, the country may be considered as an island cut off from normal marketing channels.

Although Israel has exported some textile products to Turkey on a barter basis, future prospects for trade expansion to this area do not look encouraging. Turkey is developing its own textile industry backed by large quantities of Turkish-grown cotton. Turkey now has 545,000 cotton spindles, including an increase of 280,000 within the past three years; plans call for an expansion to 700,000 within the next two years. Should Turkey start to develop a large export trade it will be in a much better position than Israel to capture the markets of the neighboring areas.

Second, most of the textiles exported are sold on a barter or soft-currency basis. Approximately 80 percent of the textiles exported from Israel in 1953 went to trade-agreement areas. (Appendix Table 3.) Such sales are not particularly conducive to building stable international markets, and should not be regarded as important when evaluating the need to expand the domestic industry. To acquire the more desirable hard-currency markets, Israel's textile exporters must compete with countries whose industries are backed by years of steady development and supported by a large national population.

An example of the unreliability of trade-agreement exports may be found in the case of raincoats. In 1953, the export of raincoats amounted to 521,000 Israel pounds--the largest single textile commodity in terms of value. Raincoats exported to Finland accounted for 82 percent of the total; 7 percent went to the United States. By special agreement Finland issued import licenses only for raincoats manufactured in Israel. As a result of this protection, the price received in Finland permitted Israeli companies to make a small profit from their sales; raincoats exported to the United States are alleged to have been sold below cost. The new trade-agreement with Finland no longer guarantees exclusive rights to Israel. Raincoats manufactured in England are now being sold in Finland at prices lower than those which prevailed in 1953, and Israeli manufacturers maintain that they cannot compete on such a basis.

Table 21

TEXTILE EXPORTS FROM ISRAEL
BY MAIN COMMODITIES, 1953

Commodity	Unit	Quantity	Value 1/
Wool, raw	Kg.	57,756	$ 87,448
Wool, waste	Kg.	8,830	5,532
Waste	Kg.	100,000	7,896
Cotton piece goods	Meter	1,108,187	731,079
Woolen tissues (inc. gabardine)	Meter	143,670	610,517
Woolstra tissues	Meter	15,069	19,323
Other tissues (frotté, jersey, angora, curtain, etc.)			301,258
Pajamas, shirts, tricot underwear			325,249
Wearing apparel (jackets, trousers, ladies dresses)			220,902
Raincoats			1,406,512
Knitted wear			200,874
Socks and stockings	Doz.	17,550	66,467
Stockings made of silk	Doz.	1,300	5,200
Stockings made of nylon	Doz.	69,696	536,035
Worsted yarn	Ton	131	642,082
Jute thread	Ton	32	17,164
Cable and twine	Ton	234	127,762
Laces			9,357
Others			15,949
		Total	$5,336,606

1/ Based on exchange rate of one Israel pound to 2.80 dollars.

Source: Ministry of Commerce and Industry, Government of Israel.

Third, the desirable practice of selling through exporters has not developed in Israel. This may be accounted for by an apparent lack of confidence on the part of manufacturers in turning over this responsibility to sales organizations. The majority of individual textile manufacturers seeking an export market now make periodic trips to European countries, and in particular to trade-agreement areas. On occasion they may send representatives to the United States in an attempt to establish import connections. However, textile manufacturers do not have adequate working capital to finance the purchase of raw material imports and the cost of manufacture, and at the same time finance an export business.

There is a real need in Israel for the development of competent business firms devoted entirely to exporting locally produced goods. A distribution system along this line should be encouraged, for the exporter is an essential link between the producer and foreign markets, and is in a better position to assume responsibilities now required of manufacturers. These responsibilities include contacting foreign importers, particularly in those countries where sales could be made for hard currency; studying trends in international markets, fashion changes and buying habits of foreign consumers; and financing the export of merchandise either by direct purchase from the producer, or through advance payments on orders received.

Fourth, Israel is outside the framework of international cooperative organizations. The union of European nations[1/] through the Organization for European Economic Cooperation (OEEC) has become an important factor in the highly competitive international field. The textile industry is included in OEEC's economic coordination program to increase production and productivity. One of the over-all effects of such coordinated industrial planning is to strengthen the export position of the member nations, and to limit the field of exports for nonmember nations, including Israel.

1/ Austria, Belgium-Luxemburg, Denmark, France, Greece, Iceland, Ireland, Italy, Norway, Portugal, Sweden, The Netherlands, United Kingdom, Trieste, Turkey, and Western Germany.

The special tariff concessions granted imports from nations that have signed the General Agreement on Tariffs and Trade (GATT) have had a restrictive effect upon Israel's textile exports to those countries which grant special concessions covering textile products. 1/

5. Development program. Development of Israel's textile industry was on somewhat of a haphazard basis during its initial stage. Today, however, there is a fairly well-established and government-encouraged development plan dedicated to the creation of what would appear to be a completely self-sufficient and self-contained industry. The plan is based upon a 1962 population of 2.5 million people, or an increase of 800,000 within the next eight years. The plan calls for production of a major supply of raw materials, the expansion of the carding and spinning facilities and the weaving of all types of cloth from ordinary gray goods to the finest Jacquards, marquisettes and velvets. Old machinery is to be replaced by the latest equipment, and capacity is to be expanded to meet all local consumer needs plus amounts required to support a large export market.

The industry received early support in 1950, when the Export-Import Bank made fourteen loans to textile companies totaling over one million dollars. These loans were used primarily to purchase machinery and equipment to expand production capacity.

During the period 1950 through 1953, the Investment Center, a part of the Ministry of Commerce and Industry, issued approvals for the establishment of 55 spinning, weaving, and knitting mills; these mills will have a total capitalization of 5,640,000 Israel pounds and 14,630,000 dollars. In 1953, 27 textile companies, 2 dyers and finishers, and 2 clothing manufacturers started production, and 7 established firms completed expansion programs which had been approved by the Center. During the first quarter of 1954, one new textile company began operation, and 4 others completed their approved expansion.

1/ Contracting countries to the General Agreement on Tariffs and Trade; Australia, Austria, Belgium, Brazil, Burma, Canada, Ceylon, Chile, Cuba, Czechoslovakia, Denmark, Dominican Republic, Federation of Rhodesia and Nyasaland, Finland, France, Greece, Haiti, Indonesia, Italy, Luxemburg, New Zealand, Nicaragua, Norway, Pakistan, Sweden, The Netherlands, Turkey, Union of South Africa, United Kingdom, United States, Uruguay, and West Germany. State Department Public Bulletin, (mimeographed) June 1954, Washington, D. C.

The growing of a good quality raw cotton in Israel as part of the Development Program is reported to have been most encouraging. In the first harvest, the staple was of good quality, and the yield varied from between 260 to more than 300 kilograms per dunam. Though cotton raising is still in an experimental stage, foreign credit is being used to purchase a large cotton gin to supplement the pilot plant now in operation, and the purchase of additional cotton gins is contemplated. About 3,500 dunams are presently under cotton cultivation and 20,000 dunams are provided in the Agricultural Development Plan for 1955. Based upon present yields, it is estimated that 70,000 dunams will be needed to meet the requirements of Israel's cotton textile manufacturers.

The chief objective of the cotton program is to reduce the purchase of raw cotton from abroad, which in 1953 amounted to 3,850 tons valued at 1.2 million dollars.1/ It would follow that should cotton production ultimately exceed the spinners' raw cotton import requirements, and if spinning facilities are increased, imports of cotton yarn could likewise be reduced. Yarn imports in 1953 amounted to 1,800 tons valued at 1.1 million dollars.1/

In 1954, the price of lint cotton grown locally was fixed at 2.25 Israel pounds per kilogram, which is 25 percent higher than the comparable c.i.f. world market price of approximately 1.80 Israel pounds. The United States Operations Mission has made a study of the cost of growing cotton in Israel to determine whether or not cotton growing is a sound undertaking from the economic point of view. The study indicates that the cost can be reduced materially so that it may be economically sound, and that the net profit may vary from 16 to slightly over 70 Israel pounds per dunam, depending upon the location of the cotton fields, the variable water rates, and the yield. It is pointed out in the study that the highest profit calculated may be increased by applying better knowledge and more skill to the raising of cotton. The calculations consider the operating costs as fixed, and the wage rate is based upon 5 Israel pounds or 2.78 dollars per man-day.

Recognizing the merits of the study, it is still not out of line to recommend that there should be a longer trial period to prove the practicality of growing cotton in Israel under the Agricultural Development Plan before additional foreign credits and German Reparation Funds are used to purchase machinery and equipment necessary to support the cotton growing program. It is believed that there should be

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1/ Value is based on the exchange rate of one Israel pound for 2.80 dollars. Central Bureau of Statistics and Economic Research, Government of Israel.

a greater assurance that cotton spinners will be able to buy Israel grown and ginned cotton at world price levels. Unless the Government intends to promote the cotton growing industry through subsidy, it is considered desirable that the entire cotton development program be reviewed, bearing in mind the following basic considerations.

First, there is no assurance that the cost to grow and gin the cotton will be reduced to the minimum level forecast in the study, or that the farmers will agree to raise cotton at such a level when the profit per dunam may be lower than that which might be received from other crops. While a profit of 200 Israel pounds per dunam has been made during the last few years through the sale of some vegetables and fruit, the study assum that such profits belong definitely to the past, and that "the farmers will be happy to have a crop with a more modest but reliable profit...the local demand for which can be regarded as being stable."

Second, Israel must compete on a price basis with such countries as Egypt, Turkey, Greece, and India, where the wage rates are considerably less and where there are either no irrigation costs, or the costs on the whole are much cheaper. It is maintained by official sources that were Israel to reduce the labor cost through the use of the mechanical cotton picker, the yield per dunam would be reduced by up to 25 percent because the method of planting would be less concentrated.

Third, the cotton growing industry would in all probability be protected by import duties and licensing controls. Were the world price level to drop, bearing in mind that present world prices are being maintained through the effort of the United States' price support program, Israel textile manufacturers would not have the advantage of purchasing cheaper cotton unless the cost differential were subsidized by the Government.

Fourth, the spinning industry at present cannot spin imported lint cotton and sell the yarn locally at a price competitive with imported yarns. There is no assurance that spinning costs can be reduced without certain corrective steps being taken, as discussed later in this section of the report. Much of the locally spun cotton yarn is bought by textile weavers and knitters only because they do not have foreign credit accounts of their own, and at the same time find it exceedingly difficult to obtain import licenses to purchase foreign-spun yarns at lower prices. (Import licenses are not as hard to obtain when the manufacturer is in the export business and has his own foreign credit account, or can offer assurance that the foreign currency needed to purchase the cotton will be recovered through exports.) The fact that the cotton

growing industry would be supporting a segment of the textile industry which in itself is a high-cost producer emphasizes the need for low-cost cotton, especially if Israeli manufacturers seek to compete in international markets on a nonsubsidized price basis.

Recent experiments in the growing of flax have indicated that a good quality fiber can be produced in Israel. A detailed study[1] made by a flax expert attached to the United Nations' Technical Assistance Program presents a cost analysis of the industry. The analysis is based upon the establishment of a processing plant which would handle three thousand tons of unseeded flax annually. The plant would cost 683,000 Israel pounds, of which 35 percent, or approximately 239,000 Israel pounds would require foreign currency. The study contends that the plant is economically justified if completed as suggested, and if the farmers are paid no more than 56.76 Israel pounds per ton "for unseeded flax, before pulling, without weeds, and without soil." The yield is based on 350 kilograms per dunam. The study concludes that the yearly foreign currency expenditure of 117,000 Israel pounds needed to finance the industry would be covered largely by 370,000 Israel pounds of exportable products. The study recommends that there should be agricultural research on flax to improve the quality of the crop.

The future of flax as an industrial crop depends upon low production costs and the marketability of ligneous fibers abroad without a subsidy. It is generally admitted by government officials that the people in Israel lack the experience and skill needed to spin and weave a fine quality linen cloth. Accordingly development plans for this industry do not include machinery to spin and weave such a fabric.

Sheep raising in Israel dates back many hundreds of years. The main breed found today is the Awasi, which is a milk-yielding species; the milk is used mainly for the manufacture of sheep cheese. The ewes of the Awasi breed are small, and meat production is correspondingly lower than for most other breeds. Since the wool from this breed is coarse, there is little demand for it in Israel, and that mainly to supply the small carpet weaving industry. Hence, most of the wool from the Awasi sheep is exported after scouring and carbonizing. It has been estimated that an increase of the present herds of about 85,000 head to approximately 150,000 would provide an adequate supply of milk to meet the country's sheep cheese requirements.

1/ A. A. M. Hamerlijnck, Flax in Israel, February 1954.

Israel's present grazing capacity, excluding cattle grazing areas, is estimated by the Soil Conservation Service to be adequate to raise approximately 200,000 head of sheep. Plans under consideration contemplate an increase of the Awasi breed to 100,000 and addition of 100,000 sheep of other breeds to produce higher yields of meat, thereby balancing the industry.

The development of the Corriedale breed of sheep is in an experimental stage, there being approximately 550 head in the country at present. The wool from these sheep is of a superior quality, and meat production is considerably higher than for the Awasi variety. The sheep have not been in the country long enough to prove their suitability for the area. To date the chief difficulty in expanding the flock arises from the fact that the sheep were imported from the southern hemisphere (Argentina and Australia) where the lambing season occurs in the summer months. During these months Israel lacks the green fodder needed to produce a healthy lamb. Corrective measures are now being taken which, if successful, would change the mating season so that lambing would be in the winter when green fodder is plentiful.

There is no reason to doubt that a suitable breed of sheep can be developed for Israel which would yield a good quality wool and increase the country's meat supply. A successful wool industry will depend largely upon a proper balance between the milk and fine wool-yielding breeds, and upon the cost of raising sheep. A large part of the cost will be for supplemental feed which, under present conditions, will have to be imported during the summer months when the grazing areas are dry. It is estimated that about 80 percent of the feed for 200,000 sheep would be natural pasture, and 20 percent supplemental fodder. To keep costs at a minimum, the development of summer grazing areas is under study as part of the Agricultural Development Program.

6. Feasibility of expansion. The primary objectives in expanding the textile industry in Israel seem commendable, i.e., to reduce foreign currency expenditure now used to purchase raw materials and manufactured goods, to increase foreign currency credits through sales abroad, and to employ more people in agriculture and industry. There is some question, however, as to the practicality of a completely integrated program in view of the extremely competitive position of textiles in the world market, and in view of the high production costs now being encountered by Israeli textile manufacturers. There would appear to be little evidence that foreign markets and production costs have been considered as major factors in deciding on a program to expand textile exports, aside from the increasing emphasis on the specialty field where price competition is less severe than with standard lines.

It is not uncommon for highly industrialized nations to use foreign markets as dumping areas for excess production, provided the home country is backed by a large and well established consumer market of its own. Israel is not in a favorable position to do this since the local market is severely limited in number of consumers and purchasing power.

The increase in textile production capacity in Israel has not been closely correlated with foreign or domestic demand. Textile expansion appears to reflect an over-all government effort to save foreign currency and to earn foreign credits regardless of the effect such a policy may have on industrial stability. Certain textile companies established in Israel since 1948 are required in their initial stage of operation to export goods at least equal in value to the foreign currency used to purchase the raw materials. Such companies have never been permitted the time to develop a quality product or a substantial local market before entering the export field, nor have they been given the chance to overcome those operational losses usually associated with the opening of a new business enterprise.

It is recommended that the rate of expansion of the textile industry be tailored to conform more closely with local and foreign demand. Furthermore, time should be permitted for certain corrective measures to be taken which will reduce high-cost production, thereby strengthening the industry and placing the exporter in a more favorable competitive position abroad.

B. Factors Contributing to High-Cost Production

Between the end of World War II and 1953, textile manufacturers in Israel operated on a cost-plus basis. Under the control system which existed during this period, wholesale prices were based upon the highest producer-cost plus a reasonable profit, and retail prices permitted a write-up on wholesale prices of from 10 to 20 percent. The removal of price controls in May 1953, placed the majority of textile manufacturers in the position where for the first time they had to consider cost of production as an important element in marketing. Local retail prices still reflect "black market" conditions developed during the time of controls. Textile manufacturers who are now producing for export in the prevailing international buyers' market encounter the intricacies of a highly complex and competitive field in which selling prices may reflect dumping practices rather than cost plus a reasonable profit.

It was not possible within the limited time available for this study to construct accurate and meaningful comparative cost estimates for textile production in Israel and in other selected countries. This, however, is not essential to the main conclusion of this section. It is fully recognized within the Israeli textile industry that production costs are too high to permit effective competition in international markets without the benefit of subsidies. The objective of this subsection is to examine the causes for high production costs in Israel's textile industry, and to suggest means whereby corrective steps may be taken. These problems fall into four major groups, namely, (1) terms and conditions of finance and fiscal matters; (2) procurement of materials and equipment; (3) labor costs; and (4) plant organization, operation, and maintenance.

1. Financial and fiscal problems in the textile industry. High on the list of causes for high-cost production in textiles are capital shortages, excessive interest rates and troublesome fiscal regulations. The combined effect of these influences is considerable.

a. Shortage of working capital. One of the major factors contributing to high-cost production is the shortage of working capital. Three main reasons account for this deficiency. The first arose following the devaluation of the Israel pound. Approximately 67 percent of the mills were established when the rate of exchange for one Israel pound was equal to 4.03 dollars, and an additional 23 percent when the Israel pound was worth 2.80 dollars. When the Israel pound was devalued to an effective rate of 55 cents in February, 1952, the purchasing power of invested capital became inadequate for manufacturers to finance the import of raw materials and at the same time to operate the enterprise. New sources of funds were generally not available, for approximately 83 percent of the textile mills and 97 percent of the clothing and the footwear industries have been financed by family or partnership funds of limited amounts. Only six textile companies and two clothing manufacturers have the corporate privilege of selling shares of stock or debentures to the general public; three of these enterprises are listed on the local stock exchange.

The second cause of working capital deficiency is the capital levy. Soon after the Israel pound was devalued, the Government levied a surcharge against stocks of imported raw materials on hand, goods in the process of manufacture, and machinery and raw materials on order. The tax on commodities on order was collected prior to their release from Customs. The surcharge was based upon the difference between the original purchase price and the price the company would have had to pay had the merchandise and machinery been purchased at the new exchange rate.

In effect, these two financial measures stripped from manufacturers most of their working capital, requiring them to seek outside financial support through loans from banks or private lenders. A few companies were able to make special arrangements to postpone the settlement of the levy on payment of interest at an agreed rate on the obligation.

One of the general reactions by industry has been to limit the maintenance of stocks-on-hand to a bare minimum. Many companies now try to maintain a six-month's supply, but as they are often unable to do so, there have been times when it has been necessary for some to buy raw materials from other companies, to make "black market" purchases, and if need be, to take unscheduled holidays or to close for an indefinite period.

The third cause for working capital deficiency is the Compulsory Loan, passed by the Knesset in March, 1953. This forced loan has withdrawn--and will continue for the next two years to withdraw--working capital funds from textile companies. Under the terms of the law, all property owners, with the exception of foreign investors, were given the option of making a 15-year loan to the Government based upon 4.5 to 10 percent of the assessed value of the property,[1/] or to pay an unredeemable levy of approximately one-half of the amount. The loans bear tax exempt interest at 2.5 percent. Redemption is to start in April 1957 with 14 subsequent annual installments. The loans to the Government on stocks were to have been completed by August 1954, and the loans on property by February 1956.

b. Financing short-term requirements. Textile manufacturers must obtain short-term loans from local banks or private lenders to supplement their limited working capital. The typical interest rate for prime loans is 11 percent, but official loans made by banking institutions may run as high as 15 percent. Since banks are unable to meet the demands of industry, textile manufacturers often find it necessary to borrow funds from private lenders at rates varying from an average of 18 percent to as high as 36 percent a year. Banks are permitted to

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1/ The applicable percentage depends upon the total value of the property as of April 1, 1952. The 10-percent rate is applied to property in excess of 65,000 Israel pounds. Property includes buildings and lots, machinery, tools, vehicles, raw material, and finished and unfinished goods. On long-term leases, the lessee is construed as the owner.

lend "Third Party Deposits" at rates set by the depositor; there are alleged instances where banks lend to private loan associations, which in turn loan at exorbitant rates. The Government does not permit manufacturers, when submitting income tax returns, to deduct any interest which has been paid over and above the official rate, so that in reality the manufacturers may pay taxes on profits that have not been earned.

Most of the textile companies and clothing manufacturers sell their products on the local market through wholesalers or retailers. Few companies have their own retail outlets.[1/] Sales are generally made by postdated bills which must be discounted to supply working capital funds. Bank discount rates are 9 percent plus a 3 percent commission. It has been estimated that 20 percent of the bills are discounted on the free market at rates running as high as 30 percent.

c. Financing long-term requirements. According to the present policy of the Government, long-term loans, including those to be made from the Counterpart Fund, are to be repaid on the basis of purchasing power existing at the time the loan is made. A method under consideration by the Government is to base the repayment on a variable such as the Israel pound-dollar exchange rate. The Government's motive in establishing such an "escalator" repayment provision is to acquire profits which may accrue to the companies through inflation. However, textile manufacturers desiring to make a long-term commitment for the purchase of capital equipment, or for plant expansion, are unable to ascertain the amount which they will be called upon to repay when the loan becomes due. This policy has tended to weaken the manufacturer's reliance on the stability of the Israel pound, and many have refused to borrow money under such terms. Consequently, in such instances plans have been postponed for the procurement of capital equipment needed to improve the quality of products, to replace old machines, and to build necessary additions to plants. As a result, manufacturers are often unable to eliminate known high-cost or wasteful production methods.

d. Financing imports and exports. Textile companies engaged in the export business carry the credit which they receive from foreign

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1/ Ata Textile Company has 300 stores; Kitan Ltd., sells through approximately 100 contract shops; Slilim Textile Company, owned by Hamashbir Hamerkazi, sells most of its products through the Hamashbir Latzarkhan's retail stores.

sales in what is called a "pamaz" bank account; this credit may be used to finance imports for processing and re-export. Under present regulations, manufacturers are generally unable to purchase foreign credit from other industries owning pamaz credits, though such a system, if properly regulated, would be desirable. Instances have been noted where a transfer of foreign credit has taken place on the basis of interlocking ownership of a company possessing a pamaz account. Also, transfers are permitted for certain interrelated industries where there is no possibility of receiving foreign credits; i.e., textile finishers may purchase foreign credit from textile exporters to buy dyes, since they themselves have no direct means of earning such credits.

Some textile manufacturers have been able to finance imports through credit advances from foreign buyers. In some instances, however, the interest rate charged for such a financial transaction has been as high as 14 percent.

Bank costs in Israel for financing imports intended for processing and re-export are as follows:

	Percent
Interest for credit in foreign currency	7.5
Commission for credit in foreign currency	1.5
Commission for credit in Israel	1.0
Fees for exchanging currency	1.0
Commission for opening a letter of credit and port fees for documentation	5.0
Total	16.0

Should an exporter finance imports twice a year, the interest payable on the above commissions and fees of 8.5 percent doubles, making total interest rates 7.5 percent plus 17 percent or a total of 24.5 percent.

The cost of financing exports to trade agreement countries is as follows:

	Percent
Interest for credit to change "clearing" currency to hard currency guaranteed by the Israel Treasury	4.0
Commissions to grant a 90-day credit	10.0
Total	14.0

Thus, to finance the imports of raw materials and the export to a clearing country under a 90-day credit, textile manufacturers must pay interest varying from 30 percent to 38.5 percent depending upon the rate of business activity.

It requires an average of from three to four months for exporters to receive payment from sales to hard-currency countries, and from two to four weeks to receive payment for a "clearing" transaction. This delay causes an additional expense to the exporter because interest must be paid during the period on working capital loans tied up in the commodity exported.

If a sound textile industry is to be developed, the Government may have to relax selectively its policy on frozen credit, permit long-term loans to be made with determinable repayment provisions, make a greater effort to control interest rates, and provide a financial institution which will permit exporters to finance their import-export business at a reasonable cost. Without such assistance it is difficult to see how Israeli textile manufacturers can be expected to compete in the international markets with countries such as Japan, where more adequate means of finance are available.

e. Agio discounts on clearing transactions. The Government charges an agio on all commodities exported to specific clearing countries. The agio rate depends upon the hard-currency foreign exchange position of the importing nation; rates vary from 2.5 to 10 percent.[1/] For example, 10 percent is collected on all exports to Turkey and Finland, and 2.5 percent on exports to Norway; there is no agio on exports to The Netherlands because of the more favorable foreign exchange position of the Dutch guilder. The basic philosophy underlying the agio is that importers in countries lacking hard currency are willing to pay a premium for commodities to be able to receive them on a clearing basis. It is reasoned, therefore, that a part of the "excess profits" which the Israeli exporter receives through premium sales should be passed on to the Government as a means of "profit control."

The agio on raincoats exported to Finland may be used as an example of the hardship which may be encountered by textile manufacturers. Even though an Israeli exporter may be selling to a Finnish buyer at a price below unit cost to compete with British manufacturers, he must pay to the Government 10 percent of the amount received.

1/ Agio rates: Norway and Denmark, 2.5 percent; Yugoslavia, Hungary, Poland, Turkey, Finland, and Argentina, 10 percent.

Though the general principle of the agio may be sound, it creates an extra burden for the textile exporter. The advantages which the Government gains through increased revenue should be weighed against the disadvantages to industry; it is considered desirable that the agio should be removed at least for textile exports.

f. Import duties on commodities for re-export. Import duties have been established to protect the textile industry. However, duties are also applied on commodities that are not manufactured locally, such as covered lastex thread for corset and hosiery manufacture, and cellophane bags for packaging nylon stockings. In most cases there are refunds when the imported articles are exported, but manufacturers must keep records of the amount exported out of each shipment recieved in order to apply for the refund. This procedure requires the employment of additional clerical staff for those engaged in large-scale operation.

Customs officials are present when the finished product is packaged for export to estimate the amount of imported material contained in the item to be exported. Two percent of imported cloth is permitted as waste; although in some textile companies the amount of waste is higher, the importer must pay a duty on the excess amount.

The total cash payment at the time of import appears to vary according to the credit standing of a company. Some manufacturers must pay 10 percent in cash and cover the remainder by a bank guarantee on which interest is payable at the rate of from 4 to 5 percent. Others may cover one-half by a bank guarantee and one-half by a promissory note. Settlement of the total amount due after the value of the exported amount has been deducted must be made within the import year.

The system of collecting duties on imports for re-export creates extra purchase and employment expense, is time-consuming, and ties up needed capital. The import duty schedule should be re-examined, and those duties not needed to protect local textile production should then be removed. It would appear to be more desirable to establish a system which would permit "operation-in-bond" or to provide a different and less costly method of export guarantee.

g. General purchase and luxury taxes. Textiles sold on the local market are subject to either a general purchase or a luxury tax. The general purchase tax is 7 percent, whereas the luxury tax may vary from 15 to 35 percent. Cloth containing more than 80 threads per square centimeter, or made from yarns with a count finer than 40/1, is classified as a luxury item. Should cloth shrink in the process of dyeing and finishing so that there are more than 80 threads per square

centimeter, it becomes a luxury item even though it may have been manufactured under contract as ordinary cloth. Under such circumstances, the excess amount of the tax must be borne by the manufacturer.

The applicable tax rate for luxury material depends upon the weight or type of thread used. For example, material made out of carded wool has a 15 percent tax, while material made out of worsted has a 35 percent tax. The decision as to whether the fabric is subject to the luxury or general purchase tax is made in the dyeing and finishing plants.

Taxes were originally collected by the retail shops at the time of sale. However, this method was considered unsatisfactory because of ineffective controls. The present system requires the weavers and knitters to pay the tax within 75 days from the date of delivery by the finishers. Should textile manufacturers sell the material soon after delivery, they have the advantage of retaining the tax money collected from a cash sale for the remainder of the 75-day period. However, if they are unable to sell the cloth within the specified time, or if they should receive a postdated check payable beyond the designated period, they must either pay the tax from the working capital account, or discount the note at a high commission rate. This system not only works a hardship on manufacturers, but is an inducement to produce cloth of lower quality. The Government should review the present method of tax collection to prevent undue hardship and to relieve the textile manufacturer of financing government taxes prior to sale.

2. Raw cotton purchases. A certain amount of foreign currency is allocated annually by the Government from the Import Budget for the purchase of raw cotton during the year. The allocation is based upon a master plan for cotton spinning prepared by the Ministry of Commerce and Industry and approved by the Cotton Spinners' Association and the Ministry of Finance. All cotton spinners are members of the Association with the exception of Ata Textile Company, which is reported to receive between 45 and 50 percent of the American cotton purchased under Grant-in-Aid. The three cotton spinners owning pamaz accounts may purchase additional amounts over and above that allocated by the Association. It is possible for the other spinners to supplement the allocated quota if weavers or knitters owning pamaz accounts will authorize credit transfers.

The usual method of distributing allocated foreign currency to spinners on a monthly basis for the purchase of raw cotton prevents advance scheduling of production. It is alleged that it may take from

eight to 30 days to obtain an import license from the Government after the foreign currency allocation has been made. Spinners are allowed up to 30 days to open a letter of credit after receiving the license; neither financial arrangements nor purchase contracts can be made before the license is issued.

This method of purchasing raw cotton prevents the maintenance of reasonable reserve stocks, and requires spinners to buy at prevailing market prices despite the cost, and without the use of hedging facilities provided by a futures exchange. Hedging facilities, which customarily afford textile manufacturers a certain degree of price insurance, are used extensively by merchants in textile centers throughout the world; Israeli spinners are denied this insurance, thereby placing them on an unreasonable competitive basis.

To illustrate the fluctuation of cotton prices, the cost of 100 tons of middling upland spot cotton in New York in 1952 fluctuated from a low of 33.2 cents per pound to a high of 42.9 cents, a difference of 10 cents or about 30 percent of the low price. Were Israeli spinners able to buy for immediate delivery and sell the yarns at prices based upon the cost of cotton at or near the purchase date, a reasonable means of protection would be afforded. However, local cotton spinners are unable to work under such favorable conditions, for the time lag between the date of purchase and actual delivery may run as high as one or two months.

Spinners not engaged in the elaborating industries do not have to be too concerned over the purchase price of raw cotton because those weavers and knitters who lack pamaz account credits, and who are unable to receive an import license, must buy the locally spun yarn despite the cost. (Import licenses for the purchase of yarn are difficult to obtain unless the manufacturer is producing for export. However, prolonged delays in the issuance of a license, or in receiving the shipment after the order has been placed, may place the export manufacturer in the position where he may have to purchase locally spun yarn to remain in operation.)

It is suggested that the method used to purchase raw cotton be reviewed. A system should be established which will give the cotton spinners greater insurance against price fluctuations and permit them to sell yarns to the elaborating industries for lower prices.

Approximately 87 percent of total raw cotton imports into Israel in 1953 (3,853 tons) came from the United States and Turkey, with small amounts from Belgium, the Union of South Africa, and India.

Turkey accounted for 14 percent of the total. The difference between the free market price and a clearing price for Turkish cotton is approximately 10 percent. The free market price is generally lower than the price for American cotton, but the clearing price may be from 10 to 12 cents per kilogram higher. Turkish cotton is of an inferior quality; the country does not have adequate grading facilities so that the variation within a given grade may be as high as 10 percent. The amount of waste is said to vary from 2 to 3 percent above that for American cotton.

Turkish cotton is imported into Israel under trade agreement in exchange for such commodities as automobiles that are assembled in Israel. Members of the Cotton Spinners' Association have been obliged to buy the Turkish cotton at a higher price than a comparable grade American cotton despite the poorer quality. However, the Ata Textile Company, a nonmember, has not been required to take large amounts of this cotton because, since it has more combing machines, its yarns are of a quality which can be used in textile exports. Though the practice is not questioned, it does place the company in a preferred position by being able to purchase a better grade of American cotton for a lower price, and at the same time manufacture a fabric of higher quality.

The allocation of Turkish and American cotton to members of the Cotton Spinners' Association in April 1954, is representative of the method of distribution. The allocation, which was at an individual ratio of four to one, was as follows:

Company	Number of Spindles	Turkish Cotton Allocation	American Grant-in-Aid Cotton Allocation
Palestine Cotton Mills, Ltd.	11,400	$138,750	$ 30,750
Sharon Textile Mills, Ltd.	5,500	61,050	13,530
Cottonia Textile Works, Ltd.	5,300	61,050	13,530
Siv, Ltd.	5,000	61,050	13,530
Moller-Dee Textile Corp.	6,000	--	42,500
Slilim Textile Company	5,000	48,100	10,160
Tova Textile Company	2,000	--	3,000
		$370,000	$127,000

Source: Cotton Spinners' Association.

The import of Turkish cotton has had harmful effects upon both spinners and weavers in Israel; the purchase price has been high, the quality of yarn manufactured has been below export standard, and faulty dyeing and finishing results from mixing American and Turkish cotton in fabrics. Those elaborating industries using Turkish cotton have been prevented from developing an export trade since sales of textiles made from these yarns have to be restricted largely to local markets.

3. Domestic cotton yarn production. The sales price for locally spun cotton yarn is considerably higher than for comparable grades of imported yarn. This difference may be illustrated by the market prices prevailing in June 1954.

	Price of Spun Yarns		
Yarn Count	Imported c.i.f. Dollars	Locally Spun Dollars	Locally Spun Israel Pounds
20/1	1.30	2.03	3.650
30/1	1.65	2.94	5.300
40/1	1.85	3.23	5.800

In order not to be misled by the above figures, two factors should be considered when comparing international yarn prices with the price of locally spun yarns. First, foreign prices may reflect a government subsidy, preventing an accurate base for cost comparison. Second, Israeli spinners seem to have established uniform price and sales terms despite individual variations in production cost.

In addition to disadvantageous methods of purchasing raw cotton described above, certain other factors contribute directly to high-cost spinning. Controls on imports of raw cotton have placed the spinners in the position where they have been unable to maintain an adequate supply, and thus are unable to work at full capacity. Under such circumstances they are unable to reduce costs by spreading their overhead expenses over a sufficient volume.

Statistics supplied by the Cotton Spinners' Association covering four member plants show potential spinning capacity expressed in tons on a two-shift operating basis, and actual tons spun during the year 1953.

Plant	Average-count Yarn	Cotton Yarns Spun	Potential Spinning Capacity	Percent of Capacity
Palestine Cotton Mills, Ltd.	16/1	776	1,300	60
Sharon Textile Mills, Ltd.	14/1	470	600	78
Cottonia Textile Works, Ltd.	16/1	517	672	77
Siv, Ltd.	16/1	333	450	74

The principal causes for high production costs in the spinning segment of the textile industry appear to be inadequate stock maintenance, improper production balances created by the intermingling of old and new machinery, low production capacity in relation to overhead expenditures, and expenses of adjusting the carding and combing machines to varying length staples.

Weavers, knitters, and dyers have indicated that locally spun yarns do not meet export standards from causes largely beyond the spinners' control.[1/] A common complaint is that their restricted foreign currency and cash position has limited the purchase of equipment necessary to clean cotton properly prior to spinning and to humidify or air condition the rooms so that the yarns may be uniform and clean.

The existence of the cotton spinning segment of the textile industry in Israel has been subject to question on the ground that it may work a hardship on those weavers and knitters who, under the circumstances described, must buy the low-quality high-priced yarns. Although there should be a thorough investigation of costs to prevent further development of an industry that may work a hardship upon the elaborating industries, (and perhaps force up local retail prices) it appears that cotton spinners in Israel have not been given a real chance to manufacture in accordance with established world practices.

Cotton spinners have the capacity to expand present production; by working three shifts a day they could meet most of the requirements of weavers and knitters operating on a one-and-one-half or two-shift basis. However, spinners must recognize and assume the responsibility they owe to the elaborating industries; they must reduce production costs by appropriate methods, under competition, and when possible by acquiring machinery and equipment which will assure a higher quality product. Their responsibility will assume special significance if cotton is to be grown extensively in Israel.

1/ The Ata Textile Company's yarns are considered to be up to export standards.

4. Raw wool purchases and domestic yarn production. Imports of raw wool in 1953 amounted to 500 tons, valued at 477,000 Israel pounds; most of the imported wool is in the form of tops. Imports of woolen and worsted yarn in 1953 totaled 235 tons, with a value of 464,000 Israel pounds.[1/] Of the total raw wool imports, 44 percent came from Uruguay; other imports of wool and yarns were fairly evenly divided among the principal wool producing countries.

Israel has 27 wool spinning plants with 15,761 carded wool spindles; four plants have 5,556 worsted spindles. In contrast to the cotton spinning industry, wool spinners have experienced little difficulty from inferior grade imports, although extra costs arise when the wool contains too much grease.

Prices of wool yarn sold locally average from 5 to 8 percent higher than prices for imported yarn. An example of comparative costs (which however may reflect a subsidy) is the recent offer by Japanese wool yarn manufacturers to sell 48/2, 60-64 quality yarn for 4.50 dollars a kilogram--a price about the same as for a kilogram of raw wool imported into Israel. It is estimated that this grade yarn could not be spun and sold locally at less than 5.80 dollars to 6.00 dollars per kilogram.

The demand for wool textiles in Israel is seasonal. There is a low rate of turnover, and stockpiling of the finished product is common practice. Because of these factors plus limited working capital, there is perhaps a more pressing need for lower-cost financing than there is in the cotton segment of the industry.

It is more difficult for wool spinners and cloth and knitgood manufacturers to absorb export losses through local sales than for those engaged in cotton textile manufacture. Not only is the demand seasonal, but the temperate climate of Israel does not require an extensive use of woolen goods. (Woolen articles such as clothing and blankets are used during the winter months largely because of the general lack of central heating.) Factors such as seasonality and the fluctuation in prices of raw materials counterbalance the alleged higher profits traditionally associated with the woolen industry. Most of the causes for high-cost cotton manufacture in Israel, which are described above, apply to the woolen industry as well, and need not be repeated here.

1/ Value of raw wool and wool yarns is based on the exchange rate of one Israel pound for 2.80 dollars. Central Bureau of Statistics and Economic Research, Government of Israel.

The cost of spinning imported grease wool might be reduced through the suggested production of lanolin as a by-product. However, before establishing a plant, a thorough cost analysis should be made to determine whether lanolin can be produced profitably.

5. German Reparations Fund purchases. The contract to purchase German Reparations machinery, equipment, and raw materials through the Israeli-established Shilumim Company contains provisions which are considered intolerable by industry and which tend to drive up purchase costs beyond reason. For example, should there be an increase in the costof a commodity following the placement of a purchase order, the Shilumim Company may raise the price specified in the order by as much as 15 percent; a written notice to the purchaser is sufficient to bind him to the new price. Purchase is by irrevocable letter of credit, though the Shilimim Company may cancel the whole or a part of an order at any time. The Shilumim Company assumes no responsibility for quality, date of delivery, or commitments of the supplier. The buyer is seldom permitted to specify the make of textile machinery or equipment to be purchased, or the suppliers of material. Purchases may be sent to Israel by sea or air as the Shilumim Company specifies.

By means of controlling foreign imports through the licensing system, the Government has in effect established a priority policy whereby it can direct textile manufacturers to buy needed machinery, equipment, or material from Germany regardless of higher costs, delays in contract performance, or inferior quality. Because of this method, companies are denied the right to purchase perhaps cheaper and better textile machinery and supplies from other countries.

6. Cost of labor. Wage rates in the textile industry are high in Israel when compared with such competitive countries as France, Germany, and Japan. (Appendix Table 17 lists comparative wage rates for these countries and Sweden.) As a result of the National Collective Agreement for the Textile Industry (Appendix D), employers pay a minimum of 32 percent of the total wages for social benefits, and the employee pays 3.4 percent. (By comparison, in the United States, employer payments for employee security in private industry amounted to approximately 6 percent in 1953.) Social insurance and various benefit costs may run as high as 75 percent of the cost of the raw materials. In one textile company, which however is not considered to be representative of the entire industry, these benefits amounted to 40 percent of the cost of labor. The breakdown for this company is as follows:

Item	Percent of Total Labor Cost
Provident fund	4.5
Recreation fund	1.4
Sick leave	2.0
Sick fund	2.2
Workmen's compensation insurance	2.1
Workers' transportation	1.0
Idle time paid	2.4
Subsidy to workers' canteen	4.9
Work clothes and allowance on goods sold to workers	3.3
Military service contribution	1.1
Annual leave	5.0
Holidays	2.6
Allocation to compensation fund	7.5
	40.0

Other factors which tend to increase wage costs are:

a. The cost-of-living allowance, which provides for a 1 percent increase for each 1 percent rise in the Cost-of-Living Index. (Cost-of-living increases are based upon the first 125.00 Israel pounds of salary per month.)

b. Inability to discharge an ineffecient employee; employees are released only on the basis of length of service.

c. Reluctance of employees to work overtime if they should be in the 50 percent income bracket; employees contend that most of the excess money which they would earn would be paid out as taxes. This condition may require companies working on contracts specifying a definite delivery date to hire additional personnel to avoid losses which might arise through contract cancellation.

d. The high cost for third-shift operators who are paid a differential of 25 percent.

Not all textile companies are signers of the National Collective Agreement for the Textile Industry; some are resisting pressure to join which is now being exerted by both the General Federation of Labor and union employees. The argument advanced by noncontracting companies for failure to join is that their financial status is such that they cannot

absorb the resulting wage increase which they claim would be from 10 to 15 percent.

Wage differentials between workers, managers, and officials in the textile industry are small after taxes have been deducted. It will be noted in the following pay scale for one of the large textile companies that the difference in "take-home" pay between a president and a worker is only 90 Israel pounds or 50 dollars a month. Considering the great difference in responsibility, such a small wage differential may not only tend to destroy initiative, but to stimulate the development of small-scale operations where there could be a greater chance to earn more money.

	Wage per Month		Taxes		"Take-Home" Pay	
	Israel Pounds	Dollars	Israel Pounds	Dollars	Israel Pounds	Dollars
Workers (average)	250.000	139.00	40.000	22.00	210.000	117.00
Manager	420.000	233.00	160.000	89.00	260.000	144.00
President	650.000	361.00	350.000	194.00	300.000	167.00

The problem of wage rates involves the General Federation of Labor and the Government. It should be remembered that high labor costs are not conducive to foreign investment or the development of an export program. Were the Government to assume a greater share of the social benefit costs which industry must now pay to the General Federation of Labor (discussed in Section II), textile manufacturers would be in a better competitive position, and their financial stability would be enhanced.

7. Productivity. It is estimated that productivity in Israel's textile industry is about 40 percent of that in the United States. Considerable attention is now being devoted to increasing production efficiency in Israel. Included in the Histadrut's wage policy for 1954 is the linking of wages to output by encouraging incentive pay and the establishment of work norms. The desirable effect of this policy has already been noted throughout the textile industry. Marked improvement in productivity has occurred in many companies which have had studies conducted to establish norms for spindle, loom, and knitting machine operation; in some instances, productivity has increased by more than 30 percent.

Four main problems have worked against increasing productivity in Israel's textile industry. The first is the lack of materials.

Many companies have been unable to maintain an adequate supply of raw materials because of delays in obtaining import licenses and in receiving raw materials purchased abroad. The second problem is the shortage of cash resources. Some textile companies desire to increase production through incentive pay, but their working capital position and limited sales demand do not permit it. A third problem involves the acceptance of proposed work norms. After a company has completed a study establishing work norms, the proposed plan must be accepted by the company's labor committee. In some instances the committee has refused to accept the proposed performance schedule despite approval by the company's executives. The fourth problem is the difficulty of releasing or transferring employees incapable of meeting work standards. To illustrate, a department of one of the textile companies employed 45 people, 10 of whom were exceeding the norm established by a company study, 18 were working at the established level, and 17 were below the norm. After the introduction of the new standards, seven out of the 17 attained the norm, but 10 were not able to do so because of age. The company was unable to release these employees and sought a transfer to less important work. Before the transfer could be accomplished, the Company had to reach an agreement with the Labor Exchange.

In addition to increasing productivity through the establishment of work norms, greater emphasis should be given to vocational training. It may not be practical to establish a school devoted entirely to the textile trade because of the limited size of the industry, but special vocational courses could be provided. The Israeli textile industry should not overlook the special opportunity now available whereby manufacturers who learned their trade in the large European textile centers may transmit their diversified knowledge and skill to the young apprentice.

8. Transportation costs and port fees. Textile companies located outside of the Haifa area, where the majority of the imports are received, must pay high trucking costs to their textile plants. Added to these costs are exorbitant port fees. The cost to a textile manufacturer located in Tel Aviv, including port fees, shipping agent's commissions, and transportation by rail and truck is approximately 4 percent of the value of the import; about 67 percent of this is accounted for by the port fee.

9. Maintenance of spare parts. One of the chief complaints of textile manufacturers is their inability to obtain spare parts when needed. In some instances it is reported to have taken up to four months to acquire an import license; added to this period is the length of time required to purchase the part in a foreign country and receive it in Israel. Companies have tried to stockpile spare parts to meet

emergencies. However, this procedure requires additional drains on working capital since funds may be tied up for more than a year before the need arises for the spare parts.

A large proportion of the textile machinery in Israel has been purchased in England, Switzerland, and the United States. Spare parts for these machines are usually not interchangeable, thereby causing a great diversification of spare part requirements. The introduction of German machinery purchased through the Reparations Fund will complicate the problem further.

The encouragement of local manufacture of spare parts would seem desirable as a solution, even to the extent of textile manufacturers financing a subsidiary organization. While production locally may result in a higher-priced article, the loss now suffered by textile manufacturers through breakdowns and cancellations of orders would probably more than offset the higher purchase cost.

It was pointed out during the course of this study that the many problems encountered by the textile industry have long been recognized by the Government, including those arising through lack of spare parts, the absence of standard specifications, and prices above prevailing international levels for cotton spinning. Further, it has been mentioned that recognition should be given to the preliminary work which has been done, and that in due time the problems will be resolved. Admittedly such obstacles cannot be surmounted by any one individual, but must be dealt with on a high policy level. But recognition must also be given to the fact that these problems are not of recent origin.

There is no intent or desire in this report to assume credit for "discovering" these problems, or for making recommendations which happen to agree with present thought or with conditions existing in other textile manufacturing countries. The chief value of the preceeding summary of contributing factors to high-cost production is to show their combined effect upon the industry as a whole, and to emphasize the need for immediate action on a number of fronts not only to permit the industry to develop on a sound economic base, but to prevent aggravation of weaknesses which might possibly lead to financial distress.

C. Dyeing, Finishing, and Printing Industries

About 45 enterprises in Israel are engaged in the dyeing, finishing, and printing of textiles. (See Table 19.) Most of this processing is handled by approximately 10 firms, the majority of which are located in the Tel Aviv area. Kurdenah Textile Company, Ltd., a subsidiary

of Ata Textile Company, and the largest cotton dyer and finisher in Israel, is located at Haifa. In 1953, this company processed eight million meters of cloth, of which 86 percent was for the Ata Textile Company, and 14 percent for sundry clients, particularly those located in the Haifa area.

There are three large dyeing and finishing plants in the Tel Aviv area; each of these companies is owned in part by its associated textile weaving company. Though there may be some preference in establishing priority for the processing of material for the associate company, no complaints on this point were expressed by other textile manufacturers during this study.

The three dyeing and finishing plants have a common labor contract with the Histadrut, and there appears to be a uniformity in service costs. When the surcharge was levied against stocks of imported raw materials following devaluation of the Israel pound in 1952, an abatement of the levy was arranged by the companies when they agreed not to raise processing charges until 1954. The surcharge, however, was applied to machinery and materials on order.

Most of the raw materials used in dyeing, finishing, and printing are imported, although the companies use some locally manufactured chemicals.1/ The idea had once been advanced that a chemical plant be established to manufacture aniline dyestuffs. However, to establish a plant on a profitable basis, it is estimated that minimum capacity should be approximately 2,000 tons a year. As local requirements are only 60 to 70 tons annually, it would be necessary to find foreign markets for excess production. Following a study of foreign markets, the plan was abandoned as being unrealistic.

Dyeing and finishing plants enter indirectly into the export business by processing materials for textile manufacture. Thus, they are unable to establish their own foreign credit pamaz account. Allocations for the purchase of dyestuffs are made annually by the Government from the Development Budget. At times the companies have been able to make foreign purchases independent of the budget allocation by arranging for the transfer of foreign currency credit from weavers and knitters. However, the processing plants do not have the independence permitted to owners of pamaz accounts of making foreign purchases.

1/ Locally manufactured chemicals, and the price per ton in Israel pounds as of June 1954: sulphuric acid, 91; ammonia, 320; sodium sulfate, 72; sodium hypochlorate, (10 percent solution) 190; hydrochloric acid, 300; and soap, 413.

The over-all production capacity of dyeing and finishing establishments in Israel appears to be sufficient to meet local textile requirements; it takes an average of about two weeks to fill an order. The plants have been working at full capacity for cotton and rayon dyeing. Wool dyeing is seasonal; during approximately one-half of each year the work is reduced to between 30 and 40 percent of capacity. As a general principle, production capacity in dyeing and finishing plants is somewhat larger than actual production requirements because a variety of equipment must be maintained to dye every type of material.

Too much emphasis cannot be placed upon the fact that textile processors constitute a major link in the entire textile industry; no matter how fine the yarn is, or how well the cloth may be woven, sales depend to a great extent upon appearance. There is a general view among Israeli processors that at the present time they are handicapped in producing a product of good quality particularly if they have to meet export standards. Several major reasons account for this view.

First, the cotton cloth received from a given textile company may be woven with yarns spun on several different types of machines and from various grades of cotton. Though the yarn count may be the same, variations in the quality of the thread prevent the material from being dyed evenly.

Second, finishers are using dyes imported from Belgium, The Netherlands, France, Germany, and Switzerland. The dyers are generally not given the chance to designate the country of purchase since import licenses are issued depending upon the source of foreign credit allocated by the Government. Dyes from the various countries vary in shade, method of treatment, and quality; colors are hard to match even though they may have the same color rating.

Third, each processor generally dyes in small lots for some 300 to 400 textile mills. Defective dyeing results from preparing the colors in small amounts and in not keeping the vats properly cleaned between color changes. Continuous process dyeing is a better method, and is cheaper when large amounts of cloth are dyed at one time. However, the companies in Israel believe that the extra expense required to purchase the equipment would not be justified because the individual orders to be filled are too small to make it profitable to use this dyeing method.

Fourth, there is a need for "perfection" machines, including modern stretchers and humidifiers; many machines now being used are too old and outmoded to do the type of work required.

Fifth, the equipment in Israel for dyeing wool tops and wool yarns is not of sufficient capacity to dye large amounts at one time; the largest vat for dyeing wool tops can only handle 500 kilograms, and the largest wool yarn dyeing vat has a capacity for only 150 kilograms. When larger quantities of wool than can be handled in one vat are to be dyed, it is difficult to match shades because the colors have to be replenished after each lot. Though dyeing of wool tops has been estimated to cost approximately 25 percent less than dyeing in the yarn, limited facilities prevent the woolen textile mills from using this method extensively.

The amount of defective material dyed may run as high as 40 percent of the total. Studies are now under way to increase efficiency and productivity. In the case of one company, which conducted such a study, it is maintained that steps have been taken which reduced defective dyeing by 7 percent; at the same time productivity was increased by 30 percent.

The three large dyeing and finishing plants in the Tel Aviv area have proposed a plan whereby each would specialize in the dyeing of a particular fiber—wool, cotton, or silk and rayon. The plan has considerable merit, and has been under consideration for some time. If a decision is to be made in its favor, it should be done soon because the companies are continuing to order equipment to meet individual requirements. Some of the main arguments for specialization are: First, it would reduce the need for each company to maintain similar machinery for dyeing the various fibers; were the duplicate machines used to dye a particular fiber to be combined in one plant, there would be little need to import additional dyeing equipment. Second, it would be unnecessary for each company to maintain a large stock of miscellaneous dyes. At present many different types of dyes are maintained by each company for each type of fiber. Because of changes in fashion, special colors may be kept for two or three years before they are in demand again, thereby tying up working capital indefinitely. Third, it would increase the proficiency of each company and reduce the time required to process material; it has been estimated that dyeing and finishing costs could be cut by from 25 to 30 percent through specialization.

Screen printing is the only process used in Israel to print cloth; the average-size order has been too small to justify the installation of roller printing equipment. Print designs in Israel are outstanding, and it should be possible to develop a larger local and export market. However, screen printers maintain that they have been handicapped in producing high-quality fabrics because a large percent of the cloth received from the finishing plants has not been sized and stretched properly. Dress manufacturers in Israel have complained because

they cannot reduce costs by cutting the cloth on a mass production basis; variations in width and improper stretching do not permit the proper matching of designs.

Screen printers have been considering the desirability of establishing their own processing plants so that more precise work may be done. However, were the dyeing and finishing plants to purchase the necessary "perfecting" machines it would be unnecessary for the printers to assume this extra expenditure.

Many of the dyeing, finishing, and printing plants in Israel have a need for technical assistance. They are seeking advice on the type of equipment required to improve quality, on the method of handling new dyes now on the market, and on how to dye plastic and synthetic yarns and fabrics.

D. Summary of Suggestions for the Textile Industry

The following suggestions are basic to the development of a sound textile industry in Israel; they are not all inclusive, but are representative of recommendations in the report which would improve the industry's status. The suggestions should not be considered independent of the substantiating material in the main text of the report.

1. General Suggestions

a. Textile development and expansion should be based, as far as practicable, upon the domestic market and upon hard-currency sales abroad rather than upon trade agreements or barter.

b. Textile manufacturers should engage in more productivity studies leading to production norms to be used in improving labor efficiency.

c. A vigorous effort should be made to improve the ratio of capital returns to capital investment. Idle machinery, presently held out of fear it might be used in competition if sold, should be disposed of under the most favorable terms to the manufacturer, preferably abroad and in noncompetitive areas.

d. Textile spinners and weavers should refrain from the tendency to fix prices to protect high-cost, inefficient producers.

e. Exporters should concentrate upon the manufacture of style and specialty commodities which have a competitive advantage in foreign markets.

f. Acquisition of new machinery should, for the immediate future, be directed toward increasing productivity and raising quality rather than quantity of production. Particular attention should be given to high quality standards in the dyeing, finishing, and printing industries. Humidifying and air conditioning equipment is needed to make possible the spinning and weaving of better fabrics. Additional cotton and wool combing machines and higher-gauge knitting machines would expand the export possibilities for quality items in less competitive fields. Modern stretching and finishing equipment would improve the appearance of cloth, and would help to promote volume manufacture of clothing made from cloth woven in Israel. Additional wool-top dyeing machines would help reduce production costs and improve quality. The acquisition of duck and upholstery weaving looms, equipment for dyeing plastics, and machinery for the manufacture of woolen knitting yarns would open fields which appear to have promising export possibilities. Special opportunities also seem to lie in further expansion of facilities for the manufacture of cordage, rope, binder and bailer twines, sacking, and fishnets. Decisions to acquire new machinery should be based upon a thorough study of cost, local demand, and foreign market possibilities.

2. Suggestions Requiring Government Action or Assistance

The Government's program to aid the textile industry should be aimed primarily at the reduction of cost and the improvement of quality. Action on the following suggestions should be as prompt and as concurrent as possible.

a. The restrictions on bank credits should be relaxed to permit textile manufacturers to acquire short-term loans at reasonable interest rates. Repayment of long-term loans should be based upon the amount borrowed plus a reasonable interest rate. The establishment of an export-import bank, probably with government backing, would assist exporters materially in financing foreign sales at reasonable interest rates.

b. Import duties should be removed when they are not used to protect an established industry.

c. Application of the agio on exports to trade-agreement countries should be modified to the extent that they will not be applied when sales to such countries are compensated by a direct or indirect subsidy.

d. A thorough cost analysis and marketing study should be made prior to the Government's promotion of any segment of the industry beyond the experimental or "pilot-plant" level. The Ministry of Commerce and Industry and the Ministry of Agriculture should reconsider the desirability of raising cotton in Israel. If the united recommendation is favorable, plans should be made for expanding the ginning facilities and spinning equipment to conform to production under the agricultural development program.

e. In purchasing raw cotton, spinners should be permitted fuller use of the credits allocated in the development budget to buy raw cotton at the cheapest world market price; quarterly or semiannual allotments would be preferable to the present system of monthly allocation.

f. The method of directing the purchase of machinery, equipment, or materials from a particular country through the allocation of foreign exchange or by the use of German Reparations should be modified. Manufacturers should be permitted to buy needed machinery, equipment, or materials under the most favorable terms of purchase and delivery when the disparity in cost or quality between German Reparations sources and others is unreasonable.

g. Regulations designating which textile commodities are subject to the general purchase or luxury tax, and their method of collection should be reviewed and adjustments made to prevent undue financial hardship and to reduce restrictions on the quality of cloth to be manufactured.

h. The Ministry of Commerce and Industry should encourage the establishment of competent and efficient export firms to handle foreign sales, thereby relieving textile manufacturers of the cost and time required to develop their own individual trade channels.

i. The Ministry of Commerce and Industry should promote the development of standard specifications covering the spinning and weaving industries, and by means of government inspection, require textile manufacturers to conform to the standards.

j. The Ministry of Commerce and Industry should coordinate with the Ministry of Education and Culture to establish vocational training classes in textile manufacture. The knowledge and skill of the European textile experts now in Israel should be utilized fully in training others so as to raise productivity and improve quality.

k. Authorization for expansion in the textile industry should be conditional upon improvements in the circumstances noted above which are retarding the development of a sound textile industry. As a general principle, expansion under existing conditions tends to worsen rather than better the financial status of the individual companies.

Created and furthered by European immigrants possessing special trade qualifications, the textile industry has become a fundamental part of Israel's economic structure. Though it may take time, the drive and determination of the industrialists to re-establish themselves in the environment of the new State, and the desire to contribute toward its development can overcome problems which are to be found within their organizations. However, immediate remedial action by the Government in areas largely beyond control of managers of textile firms is necessary so that industrialists can operate under conditions which would be more comparable to those existing in other textile manufacturing countries. In such an environment, the textile industry can overcome many of its own problems and develop on a sound basis.

Section V

CHEMICALS AND RELATED INDUSTRIES

A. The Chemical Industry and the National Economy

Israel is attempting to establish within a period of a few years an elaborate chemical industry such as larger nations have taken generations to develop. Those in government and in industry responsible for this remarkable task have been faced with serious problems: lack of raw materials, inadequate capital, scant resources, shortage of trained manpower. In spite of the handicaps, sheer determination of these dedicated people has brought about a changed industrial picture. Today, the chemical industry is composed of approximately 370 firms manufacturing a wide range of products from paints and plastics to pharmaceuticals and cosmetics.

To date there appears to be little evidence that the chemical industry was developed on a sound economic basis. This fact is understandable, however, because of the speed with which the development took place. Many of the plants, most of them small, were originally established during World War II to supply the needs of the local market, as well as a part of the requirements of the Allied Forces. Since then, many new companies have moved into the chemical field. These new plants, in line with policies established by the Government, have not replaced older ones but instead have added to existing capacity.

Since domestic consumption is limited by size and growth of the population and does not in itself warrant establishment of large chemical plants in Israel, the dependence on sales in foreign markets is great. Although exports have been emphasized by the Government, only limited success has been achieved to date. One of the main reasons is lack of local raw materials. Nearly all materials must be imported from abroad and, consequently, costs are high in the chemical industries. Therefore, it has become increasingly difficult for Israel companies to compete against well-established foreign competitors, particularly those in England and Germany. One of the few alternatives is to export chemicals to trade-agreement countries. This type of operation, however, does not earn the necessary foreign currency to replace that used for the purchase of raw materials particularly from hard currency countries.

It is well to consider to what extent the presence of a chemical industry in Israel is economically justified at this stage of development

of the country. Although this industry supplies raw materials for other commodities, specialized chemicals for the industry itself, and an ever increasing number of consumer products, as well as being a dynamic factor in creating new industries and new jobs, it must be remembered that this industry also requires heavy capital investment for plant equipment. Furthermore, since the industry is highly competitive, it is always faced with rapid obsolescence which means additional capital is constantly required for improving facilities.

Therefore, the people who will be responsible for the future development of one industry must carefully weigh the pros and cons against certain basic fundamentals upon which the building of a strong, well-integrated, chemical industry depends. A cheap source of raw materials, low-cost fuel and power, an adequate source of both investment and working capital, low-cost transportation, and adequate market possibilities are all essential to success in most chemical lines. Finally, there must be a continuing research effort directed toward improving existing products and developing new products and processes.

Although Israel, with its special industrial and political situations and geographical location, does not enjoy all the fundamental conditions usually required for a successful chemical industry, there is no reason why a logical development plan, one that would be adapted to local conditions and based on economic fundamentals, cannot be established. The various plans described in current government and industrial publications seem ambitious, particularly in relation to the financial capabilities of the country, the trained manpower requirements at the management, technical, and operational levels, and the actual need for many of the projects proposed.

In view of these considerations it is suggested that for the next five years the Government's primary aim should be to make existing chemical plants more efficient by improving facilities, processes, products, and performance of workers and managers. The ideas as developed in Section II of this report should help to establish an economic atmosphere in which all industry, as well as the chemical industry, can have a healthy existence. A suggested short-term program for the chemical industry is described in Part B of this section.

1. Structure of the industry. The 370 firms in the chemical industry in Israel now employ approximately 6,750 employees. While there are fewer firms in existence now than there were at the time of the 1952 industrial census, the number of employees has increased considerably. A breakdown of firms by employment size groups is shown for the years 1950 and 1952.

Size of Enterprise (No. of Workers)	Number of Enterprises 1950	Number of Enterprises 1952	Total Number of Workers Employed 1950	Total Number of Workers Employed 1952	Number of Workers per Enterprise 1950	Number of Workers per Enterprise 1952
1 to 9	323	315	1,435	1,127	4.4	3.6
10 to 99	67	74	1,696	1,568	25.3	21.2
100 and over	3	3	548	835	183.0	278.0
Total	393	392	3,679	3,530 1/		

Source: Israel Publications, Ltd., The Israel Yearbook 1952/53, and The Jerusalem Post, July 6, 1954.

There are no current figures available on size distribution as shown above for 1950 and 1952. However, breakdown by category 2/ is presented in Appendix Table 18. Approximately 80 percent of the employment in the industry is in the following eight categories:

Main Segments of the Chemical Industry in Israel	Number of Enterprises	Total Number of Workers Employed
Basic chemicals and fertilizers	9	900
Ceramics	18	650
Cosmetics	35	300
Glass	10	900
Paints and lacquers	23	350
Pharmaceuticals	23	500
Plastics and plastic products	57	300
Rubber products and latex	40	1,500
Total of 8 categories	215	5,400
Total chemical industry	373	6,750

The chemical companies in the country are fairly well concentrated in Jersulem, Tel Aviv, and Haifa. Over 50 percent of the plants are in the greater Tel Aviv area (including Ramat Gan, Bnei Brak, and

1/ Includes 606 owners and/or managers.

2/ The Ministry of Commerce and Industry lists 30 different categories in the chemical industry.

Petah Tiqva). The fact that there are so many small companies (over 90 percent have 20 employees or less) means that the ratio of management and staff personnel to workers is abnormally high; there is one so-called management man for every 1.6 workers. As might be expected, the number of technical specialists in relation to total employees in the chemical industry is also high. There is one technical person for each nine employees; in all the manufacturing industries this ratio is only one to 32.

Although current data are not available with respect to new investment in the chemical industry, it is pertinent that between 1950 and 1953 special emphasis was placed on increasing or improving facilities within the industry. According to a report issued in 1953, out of a total of 712 applications for all industries, the Investment Center approved 107 chemical enterprises for a total investment of 20.5 million dollars and 13.7 million Israel pounds during 1950-53. This represented over 25 percent of the new investment in all industry, and is a particularly high figure since the chemical industry contributes less than 10 percent of Israel's total industrial output. The following table shows estimated output of the chemical and related industries in comparison with all industry in Israel for the years 1950, 1951, and 1952. Output is expressed in thousands of Israel pounds with each pound valued at 2.80 dollars.

Branch of Chemical Industry	1950 1/	1951 1/	1952
Basic chemicals & fertilizers	8,400	14,500	17,000 2/
Ceramics	600	1,300	10,000 3/
Glass	1,200	2,000	
Rubber	1,000	1,800	
Plastics	1,300	1,700	
Total chemical industries	12,500	21,300	27,000
Total industry	189,750	270,000	367,000 4/
Percent of chemicals to total industry	6.6	7.9	7.4

2. Importance of chemical fertilizers. Since it is expected that Israel's economy will continue to have a strong agricultural base in

1/ Data received from Jewish Agency for Palestine.
2/ Estimated by trade and industrial sources.
3/ Estimated by Stanford Research Institute.
4/ Data received from Ministry of Commerce and Industry, Government of Israel.

the future, the chemical fertilizer industry, already well developed, will play an increasingly important role in an expanding agriculture. This was one of the prime reasons for establishing the company, Fertilizers and Chemicals, Ltd. The output from its plant, along with the production of potash by the Dead Sea Works, Ltd., will give Israel the three basic mineral requirements for chemical fertilizers—phosphorus, nitrogen, and potassium. A brief discussion of Fertilizers and Chemicals, Ltd., its future plans, and a comparative production cost estimate for sulphuric acid, is presented in Appendix E.

Fertilizers and Chemicals, Ltd., has been in a position until recently to supply only a part of the superphosphate requirements of the country. Now the company can supply all of the domestic needs for this fertilizer. Production of superphosphates over the past few years was as follows: 1950, 10,000 metric tons; 1951, 11,500 metric tons; 1952, 24,500 metric tons; 1953, 35,000 metric tons; 1954, projected on basis of reported monthly rates, 60,000-75,000 metric tons.

The plant of Dead Sea Works, Ltd., at the south end of the Dead Sea, was reactivated in July 1953. Only a limited amount of potash has been produced since then. For 1953, production amounted to 4,400 tons. Limited quantities of potash are needed for the lighter soils of the coastal region of Israel. It is planned to export the bulk of the potash production. In 1954 shipments went to England and South Africa.

To meet her needs for chemical fertilizers, Israel has had to rely mainly on imports during recent years. Comparative figures for the years 1951, 1952, 1953 (January-September), and 1953 (12 months) are presented in Table 22. The imports of chemical fertilizers into Israel, by country of origin, are shown in Table 23.

Israel's requirements for chemical fertilizers for the years 1953 through 1960 are shown in Table 24. Assuming that about the same relationship between requirements of superphosphates, ammonium sulphate, and ammonium nitrate will exist in the future as for the 1953-54 period, usage in 1960 will be 140,000 tons, 75,000 tons, and 35,000 tons, respectively. The capacity of the superphosphate plant at Fertilizers and Chemicals, Ltd., will be adequate for this production volume. However, it is estimated that the capacity of the new ammonium sulphate and ammonium nitrate plants slated for completion in 1955 will be exceeded by the country's demand for these materials in perhaps 1956 or 1957. By making small additional expenditures now, it may be possible to increase capacities significantly. The capacity of the refinery to supply sufficient hydrocarbon gases for production of

Table 22

IMPORTS OF CHEMICAL FERTILIZERS INTO ISRAEL
Quantities in metric tons, value in Israel pounds (IL. 1.000 = $2.80)

Commodity	Jan.-Sept. 1951		Jan.-Sept. 1952		Jan.-Sept. 1953		Jan.-Dec. 1953	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Phosphate fertilizers	5,892	224,436	6,871	146,607				
Potassium fertilizers	--	--	450	14,239	12,066	291,352	18,867	454,921
Nitrogenous fertilizers	2,743	62,815	1,391	37,319				
Fertilizers, other	5,678	255,286	8,223	326,538				
Ammonium sulphate	22,083	552,137	7,847	211,922	6,066	154,196	8,203	426,134
Total	36,396	1,094,674	24,782	736,625	18,132	445,548	27,070	881,055

Source: Central Bureau of Statistics and Economic Research, Statistical Bulletin of Israel, December 1953 and February 1954.

Table 23

IMPORTS OF CHEMICAL FERTILIZERS INTO ISRAEL
BY COUNTRY OF ORIGIN, 1953

	Imports	
	Metric Tons	Value in Dollars
Chemical Fertilizers		
Austria	760	61,141
Belgium	3,017	214,018
Western Germany	7,758	497,204
Tunisia	2,000	117,547
United Kingdom	1,245	73,256
Others	4,087	310,612
Total	18,867	1,273,778
Ammonium Sulphate		
Belgium	1,717	124,284
Western Germany	12,212	790,647
United Kingdom	4,274	278,244
Total	18,203	1,193,175

Source: Central Bureau of Statistics and Economic Research, Statistical Bulletin of Israel, December 1953.

Table 24

REQUIREMENTS FOR CHEMICAL FERTILIZERS IN ISRAEL
(In Metric Tons)

Commodity	1952-53 1/	1953-54 2/	1954-55	1956-57	1957-58	1958-59	1959-60
Superphosphates	32,293	80-90,000					
Ammonium sulphate	10,615	35-40,000					
Nitrates	9,838	10,000					
Total	52,746	125-140,000	125,000	145,000	165,000	190,000	250,000

Note: Figures from 1954-55 through 1959-60 estimated by the Ministry of Agriculture on the assumption that total requirements will increase by 15 percent per annum.

1/ These figures represent sales only.
2/ Estimated by the Ministry of Agriculture. Leading importers and farmers estimate a requirement of 124,000 metric tons for this same period.

additional ammonia may be a limiting factor. In any event, a decision on whether to expand local capacity or to import the additional requirements should perhaps be delayed until one or two years after the plants are in operation.

Since the production of chemical fertilizers is expected to play an important role in the future domestic economy of Israel, it is entirely possible that they could also contribute substantially to the future export trade and therefore help to improve the present adverse balance of payments. Thus, a brief review of world production and consumption of fertilizers has been made to determine how Israel's production might best fit into the world fertilizer picture.

Data for the world production and consumption of potash, phosphoric acid, and nitrogen fertilizers are summarized in Appendix Tables 19, 20, and 21. The estimated over-all increases in world consumption of fertilizers over the three-year period from 1950-51 to 1953-54 are as follows: nitrogen, up 28 percent; potash, up 24 percent; phosphoric acid, up 14 percent. These increases will no doubt continue because along with the drive for increased world food production, there should come an increased use of fertilizers. The following table shows present rates of consumption of fertilizers on arable land and permanent pastures in various areas of the world, and in addition indicates those areas where the greatest expansion in the use of fertilizers will probably take place. Rates of consumption are expressed in terms of metric tons per 1,000 hectares.

Area	Potash	Phosphate	Nitrogen
Western Europe	20.4	17.6	13.4
United States	3.2	4.4	2.9
South America	0.1	0.3	0.2
Asia	0.2	0.4	0.8
Japan	21.7	37.2	60.8
Africa	0.0	0.2	0.2
Oceania	0.1	1.2	0.1

It is unlikely that Israel can compete on the world market with most of the finished chemical fertilizer materials, such as ammonia, ammonia salts (sulphates and nitrates), and superphosphates. The reasons are that raw material, fuel, and labor costs are comparatively high and in the case of phosphates, the natural rock is not of the highest grade. Therefore, by examining the data on world production and

consumption of fertilizers and recognizing Israel's potentialities in this direction, it seems appropriate for the nation to concentrate on the more favorable possibility of exporting the basic fertilizer materials—that is, potash and phosphate rock—rather than attempting to finish the materials under adverse cost conditions.

There is a fairly good balance in North and South America with respect to nitrogen and phosphoric acid; however, for potash there has been a net yearly shortage of over 200,000 metric tons. European potash producers are undoubtedly supplying this deficit, although Israel might have a good chance in this market if she can reduce production and transportation costs sufficiently. The nation would then be in an excellent competitive position with respect to the African and especially the Asian potash markets, where for the past three years there has been a combined potash deficit of between 250,000 and 275,000 metric tons per year.

According to a recent report[1/], the supply of phosphatic fertilizers is still perhaps the most crucial factor in a further general expansion in the use of fertilizers. It seems likely that this type of fertilizer may figure even more prominently in the expansion of fertilizers used in newly developing countries. This could come about because the full benefit obtainable from nitrogen dressings may not be achieved in many areas because of phosphate deficiency in the soil.

Phosphate rock is the chief source of phosphoric acid fertilizers. Thus, its production has an important bearing on the manufacture of these fertilizers. World production of phosphate rock for the years 1950-51 and 1951-52 was 21.2 million and 23.6 million metric tons, respectively. For the past two years, production has been steadily rising, and it is now estimated that the world output of phosphate rock is nearly 29 million metric tons. Israel has a good opportunity to become a large supplier of phosphate rock, provided costs of processing and handling the present deposits can be reduced substantially or if new higher-grade deposits can be located.

3. Chemical imports and exports. Israel's balance of trade during 1953 showed a deficit of about 82 million Israel pounds. This information, along with trade balance figures for chemicals and related products, is given in the following table. The data are shown in thousands of Israel pounds with each pound valued at 2.80 dollars.

1/ Food and Agriculture Organization of the United Nations, An Annual Review of World Production and Consumption of Fertilizers, 1953, Rome, November 1953.

	Imports	Exports	Trade Deficit
All commodities	102,454	20,548	81,906
Chemicals and related products	9,606	1,369	8,237
Basic chemicals	3,394	380	3,014
Ceramics and glass	501	502	1 1/
Rubber products	260	327	67 1/
Oils, fats, and waxes	5,126	153	4,973
Nonmetalliferous products	325	7	318

Source: Central Bureau of Statistics and Economic Research, Statistical Bulletin of Israel, February 1954.

These figures indicate the importance of imported materials for the chemical industry, especially for basic chemicals and oils, fats, and waxes. As a result of the export of plate glass and truck and passenger tires, the trade balance was favorable for the ceramics and glass, and rubber products fields. Whereas some 9.4 percent of all Israel's imports during this period were chemicals and related products, the chemical industry contributed only 6.7 percent of the country's total exports. Furthermore, most of the chemical materials were purchased from hard-currency countries, whereas about 75 percent of total chemical exports went to soft-currency countries. This situation is shown in the following table. The data are expressed in thousands of Israel pounds at 2.80 dollars per pound.

		1953	
Hard-Currency Countries		Imports	Exports
United States	- Total	31,900	4,360
	- Chemicals	2,720	65
England	- Total	10,650	3,330
	- Chemicals	1,060	42
West Germany	- Total	4,500	--
	- Chemicals	980	--
Soft-Currency Countries			
Turkey	- Total	4,550	2,800
	- Chemicals	--	990
Finland	- Total	1,520	2,100
	- Chemicals	--	43

Source: Central Bureau of Statistics and Economic Research, Statistical Bulletin of Israel, February 1954.

1/ Excess of imports over exports.

Some of Israel's more important chemical exports for 1953, according to country of destination, are shown in Appendix Table 22. Comparative data for these chemicals and related materials are presented in Table 25 to show their relative importance for the years 1949-1953, and for the first three months of 1954.

In the past, chemical materials have been imported from the United States, England, and West Germany. Most of these materials are imported by the Ministry of Commerce and Industry, although other Ministries, such as Agriculture, Health, and Defense, also import chemicals. The 1954-55 procurement budget of the Ministry of Commerce and Industry calls for the purchase of only 16 percent from hard-currency countries, 32 percent through trade-agreement countries, and 52 percent through German Reparations. This is a complete change in policy, but it is well founded in that there will be a considerable saving in dollars. Imperial Chemicals Industries in the United Kingdom tentatively has been scheduled to provide 47 percent of the total of all chemicals to be purchased from hard-currency countries. By following this procurement plan, the Government expects to stockpile about 1.24 million dollars worth of chemical materials. This policy will establish stocks of most commodities for a period of from six months to one year.

B. Development Plans for the Chemical Industry

In early 1949, the Ministry of Commerce and Industry appointed a planning committee for the chemical industry in Israel. Its task was to formulate proposals for chemical development. The recommendations[1/] of this group are summarized as follows:

1. Basic chemicals should be given first priority.

2. The chemical industry should be based on the production of sulphuric acid, hydrochloric acid, phosphoric acid, nitric acid, ammonia, caustic soda, soda ash, chlorine, benzene, toluene, naphthalene, phenol, formaldehyde, and acetylene.

3. All of these chemicals should be produced in the country, even if on a small scale, so as to assure availability.

4. The basic considerations for introduction of a chemical industry in Israel were set forth as follows:

1/ M. J. Deutch, Industrial Conditions in Israel, Preliminary Report, August 31, 1949.

a. Most of the basic chemicals enumerated above were already consumed in quantities justifying erection of plants which will be sufficiently efficient to produce at prices equivalent to or lower than c. i. f. Haifa prices.

b. There were promising possibilities for exporting nitrogen products to England.

c. With the exception of sulphur, necessary raw materials were available locally.

d. Power costs appeared to be the main impediment to introduction of a successful chemical industry; costs were high because it was necessary to import high-cost crude oil for fuel.

e. The Government should be disposed to give tariff protection, subsidies, and other advantages for production of the above-mentioned chemicals.

The original recommendations of the planning committee have been or are being carried out for all of the inorganic chemicals, except soda ash. In the case of the organic chemicals, only acetylene is being produced on the basis of imported calcium carbide; the other organic chemicals are still being imported, although at various times in the past tentative consideration has been given to domestic production of some of them.

To augment the original plan for developing Israel's chemical industry, a number of long- and short-range programs have been drawn up and submitted by various agencies of the Government. While most of these plans have considerable merit, and are entirely feasible from a technical point of view, they appear to be overly ambitious in relation to the financial capabilities of the country. Consequently, the various projects included under each plan should be reappraised from a strict economic point of view. Thus many of the projects which are marginal now should be shelved, and only those which can be justified on their own merits should be considered. Based on the amount of investment capital flowing into the country and previously determined criteria of preference for all industry, final selection of the screened projects for the chemical industry can be made. A discussion of some of the more important plans follows.

1. Ten-year development plan for the chemical industry. In 1952, at the request of the Government, Mr. J. Araten, then Manager of the

Table 25

MAIN CHEMICAL EXPORTS FROM ISRAEL
In Israel Pounds (IL 1.000 = $2.80)

Commodity	1949	1950	1951	1952	1953	Jan.-March 1954
Cement, portland 1/	0	0	0	21,500	453,304	73,844
Rubber tires	--	--	--	10,000	318,361	18,356
Essential oils	120,161	52,293	165,623	139,000	195,083	23,046
Paints and lacquers	4,000 2/	20,800 2/	35,700 2/	22,000	91,370	21,381
Artificial teeth	182,335	307,914	268,353	106,000	63,708	15,706
Drugs and medicines	22,278	92,551	234,734	83,500	163,554	63,556
Window glass	--	--	--	--	30,400	10,531
Detergents	2,000 2/	6,500 2/	11,000 2/	21,000	29,797	3,269
Potassic chemical fertilizer	--	--	--	--	--	75,681
Total	330,774	480,058	715,410	403,000	1.345,577	305,370

1/ During first six months of 1954, 53,430 tons of cement valued at 357,000 Israel pounds were exported.
2/ Total figures available for paints and lacquers and detergents; split estimated by Stanford Research Institute.

Source: Central Bureau of Statistics and Economic Research, Statistical Bulletin of Israel, September 1952; December 1953; and February and May 1954.

Chemical Section, Ministry of Commerce and Industry, was asked to draw up a long-range program for the chemical industry to cover the period 1953-1962. It was not official, and therefore can be used only as a rough guide.

Details of the plan are given in Appendix F. For the major part of the program, Mr. Araten visualized an expenditure of about 33 million dollars and 17 million Israel pounds would be required. This capital outlay includes expansion of facilities for production of calcinated phosphate rock, potash, sulphuric acid, sodium chloride, chlorine, caustic soda, and nitrogen, as well as new facilities for production of soda ash, bromine, insecticides, and fungicides. Only pyrite ores and certain petroleum fractions were to be imported; all the raw materials were available locally.

The purpose of the report was to establish the most likely chemicals for production in Israel. They were selected primarily on the basis of local raw material available and the use of one chemical for production of another chemical. A level of production was set for several of the basic chemicals; this more or less determined the level of production of the remaining chemicals. No attempt was made to determine if the projects were economically feasible. The cost estimates were made in 1952. Since then, equipment costs (assuming purchase in the United States) have increased at least 5 percent. Construction costs in Israel have advanced approximately 75 percent.

2. A chemical industry in the Negev. A plan[1/] has been proposed to establish a group of chemical plants somewhere in Southern Israel for production of the following materials: (1) high-grade calcined phosphate, (2) phosphate salts, (3) concentrated phosphate fertilizers, and (4) soda ash. The primary raw materials for this operation are: (1) phosphate rock from the present quarries, (2) salt from the Dead Sea, and (3) pyrites from Greece or Turkey. It has been visualized that these plants will produce materials almost entirely for export.

Israel probably cannot afford to establish another industrial chemical center of this magnitude within the next five years. Furthermore, the Negev is not a logical choice for a site.

One reason advanced for locating in the Negev was that transportation costs and burden on the railroad network would otherwise be

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1/ Ministry of Finance, Government of Israel, Data and Plans Submitted to the Jerusalem Conference, "Southern Chemical Works," October 1953. Details of this plan are described in Appendix G.

severe. The future salt supply is close by, as are the phosphate deposits. However, the fuel and pyrite ores must be brought to the site. Furthermore, 40 percent of the total production of this group of plants is earmarked for export and consequently would require transportation to Haifa for shipment. Also, a large share of the material for local consumption (mostly soda ash) is used in the Haifa area to the north.

It is understandable that the Government wishes to give impetus to development of the Negev by locating industrial units in the area. However, lower operating costs could be achieved by concentrating the manufacture of additional sulphuric acid, phosphate compounds, and phosphate fertilizers at Fertilizers and Chemicals, Ltd., instead of duplicating these facilities in the Negev. Also, there would be a considerable saving in capital expenditure if all facilities for the production of these materials were located at one place.

The capital required for the proposed Southern Chemical Works is estimated to be 17 million dollars and 17 million Israel pounds based on tenders (now about one year old) of German manufacturers. A scheme of this magnitude is out of the question when it is noted the Development Budget for 1954-55 allocates only 12.4 million Israel pounds to all industry and 9.5 million pounds to mines and quarries. However, certain projects covered in this scheme do deserve a good deal more study. For example, installation of facilities to produce a high-grade phosphate rock and soda ash appear close to being economically feasible, and should help to improve the unfavorable balance in chemicals.

3. Tentative projects for the chemical industry. The Ministry of Commerce and Industry has been very active in initiating a number of projects which may be suitable for the chemical industry. This is one of the prime functions of the Ministry. Although most of the projects are only in the preliminary study stages, several companies have investigated the possibilities of producing such chemicals as phthalic anhydride, ethylene dibromide, and hydrogen peroxide. A list of the projects, together with some descriptive material, is included in Appendix H.

It was possible to make only a cursory examination of the merits of these proposals within the time limit of this study. Nevertheless it seems appropriate to comment briefly on several of the more important proposals.

a. Utilization of local materials. Several projects suggest the utilization of local materials. Examples of these are: herbs for

pharmaceutical preparations; flowers and herbs for essences; olives, peanuts, and safflower seeds for both edible and industrial oils. To indicate the potential in this direction, for the period April 1, 1953 to March 31, 1954, some 25 million dollars, or over 8 percent of the nation's total imports, was spent for seeds, beans, and nuts from which were produced oils and fats, gums, and resins. If only 25 percent of these commodities were produced within the country—and agricultural tests show this to be entirely feasible—an annual savings of about six million dollars, would result. To be sure, domestic costs may be somewhat higher at first, but with time, good farming techniques, and imagination, the costs of production should gradually decline. It is suggested a good deal more effort be directed toward projects of this nature.

b. Ethylene dibromide. The production of ethylene dibromide based on bromine from the Dead Sea, seems promising. The two main uses for this material are as an antiknock fluid for gasoline and as a seed fumigant. According to reports, equipment has already been ordered from Germany for production of bromine. It is not known if the source of ethylene has been established; that is, whether from petroleum fraction or ethyl alcohol.

Taking into consideration the experience gained in previous production of ethylene dibromide, as well as bromine, this project should have a good chance for success. Since it is planned to export most of the production (ethylene dibromide and/or bromine), a market study should be made as early as possible to determine the most favorable economic distribution of these two chemicals.

c. Organic chemicals. Any project which considers the production of organic chemicals in Israel should be approached with caution. Initial investment costs are high, the technological aspects are extremely difficult, and capacities must be established at levels considerably beyond Israel's needs before a plant can become an economic unit.

d. Wood waste. Several projects suggest the use of wood waste as a raw material. For example, the production of yeast and sugar from wood waste are two interesting possibilities. It is believed costs of operation would be prohibitive for this type of wood waste utilization, but an engineering study should be conducted to verify this point. Another possibility is to use wood waste in conjunction with plastic resins to form a sort of semihardboard, such as Celotex. 1/

1/ A pressed board made from local scrap materials.

This use of wood waste seems a promising project if it can be shown that the board produced is suitable for the manufacture of orange boxes and other packing crates. At present, the wood used in making orange boxes must be imported.

Although large quantities of wood waste are reported to be available in the country, much of it is presently derived from the production of orange crates. In other words, assuming the above project for producing a resin-bonded board is proven successful, the making of orange crates would no longer provide wood waste. Thus, it would be necessary to import wood waste, and this operation may not be economical.

e. Calcium carbide and acetylene production. It has been suggested that calcium carbide be produced locally in support of acetylene production. The present use of acetylene is for welding, but it has also been suggested as an intermediate for further processing to polyethylene and trichloroethylene. About 2,000 to 2,500 tons per year of imported calcium carbide are required to meet local needs now. Two firms are manufacturing calcium carbide on a small scale from local limestone and wood waste, but whether this operation can be justified on an economic basis alone is not known.

f. Carbon black. Low-grade carbon black might be produced in Israel, and at some future date, high-grade carbon black might be produced and supplied to the two local tire companies. Annual consumption of the lower-grade carbon black is about 300 metric tons at present. It is assumed that raw materials would be refinery by-products. Since only minimum quantities of crude oil are now imported to satisfy domestic needs for refined products, the economics of producing carbon black locally probably cannot be justified.

g. Aniline dyestuffs. To manufacture aniline dyestuffs in Israel appears to be unrealistic, even though it is visualized that only the more important dyes would be produced. It is reported that two foreign companies have investigated the possibilities and that capital requirements were prohibitive. Plant costs average about 300 to 500 dollars per annual ton of capacity, but in order to justify the building of a plant, minimum capacity must be about 2,000 tons per year. Israel's requirements are only 60 to 70 tons per year, and thus export outlets would have to be found for almost the entire capacity of the plant.

The projects discussed above are significant in that many of the chemicals are now being imported in substantial quantities. Projects of this type have been and are being continually encouraged by the

Chemical Section of the Ministry of Commerce and Industry. It would seem worthwhile to devote even more time to this type of project. Although some of them may not now prove to be economically feasible, they should be revaluated from time to time as the world market picture changes.

While the Government has taken no active steps to promote two widely discussed projects, magnesium and petrochemicals—the view is held in some quarters that the production of these materials, especially magnesium, could play an important role in the future economy of the country. Therefore, it also seems appropriate to comment on these projects.

h. Magnesium. For discussion purposes, a plant with a capacity[1/] of 3,000 tons per year has been suggested for Israel, the facilities to be located at the Dead Sea. It is visualized that power requirements would be supplied from a surplus of some 80 million kilowatt hours per year that would be available from the proposed Jordan River power development. In lieu of hydroelectric power, however, it is claimed by government sources that power can be produced for 1.0 to 1.1 cents per kwh from a steam-generation plant located adjacent to the magnesium facilities. This power cost assumes the station would be operated at essentially a 100 percent load factor for magnesium production alone.

According to government sources, the process, as visualized for Israel, would have several advantages over the one used by the Dow Chemical Company in Texas. They are:

1. Higher concentration of magnesium—4.0 percent in Dead Sea water as compared with 0.13 percent in ocean waters.

2. Smaller equipment requirements—Dow Chemical Company uses calcination equipment for concentrating the magnesium salts prior to electrolysis; much of this equipment would presumably not be required at the Dead Sea plant.

Consequently, because smaller volumes of water would need to be handled to recover the same quantity of magnesium, and because equipment requirements may be lower since calcination facilities would be

1/ Information from a reliable source in the Government indicates that the capacity should be 5,000 tons or over for plant operation to be economical.

unnecessary, initial investment costs would probably be less in Israel. However, the operation at the Dead Sea would very likely be tied to potash production. This would mean an increase in shared investment costs since additional facilities (processing equipment, pumping equipment, and perhaps evaporating pans) would probably be required. A portion of the additional costs would undoubtedly be absorbed by the potash plant. In 1950, it was estimated that a plant for the production of primary magnesium would cost 800 dollars per annual ton capacity in the United States.

Even if the adjustments mentioned above are taken into consideration, the 800 dollar figure may be low at today's prices because of inflationary pressures of the past four years. Actually, it is difficult to determine a price at this time because it is not known what operations would be required to process the Dead Sea water. As an example, representatives of the Government are hopeful that the magnesium chloride salts can be passed directly into the electrolytic cells without concentration or extensive purification. This would be the key step in the operation. If this is possible there would be a definite saving in equipment, and operating costs would be reduced. It is reported, however, that in the Dow process very close control is necessary during electrolysis to prevent contamination of the magnesium, and thus, the above proposal may not be feasible.

This project may appear to offer good possibilities now because of the present selling price for magnesium of 600 dollars per metric ton, but there are still many variables that may adversely affect future production of this metal in Israel. One of the most important considerations is that excess capacity now exists in the world. In the face of this, Israel would probably have a difficult time finding markets for its surplus production.

If the magnesium project is ever to become a reality, it should be considered on its own economic merits, not, as the Government has argued, on foreign currency savings. Some of the economic aspects of the proposed scheme are questionable. For example, one of the major cost components is for power. The estimate that power can be produced for 1.0 to 1.1 cents per kwh may be somewhat unrealistic especially if high-priced fuel oil must be transported at additional costs to a proposed steam electric plant at the Dead Sea. To indicate the importance of some of the costs, a few rough calculations have been made. Capital requirements are also estimated.

Assuming a plant with a capacity of 5,000 tons of magnesium per year, and using an investment figure of 800 dollars per annual

ton of capacity, capital requirements for the Dead Sea project would be four million dollars. In addition, a steam power plant of at least 12,000 kw would be needed. A figure of 250 dollars per installed kw should be adequate to cover the cost of the power plant. With working capital and possible expenditures for adapting the potash plant to enable its by-products to serve the magnesium plant, it is estimated that the total initial cost of the project could easily be eight million dollars. Providing the plant operated at capacity, annual sales (on the basis of a selling price of 600 dollars per ton) would be three million dollars. While production costs are difficult to estimate at this stage, calculations show that annual costs for only power, labor, and depreciation would come to over 2.0 million dollars.[1/] This gives a differential of less than 1.0 million dollars to cover all other costs, including raw materials, maintenance, and profits.

i. Petrochemicals. Until imported crude oil is available at a reasonable price, or until oil is discovered in the country, there is little possibility for creating a petrochemical industry in Israel. Furthermore, even assuming a low-cost source of crude oil, the refinery would probably have to operate at capacity to provide the necessary raw materials at low cost. And, finally, before a decision is reached to establish a petrochemical industry, a study should be made to determine which organic chemicals are most adaptable to local requirements and to export possibilities.

Major problems would be encountered in setting up a petrochemical industry in Israel. For example, to produce on a low-cost basis, the plants would have to be large. This means not only heavy capital investment but it also creates the problem of disposing of excess production abroad. Furthermore, there might be some difficulty in the disposal of by-products; the present chemical industry is probably not in a position to absorb them. In addition, markets and prices of the products are in a state of flux because of technological changes throughout the world.

4. Short-term program for the chemical industry. Following the general principles of methodical growth, and guided by observations made in visiting most of the important chemical plants in Israel, a program adapted to present conditions which could be carried out by 1960 is suggested. This plan could be integrated with any one of several long-range plans mentioned earlier in this section.

1/ Figure assumes power cost equal to 1.1 cents per kwh, operation at 90 percent of capacity, 175 employees at an average annual wage of 3,000 dollars, and 10 percent depreciation on an investment of 5 million dollars.

Israel is a small country, and as such her present needs for most specialized chemicals are not sufficiently large to justify the installation of facilities to produce many of these materials locally. Therefore, Israel may need to rely on imported chemicals for some time to come. With this point in mind, the following short-term (1955-60) program for the chemical industry is suggested:

a. Potash and phosphates. To offset the unfavorable trade balance in chemicals, primary effort should be directed toward production of good quality potash and phosphates for export. Since these materials are important to agricultural production, an expanded fertilizer program fits in well with the Government's plan to make the country self-sufficient for its food requirements.

This suggestion is valid only if the two producing companies, Dead Sea Works, Ltd. (potash) and Negev Phosphates, Ltd. (phosphate rock) are in a strong financial position and able to operate efficiently. Since the Dead Sea Works, Ltd. and the Negev Phosphates, Ltd. could play an important role in the future economy of the country, it is advisable to examine closely some of the current difficulties in construction and operation. These problems could affect the long-term position of potash and phosphate rock production.

Dead Sea Works, Ltd. By the end of the fiscal year 1954-55, the equivalent of 11 million Israel pounds will have been invested in rehabilitating the potash plant. Production has reached a level of about 30,000 metric tons per year. Not until the middle of 1955 will the capacity output of 135,000 metric tons per year be attained.

The major criticism of the company has been directed at construction progress at the plant site. While management was probably optimistic in forecasting dates for various stages of production of potash, unexpected construction and operating difficulties have interfered with the attainment of completion goals. This may reflect insufficient planning initially on this project. The time required to build new pans, install new equipment, and make the old equipment operate in conjunction with the new was often much longer than expected. Apparently the labor force has been maintained on a level which could only be justified by successful completion and operation of facilities.

However, much has been accomplished in recent months by a close working arrangement between the management of the Company and the technical assistance furnished by the United States Operations Mission. Many of the problems mentioned above came about because of inexperience; a satisfactory solution has been reached in most cases.

For the immediate future, it is expected that such problems as harvesting the carnallite from the pans on a continuous basis, using Dead Sea water to wash the salt pans, and reducing operating and transportation costs, will be resolved. The production of potash was a successful operation prior to 1948; it should be a successful operation again within a year or two.

Based on the above considerations, the capacity of the potash plant probably should be maintained at an operating level of 135,000 metric tons per year, through 1956 or 1957, or at least until production problems have been solved and operating and transportation costs reduced. Only then should the possibility of expanding the plant capacity to 180,000 or 200,000 metric tons per year be considered. Prior to the decision to expand, an engineering study on projected costs and a re-evaluation of the market should be made.

Negev Phosphates, Ltd. To date, the total investment in Negev Phosphates, Ltd., is ablut 2.5 million Israel pounds. By the beginning of 1954, after approximately a year and one-half of operation, total production of phosphate rock amounted to 50,000 metric tons. An additional 32,000 metric tons was produced during the first three months of 1954. Most of the output has been supplied to Fertilizers and Chemicals, Ltd., for the manufacture of superphosphate fertilizers.

The major difficulty of the company has been wasteful working methods. At present, only 40 to 45 percent recovery is being accomplished in the grinding and sizing process. Furthermore, while nonselective exploitation of the deposits is probably cheaper, the quality of the phosphate rock is lower than more selective mining could produce. Until adequate transportation facilities are available, that is, until the railroad is extended to the plant site, a conveyor belt is used, or trucking costs are reduced, transportation expenses will continue to be burdensome. At present, the cost for hauling phosphate rock from the deposits to Haifa is about 10 Israel pounds per metric ton. This partially explains the present high costs of operation. Sales in the domestic market cover less than 50 percent of the manufacturing cost, with the result that the operating deficit has now reached about one million Israel pounds.

However, better recoveries, proper mining techniques, and adequate transportation facilities should help to reduce manufacturing costs to a point where this operation could be profitable, and thus provide substantial dollar earnings. Every effort should be made to place this company on a sound basis.

In connection with the phosphate rock facilities, work should proceed in two directions. Primary effort should be directed to finding better grade phosphate deposits; however, continued effort should be made to improve operations and reduce costs at the existing facilities. If better grade deposits are not found, it may be feasible to build new facilities for upgrading the present phosphate deposits. An experimental program should be initiated to establish the economics of upgrading as well as which method (calcination or hydrochloric acid leaching) is more appropriate.

b. Soda ash. Serious consideration should be given to the production of soda ash. The present demand for soda ash in Israel is 12,000-15,000 metric tons per year. This basic chemical material is supplied to the glass, textile, and leather industries, as well as to miscellaneous consumers. To satisfy these local requirements, soda ash is now imported.

For a plant to be an economic unit, its capacity should be at least 30,000 metric tons per year. This means an export market for about 10,000 metric tons per year would have to be found, allowing for an increase in local demand during the next few years of perhaps 5,000 metric tons. In order to succeed in the export market, it must first be established that a good quality of soda ash can be produced at competitive world prices. It might even be well to consider producing a very high-quality ash which could be used in such countries as Greece and Italy, where fine crystal is manufactured. To arrive at low unit cost of operation, it might be possible to utilize the lower grade by-products which would result from upgrading the present phosphate rock. Also, there is the possibility that a Solvay (ammonia-soda process) plant could be scaled down in size to fit the demand for this chemical in the Israel economy. With experimental work on various steps of the process, low-unit costs still may be attained. The results of the market study and experimental work should be incorporated in an engineering study which would establish the merits of the proposal.

c. Bromine. The production of bromine should be resumed and perhaps the production of ethylene dibromide should be started. Equipment has been ordered from Germany for production of 1,000 metric tons per year of bromine. A study should be made now to determine the market potential especially in Europe, for bromine and ethylene dibromide. The results of this work will indicate where the emphasis should be placed, and may help to resolve the problem of whether the bromine should be transported as such or whether it should be converted to ethylene dibromide at the Dead Sea plant site.

d. Imported chemicals. Certain imported chemicals are used in sufficiently large quantities in local industry to warrant consideration for their production in Israel. In fact, the Chemical Section of the Ministry of Commerce and Industry is constantly examining these chemicals and their production possibilities. Examples are: pigments and color materials (red lead, zinc oxide); auxiliaries (such as washing and conditioning materials) for textiles and leather; casein; peppermint oil; pharmaceutical raw materials. Since many of these same materials are used by segments of industry which now contribute substantially to the export trade, it is essential that the economics for producing any chemical be well-established. Furthermore, if there is excess production, over and above local requirements, the export markets should be known and exploited.

e. Modernization of facilities. Full use should be made of German Reparations equipment to modernize facilities in the chemical industry. Except for a few investment possibilities, some of which are mentioned above, further attempts to expand the existing industry during the next few years, or to broaden the base of the industry, should be made with caution.

The capacity of the sulphuric acid plant at Fertilizers and Chemicals, Ltd., should be adequate through 1960. Even if the present trade agreement to supply sulphuric acid to Turkey in exchange for pyrite ores is extended, the capacity of the plant should be large enough.

The capacity of the ammonium sulphate (30,000 metric tons per year) and ammonium nitrate (8,000 metric tons per year) plants at Fertilizers and Chemicals, Ltd., will not be adequate to supply domestic demand for these fertilizers much past 1956 or 1957, if estimates by the Ministry of Agriculture are valid. However, until operating costs are reduced to a point where local retail prices are competitive with prices of imported fertilizers, it may be better to continue domestic operations at capacity and to import the additional requirements instead of expanding the present facilities.

f. Cost of program. It is difficult to estimate the total capital investment which would be required for this program without a complete engineering study of the various projects. However, to give a rough guide for financial planning, cost estimates for the projects were taken from various government publications and were adjusted to fit suggested capacities and present-day prices. The total cost of the program will approach 20 million dollars. No attempt has been made to determine the foreign currency (dollar) requirements as opposed to

local capital in Israeli pounds. A breakdown of the costs, by project, is shown as follows:

Project	Investment Requirements (Dollars)
Potash expansion 1/	3,000,000
Facilities for phosphate rock 2/	5,000,000
Soda ash 3/	5,000,000
Bromine (and ethylene dibromide) 4/	750,000
Miscellaneous 5/	5,000,000
Total	18,750,000

To attract capital for this program, it is believed that the installation of such cost reducing measures as adhering to strict cost accounting, streamlining staff and labor force, increasing productivity, and improving maintenance procedures, will help considerably. Once the various companies and segments of the industry affected by this program are on a sound economic basis, capital should be obtainable from any one of four possible sources: bank loans (foreign and local), reallocation of the Development Budget, further capitalization by stock issue (private capital), and United States Grant-in-Aid funds (if not too far into the future).

It is visualized that the heaviest spending for this program would come in the 1955 to 1958 period. Those projects which have the greatest chance to increase export earnings or reduce import expenditures should receive major emphasis. For example, the phosphate rock facilities and the soda ash plant might have first priority. This program should provide the means for the chemical industry to approach economic self-sufficiency. Only a limited number (perhaps 500) of additional jobs will be created. Assuming approximate present-day prices for the basic materials which will be produced, it is estimated

1/ Expansion of plant capacity from 135,000 to 180,000 or 200,000 metric tons per year.

2/ Assume facilities for upgrading. Capacity taken at 250,000 metric tons per year, of which 100,000 tons for the local market and 150,000 tons for the export market.

3/ Assume a plant with a capacity of 30,000 metric tons per year.

4/ Bromine plant capacity of 1,000 metric tons per year, and ethylene dibromide facilities to process 75 percent of bromine output.

5/ Pigments auxiliary products for textiles and leather, casein, peppermint oil, pharmaceutical raw materials, and similar products.

gross foreign earnings from this program by 1960 will be between five and seven million dollars annually.

C. Problems of the Chemical Industry

The chemical industry in Israel has shared substantially in the general industrial expansion program undertaken by the Government during the past six years. In fact, nearly 50 percent of the firms have come into existence since the inception of the State. Considerable excess capacity now exists in the industry. The chemical industry has had to operate for various reasons under conditions not always conducive to natural and healthy development. As a result, many problems have arisen. While most of these problems are common to all industry in Israel, they are discussed here in the light of their effect upon operations within the chemical industry.

One of the critical problems which face the chemical industry in Israel today is procurement of raw materials. Emphasis is to be placed on the use of German Reparations material. However, it is reported that in many cases prices may be as much as 10 to 15 percent higher than prices for materials available in the United States or other European countries. This could have important effects upon costs of operation. There seem to be few complaints within industry so far as quality of Reparations materials is concerned. Many feel that more freedom should be allowed for purchasing elsewhere if price differentials are excessive. Some of the larger chemical companies with dollar accounts prefer, and apparently are in a position, to import raw materials even though they may be available locally. Their reasoning is often based upon cost and higher as well as consistent quality.

In general, the larger chemical plants in Israel have reasonably efficient layouts. Considerable thought has been given to this problem in construction of new plants. However, in case of the older medium-sized and small companies, plant layout is often inefficient with the result that the flow of materials is not smooth. In most cases equipment is of excellent quality and well-selected for specific jobs. Most firms are operating only one shift per day, six days per week. It is often stated in the industry, where there may be ten or more firms in a field, that one or two companies could supply the entire domestic market. Yet, these same companies often do not export nor are many in a position to do so. Furthermore, there are a number of firms, especially in the fields of paints, plastics, detergents, and rubber products, which seem to produce too wide a range of items. Some companies realize that it may not be rational to operate on this basis but do so in order to retain present customers. Many apparently appreciate the advantages of

specialization but cannot afford to switch operations in such a limited market. In general, more emphasis needs to be placed in the industry on quality control and standards. In the export market, quality is one of the major selling points; without good standards, markets may be lost because of inability to duplicate specifications.

There is a general lack of knowledge in the chemical industry on proper cost control. Many of the people consulted on this matter during the study fully appreciate their deficiencies and wish for assistance. It was stated by nearly all firms that they are operating on very narrow profit margins and, in fact, cover losses in the export market by sales at higher prices in the domestic market. Apparently incentive to export to trade-agreement countries is weakened because the Government collects a 2.5 to 10 percent agio charge on most of these sales. Depreciation allowances are almost nonexistent in the smaller companies; in other words, with small margins of profit these companies are probably operating at an actual loss because none of the current funds are being set aside for equipment replacement.

Production costs are basically high for most chemical products manufactured in Israel. Three factors are primarily responsible—labor, transportation, and power costs.

Comparative data in the following table show that average hourly earnings for skilled chemical workers in Israel are high in relation to those in several other countries.

Country	Average Hourly Earnings (dollars)	Employer's Contribution for Social Costs (percentage)
United States	1.80-1.90	20
Israel	0.60-0.70	30 1/
Germany	0.45-0.50	25
Japan	0.25-0.30	14

Sources: United States - U. S. Department of Labor, Hours and Earnings - Industry Report, December 1953.
Israel - Average from industry sources.
Germany - Wire from USOM, Bonn, July 23, 1954.
Japan - Wire from USOM, Tokyo, July 26, 1954.

1/ Sometimes as high as 40 percent.

In a number of instances, the cost for transporting chemical materials from European ports to Haifa is no more than the cost for moving materials from Haifa to the plant in Israel. The following example is noted to show how high transportation costs can affect the economies of an operation. An average figure of 10 Israel pounds per ton is quoted as the price for hauling phosphate rock and potash from the Negev to Haifa. Assuming that phosphate rock is destined for export, the figure represents one-third to one-half the price which can be obtained for this material in the world market.

Until a cheaper source of crude oil or some other form of energy is available to Israel, there is little that can be done about power costs. A number of companies have pointed out that since power is sometimes a rather large item in total production cost for chemicals, it makes operating at a profit almost impossible under present conditions.

Another major problem facing the chemical industry today is a shortage of capital and credit. In order to have sufficient working capital, short-term loans are obtained by prime borrowers at a cost of 11 to 14 percent per year. It is even reported that rates of 18 to 24 percent have been charged to chemical producers by small banks or private lending groups. Several companies feel that it is unfair that the 7.5 percent purchase tax should be collected at the plant level, thus using additional working capital. In the absence of adequate capital, it is difficult to maintain sufficient stocks of raw materials to produce efficiently for the export market. It is suggested by industry that a more lenient policy should be adopted by the Government in connection with drawbacks on import duties and excise taxes on supplies which go into finished export goods, such as fuel and paper.

Many of the companies presently in the export business realize that there is too much concentration in the Turkish market. One view is that if Turkey should become a free dollar market, the effect on Israel would be a major one since a very high percentage of her chemical exports are purchased by Turkey. It was noted by a few chemical companies that there is a very definite buyer's market developing in chemicals. This means that for the future, better products, lower prices, and greater service must be given in order to compete successfully. Several companies have observed that there seems to be an increasing delay in trade-agreement countries in approving import licenses for Israel goods. Some of the smaller companies point out that they have neither the means nor the knowledge to establish contacts in foreign countries. There is general agreement that correspondence contacts are usually unsuccessful.

D. Suggestions for the Chemical Industry

The following suggestions are offered for improving the general position of the chemical industry in Israel.

There is a definite need for developing the functions and skills of management and technicians at all levels. The caliber of management often makes the difference between profitable and unprofitable operations in any business, particularly a highly technical one. This training should be provided within industry, and steps should be taken to set up the proper courses in schools and colleges so that a steady flow of trained personnel into industry is assured.

Considerably greater emphasis could be placed upon a well-coordinated industry-agriculture program so that: (1) farmers are supplied with acceptable fertilizers, feed supplements, insecticides, and fungicides, and (2) industry is provided with agricultural products and wastes which can be utilized for oils, pharmaceutical preparations, essences, and the like.

Additional applied research effort is required within the chemical industry, not alone for technical problems, but also for perfecting quality, conducting market studies, and undertaking long-range planning. One example lies in utilization of Dead Sea chemicals. It may be possible to obtain this effort in one or more of three ways:

1. Mutual sponsorship of applied research by several companies or by a segment of the industry.

2. Contract research work by existing institutions such as the Weizmann Institute and Haifa Technion.

3. Contract research work by foreign groups.

The promotion of further affiliations by local companies with foreign firms should perhaps be encouraged. Local companies considered for such an arrangement should have already proven themselves by producing a good quality product with relatively efficient and low-cost operations.

Full use should be made of German Reparations materials. However, if at all possible it should not be mandatory for industry to use these materials if quality and price elsewhere are better. Stockpiling of large quantities of German materials should be avoided if possible; only reasonable operating inventories should be maintained.

The various departments in the Chemical Section of the Ministry of Commerce and Industry already provide a valuable service to the chemical industry in Israel by giving technical information. Further efforts should be made to gather data and literature from other countries on investment and operating costs, market trends, and prices for products now being manufactured in the country and for products which might be produced here. These data should be kept up-to-date and published in the form of a government trade journal or bulletin. In this connection, the industry might well have a trade press as a means for disseminating information of interest. Perhaps, this could also be published by the Government or by the Manufacturer's Association.

Where lacking, the Standards Institute should establish, as soon as possible, certain criteria or standards for chemicals produced in Israel which are destined for the export market. Local companies interested in exporting would then be in a better position to know how their products compare with those on the international market.

Most of the chemical companies in Israel are in urgent need of assistance in proper cost accounting and budget control. In the smaller companies, only the barest of cost records are maintained.

In order to centralize export activities for various segments of the chemical industry, more specialized exporting groups or brokers should be established. Some groups have already been organized with this purpose in mind. It is costly for each firm to handle its own export business. One of the primary functions of these brokers should be to concentrate on developing new markets, especially in hard-currency countries. Perhaps, too many companies have been planning their export program around trade-agreement countries, and these markets are anything but safe. Even now, several companies report increased competition from European and American firms.

The following chemical products appear to have promising possibilities for future success in the export market, provided there is a concerted effort on the part of management to improve operations and reduce costs:

- Bromine (or ethylene dibromide)
- Cement
- Cosmetics
- Essential oils
- Paints
- Pharmaceuticals
- Phosphate rock
- Potash
- Plate glass

It is likely that cement, phosphate rock, and potash will ultimately be important foreign-currency earners for Israel. Establishment of a stable peace with the Arabs could open up better market opportunities for a number of products, especially cosmetics, essential oils, pharmaceuticals, and plate glass.

Greater specialization should improve profitability on such product lines as paints, plastics, rubber goods, and auxiliary products for use in the textile and leather trades.

1. The more promising segments of the chemical industry. A discussion of the fields in the chemical industry with the most encouraging indications of success is presented in the following subsections.

a. Cement. There are now three cement plants in operation, employing a total of about 1,300 persons. The combined capacity of these plants is:

Plants	Metric Tons per Year
Nesher, Ltd., Haifa	400,000
Nesher, Ltd., Ramleh	160,000
Shimshon	250,000
Total	810,000

All raw materials (limestone, clay, and gypsum) are available within the country. However, one item, which may influence the possibility of exporting over the long run and which may play a major role in final cost, still must be imported, i.e., fuel oil.

According to an official of Nesher, Ltd., the present requirement of the country for cement is about 35,000 metric tons per month (420,000 metric tons per year). Thus, there is a potential excess capacity of nearly 400,000 metric tons per year. It is planned to expand the export market. In 1952, 10,000 metric tons were exported to Turkey and in 1953, 70,000 metric tons to Turkey, Cyprus, Eritrea, and Malta. Exports for 1954 are estimated at 120,000 to 180,000 metric tons.

To compete successfully in cement, reliability of delivery is an important factor along with price and quality. Turkey is the main hope for cement exports from Israel; even this is only short-range, for

Turkey plans over the next four or five years to build up its own cement industry. Other export possibilities are: Greece, Cyprus, Spain, and perhaps some countries in the Far East. Australia has ordered two 5,000-ton lots this year. Now that the Shimshon plant is in operation, competition within Israel may become keener. However, since Nesher, Ltd., is owned by Soleh Boneh, the largest user of cement, it is difficult to see how this new company can capture much of the local market.

Major effort should be devoted to lowering operating costs in the cement industry. Possibilities may be: (1) to transport more cement by rail, where practical, instead of by truck; (2) to handle cement in bulk rather than in bags or perhaps by increasing the use of ready-mix trucks for local deliveries; (3) to consolidate maintenance forces. (This suggestion applies to the two Nesher plants. Perhaps stocks of equipment spare parts could also be reduced by this means.)

b. Cosmetics. Of the 35 companies in the cosmetic field, only six or eight are large plants. Approximately 300 persons are employed by the industry in Israel.

A number of companies are affiliated with American firms, with the consequence that product quality is rigidly controlled; however, cosmetics produced locally by other companies are also of excellent quality and have found markets both within the country and abroad.

Where local companies are affiliated with foreign firms, basic raw materials are usually obtained from these foreign companies. Most of the materials required by the independent cosmetic producers are purchased through German Reparations; however, some alcohols and essential oils are obtained in Israel. Import duties on raw materials range from 35 to 45 percent and on finished goods from 70 to 100 percent. About 75 percent of the bottles must be purchased abroad, since the specialized requirements of the cosmetic industry are not of sufficient size to justify production in Israel.

Exports of cosmetics and related materials amounted to 140,000 dollars in 1953. Two or three companies held the major part of this export trade. About 85 percent of the foreign sales are usually made to Italy and the Scandinavian countries.

Attactive packaging plays an extremely important part in obtaining customer acceptance for these products. More effort should be devoted to improving the general appearance of labels and such packaging materials as bottles, tubes, and boxes. Since special bottles

must now be imported at high cost, every effort should be made to develop local substitutes. It may even be possible to substitute ceramic containers to good advantage.

c. Essential oils. Of the 10 companies in the field of essential oils, two are prominent in both domestic and export markets. They are Palestine Frutarom, Ltd., and Aromanil, Ltd. There are approximately 100 employees in the industry. The foodstuff and perfume industries are the principal large-scale users of the flavors and oil concentrates. Products are of excellent quality and have received wide acceptance in international markets. Considerable emphasis is placed on exports by the two companies named.

No one country can produce economically more than a limited number of the raw materials required for production of the various perfume and oil concentrates. However, Israel is in an enviable position with respect to climate, and could probably produce more of the basic materials than she does at present. Some of the main oils which have been or are being produced locally are citrus oils and concentrates, origanum oil, jasmine, acacia, and peppermint oils. The high labor cost for harvesting the raw materials is one of the principal reasons that more of the essential plants and shrubs are not grown in Israel.

Raw materials for this industry must come from all over the world. However, this fact is not a deterrent because the added value for producing essential oils is extremely high. The skill in concentrating essences and flavors without loss of the main characteristics is the key to the whole process. Considerable "know-how" has been obtained through affiliations with foreign companies; however, many of the techniques in operation have been developed in Israel.

This is one of the few fields in the chemical industry in which Turkey and Finland are not the main export markets. Essential oils are sold by Israel in nearly 50 different countries. Exports amounted to about 400,000 dollars in 1953.

Continued effort should be made to produce more basic raw materials in Israel, especially peppermint oil. This is one of the projects suggested for the short-term program for the chemical industry.

d. Glass. There are 10 firms in the glass-making field employing a total of about 900 persons. The Palestine Glassworks, Ltd. (Phoenicia) is the largest single plant, with a working force of approximately 500 persons.

The major raw materials for the production of glass are soda ash, limestone, dolomite, and glass sand. At present, only soda ash must be imported. The other basic raw materials are available in good quantity within the country, and quality is reported to be excellent. However, to obtain a high grade, uniform product, additional screening, grinding, and washing facilities will be needed. As a first step in this direction, the Government is going ahead with a small-scale screening operation of the bulk sand from the Negev. It is planned to locate the facilities at Beersheba. This installation will serve two purposes: (1) equipment will be used to pilot a future large-scale sand processing operation in the Eilat area from which it is hoped to develop a sizable export trade; (2) equipment will be used in conjunction with a proposed clay washing and processing plant. Equipment for the future Eilat facilities (screening, grinding, and washing) is estimated to cost about 150,000 dollars and 100,000 Israel pounds.

If it can be shown that quality of the finished glass products will be improved by installation of processing facilities for the sand, then the priority for this project should be moved up. For the future, quality of such items as bottles and jars will have an important effect on the export market in wines, juices, and preserved foods.

At present, the Negev sand costs 16.5 Israel pounds per metric ton at the glass plant at Haifa; of this figure, 12.0 Israel pounds alone goes for transportation. Most of the sand is now trucked north. Extension of the railroad south to Beersheba as planned by the Government should help to reduce these high transportation charges substantially.

Because of the high price for light fuel oils, many of the glass companies are now using improper fuel oils for firing their furnaces with the result that the finished glass products have a high degree of impurities. To assure future good quality in glass and glass products, it is necessary that a high-BTU, light fuel oil (sulphur free and with low carbon content) be used. To obtain uniform quality, it may be necessary to import this type of fuel oil for the glass industry. More effort by the glass producers should be directed to proper and efficient utilization of their fuel in order to reduce operating costs.

Plate and safety glass. Because of the difficulty of exporting hollow ware and because of high transportation costs and breakage, plate and safety glass are probably the two items in this industry which have the best chance in the future export market. In 1953, plate glass valued at 85,000 dollars was exported mainly to Turkey; exports are expected to reach 500,000 dollars in 1954. The

fact that all plate glass must be shipped in wooden cases handicaps the export program, since all the wood must be imported. As mentioned previously, the problem of finding a wood substitute to use for manufacturing orange boxes and other packing crates is being studied.

Bottles and hollow ware. Recently, small export orders have been received for several utility glass items as well as decorative blown glass. Assuming good quality is maintained for these items, a sizable export trade may result. Transportation costs and breakage, however, will still combine to limit the volume of export trade.

Although certain standards of design and quality of glass containers were established approximately two years ago in Israel, there has been little effort to hold to them. Initial changeover would be expensive because not only would some of the present equipment need to be revised, but perhaps additional equipment would be required. However, the cost of the containers will ultimately be lower for the consumer when the standards are followed.

Standards for sizes and shapes of bottles and jars should be established. Different colored containers may be used to good advantage to prevent contamination in reuse. This program should be introduced slowly to give the wine and beer producers and canners time to adapt their present equipment. Substitution of glass jars for tin cans should be encouraged. New closing equipment will be required, but in the long run the cost of the containers will be lower. In addition, there would be a substantial reduction in metal imports, thus saving foreign exchange.

It is believed in the glass industry that until special bottle requirements reach 500,000 units per year, it will not be economical to produce them in Israel. According to other informed sources, including those in the Government, it is believed that special bottles and containers can be produced in quantities as low as 100,000 units per year, using semiautomatic equipment now available in some of the smaller hand plants.

By government order, all glass containers must be reused. The present system of bottle returns is not practical, however, and results in excessive breakage and costly handling. In some cases, the problem of sanitation and health is involved because bottles might first be used for chemicals and reused for food products. As an alternative, the policy of "no return" on bottles and jars should be investigated and related to the economics of glass container use. If this is not a satisfactory solution, it might be possible to establish a

central bottle exchange to gain economies in handling, washing and sorting, and in dispatching the returned bottles to the appropriate users.

e. Pharmaceuticals and fine chemicals. The pharmaceutical industry in Israel is about 20 years old. It is composed of five or six large firms and about 15 smaller companies or laboratories. There are nearly 500 persons employed in the industry. Although the industry has made great strides in synthesizing many of its own basic materials, most of its production is based on the finishing stages in processing imported technically pure chemicals and pharmacopoeia materials. Some of the products now manufactured are synthetic drugs, antibiotics, vaccines, and such specialty preparations as tablets, ampoules, syrups, and ointments.

Until the middle of 1953, about 75 percent of all raw material imports (including antibiotics) was obtained from the United States, while the remaining 25 percent was divided between England, France, Holland, Belgium, and Switzerland. Approximately 75 percent of the raw materials is now obtained through German Reparations, the balance coming from several other countries, including the United States. Antibiotics are purchased in bulk, primarily from the United States. Since a large percentage of the imports is to meet re-export commitments, many of the companies have considerable leeway in choosing suppliers.

Two problems which face the industry today are high packaging and shipping costs and shortage of both applied research specialists and technicians. By working closely with suppliers and by adopting a training-within-industry program, these two problems should be resolved with time.

There is excess capacity in the industry, with many firms operating only one shift. Competition on the local market comes largely from the small laboratories and from some foreign producers, notably Swiss. The export market is developing very well. During the first three months of 1954, pharmaceutical goods valued at 248,000 dollars were exported, as compared with only 67,000 dollars for the same period in 1953. Although the main markets have been Turkey and Greece, other countries are now making larger purchases. Major competition can be expected from the United States and Germany, and some from England, France, and Italy. The most lucrative market possibilities are South America, Africa, and the Far East, although some of the countries in these areas are now moving more and more in the direction of supplying their own requirements. For example,

the American firms of Chas. Pfizer, Lederle Laboratories, and Merck, and the Swiss firm of Dira A. G. all have built or have plans to build plants in Buenos Aires, Argentina. In India, Parke-Davis has recently opened a plant for the production of chloramycetin; a penicillin plant is also being erected.

The pharmaceutical industry in Israel, especially that part comprising the larger companies, is efficient and well-run, has good products, and is developing a sizable export market. As a means for maintaining the present high standards, and protecting the reputation of the industry in the world market, it may be judicious to consider legislation for a Drug Act similar to that in the United States or in other countries.

Considerable progress has been made by several of the companies on research concerning pharmaceutical chemicals for use in the veterinary and agricultural fields; examples include vaccines and sera. This work should be continued and expanded, with primary concentration on development of those substances which at present must be imported. This does not imply, however, that thought should be given now to the production of penicillin or hormones. Today, world production of penicillin is almost without profit, and the hormone industry is unpredictable.

The field of nutrition, embracing carbohydrates, fats, proteins, minerals, and vitamins, should hold considerable promise for the future of the Israeli pharmaceutical industry. In the domestic diet, there are basic deficiencies which can be corrected by proper chemical supplementation. The experience gained in this field within Israel should aid in promoting an export market for nutritional materials.

f. Paints and pigments. In most countries, the paint industry is essentially a service industry for the building trade and the metal and wood processing firms. Companies tend to concentrate on serving only one of these trades or industries. However, in Israel the various plants cannot afford this degree of specialization. Instead, they compete for the entire market by offering a wide range of paints and lacquers as to kind and color and in many different sizes of containers. Two or three companies dominate the local market.

The industry is approximately 20 years old. There are some 23 paint companies and 10 firms producing pigments. Together, these companies employ a total of about 400 persons.

The industry is fairly aggressive in expanding its services to industry by stressing high quality and by adapting products to the specific needs of the country. The larger plants, for the most part, are well laid out, although working areas are often small. Equipment is generally good, with much of it made in Israel.

Raw materials represent about 50 to 60 percent of total costs in the paint industry. At present, most of the raw materials are obtained from German Reparations, although some are purchased in the United States, the United Kingdom, France, and Holland. There have been a number of attempts to produce some of the basic materials, particularly drying oils. While the quality of some of these materials is excellent, price is considerably higher than for imported goods. One plant in Israel has produced zinc oxide; however, because of quality considerations the paint and tire industries take only a small portion of their needs from this plant, preferring to import their high-quality requirements. As a result, this business has, in effect, been forced to shut down. A new factory was started recently for the production of iron oxide pigments, and product quality is reported to be good.

Exports in 1953 amounted to about 275,000 dollars with one company supplying over 50 percent of this amount. At least 90 percent of the paint and lacquers exported are sent to Turkey.

Although considerable work has been done in Israel on producing some of the basic oils such as safflower and linseed, manufacturing costs are higher than prices for imported materials. However, it is reported that quality is good. More effort should be made to place these projects on an economic basis, perhaps by increasing the size of operations with the idea of exporting the surplus. It would be necessary to evaluate market possibilities before beginning such expansion.

A number of pigments are already produced in Israel, but the paint and tire companies report that prices are higher than for imported materials and that quality is usually inferior. An engineering study of the existing companies should reveal which plants could operate to produce a pigment of satisfactory quality at reasonable cost. It may be possible to modernize facilities with the installation of some new equipment.

g. Rubber tires. There are two tire companies in Israel—Alliance Tire and Rubber Company, Ltd., and The General Tire and Rubber Company of Israel, Ltd.—which together employ 450 to 500

persons. The combined annual production capacity of these two concerns is approximately 4,500 tons a year, divided about equally.

The Alliance Company produces truck, tractor, and passenger tires and tubes, while the General Company concentrates mainly on passenger tires and tubes. Output of the two plants increased steadily during 1953, reaching a level of 3,250 tons. Combined domestic sales amounted to 2,325 tons. The Kaiser-Frazer automobile factory in Israel has annual requirements of about 500 tons, of which Alliance supplies 10 to 20 percent and General the balance.

Nearly all raw materials for tires (crude rubber, rayon, carbon black, sulphur, beading, and fillers) must be imported. Raw materials represent about 60 percent of total manufacturing costs. In order to break even on operating costs, each factory must sell about 1,500 tons of tires per year. Since the combined total is higher than domestic requirements of around 2,500 tons, the two companies together must plan to export annually at least 400 to 500 tons. It is estimated that local needs will increase but slowly over the next few years, so emphasis must be placed on maintaining and even expanding the present export business.

In 1953, tires and tubes accounted for 99 percent of all rubber products exported from Israel. In dollar value, General's foreign sales amounted to 487,000 dollars while Alliance's came to 318,000 dollars. Turkey alone purchased 735,781 dollars worth of tires, or 91 percent of the total. Export sales in 1954 are expected to reach approximately 1.25 million dollars for each company. For the first six months of 1954, General's export sales are reported to be 750,000 dollars, mostly to Turkey. Alliance has recently negotiated a contract with Turkey to supply the country with tires up to a value of one million dollars per year for five years. However, it is understood that exports to Turkey are now encountering difficulties because of keen competition from other producers, especially those in the United States and France. While passenger tire sales have been falling off, sales of truck and tractor tires, as well as special tires for mechanical equipment, have remained steady. Thus, of the two companies, Alliance appears to be in the better export position over the long run.

Although product quality is excellent, the export potential in nearby countries for both tire companies is limited. The Italian Pirelli Company, with the backing of Turkish banks, has recently formed an affiliate and plans to produce both rubber tires and plastic goods. No estimated date of completion of new facilities has been announced. Because of remoteness from Israel, there seems to be little possibility for competing in the European markets.

Under the circumstances of limited markets and disadvantages of scale, the recommendation by the Government's Economic Advisory Staff that, in the interest of economies, the two tire companies should be consolidated under one management, is well taken.

2. The less promising segments of the chemical industry. The several chemical fields discussed previously offer considerable promise for improving the export position of this branch of the industry. While it is not intended to imply that the remaining segments of the industry cannot eventually make contributions to chemical exports, it appears that they are not in as strong a position as are those discussed above. The less promising branches, however, can enhance their future position by devoting more time and energy to building a reputation in the domestic market for reliability and good-quality products at low cost. Export possibilities may very well develop from such an approach. Competition will provide the means for bringing about a natural balance in the number of companies which the market can support.

a. Basic chemicals. Except for a few chemicals, such as soda ash and caustic soda, and those acids produced by Fertilizers and Chemicals, Ltd., for fertilizers, the domestic need in Israel for most basic chemical materials is still relatively small--in the order of 100 to 300 tons each per year. A number of these chemicals[1/] have been produced in Israel by some six or seven small concerns for several years. However, as the larger companies, such as Fertilizers and Chemicals, Ltd., Makhteshim, and American Electrochemical Industries (Frutarom) Ltd., begin production of many of these same chemicals, the small concerns will probably be forced to cease production unless governmental protection is provided.

Many of the basic chemicals for which there is still only a small demand will undoubtedly be imported under German Reparations. The Ministry of Commerce and Industry has done a good job of keeping the small producers now in the field continually informed of the country's needs for these chemicals and whether or not it might be feasible to produce them locally. This work should be expanded and the possibility for producing these chemicals should be reviewed periodically. Only the production of chemicals which will require small capital expenditure or can show a rapid return on the investment should be considered.

1/ Sulphuric acid, nitric acid, hydrochloric acid, liquid sulphur dioxide, zinc sulphate, magnesium sulphate, sodium sulphate (Glauber salt) and anhydrous aluminum sulphate, and others.

The smaller producers will find it virtually impossible to compete against the larger companies who have recently entered the field. Perhaps, consolidations can be effected, or working relationships established, whereby the smaller companies can produce only technical or high-quality grades. If such an agreement could be reached, it is entirely possible some new equipment will be required.

Considerable ingenuity has been shown by several of the smaller companies in utilizing by-products and wastes from other industries as a low-cost source of raw materials. Further work in this direction should be encouraged.

b. Candles. There are 10 candle companies in Israel employing a total of about 70 persons. Only two companies export candles; in 1953, the estimated export value was 50,000 dollars. These same two companies also dominate the domestic market.

There is great overcapacity in the candle industry, and export possibilities are hampered because of high import duties in other countries. If it were possible to produce distinctly religious candles, and thus avoid this duty, there might be a fairly good market among World Jewry for the various altar and holiday candles.

c. Ceramics. There are 18 companies in Israel in the ceramics field employing about 650 persons. A full range of products is produced by these firms—from bricks and sanitary items to ceramics for electrical and artistic uses. Only 20 percent of the constituent raw materials required for the production of ceramics needs to be imported. In 1953, about 100,000 dollars worth of imported raw material was required, with china clay and sillimanite accounting for the major amount. Exports, totaling 20,000 to 25,000 dollars, consisted mainly of pottery and artistic ware. Most of the electrical and sanitary products are being manufactured for local consumption. Trial shipments have been sent to some of the trade-agreement countries, but opportunities for exports seem only fair.

The effort to replace presently imported goods with those produced in Israel should be continued. The industry has already made remarkable progress in this direction; imports of ceramic ware and glass were cut by approximately 75 percent from 1952 to 1953. The use of ceramic and glass goods should be encouraged in preference to plastic goods, especially in household and kitchen ware because all raw materials for molded plastic commodities must be imported.

d. Detergents and related products.[1] There are some 23 companies in Israel in the detergent field employing a total of about

1/ Includes auxiliary products for textiles and leather, as well as cleaning and water-treating materials.

215 persons. The country is ideally suited to the use of detergents because of the hard water. However, there is excess production capacity in both the sulphonating and formulating phases. In 1953, only 160 tons of detergents, worth about 75,000 dollars were exported. Many of the companies are hoping to develop export markets for about 20 to 25 percent of their output, but results to date are not encouraging.

The same companies that manufacture detergents usually produce a variety of cleaning compounds and/or auxiliary products for textiles and leather as well. A relatively small volume is supplied by the local manufacturers; during the period 1953 to 1954, alone, some 820,000 dollars worth of materials still had to be imported. While 400,000 dollars of the total was for aniline dyes, the production of which does not appear feasible in Israel, some of the other materials may offer attractive possibilities for local firms.

Additional equipment is required by several companies to permit modernization of plant facilities. Continued effort should be placed on product quality. Both of these measures will place the industry in a stronger position for the export market. With respect to auxiliary materials for textiles and leather, a thorough study should be made of the requirements of these two industries to establish whether or not more of the materials can be produced in Israel. This survey will require cooperation of the industries as well as the Government.

e. Glue. There are 10 companies in Israel producing glue, and they employ a total of approximately 170 persons. Some 60 to 70 percent of the raw materials used by the glue manufacturers must be imported. In order to protect themselves in changing markets, several of these companies also manufacture auxiliary products for leather and textiles. Export possibilities for glue appear to be limited because of cost, and also because of the fact that most other countries have their own facilities for production of these materials. A few small orders have been shipped to Turkey and trial orders have been sent to Greece, Finland, and Iceland. Competition in this field will become more difficult for the small producers as the plywood manufacturers in Israel will install facilities for producing their own glue and synthetic resins. One plywood company has already installed such facilities.

As part of a short-term program for the chemical industry, it has been suggested that the production of casein might be warranted in Israel now that imports have reached sizable proportions. Casein is used in the production of casein glue. Since there is overcapacity in production of other glues, this may be a way for one or two of the existing glue manufacturers to switch operations profitably.

In a further effort to consolidate this field, perhaps one of the plywood companies, presently purchasing glue requirements locally, would be interested in acquiring one of the glue manufacturing concerns.

f. Plastics and plastic products. There are 57 companies in Israel engaged in plastic molding and fabrication, with some 300 persons employed by the industry. This is a high concentration of one industry in so small a country, but it was brought about primarily during World War II, when the industry expanded rapidly to supply the needs of the armed forces. A major problem now facing the industry, and one which will be a deterrent to entering the export market on a large scale, is that raw materials will need to be imported for some time to come. There is little possibility that basic molding powders for the plastics industry can be produced economically in Israel. It is true that Serafon, in Rehovot, now produces phenol formaldehyde molding powder, but all the essential ingredients are purchased from abroad. In 1953, the industry required some 400 tons of imported materials worth 320,000 dollars. Most of these materials come from England and the United States. Exports amounted to only 59,000 dollars. Nearly 75 percent of these exports was shipped to trade-agreement countries; hence, dollar earnings from this industry are negligible.

There is excess capacity in the plastics industry and the majority of the companies probably offer too wide a range of products. Since competition is severe in this field, and because high volume is required in order to produce economically, more specialization is required.

The technique of proper mold design and manufacture is the key to producing high-quality plastic products at a low cost. Considerable work has already been done by the Ministry of Commerce and Industry in solving this problem, but more effort along similar lines will be required to attain better products. This should be of particular concern to the small producers who may lack the means or knowledge of keeping abreast of technical changes that occur in the industry.

In the United States, many small plastics firms, especially the fabricators, have recently been merging with the larger companies to permit greater flexibility of operation. This might be an appropriate course of action in Israel.

Plastics and ceramics or glass are in direct competition with one another for domestic requirements of many household and kitchen items, such as tumblers and dishes. Since all raw materials for plastics must be imported to Israel, whereas only a small percentage

of the materials for ceramics need be, it is suggested that for household and kitchen ware the ceramics and glass industries should be allowed to fill the needs of the country.

Through plastics research, the large industrial nations of the world are continually finding new and better materials as well as new applications. The industry in Israel often does not have the benefit of this knowledge, and thus the local companies are handicapped in world competition. Consequently, the industry might well direct more of its effort toward the local market, especially where plastics can be substituted for metals. With short production runs, which is typical in Israel where domestic needs are small, the use of plastics can be more economical than the use of metals.

g. Rubber products. Of the 40 companies in the field of manufacturing rubber products in Israel, six or seven dominate the domestic market. There are about 900 to 950 employees in the industry. All raw materials must be imported; for example, in 1953, there was an import of 500 tons of crude rubber (285,000 dollars) and 560 tons of chemicals (165,000 dollars). Thus, the total value of imports was 450,000 dollars, as compared with only 2,800 dollars worth of exports. This certainly is not a favorable balance, nor is it expected to improve significantly.

Although there is some indication that the various rubber products companiesare attempting to specialize, they still offer a wide range of articles. Almost without exception, the plants are operating at one-third to one-half capacity. Competition in the local market is particularly severe, and with the narrow margins of profits under which these firms are operating, it is doubtful that many can succeed for long without outside support.

Certainly no additional capacity in this industry is required. Any attempt to establish new plants or to expand old plants should be discouraged unless the circumstances are based upon other than a supply-demand justification. Some new equipment may be required for modernizing existing facilities, and for allowing specialization of operation; but even these needs should be carefully studied. Standards should be established for the various rubber products. Considerable further attention should be given to improving quality.

E. Summary of Suggestions for the Chemical and Related Industries

To carry through the suggestions incorporated in this section of the report, it seems appropriate for the Government and industry to assume individual responsibility for some of them and joint responsibility for others. Some of the suggestions are well-known to the different agencies of the Government and they are already being implemented. This report has attempted to establish a system of preference for the proposed projects based on the economics of the various projects and the potential contribution they can make to improving the present unfavorable trade balance in chemicals and related materials. Because of their relative importance, the following suggestions have been selected from a larger number contained throughout the main text. None of the suggestions should be considered apart from the context of the main report.

1. Suggestions for Government Action

a. The primary aim of the Government should be to assist industry to improve facilities, products, and the performance of workers and managers.

b. German Reparations in the chemical industries should be used mainly for modernizing facilities and for purchasing necessary raw materials, unless German prices are excessive.

c. Full utilization of local raw materials should be made; new possibilities should be explored.

d. Greater coordination should be developed between the programs for the chemical industries and agriculture.

e. An industry-wide research program should be sponsored with emphasis on applied research.

f. Investigation of the possibility of producing chemicals which are now imported in substantial quantities should be extended.

g. In conjunction with the Standards Institute, some limits should be established by which chemical exports can be judged against world standards. Comprehensive Pure Food and Drug legislation should be enacted.

h. In cooperation with industry, new technical and business courses should be established at the universities to assure an adequately trained corps of men and women for management functions.

i. The export program of the chemical industry should be assisted by the Government through its encouragement of export brokers and by special loans.

j. The search for better grade phosphate rock deposits should be expanded and the study of methods of upgrading should be intensified. Better methods of transportation and handling should be developed through engineering studies.

k. Production of soda ash by the establishment of a small Solvay plant should be considered.

l. The operations of the basic oil (edible and industrial) industry should be expanded with idea of exporting the surplus.

m. To assist in more efficient distribution in certain chemical industries, a central bottle exchange should be established and operated until bottle manufacturing costs are reduced to the point that a policy of "no return" on bottles is justified.

n. The market for bromine and ethylene dibromide should be studied.

o. The manufacture of aniline dyestuffs and petrochemicals should not be encouraged because of extremely high costs.

p. The plan for establishing a large integrated chemical industry in the Negev should be critically revaluated by applying economic standards.

2. General Suggestions for Industry Action

a. Primary emphasis should be directed toward improved operations through:

(1) Improving facilities—new equipment, equipment revisions.

(2) Improving processes—innovations, better flow of materials.

(3) Improving products—better formulas, design, better quality.

(4) Improving marketing practices—better labeling, better packaging, more use of brokers in foreign trade.

(5) Improving accounting procedures--cost accounting, budget control.

b. More training-within-industry should be done to improve the quality of the labor supply.

c. In cooperation with the Government, industry applied research programs should be set up and directed toward the solution of the more pressing problems.

d. More trade associations should be organized for dissemination of information within industry.

3. Suggestions for Certain Segments of the Chemical Industry

a. Because of high processing costs on manufactured chemical fertilizers, more emphasis should be placed on exporting basic fertilizer materials (potash and phosphate rock) rather than the manufactured fertilizers.

b. Every effort should be made to lower operating costs in producing ammonia, ammonium sulphate, and ammonium nitrate. Until this is done expansion should be deferred.

c. In the case of essential oils, more of the basic raw materials should be produced locally, especially peppermint herbs.

d. Production of bromine and ethylene dibromide should be undertaken on condition of favorable marketing studies.

e. Production equipment and additional screening, grinding, and washing facilities should receive high priority in the glass industry. Standards for size, shape, and quality of bottles should be set up; colored bottles should be used to distinguish between edible and industrial products. Substitution of glass for tin containers should be encouraged; this change would ultimately bring about the need for new bottle closure equipment.

f. In the field of pharmaceuticals, applied research specialists and technicians should be obtained. Packaging should receive more attention.

g. The field of nutrition supplements, embracing carbohydrates, fats, proteins, minerals, and vitamins, should be expanded to meet promising domestic and export demand.

h. Since production capacity for sulphuric acid is adequate at present, this industry should not be expanded.

i. Any work which may be done in magnesium at present should be devoted to establishing its economic feasibility.

j. Since production capacity for cement is more than adequate, further expansion should not be attempted. More work should be directed toward developing the export market.

k. Since production capacity for cosmetics is adequate, investments in new equipment should be made only for improving operations. Packaging should receive more attention.

l. More pigments for paints should be produced locally.

Section VI

METAL AND MECHANICAL INDUSTRIES

A. Introduction

Israel's metal products range in complexity from manhole covers to fine optical instruments and in size from small teaspoons to large boilers. Establishments may be of any size from one-man shops up to plants employing hundreds of workers with many types and grades of skill.

Some factories convert raw metals into highly finished precision machines, while others perform a single operation, such as forging, machining, or galvanizing. Many of the important products of the metal trades, such as machinery, factory equipment, and structural materials, are made for use by other industries and by other branches of the metal trades. But the industry also turns out, even in the young State of Israel, a large volume of consumers' durable goods made essentially of metals, e.g., stoves, refrigerators and other household equipment, bicycles, and assembled automobiles. These products are marks of an advanced industrial community.

Perhaps in no other segment of Israel's economy are there both so much dependence upon and contribution to other branches of industry as are found in the metal trades. In fact, one division of the Israeli metal trades is usually intertwined with many other divisions.

Although the metal trades are more complex than most other industries, the description and discussion of the industry which follows will be carried out in nontechnical terms; the present study is one of economic rather than engineering aspects of the metal industries. A further reason for a nontechnical approach is the paucity of detailed information on unit costs of manufacturing and selling activities in Israel. The problems encountered in the growth and development of the country's new mechanical industries, and in international commerce involving this industrial sector, are great indeed. Hence, technically refined economic analysis seems less useful than an understanding of major industrial and commercial influences which may control the destiny of these industries in Israel.

Because of the breadth and diversity of the metal and mechanical industries, a manageable discussion is possible within the limitations of this report only if attention is confined to a few representative

branches of the industries. Therefore, in the following pages no attempt is made to cover the entire field. The aim is to consider the parts of the industries that are of greatest importance to Israel's continued industrial development, to her struggle for a trade balance, and to the physical and economic welfare of her people.

Following a brief description of the structure of and trends within the metal industries, the contribution to the economy made by representative products is evaluated. The major problems, both within and beyond control of management, are treated on an industry-wide basis so far as is appropriate, and suggestions are made as to how management may overcome or adjust to these problems. The discussion is concluded with an examination of the problems and prospects pertaining to five representative branches of the metal and mechanical trades.

B. Industry Structure, Relationships, and Trends

Aside from small foundries, machine shops, and sheet-metal shops, there was no metal or mechanical industry of consequence in Palestine or Israel until the period of World War II. In that period a considerable armaments business developed with concentration on small arms and ammunition. The renewed increase in population following the conclusion of the war in 1945 gave great impetus to building, especially residential. This provided a stimulant to the metal trades, many of which rise and decline with building activity. A further impulse--perhaps most important of all--was the conscious policy of rapid industrialization in Israel pursued with vigor by the Government, the Jewish institutions, and supported also by the United States. Because of the close identity of the metal and mechanical industries with all other industry, this meant that the metal trades were called upon to expand materially in an effort to reduce dependence upon imports for industrial equipment and metal goods of many types. The building of new factories provided an added demand for mechanical goods which greatly exceeded even the growing capacity of the metal and mechanical trades. This created an extreme sellers' market which basically might still persist in Israel if it were not for the overwhelming influence of the buyers' market which has arisen in international trade.

1. Contribution to national income and employment. A rough estimate of the share of Israel's national income contributed by the metal and mechanical industries (including electrical applicances) may be inferred from the number of gainfully employed workers in 1952--about 20,000, or 20 percent of all industrial workers in the nation. (See Table 7.) The entire industrial division of the economy produced an estimated income of about 280 million Israel pounds in 1953.

(See tabulation, p. 43.)[1/] Assuming that all industries in Israel earn about the same income per employee, the metal and mechanical division contributed about 56 million Israel pounds, or about 2,800 Israel pounds per worker. The prospect seems good that this industrial branch in Israel will soon employ more people than any [illegible]r; it is now a close second to the textile industry. Hundreds of new jobs will be provided when new steel works, tube mills, and vehicle manufacturing and assembly plants are placed in operation.

Exports of mechanical goods have been increasing until, next to polished diamonds, they constitute the largest group of manufactured exports. Of the value of mechanical industry exports of about seven million dollars in 1953, over five million dollars was contributed by automobiles and parts. (See Appendix Table 3.) However, this may represent an unstable condition so far as automobile exports are concerned; a major part of the latter exports went to Turkey under a trade agreement.

On the import side of the trade balance sheet, the metals and mechanical items have an aggregate value of about 85 million dollars, or about 25 percent of all imports. (See Appendix Table 2.) Thus, the unfavorable balance is overwhelming as might be expected in a country with virtually no raw materials such as are needed in the metal trades but which pursues an ambitious program of industrialization. Exclusive of automobiles and capital equipment, imports of metal goods are about 15 million dollars. Although the trade gap in metal articles will be narrowed in future years, it is likely that there will always be a great disparity between imports (heavily weighted by raw materials and by equipment best suited to mass production) and exports (most suitably those articles requiring much skilled labor).

2. Relationships with other industries. In appraising the relative value of an industry to the economy, consideration should be given to the extent and type of service rendered to other industries. By this criterion, the metal and mechanical industries of Israel rate high.

1/ A survey made in mid-1954 by the Ministry of Commerce and Industry indicates that the metal trades employed at that time about 25,000 workers and contributed about 80 million Israel pounds, or 3,200 Israel pounds per worker, to the national income.

With the exception of a few branches,[1] these industries make industrial equipment; building and construction equipment; agricultural equipment; vehicles for transportation companies; electrical power and transmission articles; office equipment; foundry products; and rolled, drawn, extruded, and forged metal products. (See Appendix I for a list of products.)

As to procurement, the metal and mechanical industries depend greatly on concerns within the same general industry division; the amount of dependence is governed by the extent to which given companies in question are integrated. In Israel, for a complex of reasons to be discussed later, there is a tendency for each company to try to be as self-sufficient as possible. Nevertheless, metalworking firms make large purchases of materials, semifinished articles, parts and services from other firms, many of which are also in the metal trades. This may be illustrated by a company making refrigerators; it imports steel sheets, compressor parts, copper tubing, and some hardware from the United States; it purchases motors, electric wire and fittings, valves, insulating material, some hardware and fittings, burners, welding supplies, bolts and nuts and paints from Israeli manufacturers; and it subcontracts part of the metal-finishing work, such as galvanizing and enameling. There are many metalworking firms, particularly in the machinery business, which have occasion to buy many parts from other firms and which often subcontract part of the metalworking operations, such as forging, machining and finishing. It should be noted, also, that the metal trades are heavy consumers of fuel, power, and water; and, since they are mechanized, they require large investments in metal products.

From these remarks about relationships between the metal trades and other industries it may be concluded that the former are indispensable to a well-rounded economy and that self-sufficiency in industry cannot be approached without a large number of enterprises in the metal field which is already surprisingly diversified in Israel.

1/ The leading nonindustrial articles made in Israel's metal trades are: automobiles, bicycles, electric and gas cooking equipment, refrigerators, washing machines, kitchen utensils, cutlery, electric lamps and bulbs, domestic furniture, razors, radios, watches, and optical instruments.

3. Ownership, control, and size of establishments. With about 4,000 establishments in the metalworking trades in 1952, including small workshops and artisans, obviously free enterprise prevails in Israel. However, since only about 40 companies employed more than 50 people, strong competitors in any one branch of the metal trades are few. Only 13 firms in the combined metal, machinery, and electrical appliance fields reported more than 100 employees each and but three had over 300 employees. The largest firm in the field had about 700 employees. (See Table 7.)1/

Despite the lively competition among small enterprises, there is considerable concentration of control among the larger firms in the private sector as well as among the cooperatives where the Histadrut holdings exist. These holdings embrace such large undertakings as the steel rolling mills, the largest steel pipe company, the only seamless tube company, the large cement-coating pipe company, the largest foundry and machine shop, and large stove, radio, and refrigerator concerns, to mention a few. Through the close tie between the Histadrut and the kibbutzim, many of which engage in the metal trades as a sideline to farming, the Histadrut is in a position to affect the competitive situation. Since the kibbutzim pay no wages they are in a position to undersell firms that operate in the usual manner. There is no guarantee of fair competition even when the value of the labor entering into the products made in the kibbutzim is treated as an imputed cost. Private competitors who pay cash wages face a totally different financial problem from that faced by the kibbutzim in the event competition becomes intense. Affiliation of the Histadrut with its own marketing organizations and with its large building, construction, transportation, and agricultural enterprises, would seem to give the cooperative sector a competitive advantage over most of the independent metalworking firms.

One of the striking features of several successful enterprises in Israel is their close affiliation with foreign firms, notably those with home offices in the United States. Through intercompany ownership, licensing, franchise, or management arrangements, a number of Israeli firms have the advantage of American or British technical "know-how," capital, and sometimes market connections. Also, especially in times of world shortage, these ties give the Israeli establishment preferential access to capital equipment, to materials, and to parts. In the growing stages of Israel's economy there is perhaps no other aspect of international business connections which outweighs the importance of financing. This subject is discussed later in this section.

1/ The Ministry of Commerce and Industry estimated that in the summer of 1954 there were 5,000 firms engaged in the metal trades in Israel, over 4,000 of which had fewer than five employees each, while 21 plants had more than 100 and seven had more than 300.

C. Capacity of the Metal Trades in Relation to Markets

There is a general condition of overcapacity in the metalworking industries of Israel. This is remarkable in the light of the fact that universal shortage was the rule scarcely two years ago. It is further surprising because of the large imports of metal products into Israel. This apparently anomalous condition is examined in the concluding paragraphs of this section where the outlook for international trade is discussed.

1. Domestic needs and local supplies. The limitations of the local market are mentioned several times in this report where reference is made to the small population, to low incomes and savings, and to diverse and sometimes backward habits and traditions of the new immigrants. These circumstances are not favorable to the metal trades. However, certain favorable influences are to be found in the same situation. The building up of a new industrial nation provides an insistent demand for metal products not only to be used in housing, but in the building of factories needed to support the development program, and in the irrigation and other supporting services of a public nature such as utilities and communications. These are destined to be sources of continuing local demand for metal products.

Despite the low purchasing power in Israel, there are many potential buyers of mechanical goods for personal use, such as refrigerators, air conditioners, automobiles, motorcycles, motor scooters, bicycles, radios, washing machines, vacuum cleaners, and others. These markets for semiluxuries have scarcely been touched because of the austerity policy which has prevailed since the State was formed.

In the immediate years ahead, the Israeli market is expected to have from two to two and one-half million people who will provide a dependable outlet for the more necessary consumers' articles made of metals, such as stoves and heaters, kitchen utensils, cutlery, furniture, and bicycles.

Meanwhile, there is visible evidence in most metalworking concerns of a great excess capacity in relation to domestic needs. No accurate statistics are available, but typical rates of operation on a one-shift basis are 60 to 70 percent of capacity. A few establishments, such as those supplying the construction industries engaged in building settlements and irrigation works, and those with good international connections, are doing relatively well so far as volume is concerned. Most of the others are suffering from a slackening in the rate of building and in the rate at which new industrial establishments are being created.

2. Foreign demand and excess capacity. Theoretically, the foreign market for Israeli products is relatively unlimited when compared with domestic possibilities. However, a reputation in world markets for quality mechanical goods cannot be made overnight. This is something which Israel must build with great patience and foresight. She must not be misled by the quick success sometimes experienced in selling to soft-currency countries--a success which is often based on products made abroad and assembled in Israel or on products which find a market only when priced too low to recover costs. As noted earlier, Israel's over-all export of metal and mechanical goods, excluding vehicles and parts, is less than two million dollars annually. This is a mere beginning. There is sufficient capacity to produce more of these products for sale abroad, but the control of costs, quality, and adequate service--with all of its implications--must precede the development of a significant foreign trade.

D. Value to Israel of Selected Metal Products

No two products of the metal and mechanical industries affect Israel in exactly the same way; therefore, in order to make rational selections of industry which should receive the most encouragement, some scheme of evaluation is desirable. There is no need to consider all of the effects which the manufacture and sale of a product may have upon the economy, so long as the major influences can be identified clearly and compared. To this end a simple rating scale may be used--one which is based upon nine factors chosen after weighing the economic aims and problems of Israel. It is recognized, of course, that certain other factors might just as well be selected. The weights in the rating scale are purely arbitrary and serve only as a means for comparing personal observations. No attempt is made in this simple scheme to rate one factor above another in importance; this can be done readily by anyone who wishes to make such distinctions. For example, under certain conditions it may be appropriate to consider the job-making function of a given industrial product as paramount; under other circumstances, reducing imports or increasing exports may assume special significance. A few comments about the factors shown in Table 26 may serve to clarify the purpose and application of the rating scheme.

To each of the nine factors listed a rating is applied opposite the product to be rated. The highest rating is given the number 4 the second highest, 3, and so on down to 0 which indicates that no significant contribution is noted. The sum of the ratings gives a rough measure of the over-all value of the product to the economy of Israel under current conditions of manufacture as observed in the course of

Table 26

EVALUATION OF CONTRIBUTION TO THE ECONOMY BY SELECTED METAL PRODUCTS MADE IN ISRAEL

Rating Scale: 4=high; 3=medium-high; 2=medium-low; 1=low; 0=inconsequential

Product	Total Points	Reduces Imports	Increases Exports	Provides Jobs	Uses Local Skills	Uses Local Materials	Lowers Cost	Serves Industry	Serves Consumers	Aids Security
Steel rods and angles	8	1	0	3	0	0	1	3	0	0
Steam boilers	11	3	0	1	0	0	3	2	0	2
Plumbing fixtures	18	3	0	2	0	3	3	2	3	2
Hardware	14	3	1	2	0	0	0	2	3	3
Cast-iron pipe	13	3	0	0	0	3	3	2	0	2
Steel pipe, welded, lge.	16	3	2	3	0	0	3	3	0	2
Steel-concrete pipe	16	3	0	4	0	3	3	3	0	0
Valves	16	3	1	3	0	2	2	2	0	3
Irrigation pumps	15	3	2	1	1	2	1	3	0	2
Agricultural equipment	16	3	2	2	1	0	3	3	0	2
Food machinery	15	3	1	2	1	0	3	3	0	2
Tin cans	13	3	2	1	0	0	4	3	0	0
Kitchen ware	14	3	2	2	0	0	2	0	3	2
Electric timers	3	0	0	0	0	0	0	1	2	0
Electric ranges	7	2	0	3	0	0	0	0	2	0
Gas ranges	9	2	1	3	0	1	0	0	2	0
Refrigerators, mech.	9	2	0	3	0	0	0	0	2	2
Refrigerators, absorb.	9	0	2	2	0	1	0	0	2	2
Refrigerators, reclmd.	10	4	0	1	0	0	3	0	2	0
Air conditioners	10	1	0	2	0	0	0	3	3	1
Electric appliances	7	1	0	1	0	0	0	1	2	2
Sewing machines	7	2	0	2	0	1	0	0	2	0
Bicycles	7	2	0	2	0	0	0	0	2	1
Optical goods	14	1	2	1	2	0	1	2	1	4
Metal art goods, etc.	10	1	2	2	4	0	0	0	1	0

Source: Stanford Research Institute (see accompanying text).

this study, and as these conditions relate to the market situations expected to prevail in the immediate years ahead. A perfect score (naturally, an improbable occurrence) would be 36 points.

Although the factors used in the ratings do not by any means cover all economic policy issues, they all seem to deserve serious consideration by the planners and administrators of Israel's unique economic program. The reasons for this view are indicated below as each factor is explained briefly.

1. Reduces imports. If a product saves imports in significant volume and does so without corresponding imports of raw materials and equipment, it is rated 2 or better. In this case, savings in hard currency are given special weight.

2. Increases exports. Exports in appreciable volume, expecially to hard-currency countries, using small amounts of imports for re-export, receive high ratings. In other words, high added value in terms of hard currency justifies a high rating.

3. Provides jobs. The products which provide well-paying jobs with a minimum of capital and foreign currency expenditures receive the highest ratings.

4. Uses local skills. Utilization of special or unusual skills is rated high when there is an adequate local supply; where experts must be attracted from other countries, the rating is lower, but still relatively high.

5. Uses local materials. Since the use of local materials reduces the need for foreign currency, saves transportation, handling and financing costs, and contributes to self-sufficiency, stability, and security, it is considered important. The inclusion of this factor may serve to give additional weight to factors 1 and 2.

6. Lowers cost. If a product is manufactured at low cost, or if its local production (as contrasted to importing) results in great savings in freight it is given a high rating.

7. Serves industry. Service to other industries is rated high when local production saves time in building or repairing local production facilities, or where it results in cost reduction as in reducing inventory requirements. Usually, when a product is essential in the production of another essential product, it is rated high.

8. Serves consumer. Products deemed essential for maintaining the prevailing standard of living are given high ratings.

9. Aids security. When a product is needed in the national defense or to support industry essential for the national defense, or where the facilities for making a given product are convertible into defense-supporting activities, it is rated high. In this same class are products which protect the nation against the effects of boycotts, blockades, or disaster of any type.

By way of illustration, the table shows a total point rating of 18 for plumbing fixtures--one of the highest of the products selected. Local production of such things as bathtubs and kitchen sinks has practically eliminated imports of these items; however, exports do not seem promising because of high transportation costs and low quality. A fair number of jobs are provided in producing these articles with semi-mechanized operations, but no unusual local skill enters into the production. Local materials are used to a large extent, the principal one being scrap iron. Costs are kept down because of savings in transportation, relatively low daily wages for common labor, and an economical use of scrap material. Plumbing fixtures are essential items in the large building program of Israel. Finally, the foundry facilities now making plumbing fixtures could be used to make some items for military use, although a steel foundry would be more valuable.

An opposite extreme, for example, is an electric self-timer, with a capacity of about 1,000 watts--sufficient for a standard American flatiron or small space heater. This ingenious device is given a rating of only 3 points. There appears to be no present or prospective international trade in this article so far as Israel is concerned. Its manufacture is on such a small scale that it provides little employment and it makes no use of any skills in which Israel has a special advantage. The materials used are all imported. Costs are prohibitive in view of the small scale of production, even though the design is fairly simple. The self-timer can have a limited application in industry or commercial establishments. Its principal use, according to the inventors would be in the Jewish households where strict orthodoxy prevails; its purpose would be to turn electric current on and off during the Sabbath, which chore is forbidden to Jews in the orthodox code.

The combined ratings for the respective factors show that the primary value of the metalworking trades to the Israeli economy--at least that part represented by the sample products--is to reduce imports, to serve industry, and to provide employment, in about that order. It is regrettable that these products do not contribute more by way of

exports, use of local special skills, use of local materials or low costs. They make a fair contribution to the welfare of consumers and to the national security.

E. External Problems of the Metal Trades

In Israel, a number of the more difficult problems faced by the metal and mechanical industries are results of the economic and social environment. From the standpoint of the single manager of an enterprise, this type of problem is perhaps beyond his control. It may be recalled that Section II of this report deals at some length with such pervasive problems as shortage of capital and credit, cumbersome controls over export and import operations and foreign exchange, high labor costs, high costs of transportation, poor communications, political instability in the area, and others. All of these are of as great importance to the metal trades as to any of the other branches of industry. It is not necessary to repeat the discussion of these problems at this point. However, there are a few of the other phases of the industrial situation, also discussed in Section II, which affect the metal trades in such a way as to deserve further analysis. Some of these conditions are raw material supplies; extremes of competition at certain points and of apparent monopolistic practices at others; inadequacy of complementary industries; and a lack of what is known in some industrial communities as the industrial spirit or managerial atmosphere.

1. Raw material supply. The metal trades and mechanical industries in Israel are responsible for large imports from hard-currency countries. (See Appendix Table 2.) There is no opportunity to purchase these materials at favorable prices through the device of trade agreements. During the past year, a new difficulty has taken the place of the erstwhile shortages of iron and steel and nonferrous metals—that is, the obligatory purchase of more and more of these and other materials from Germany through the Reparations program. While the quality of the materials is generally good, the prices are more or less imposed upon the often unwilling purchaser in Israel. While this procedure still results in an advantage to the nation, it is partly at the expense of the competitive strength of manufacturers who must pay the price asked by the Government, usually on credit terms which purchasers are ill-prepared to meet. Application of the so-called "escalator" clause, requiring the debtor who repays after two years to return the same amount of purchasing power as he borrowed, seems equitable on the surface. However, it places a great risk upon the borrower. The Government should be able to protect itself from its own inflationary actions and perhaps should not expect its debtors to assume the burden. If any "windfall" profits of the creditor seem to be undesirable, they

may be subjected to some type of fair tax which takes account of all pertinent circumstances at the time the profits are made. This issue is of importance to the metal trades because of their reliance on imported materials and equipment which more and more are being brought in under arrangements that generate the problem just discussed.

There is an obvious tendency for the metal industries to maintain a large supply of raw materials on hand. Such a measure is plain prudence on the part of businessmen when there is uncertainty of supplies or when inflation is unchecked; but, with more stable world prices and abundant supplies abroad, there does not seem to be any basic need for large stocks today. Excess inventories are often justified on the grounds that the procurement procedure and final delivery under the Reparations program are so slow and uncertain that it is wise to carry a stock sufficiently great to maintain operations for about six months. In the metal trades this ties up considerable capital.

Everyone concerned with the industries of Israel recognizes that a local steel supply, at reasonable cost, would be a blessing to the metal trades and to the entire economy; but, local production must be developed with caution because of the excess capacity for steelmaking which now exists in the western area. This subject is considered further in a later part of this Section.

Nonferrous imports to Israel will not likely be replaced soon by local supplies. Although there is a remote prospect for economical copper production, the vast mines in the western area which can be operated at a very low cost per ton would seem to be a better source of supply than Israel where production would be too small to enjoy economies of scale. As pointed out later, there are opportunities to improve the effectiveness with which nonferrous metals are now handled in the trade. This would relieve the problem of supply to some extent. The interesting but perhaps not immediate possibility of developing economical magnesium metal from Dead Sea waters is discussed above in Section V.

2. Competition and monopolistic tendencies. In the metal trades of Israel, extremes of both competition and monopolistic practices may be found. With about 5,000 establishments operating in this field, each trying to gain a share of the market consisting of no more than about 1,700,000 people, excessive competition is to be expected. This is currently being aggravated by the large amount of idle capacity, especially in sheet metal, fabricating shops, and the poorer-equipped foundries. If it were not for the curtailment of credit, the rivalry would be much stronger. In contrast with this competitiveness, there is the controlled market where the sharp edge is taken off of competition by collective

measures. These arrangements or policies are furthered by such groups as manufacturers' or merchants' associations, collective enterprises, and the Histadrut.

To illustrate the abridgement of free competition, a case may be cited where a foundry is owned by Solel Boneh (an affiliate of the Histadrut), the largest building construction company in Israel. This means that any competitors of this foundry (which makes such articles as plumbing fixtures, cast iron pipe, valves, and fittings) face a market which need not take their goods unless the managers of Histadrut so desire. It may be doubted that the Histadrut would allow the foundry to operate on a reduced scale while Solel Boneh purchased articles from competing foundries. These same interests own the steel works and the large pipe and tube plants. The products of these plants will doubtless receive preferential treatment from the large users who happen, also, to be affiliated with the Histadrut organization. These associations and their practices might well be the subject of a thorough but impartial investigation sponsored by the public, through the Government if possible. The study should weigh the advantages of a strong group with a bold spirit of enterprise (such as the Histadrut) to the development program against the possible hindrance to private investment created by the commanding position occupied by these same interests. The metal trades would be an appropriate branch of industry in which to assess market freedom in Israel.

3. Complementary industries. In most industrialized nations there are many industries which exist solely to serve other industries, the metal trades being a prime example of this relationship; but in Israel there are not enough large establishments to warrant many specialists of the complementary type. This fact will be a continuing handicap to the metal trades of Israel; it can be overcome only when the nation's markets for metal products are much more fully developed than they are today. Dependence upon foreign companies for auxiliary services has the obvious limitations imposed by time and distance.

One partial solution for inadequate auxiliary services is suggested by practices noted here and there in the metal industries of Israel whereby some of the larger firms (which have been driven to establishing their own auxiliary services) make them available to other metalworking firms on a cost basis. This sort of cooperation produces sufficient benefit for the metal trades in general to offset any loss in competitive superiority suffered by any firm which makes the service available. Examples of these auxiliary services in the metals field are sand conditioning, ingot melting, research and testing, specialized machining, heat treating and metal finishing such as plating, galvanizing,

and enameling. Technical assistance might be directed more to these functions than it has been in the past, and cooperation among metal-working firms should be promoted with vigor. Even with all the improvements possible through specialization and cooperation, some inadequacy in auxiliary services should be taken into account in making industry plans.

4. Managerial environment. For many years in the more progressive manufacturing countries there has existed an industrial spirit—an active tradition of viewing all aspects of business in terms of costs, productivity, and successful sale. New ideas from any source are seldom rejected on the assumption that local conditions are so different from those elsewhere that the new idea would not apply. The whole approach to business in this atmosphere is one of considered optimism which never shrinks from fear of competition.

The metal trades in Israel are still young enough in most cases to have the advantage of freedom from outmoded ideas of management. However, this circumstance should be fully utilized so as to infuse the best and latest ideas of progressive management as practiced in successful free economies. The managers in the metal and mechanical fields have a special interest in the scientific management approach by virtue of the fact that their business is to supply industrial goods to purchasers who generally are cost- and quality-minded, or to consumers who have the freedom to vote for or against the article made of metal, depending upon suitability of price and quality appeal. In the consumer field, the purchase of metal articles is usually postponable; this gives added importance to price and quality. Finally, because most metal products used by consumers lend themselves to mass production, success depends upon the effectiveness of managerial control and marketing efficiency. These all seem to be good reasons for engendering a high standard of management in the metal trades, even at the cost of considerable effort.

This question of managerial atmosphere is not strictly external to industry. A favorable environment for good management can be created by intelligent action. In a narrower and perhaps more practical sense, the managerial approach can be developed within a single business enterprise. Certain suggestions for fostering improved management are advanced in Section II of this report; others adapted especially to the metal trades are discussed in the following paragraphs.

F. Internal Problems of the Metal Trades

Adjustments to the external influences mentioned above consist mainly of management decisions and policies which are carried out

within individual establishments, and to a lesser extent, within associations or groups of manufacturers. This is not to say that group action or individual appeals directed at the Government are seldom used. In fact, there is probably in Israel an excess of dependence by business leaders upon the Government or other organizations. Whether or not this observation is valid, there seems to be ample opportunity to improve performance in the metal trades by giving more attention to the operation of individual establishments. Probably, it would be beneficial to direct a larger share of group activities to the solution of problems within each factory and in its market for particular products and a smaller share to the Government.

1. Uneconomic diversification. One of the main causes for high production costs and lack of success in marketing is the tendency to produce too many kinds of product in a given plant. Although this practice has already been mentioned, it may be observed here that several types of operation in the metalworking business, notably those using machine tools, and foundry work, seem to be adaptable to many different products. Many foundries and machine shops—custom or job shops—make a practice of catering to many different customers. They do not attempt to design products, to carry them through all stages of production, and to sell them in the open market. These custom shops may do very well in normal times or when business is expanding, despite the fact that lack of specialization may result in high costs. The limited size of the local market almost precludes any continuity of production for custom foundries and machine shops in Israel. The existence of too many establishments of small size increases the difficulty of obtaining sufficient work to achieve production economies, or to develop high standards of quality.

Some metalworking companies in Israel operate on the finishing stages of products and carry them through to final sale, assuming all of the risks of designing and marketing. These are the establishments which suffer most from overdiversification. They often are led into this situation by inadequate analysis, bordering upon opportunism. It is tempting, when facilities and workmen are idle, to embark on any kind of product which physically can be made in the factory where the idle facilities exist. Overhead costs in these situations typically are disregarded in the rough computations of production expense. Likewise, the cost of distribution—a special type of overhead cost for which too little concern is shown in Israel--is not properly reckoned. Furthermore, actual out-of-pocket expenses for labor and materials (and sometimes special equipment) are often excessively high where producers are unfamiliar with a new product. The climax of the difficulties is the likelihood that purchasers will not be satisfied with what they buy from

the opportunistic producers. This will necessitate shifting to other one-time customers, to still other new products, or curtailment of operations. A sounder course of action would seem to be to concentrate on fewer products and better satisfaction of customers, even though this would often result in less than full utilization of facilities. A certain degree of slackness in the use of a plant is preferable to fuller operations on products which may not return even their material and labor cost or which may damage the reputation of the enterprise. If this is true in the domestic field, it is even more applicable to business conducted in the international field.

2. Unbalanced equipment. There are several explanations for the existence in Israel of many types of factory equipment which are out of balance with a given plant as a whole or with the basic requirements of the metal trades. The evolution of the industry under several political regimes—Turkish, British, and Israeli—accounts for the presence of many different makes of machinery and equipment. Under the Israeli regime the influence of the Grant-in-Aid program of the United States and of the German Reparation plan is adding still other types of equipment to complicate the problems of operation and maintenance. However, the diversity of sources of equipment is less troublesome than the fact that the productive capacity of one machine is often not consistent with that of another with which it should be coordinated. The mixture of old and new machines is so pronounced in many metalworking establishments that it may be desirable in some cases to re-equip for completely modern and well-balanced operations. Undoubtedly, a new firm with balanced, modern equipment would have a much better chance to achieve economical production. The existence of old facilities, however, would plague any newcomer into the metal field, unless the latter could produce at a cost so low that the older firms in competition could not even recover material and labor costs.

One obvious solution to unbalanced equipment and idle facilities is to combine several companies, organizing the best of the facilities to attain so far as possible an ideal balance, and dismantling or selling abroad the facilities which would not be needed. Another less drastic method is to rationalize product lines and production procedures specifically to overcome the low utilization of facilities.

3. Designing and engineering of products. Too often engineering matters are considered to apply only to facilities and processes in the manufacturing business. The narrowness of this view is sometimes exposed when attempts are made to produce abroad under license a product which has been made successfully in the home country. In some of these cases failure to produce up to specified quality standards and

to achieve high factory efficiency is due to the poor adaptation of the breakdown of work to the differing conditions of size, equipment, material, and human skills found in the foreign factory. To correct this situation redesigning the product purely for efficiency in production is often required.

In a more general sense, there remains the problem of product design for the purpose of meeting the needs of the user. This implies a close identity of marketing and designing functions. Israel's remoteness from the world's major industrial and design centers places her at somewhat of a disadvantage. To overcome this, at least in part, there should be more reliance on licensing arrangements and affiliations through joint ownership and sales contracts between Israeli and foreign companies. What is needed most of all in the development, production, and sale of mechanical goods in Israel is closer attunement to the needs of the ultimate user of the product. Because mechanical goods are used mainly to produce other goods and services, the central objectives in their design from the users' standpoint are dependable functional qualities and low costs of operation, including depreciation. To help overcome the financial inability of many firms in Israel's metal trades to employ designers, there should be more use made of professional or "free-lance" designers on a contract basis.

4. Developing and maintaining quality. In this report several references are made to the importance of quality standards which should be consistently maintained. It has been suggested that high quality should prevail in the domestic market as a basis for a reputation which could facilitate sales abroad. Because of the wide variety of articles made of metal in Israel, it is not possible to set up and administer detailed codes or standards without excessive administrative burdens. However, there are engineering standards which have been developed in other countries and which can be applied to some of the products of Israel's metal trades. In this connection, the outstanding work of the Standards Institute deserves commendation. This Institute should be expanded and generously supported by the metal industries.

Perhaps, the greatest need in quality control is simply the will to learn what constitutes good quality and the determination to achieve it. This means, at least for managers who have had their main experience in an expanding inflationary economy, an entirely new approach—one which takes the long view.

The emphasis on quality seems particularly appropriate to Israel's export situation for several reasons. Cost competition, considering Israel's natural handicaps, is more difficult than quality

competition which sometimes relegates cost to a minor role. Quality products have a higher added value and they usually require a relatively high proportion of labor to investment or material cost. Furthermore, a reputation for high quality reduces selling costs and reduces, in effect, the distance between Israel and foreign markets.

5. Developing managerial competence. The complexities of Israel's economy—so clearly evident in the metal-trade sector—call for heavy emphasis on managerial skill. In spite of this truism, there is perhaps less expenditure for management salaries in proportion to the needs of the situation than is to be found in most countries. This condition exists partly because of the philosophy of equality for which leading political and religious groups have stood in Israel. Another reason for low executive compensation is the doctrine of austerity which is considered appropriate for a country with limited resources that attempts to build itself into an industrial nation in a short period of time. In the mechanical trades, the failure to rationalize management organization and functions draws heavy penalties in high costs and poor utilization of equipment. This results from the need to plan and coordinate a wide range of technical activities.

Many managers of Israeli plants that produce articles made of metal gained their executive experience in Europe two decades or more ago. They find themselves working in a very different environment today, where the scale of operations is a fraction of that with which the managers had their early experience. Many new techniques have been developed as a result of World War II experience and the postwar technological and industrial surge. Means should be provided by individual firms, associations, and even by the Government, for more opportunities for Israeli managers to make extended visits to well-managed firms in Europe and North America to learn these techniques first hand.

The suggestions made in Section II for improving management practices would seem to apply with particular force to the metal and mechanical industries. This is especially true with respect to organized training, professional societies of management people, and above all, adequate compensation.

6. Worker performance and morale. In the metal trades of Israel there is not much distinction in pay rates as between unskilled and highly skilled workers. Perhaps, in no other industrial country of the world is there such narrowness in wage differentials. This is often destructive to morale and incentive. However, with the application of incentive wage methods which reward workers according to production, this condition is being somewhat relieved. Even though higher output is often a reflection

of greater skill, the reward for added output is not always an adequate recognition of the value of skill. There are other advantages to skill which benefit a company; for example, less breakage and work stoppage, greater precision in work, less need for supervision by others and assistance to others with less skill.

The efficiency of Israeli workmen is the subject of comments elsewhere in this report. Productivity in the metal trades shows about the same relative status as that found in other industries. During recent months it seems especially low; but this is explainable in part by the low volume of orders. In several plants that enjoy almost capacity operation and where production engineering has been coupled with incentive pay, the efficiency has risen to almost twice its former level.

7. Financial management. Capital requirements for the mechanical industries are great because of the large initial investment in buildings and equipment, the long production period required on expensive materials, and the need to stock raw materials. These requirements count more heavily in Israel than they do in most competing countries. These extra requirements are all the more severe in a period of capital shortage such as now exists in Israel. However, the place where the most attention is needed to improve the financial position of Israel's metal trades is in the management of operations and marketing so that losses may be reduced and turned into profitable results.

In perhaps none of the management techniques are Israel's metal industries more deficient than in cost accounting. It may be just as important to have the services of a cost engineer as those of any other specialist. There are too many complicated individual parts to a metalworking establishment to permit control by "hit-and-miss" guesses concerning costs and performance. If any firm is not large enough to retain a full-time cost specialist it should employ one on a part-time or cooperative basis.

An extension of the cost accounting approach is to ascertain unit costs for marketing. Israel's unusual difficulties in marketing its products abroad call for greater attention to costs than under more normal conditions.

8. Marketing methods. The special problem of marketing Israel's metal products is foreign sales. Domestic sales may be hampered by influences which have already been discussed, but solutions to problems of local sales are not so difficult to find. In the foreign field, the great weakness is lack of contact with foreign buyers or distributors. This is to be expected for some years to come—until the products of Israel

establish themselves more firmly at home and until a larger volume will justify the expense of intensive sales promotion in world markets. Meanwhile, sales must be made through the medium of brokers, specialists, and business friends abroad on a more or less intermittent basis.

G. Evaluation of Metal and Mechanical Industries

In the preceding pages the discussion is directed mostly to problems and prospects for the metal and mechanical industries as a whole. Subjects dealing with organization, management, and operations are generally treated as matters of interest to firms that are large enough to warrant a rational management approach. Problems of labor, product quality, financing, and marketing are regarded as applicable to organizations of all sizes (excluding the smallest artisan shops). In the industrial setting as described in this report, each branch of the metals industry has its own combination of circumstances which determines the direction it must follow. Therefore, five major divisions of the metal and mechanical trades are selected for discussion with the purpose of pointing up the future course each should follow to make its greatest contribution to the economy.

1. Iron and steel. No branch of industry, aside from food and agriculture, is of more basic importance to Israel than is iron and steel. These metals and the products derived from them constitute the bulk of machinery and metal imports valued at about 85 million dollars annually. Likewise, the major part of machinery and metal products exported, with a value of about seven million dollars, is derived from iron and steel. Although employment in the production of primary iron and steel is not yet high in Israel, the number of workers in plants which fabricate these metals is larger than in any major branch of manufacturing except food processing and textiles.

a. Iron foundries. The iron foundries of Israel are not numerous, and only two--Vulcan at Haifa and Hamalchim at Tel Aviv, both operated by the Histadrut--are considered large by Israel standards. The combined iron foundry capacity of the country is approximately 10,000 metric tons a year, requiring about 6,000 tons of imported pig iron and about 4,000 tons of domestic scrap iron. In view of current plant idleness of perhaps 30 percent, it may be concluded that Israel's needs for the next several years can be met by existing capacity, provided quality is adequate and costs are reasonable.

The quality of gray iron castings produced in Israel is considered fair, except for final finish, and in many cases, tensile

strength. Lack of attention to the latter is the general rule in the industry. In all foundries observed except one, the rate of defective castings was high by world standards. Poor sand conditioning and a virtual absence of laboratory control account for much of the substandard results.

Operations and management practices cannot be said to be excellent in Israeli foundries, although much ingenuity and perseverance are in evidence in most foundries. The extreme diversification of products in most foundries works against economical production. The best use of facilities is not being attained, mainly because of lack of orderly planning, routing and scheduling, and because of poor housekeeping. Adequate internal transportation and powered hand tools are not to be found in any foundry.

Foundries are in need of a central sand supply. Sand conditioning facilities with adequate testing equipment and service are needed to attain better finishes and to reduce the number of defective castings. Better cupolas and cupola practice could utilize a fair quantity of the steel scrap which now has little local use, thus improving the quality of castings and satisfying a local need for machinable parts for repair and maintenance of machinery and equipment of many types throughout industry. Foundries need nothing more than competent foremen who can adjust to the many inadequacies of facilities, skilled workmen, and proper materials.

There is not much hope for a large export market in iron castings because of Israel's inherent disadvantage in transportation. However, a fair volume of Israeli castings may find foreign markets as parts of agricultural or industrial equipment sold abroad. By adopting the measures suggested here, there can be a further reduction in imports. However, as a field for new investment, the iron foundry industry does not seem attractive.

b. Steel foundries. One firm classes itself as a steel foundry in Israel. However, its volume is small and its practices are not modern. This is a field where an investment opportunity seems to exist. Israel is acquiring many different types of industrial equipment from many countries and for which the spare parts problem is enormous. With a good steel foundry, many of these parts could be produced locally with obvious savings in time, investment in spare parts, and in foreign currency requirements.

c. Steel rolling mills. A steel rolling mill in operation is one of Israel's proudest industrial accomplishments—at least in a physical

sense. The plant began production in February 1954, but has not yet achieved a smooth operation. Any data on costs are therefore inconclusive; however, several studies by steel specialists indicate a cost considerably above that found in other steel producing countries. The transportation factor alone makes this almost inevitable, since there are no local supplies of raw materials.

The Ministry of Commerce and Industry estimates that the annual requirements of Israel for rolled steel products is about 45,000 metric tons a year, with a prospective demand for an additional 10,000 tons to supply a seamless tube mill now under construction and scheduled to be completed within a year. This is too small a volume, even if it were not made up of diversified products, to sustain an economical rolling operation. It would appear that there may be excessive zeal in Israel to be self-contained in steel making. However, even if present plans for integrated production are carried through, Israel must depend upon imported coke and other essential materials. Justification of local steel mills on the grounds of service to Israeli industries is questionable for the reason that producing in small volumes and for small orders is most uneconomic. The costs of stockpiling finished Israel-made steel, even if it otherwise could be produced as cheaply as imported steel, would nullify the effect of inventory economy to the steel-using industries. It will take some time to develop quality standards and to perfect practices which achieve them.

Present operations highlight the lack of experienced managers, foremen, and working crew. Also, material handling and feeding equipment seems to have been neglected. To get the best or least wasteful operation out of the present mills and furnaces, it already appears that part of the equipment must be held in an idle state. The engineering of the steel rolling plant was apparently not thoroughly coordinated with Israel's particular needs for steel.

Construction of two used Siemens-Martin blast furnaces is well under way. When finished, these facilities will utilize local steel scrap. In this manner, there should be a saving in foreign purchases of steel. It would seem that with proper balance of equipment and good operations, this addition to the steel industry might help to overcome the troublesome problem of steel ingot supply. The problem, briefly, is that when foreign producers of ingots have a surplus of ingots they also have idle rolling capacity and prefer to sell rolled products rather than ingots. On the other hand, when there is a shortage in the market, they will not sell ingots at the expense of leaving their own mills idle.

A large plant for making steel pipes has been in successful operation for several years. It fills a natural need in Israel and should be in a position to supply projects engaged in the development of agriculture and housing in the Middle East when international relations are more settled. Its greatest elements of strength are its specialization on thicknesses of pipe appropriate to the Middle East market and its savings in freight on the larger sizes of pipe. Capacity is more than adequate for Israel's present and prospective requirement for some years to come. The steel tube mill, soon to be completed, does not seem appropriate to such a limited market for its expensive, specialized products.

Exports of steel, except in the form of pipes, and perhaps to a small extent in the form of rods, are not likely because of the cost disadvantages mentioned earlier. There is little or no attraction for new investment in steel rolling mills in Israel. In view of the disadvantages of location, lack of raw materials, and of limited scale, it seems questionable that investment in steel mills in Israel is justified on economic grounds.

c. Iron smelting. The proposal to set up blast furnaces in Israel has the attraction of contributing to national security and of utilizing local iron ores. However, coke must always be imported, and it is doubtful that the iron deposits in Israel are proven to the extent that investment in blast furnaces is justified in the near future. At best, the operation would be on such a small scale as to be costly.

2. Nonferrous metals. In the nonferrous metals field there are many establishments which serve other manufacturing plants, and only a few which turn out consumers' products. They operate almost entirely on imported raw materials, together with some local scrap. However, in the aggregate, the size of the industry is not large as is indicated by the annual requirements for nonferrous ingot metals, as follows:

Ingot Metal	Metric Tons
Brass	1,000
Bronze	500
Copper	50
Zinc or mazak (400-500 tons for galvanizing)	500-600
Tin (50 tons for coating)	150
Lead	600-800
Aluminum (plus unknown quantity for aluminum pipes)	400
Antimon regulus	10
Phosphor copper	5-6

Ingots produced from local scrap amount to about 400 tons of brass, 150 tons of bronze, and 400 to 500 tons of lead. The possibilities for local mining and refining of copper are discussed in Section II under the heading "Mineral and Chemical Resources."

a. Nonferrous foundries. In contrast with the 20-odd ferrous foundries in Israel, there are over 150 nonferrous foundries, about 120 of which are "captive," that is, departments or subsidiaries of other establishments. About 125 foundries use only sand molding while about 15 employ die casting. (See Appendix Table 23.) This number of foundries is more than adequate to supply the needs of Israel. It seems uneconomic for so many firms to maintain their own captive establishments.

The quality of nonferrous castings made by die-casting plants in Israel is considered good in a number of instances, whereas quality in many other instances suffers from poor molding sand, lack of adequate testing, and inferior ingots or ingots not being melted according to proper specifications. The observations made about management and operating practices in ferrous foundries apply, in general, to the nonferrous field.

Although there are about 12 ingot smelters in Israel, none performs adequately in producing according to uniform standards or in such a way as to meet the technical needs of many of the foundries. Testing laboratories are inadequate in the few instances where they exist at all. The facilities of Technion and of the Standards Institute should be expanded to meet this problem.

b. Copper wire and cables. There is one fairly large wire-drawing plant in Israel—one which enjoys a good market by virtue of the building program and power development activities. Its presence in Israel conserves inventories of wire-rod stock and aids in serving responsively the demands of its Israeli customers, thus relieving them and industry in general of part of their inventory burdens. Since there are no other similar companies in the Middle East, the future in exports seems encouraging. To date, the control of costs and quality has been good. In view of the general adequacy of this concern, there is no reason for additional investments in this field, except for the stimulation which might come from more competition.

c. Aluminum fabrication. The principal applications in Israel for aluminum products are materials for building, irrigation pipes, bus bodies and kitchenware. Except for flat shapes used in building, each of these important applications results in the enclosure of air space by the metal; this makes for high transportation costs for

imports of the finished products in relationship to weight or value. For this reason, ordinarily, it seems economical to engage in aluminum fabrication in Israel.

There seem to have been some false hopes raised for aluminum exports—particularly in the field of kitchen utensils. The low value of these articles and the high cost of transportation work against a profitable result in competition with local producers in other countries, and with very large producers engaged in world trade.

There do not seem to be any special situations in the aluminum field calling for new ventures, save perhaps for a rolling mill.

d. Nonferrous rolling mill. A current proposal for a rolling mill which will produce both aluminum sheets and sheets and strips of copper and copper alloys appears to have economic merit. The small demand for the resulting products casts some doubt on the probable efficiency with which the proposed plant might operate. However, it is the purpose of a combined mill for both aluminum and copper-based metals to overcome this handicap of scale. Some technicians claim that impure products would result from rolling both types of metal in the same plant. This would produce electrolysis in the finished product, causing pitting and corrosion. However, there may be a compromise whereby part of the operations, such as cold rolling, can be intermixed without harm.

3. Household equipment and appliances. The need in Israel for household equipment and appliances made of metal is in proportion to the magnitude of new housing and immigration, plus a small quantity of exports. The local market should continue at the current or at a higher rate for many years. At present, it is hampered by austerity measures established by the Government, high excise, purchase and "luxury" taxes, and the nation's low disposable income. Installment credit for consumers is discouraged in Israel. These retarding factors, though probably desirable at present, will undoubtedly be removed at some future time; this will give an added impetus to sales of household goods of all types.

a. Stoves. Israel has factories which produce all of the modern types of stoves—electric, gas, butane, and kerosene. There is a fair volume of business in gasoline and kerosene "primus" stoves and hotplates. Because the stove may be considered the most universally necessary item of household equipment, its market is assured, even though the market may fluctuate with residential building. There

are numerous homes in Israel without adequate stoves. This provides a potential demand which will result in a good market when consumers' incomes rise.

There are adequate facilities for making kitchen ranges in Israel, with three companies providing the field with a healthy degree of competition. These companies are large enough to achieve some economies in production, although their techniques cannot be called "mass production." They are able to make products with a reasonably good finish and good functional properties. However, under the austerity program they have been required to stress the lower-cost lines and the small sizes. Local enameling, sometimes done by outside contractors, is of good finish.

Exports of stoves in limited quantities have been made; the principal country of destination has been Turkey. There is no special reason to expect a large foreign demand for Israeli stoves. No additional investment appears to be needed in Israel for the manufacture of stoves.

b. Refrigerators. There is one important manufacturer of refrigerators in Israel. It relies on a licensing agreement with a leading American manufacturer for parts and techniques for making its main line—small mechanical refrigerators. This company is controlled by the Histadrut and is affiliated with a radio manufacturing enterprise. The company has its own design for an absorption-type refrigerator, one model of which operates with kerosene and another with electricity.

A natural local demand for refrigerators is partly held in check by purchase taxes which have averaged about 40 percent of the selling price. Climatic conditions and the availability of fresh produce put a premium on the need for refrigerators; but purchasing power is too meager to create a brisk market. However, many refrigerators are purchased locally by remittances from Jews abroad and are then given to members of their families and friends residing in Israel. In this way, refrigerators earn an appreciable amount of foreign exchange.

Through the licensing arrangement with the American producer, the Israeli manufacturer is assured of standard quality in its mechanical refrigerators; the essential working parts are imported as an assembled unit. The cabinet is made with imported sheet steel which is stamped in Israel. The finish is made in Israel, but its application is made in accordance with standards established by the American firm. The absorption-type refrigerators are made almost

entirely in the local factory, thus saving foreign exchange in contrast to the mechanical compressor-type unit. Rigid testing procedure is employed by the local factory to insure dependable performance.

The operation and management of the refrigerator factory are superior to those found in most plants in the country. Recent production engineering and cost studies and the use of incentive pay schemes have increased productivity by about 100 percent as compared to earlier performance. However, a smoother flow of work is still possible.

The export trade has limited possibilities and the absorption-type refrigerator may have the better competitive position. It is based upon a valuable patent, and the burner model may be used where electric power is not available. There are few contenders for such a market.

Several companies have gone into the business of reclaiming used American refrigerators for sale in the Israeli market. These "trade-ins" can be acquired in the United States for a very low price—usually from five to 25 dollars—overhauled and refinished for 25 to 50 dollars in the worst cases and five to 10 dollars in the better cases, and resold at a large profit without charging more than one-half of the Israeli price of a new refrigerator.

The manufacture of refrigerators is a field in which investment seems to be adequate at the present time.

4. Machinery and vehicles. Machinery and vehicle factories constitute a distinctive feature in the metal and mechanical trades of Israel, and represent some of the boldest ventures. The machinery segment represents many types, notably agricultural equipment, industrial equipment, and food machinery. There are several types of vehicles in production in Israel including bicycles, automobiles, and trucks assembled in Israel, and bus bodies. There are plans to set up an additional factory for small automobiles using plant equipment purchased from a defunct American maker; there are also plans to assemble motor scooters under an Italian license. These industries provide many jobs in Israel and give promise of providing even more in the future. They make articles essential to Israel's industrial economy, and contribute greatly to the higher standards of living. However, the attempted export of automobiles built of American parts, causes a net loss of hard currency.

a. Agricultural machinery. Almost any machine shop or foundry may make one or more articles used in farming operations. About 25 firms, including several kibbutzim, may be classed as makers

of agricultural equipment. There is no large specialist in this field. Statistics on the volume of production in agricultural equipment in Israel are not satisfactory; however, it may be assumed that volume is small in proportion to imports of similar products which have an aggregate value of about 800,000 dollars a year. Israeli farming is partly mechanized although individual farmers lack capital. Cooperative settlements encourage the use of large machinery. On the other hand, the preponderance of citrus fruit and vegetable crops restricts somewhat the field for the use of equipment.

Several manufacturers cater to the unusual conditions faced by Israeli farmers which require such things as deep-plowing equipment; but, the bulk of the volume relates to more conventional equipment which is made in competition with foreign manufacturers. To the extent that costs can be kept down, this results in a benefit to the local economy; but operating conditions, as already described in connection with foundries, are not conducive to economies. The use of many different brands of equipment is not good in itself because of the spare parts problem it creates.

There is a sufficient number of small manufacturers now producing agricultural equipment in Israel. Until there are more large-scale farms, there will be little reason to establish additional plants to make agricultural equipment.

b. Food machinery. There are no companies in Israel specializing in food machinery and only a few machine shops or sheet metal shops which manufacture in this field. Most of the equipment is made by the small shops to individual specifications appropriate to the products and volume of business of each customer. The demand for food machinery should be good in view of the fact that food processing is one of the leading industries of Israel. Unfortunately, a fairly large segment of the market for food machinery requires equipment which is produced in other countries on a mass production or patented basis. Both circumstances make the competitive position of the Israeli producer difficult.

The ingenuity and care with which some food machinery has been designed and built in Israel augurs well for the extension of this type of undertaking. With careful investigation and selection, there should be opportunities for additional investment in this field; perhaps there is a place for one or more specialist companies in food machinery. The most promising type of food machinery is probably canning equipment.

c. Industrial equipment. Many machine shops in Israel make industrial equipment as a part-time operation. There are also many instances where the larger manufacturing plants in various segments of industry produce part of their own machinery and equipment. This type of diversification, though understandable, creates the usual unsatisfactory conditions of manufacture in which high costs prevail. The volume of potential business in industrial equipment is one of the largest in Israel as evidenced by the high value of machinery imports. However, many imported articles are not appropriate to small-scale methods of manufacture, and they should not be produced in Israel under present circumstances.

Because of the lack of specialization in the manufacture of industrial equipment it is not feasible in this report to present specific conclusions about operating practices and efficiency. However, it should be noted that one aspect of labor supply affects this and similar industries where shop operations are important. The natural supply of labor in Israel includes few persons who are experienced in factory work. Most immigrants to Israel have little or no mechanical skill; however, they may be and are being trained in Israel as machinists. In the years ahead there should be an ample supply of skilled workers as a result of the military program in Israel in which young men and women are given premilitary training in government machine shops and are sometimes assigned to the same jobs while in military service. The standards of performance in these establishments are reputedly high.

In the manufacturing of machinery for industry the opportunities seem reasonably secure in the domestic market and rather remote in international trade. Modest investments in carefully chosen lines may prove profitable. There probably is a place for a specialized firm making tools and dies for the metalworking trade. One such undertaking was tried without success a year to two ago. The reasons for failure centered on poor quality of work and general lack of management. Furthermore, the trial period was much too short to allow the company to earn a reputation for precision work at a reasonable price.

d. Vehicles. One of Israel's largest exports of manufactured articles is motor vehicles. Domestic sales of automobiles are strictly limited by high luxury taxes. In the entire country there are only about 15,000 passenger automobiles. Total personal income will not permit the purchase of a large number of cars, even if the price should be lowered substantially from present levels which are about 200 percent of American prices for equivalent cars. The use of bicycles and motor scooters should be increased, and these vehicles could be produced on a satisfactory cost basis in Israel.

Automobiles assembled and finished in Israel have attained—particularly in Turkey—a reputation for quality slightly better than that of the American-made models of the same type. This is due mainly to special attention to the finish. (Unfortunately, this particular automobile has not been too well accepted in the American market.) The assembly plant in Israel has made excellent progress toward high efficiency and the sales organization is unusually alert and ingenious in promoting the sale of automobiles in other countries.

The greatest defect in the automobile business of Israel seems to be the international trade position which requires imports of the unassembled parts from the United States and exports only to soft-currency countries.

5. Hardware, plumbing, and miscellaneous goods. Builders' hardware is produced by many different foundries, machine shops, and similar concerns in Israel. Here again there are no specialized firms. Lack of specialization is one important cause for the generally unsatisfactory quality of hardware. Another may possibly be the absence of critical scrutiny on the part of purchasers—the construction companies that erect the buildings in which the hardware is used. Failure to enforce quality standards may be attributable to the existence of common ownership or control between the manufacturer and the building company.

Comments are made earlier in this report concerning certain plumbing fixtures—bathtubs and sinks. These are major items in the plumbing fixture business. Another important item is valves and fittings. There are many foundries, especially of the nonferrous type, which produce valves. Quality could be improved by use of more pressure testing equipment and better foundry practice.

The manufacture and sale of metal souvenirs offers attractive possibilities in Israel for the tourist trade and for the export market. No large volume in this type of article should be expected; but, souvenirs and art goods offer opportunities to earn foreign currency because of their high added value. They offer the collateral advantage of advertising Israel and its metal trades.

H. Summary of Suggestions for the Metal and Mechanical Industries

The suggestions which follow are not exhaustive and they should not be considered apart from the whole context of this research report; they are enumerated here for convenience and emphasis.

1. General Suggestions

Most of the important suggestions relating to the entire industrial economy of Israel that appear in Sections I and II apply with full force to the metal and mechanical sector of the economy; they should be kept in mind in developing or applying any course of action for improving conditions in this sector.

a. General managers who understand management functions, versatile and technically trained foremen, better machinists, more metallurgists, and more cost engineers are especially needed. The financial rewards for the skills of such people must be greatly enhanced.

b. Incentive wages, developed on the basis of thorough and practical productivity analysis, and wider differentials between the pay of skilled, efficient workers and other workers, should be more widely adopted.

c. The metal trades should more generally use the services of specialist industries, such as sand conditioning, ingot melting, testing and metallurgical analysis, galvanizing, enameling, tool and die making, foundries, and others that can lower costs and improve quality through specialization.

d. The major emphasis in the metal trades for the present should be upon articles with high added value in manufacture, low cost of imported materials and capital equipment, high skilled labor requirements, custom-made features, and with a local or nearby market.

e. Ownership, licensing, marketing, and managerial connections with successful foreign firms should be arranged, if possible, for a majority of the more complex mechanical products and for most articles designed for world markets.

2. Suggestions for Specific Branches of the Metal and Mechanical Industries

a. Establish a modern steel foundry with an annual capacity of about 1,200 tons.

b. Establish in the Tel Aviv area an additional gray-iron foundry with modern equipment, consolidating the interests of a number of smaller firms with equivalent capacity, and dismantling inefficient equipment or selling it abroad. When industrial expansion in Southern Israel justifies, establish another such foundry in the area of Beersheba.

c. Establish a central sand conditioning plant at Haifa to serve all foundries in Israel. If and when volume justifies, establish a second plant at Tel Aviv.

d. Establish a nonferrous ingot melting plant either at Haifa or Tel Aviv; set up strict quality standards for its products. Encourage nonferrous foundries to patronize this plant and give up their poor-quality reclaiming operations.

e. Expand the metallurgical laboratory and testing facilities of Technion at Haifa and the Standards Institute at Tel Aviv, preferably with increased financial support by industry.

f. Organize a die making plant to serve machine shops throughout the country. Joint ownership by plants to be served and a fair price and service policy for all, should insure that the products meet the needs of the metalworking industry.

g. Continue the development and expansion of production of food processing and agricultural equipment, especially of the types now imported (unless adaptable only to mass production) and the types which are peculiar to conditions in the natural export market area of Israel.

h. Abandon the program of establishing an integrated steel industry in Israel at this time because of lack of raw materials, disadvantageous world-market location, and small scale of potential business. Seek the best solution for using or disposing of present rolling mills and seamless tube manufacturing equipment without appreciably increasing investment in or for these industries.

i. Modify the automobile business by giving the main emphasis to trucks, jeeps, motor scooters, trailers, and bus bodies for local use and giving up the exports of assembled passenger automobiles which take hard currency for purchase of parts and which bring in only soft currency.

j. Continue emphasis on production of metal articles used in the local building trades, such as hardware, wire, electrical fixtures, plumbing fixtures, pipes of most types, and miscellaneous builders' supplies. Develop higher standards of quality, and better servicing of the building trades.

k. Give special encouragement to the establishment of industries making fine mechanical and optical products. Even though the short-run prospects for success in this field may be discouraging, the long-run possibilities and benefits are important enough to warrant substantial present sacrifices for future success.

Appendix A

EXCERPTS FROM CONTRACT OF RESEARCH BETWEEN FOREIGN OPERATIONS ADMINISTRATION AND STANFORD RESEARCH INSTITUTE

The contract under which this study was carried out is dated December 9, 1953. It was issued to Stanford Research Institute by the Foreign Operations Administration in Washington, D. C. Amendment No. 1 to the contract is dated December 24, 1953; Amendment No. 2 is dated February 24, 1954; Amendment No. 3 is dated April 8, 1954. These amendments for the most part deal with composition of the research team and with the scope of the contract.

The essential provisions of the contract involving scope and objectives of the investigation are as follows:

"The . . . project team will . . . carry out in Israel a field study of the following major industrial fields: (1) the chemical industry; (2) the textile industry; (3) the food processing industry; (4) the metal working industry.

". . . the . . . study will consider the national and local policies affecting industrial development, including but not limited to the fields of import regulations, foreign exchange, credit, taxation, labor, transportation, and power.

". . . the project team will travel throughout Israel to confer with national and provincial officials, economists, foreign and domestic bankers, and many individual industrialists, directing their attention to the following factors as they affect the industries being studied:

a. Total domestic and foreign investment
b. Export-Import Bank loans
c. Industrial allocation of grant-in-aid funds
d. Industrial plants authorized by the Investment Center
e. Industrial plants under construction
f. Excess plant capacity
g. Potential added value
h. Foreign currency expenditures
i. Available raw materials and natural resources
j. Present distribution of labor
k. Recognized local skills
l. Potential export possibilities

"Following completion of the field study the project team will prepare from the data assembled in the field a report which will provide (a) a discussion of the pertinent information found under each of the categories listed . . . above, and (b) essential support-data and specific practical recommendations which will be of assistance in fostering the most desirable industrial developments."

Another section of the covering contract is pertinent to the scope and objectives of this study.

"FOA desires to obtain . . . technical assistance . . . in determining the guide lines which offer the greatest opportunity for a practical industrial utilization of local raw materials and natural resources, a reduction of imports of processed and manufactured goods and the establishment of a sound export trade based upon commodities with the greatest added value; . . .

"An industrial audit will provide information in evaluating existing and potential industry in the fields selected, as to their necessity or desirability in the local economy, and thus serve as a guide in recommending the flow of domestic and foreign investment;. . ."

It may be noted from the above contract provisions that this study deals with industrial economics in Israel and not with political, social, or military matters as such. These are pertinent in the report only insofar as they have a direct bearing on economic problems.

Appendix B

EXPORT-PROMOTION MEASURES AND COST POSITION OF SELECTED INDUSTRIAL COUNTRIES

Great Britain	France	Holland	Belgium	Italy
		Export Credit Guarantees		
State guarantees (ECGD) in respect of insolvency, delayed payment, price, manufacturing, transfer, war & catastrophe, transport & trade agreement risk up to 90%. Also risks connected with market research, advertising and consignment stores in the dollar area up to 50% (total guarantee fund £ 900 million, premiums fund £900 million). Premiums 0.25-0.5%; insured period up to 5 years.	State guarantees (CFACE) for commercial political, catastrophe, currency, price fluctuation and other extraordinary risks. Cover up to 80%. Also risks in respect of market research, advertising and consignment stores in dollar area up to 50%.	State guarantees (Nederlandsche Crediet-versekering Maatschappij N. V.) for debtors (insolvency), manufacturing, transfers, rates of exchange, catastrophe & political risks up to 90%. Also risks of market research, advertising & consignment stores in the dollar area up to 50%. Differentiated premium rates (up to 0.5%).	State guarantees (Office National du Ducroire) for trade, market, manufacturing, political & transfer, and currency risks. Cover up to 85%. Guarantee fund B. Frs. 9.75 milliard. Premiums 0.33 to 1.25%. Long term export transactions 4 to 5%.	State guarantees in course of preparation.
		Export Financing		
Credit allocation in favor of export industries. Long-term export credits by special sanction of British foreign exchange authorities.	Manufacturing and export credits with a life of up to 2 years, in special cases (dollar exports) even up to 5 years (rediscount sanction of Banque de France).	Long-term export credit by Export Financing Co. (original capital D. Fl. 25 million). State liquidity guarantee of D. Fl. 50 million.	Export credits with differentiated rediscount rates (Belgian Congo 2-2.75%, dollar countries 2.25 to 4%, other countries 2.50-5%) and a life up to 2 years.	
		Currency Policy (Dollar Drive)		
	CAFC accounts: 15% dollar bonus, including 12% use of which is restricted. 10% foreign exchange bonus in other currencies (use restricted). In some cases lower franc rate for compensation business.	10% foreign exchange bonus in trade with all countries with which no payments agreement exists. Transit trade with dollar area greatly favored (90% foreign exchange bonus).		30% import rights in dollar export trade, use subject to restrictions.
		Social Policy, Wage Policy		
State subsidies for social insurance. (National Health Service), food subsidies.	The whole of wages tax and employers' quota of all social taxes (about 28% of wages bill) are refunded in the case of export production.			
		Price Policy		
Dual prices for steel and coal.		Differentiated prices for agricultural produce in home and export trade.		

Appendix B (Continued)

Great Britain	France	Holland	Belgium	Italy
Customs Policy				
Preferential duties in the Commonwealth countries for British manufactures. Duty-free imports of raw materials by the Government.				
Special Advantages as Regards Costs				
Efficient capital market, low interest rate (export credits 2-5%). Sterling a world currency. Highly developed system of foreign representation. Cheap steel.	Low taxation of exports (high quota of indirect taxes).	Low interest rates.		
Raw Material Supplies				
Raw material priorities for exports for raw materials still controlled. Securing of raw material supplies by "bulk supply." To a lesser extent, subsidies.		Raw material priorities for export industries for raw materials still controlled.		
Financial and Tax Policy				
Export transactions exempt from purchase tax. Unlimited carrying forward of losses. Depreciation, facilities for industry.	Export goods exempt from turnover tax (1%), production tax (15.1%) and other taxes (3-4%). Also refunding of 5.4 or 8.6% of the export value as reimbursement of the turnover and production tax paid by exporters on trade done on the domestic market.	Turnover tax refunds basic rates 4%, 15-30% for luxuries. Provision made ("Export Nota") for tax-free reserves out of profits (3%) and refunding of equalization taxes (4.5% of wages), depreciation, facilities.	Turnover tax refunds.	Special freight tariffs for fruit and vegetable exports. Refunding of turnover tax on exports to the dollar area. In some cases reimbursement of manufacturing tax. Extensive subsidizing of industry.

Appendix C

LONG-RANGE PROGRAM FOR ISRAEL AGRICULTURE 1959-60

The approved long-range agricultural program was prepared by the Joint Planning Center of the Ministry of Agriculture and the Jewish Agency, and was published in September 1953. The following is a summary of the detailed objectives of the plan for various segments of agriculture as reported in Data and Plans. 1/

I. The plan has the following objectives for the livestock industry:

1. Undertake large expansion of the sheep industry on natural grazing lands, emphasizing wool as well as meat;

2. Develop the beef cattle industry based primarily on grazing land and on the by-products of industrial plants;

3. Develop the dairy industry based on natural increase;

4. Maintain the poultry industry at the level of an annual supply of 200 eggs per person;

5. Rapid development of sea fisheries as a source of animal proteins;

6. Extend the fishpond industry in storage reservoirs and where land and water cannot otherwise be utilized.

II. The plan for field crops emphasizes the production of industrial crops to provide raw material for industry, with the following objectives:

1. Obtain about 120 kilograms of vegetables and 60 kilograms of potatoes and sweet potatoes annually per person;

2. Extend the fodder-producing area and the production of fodder grains, especially irrigated maize and sorghum, so as to supply all livestock;

3. Produce peanuts for oil on 280,000 dunams of irrigated land, in addition to olive and cottonseed oil, to supply all the edible oil required;

1/ Ministry of Finance, Government of Israel, Data and Plans Submitted to the Jerusalem Conference, October 1953, pp. 108-163.

4. Produce sugar beets and establish a sugar refining industry; about 100,000 dunams of sugar beets will supply enough sugar for domestic consumption, and for the production of chocolate, sweets and preserves, working in part for export;

5. Grow legumes and grains for human consumption; and especially expand production of irrigated field corn, and expand wheat production in the South and the Negev;

6. Produce fibrous plants, particularly cotton and flax, and possibly kanaf, to supply the needs of the textile industry; 70,000 dunams or irrigated land in cotton and kanaf, and 10,000 dunams of unirrigated land for flax will supply the needs of the country.

III. The plan proposes the following program for plantation crops:

1. Develop the fruit industry to meet internal consumption needs, and to use effectively the hill regions suitable for fruit trees;

2. Further develop olive groves, especially in the Negev, and plant olive groves for oil on irrigated land;

3. Develop carob plantations on otherwise unsuitable land to supply large quantities of fodder and permit an extension of the livestock industry.

These proposed plantations may reach full productive capacity only by the end of the development period.

IV. The program pays particular attention to the development and extension of agricultural export industries as a means of increasing foreign exchange.

1. Increase citrus plantations to 213,000 dunams. Exports at the end of the development period should reach 11,300,000 cases.

2. Extend banana plantations to 15,000 dunams in order to supply 15,000 tons for export;

3. Extend wine grapes, raisins, and subtropical fruits to supply substantial quantities for foreign markets;

4. Increase olive oil production to permit some exports;

5. Increase early vegetables in order to export 40,000 tons;

6. Further extend tobacco growing in order to export substantial proportions;

7. Export bulbs, flowers, and seeds in some quantities during certain seasons of the year.

V. Agricultural production will be intensified under the program. According to the "Tahal" irrigation plan 1,300 million cubic meters of water will be available to irrigate about 1,850,000 dunams by 1959-60. By then, it is estimated, about 52 percent of the cultivable land will be irrigated, and half the irrigated land will be cropped at least twice a year. Assuming a population of 2 million by the end of the period, the irrigated area per person will reach 0.925 dunams compared to 0.363 dunams in 1952-53.

Appendix D

NATIONAL COLLECTIVE AGREEMENT FOR THE TEXTILE INDUSTRY

National collective agreements between the General Federation of Labor and the Manufacturers' Association operate in spinning, weaving, and knitting establishments, and in the dyeworks. In other branches, local collective agreements operate in each enterprise; the Federation endeavors to secure similar conditions in each of the local agreements. Standard social benefits prevail in the majority of the agreements throughout the industry; wage scales are standard within each of the branches of the industry.

The following are the main conditions laid down in each agreement:

1. Engagement of workers must be made only through the General Labor Exchange.
2. The work day is 8 hours; 7 hours on Friday and days preceding national holidays, with pay for 8 hours.
3. The overtime allowance is 25 percent for the first two hours and 50 percent for any additional overtime above two hours. Night shift is paid 25 percent extra, and 50 percent on rest-days or holidays.
4. Family allowances are paid ranging from 2 to 8 Israel pounds a month.
5. Disability pay as a result of a work accident is 75 percent of the wage.
6. Employers contribute 3 percent of the wage to the Workers' Sick Fund, 2 percent to the sick-pay fund, and 3 percent to the Provident Fund.
7. The minimum paid annual holiday is 12 days (by law).
8. The minimum holiday is 9 days plus national festivals.
9. The employer pays compensation on dismissal amounting to 12 days' pay for every year of service.
10. Women workers receive two months' paid maternity leave.

There are three wage systems in operation:

1. Daily pay for unskilled workers and women workers.
2. Daily or monthly pay for skilled workers.
3. Pay on a piecework basis in weaving and knitting only.

Source: General Federation of Jewish Labor in Israel.

Appendix E

FERTILIZERS AND CHEMICALS, LTD.

The Company was founded in 1946, but it was not until 1949 that a sulphur-burning sulphuric acid plant and a superphosphate plant were built. Operations started in 1950, but it was soon obvious that additional capacity would be required. Thus to satisfy Israel's future needs in fertilizers and, in addition, to provide some of the basic chemicals required for development of a chemical industry, the Company initiated an expansion program in 1950, scheduled for completion in 1954. Although one of the new projects, a pyrites-burning sulphuric acid plant, was recently completed, the balance of the construction program has been delayed somewhat by difficulty in obtaining additional capital. Most of the construction work was carried out by means of loans from the Government. However, the Palestine Economic Corporation, now a majority holder in Fertilizers and Chemicals Export Corporation, recently advanced a loan of 1.5 million dollars to ease the Company's financial difficulty. Total investment and loan capital amount to 16 million Israel pounds including the equivalent of 7 million dollars in foreign currency.

Under a barter agreement between Fertilizers and Chemicals, Ltd. and a Turkish fertilizer manufacturing firm, 20,000 metric tons of sulphuric acid will be shipped to Turkey in 1954 and 30,000 metric tons in 1955. In return, Fertilizers and Chemicals, Ltd. will receive the equivalent value in iron pyrites (48 to 50 percent sulphur content). For 1.75 metric tons of ore received, one metric ton of acid will be returned. The trade is valued at 1.6 million dollars, each way. This means that the ore will be purchased for 20 dollars per metric ton, CIF Haifa, while the acid is sold for 36 dollars per metric ton. This agreement now provides only 80 percent of the Company's requirements; the balance is obtained on import license from Turkey or Greece.

The latest information[1/] on products and capacities of the plants, either built or now in construction, is shown in the following table.

1/ Fertilizers and Chemicals, Ltd., Provisional Report to Shareholders, May, 1954.

Main Plants	Production Capacity (metric tons per year)	Main Raw Materials	Utilization
Sulphuric acid	80,000	Pyrites	Processing and export sales
Phosphoric acid	30,000	Rock phosphate	Further processing
Ammonia	14,000	Refinery gas	Further processing
Nitric acid	10,000	Ammonia	Further processing
Hydrochloric acid	n.a.	By-product from potassium sulphate operation	Processing and local sales
Ammonium sulphate	30,000	Ammonia and sulphuric acid	Local sales 70 percent; export sales 30 percent
Potassium sulphate	12,000	Potash and sulphuric acid	Export sales
Ammonium nitrate	8,000	Ammonia and nitric acid	Local sales
Di-calcium phosphate	12,000	Rock phosphate and hydrochloric acid	Local sales

The sulphuric acid plant is already in operation, and the potassium sulphate and di-calcium phosphate plants should be ready for operation by September and December, 1954, respectively. The rest of the plants will be completed and in operation by the summer of 1955.

In an effort to compare the cost of producing sulphuric acid in Israel with the cost in the United States, some rough calculations have been made. Information was available from a recent report[1/] which indicates that sulphuric acid (200 ton per day plant) produced from 25 percent pyrites costs about 17 dollars per short ton in the United States. A breakdown of these figures is shown as follows:

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n.a. = not available.

1/ Midwest Research Institute, Sulphur, A Raw Material Survey, Kansas City, Missouri, 1953.

Cost Item	Cost per Short Ton
Sulphur	$ 7.0
Labor	2.0
Maintenance	3.3
Depreciation	3.3
Power	0.6
Insurance and taxes	0.8
	$17.0 (Approximately $20 in 1954)

Fixed capital for this plant was estimated at 2.4 million dollars and working capital at 250,000 dollars.

According to information in Economic Horizons (Publication of the Jewish Agency, January 1954 issue), the sulphuric acid plant at Fertilizers and Chemicals, Ltd., cost 2.5 million dollars. However, this does not include capital expenditures for auxiliary services and buildings. If only a proportionate share of these costs is added, it is estimated that at least 3.5 million dollars has been invested in the new sulphuric acid plant with auxiliaries. Assuming a 75 percent yield, about 0.8 ton of pyrites is consumed per ton of acid produced. Thus the raw material cost for this operation is about 16 dollars per metric ton. At the present rate of production (reported to be about 50,000 metric tons per year), depreciation cost is estimated at around 7 dollars per metric ton based upon a 10 percent annual rate. If labor, maintenance, and power costs, known to be high in Israel, are taken at 1.5 times unit cost in the United States, the following comparative production cost for sulphuric acid is determined:

Cost Item	Cost per Metric Ton	Cost per Short Ton
Sulphur	$16.0	$14.4
Labor	3.0	2.7
Maintenance	5.0	4.5
Depreciation	7.0	6.3
Power	1.0	0.9
Insurance and taxes	1.0	0.9
	$33.0	$29.7

Thus, in 1954 there is a cost differential of about 10 dollars per ton. While this figure is high, sulphuric acid probably could not be shipped into Israel for this price. As the rate of production increases, the cost of sulphuric acid should come down appreciably. In turn, since the sulphuric acid represents about 50 percent of the total cost of superphosphate fertilizers, lower production costs for superphosphates will result.

Appendix F

DETAILS OF TEN-YEAR DEVELOPMENT PLAN FOR THE CHEMICAL INDUSTRY AS DEVELOPED BY MINISTRY OF COMMERCE AND INDUSTRY GOVERNMENT OF ISRAEL IN 1952

The following basic assumptions were made in preparing this plan:

1. The population of Israel will reach 2.5 million by 1962, with an increase in the country's requirements for chemicals of 1.6 times current needs.

2. An adequate skilled and unskilled labor force will be available.

3. There will be two harbors, one in the north and one in the south.

4. An adequate supply of power and electricity will be available.

The only materials to be imported would be pyrite ore (165,000 tons at 22 dollars per ton - 3.63 million dollars); petroleum fractions (40,000 tons at 25 dollars per ton - 1.0 million dollars); and penicillin raw material (900,000 dollars). Total value of imports would be 5.53 million dollars.

Local raw material requirements are listed below. No monetary value was assigned.

Raw Materials	Metric Tons per Year
Bromine	3,000
Copper ores	150,000
Peppermint grass	25,000
Phosphate rock	650,000
Potassium chloride (potash)	150,000
Sodium chloride (common salt)	316,000

Total investment was calculated at 54.0 million dollars and 32.3 million Israel pounds. Total product value would amount to 58.6 million dollars, of which 37.7 million dollars would be for local needs, the balance (20.9 million dollars) for export.

The end chemicals which would be produced are listed as follows:

	Thousands of Metric Tons per Year	
	Quantity Used Locally	Quantity Exported
Acetylene	1.1	
Benzene	2.8	
Bromine	2.0	
Chlorine	3.0	
Chlorine derivatives	4.5	
Copper	1.3	
Detergent base	3.0	
Ethylene dibromide	0.2	2.0
Nitrogen fertilizers	200.0	
Penicillin	1,200 billion units	2,800 billion units
Peppermint oil	5 tons	60 tons
Phosphate rock--calcinated	227	233
Polyvinyl chloride		1.5
Potassium chloride (potash)		150
Sodium chloride	29	
Soda ash	50	100
Caustic soda	11	
Sulfuric acid	14	
Superphosphate	90	
Iron oxide	90	
Fodder	25	

Appendix G

DETAILS OF PROPOSED SOUTHERN CHEMICAL WORKS AS PREPARED BY MINISTRY OF FINANCE GOVERNMENT OF ISRAEL, in 1953

A. Location

Tentatively, Kurnub was the site chosen; it is located some 35 kilometers east of Beersheba. The reasons advanced for the choice of this particular site are:

1. Transportation costs and the traffic burden on the railway require that the works be located close to the phosphate quarries.

2. The future salt supply for the soda ash plant requires that the works be located near Sodom.

3. The steel works which may be erected in Kurnub will use by-product cinders from the pyrite-burning operation as an integral part of raw material requirements for the former.

4. There will be an efficient use of energy for the various operations by concentrating all these plants in one place.

5. The erection of an industrial unit of these dimensions will give a big impetus to development of the Negev.

B. Production Program

The chemical works will contain units for the production of chemicals in the following quantities (in metric tons per year):

Chemical	Production Capacity	Use as Intermediate Material	Sales	
			Local	Export
Calcined phosphate	600,000	180,000	80,000	340,000
Soda ash	60,000	37,000	5,000	18,000
Sulphuric acid	166,000	166,000	--	--
Phosphoric acid as P_2O_5	52,500	52,500	--	--
Phosphate salts	37,500	--	3,000	34,500
Concentrated phosphatic fertilizers	55,000	--	--	--

C. Basic Investment

The basic investment in foreign currency required for these industries is noted below; these prices are based mainly on the 1952 tenders of German manufacturers.

Beneficiated phosphate works	$1,800,000	
Sulphuric acid	1,580,000	
Phosphoric acid	920,000	
Phosphate salts	560,000	
Concentrated phosphatic fertilizers	400,000	
Cleaning of fluorine gases	40,000	
Sodium carbonate (soda ash)	4,500,000	
Motors and auxiliaries	310,000	
Power station	1,000,000	
Transport of materials	650,000	
Service units (water softening, cooling, etc.)	1,700,000	
Engineering expenses	400,000	
Unforeseen expenses	1,300,000	
		$15,160,000
Freight and insurance (approx. 10%)		1,500,000
Total		$16,660,000

The additional investment in local currency is estimated to be 17 million Israel pounds.

D. Foreign Currency Income

The estimated yearly balance of foreign currency profits is as follows:

Income from Foreign Sales

Beneficiated phosphate at $15 per ton	$ 5,100,000
Soda ash at $30 per ton	540,000
Phosphate salts at $180 per ton	5,750,000
Phosphatic fertilizers at $80 per ton	4,400,000
Total	$15,790,000

Savings in Foreign Currency Because of Local Sales	
Calcined phosphate at $15 per ton	$ 1,200,000
Soda ash at $35 per ton	175,000
Phosphate salts at $100 per ton	600,000
Total	$ 1,975,000

Expenses	
Fuel at $25 per ton	$ 3,000,000
Pyrites at $20 per ton	2,160,000
Spare parts	550,000
Miscellaneous	100,000
Total	$ 5,810,000

From this calculation, the net yearly foreign currency profit will be 9,980,000 dollars, while the real profit margin in foreign currency will be 11,955,000 dollars per year.

E. Employment

Preliminary estimates indicate that 1,750 workers will be employed when the plants are operating at full capacity.

Appendix H

PROJECTS FOR THE CHEMICAL INDUSTRY OF ISRAEL
Under Consideration by the Ministry of Commerce and Industry
Government of Israel

Project	Capacity (metric tons per year)	Domestic Requirements (metric tons per year)	Investment (dollars)	Remarks
Phthalic anhydride	300		300,000	
Di-octyl phthalate				
Polyvinyl chloride	2,000	700		Cheap acetylene is the problem
Food yeast				Based on whey or wood waste
Lead and lead oxide		2,500	1,000,000	Ores from Turkey
Alcaloids[1]			200,000	Based partially on locally grown herbs
Pharmaceutical raw materials			400,000	
Bichromates[2]	500	200		Possibility of Iran ores
Stearine-oleine/ glycerine			200,000	Beef tallow from South Africa or Argentina
Ethylene dibromide				Bromine from the Dead Sea
Calcium carbide/ acetylene[3]	2,500			
Aniline dyestuffs		60		
Hydrogen peroxide/ borates	200			Boracites from Turkey
Carbon black[4]	300	1.000		Raw materials from refinery products
Casein				Possibilities are peanut or castor bean protein

Project	Capacity (metric tons per year)	Domestic Requirements (metric tons per year)	Investment (dollars)	Remarks
Titanium dioxide		150		Ilmenite ores from Ceylon
Organic chlorine compounds				Chlorine not available in Israel
Wood sugar				Raw materials: wood waste
Methyl alcohol/ formaldehyde	1,000 5/	500 5/		

1/ Connection with a world-wide firm is recommended.
2/ May be possible to obtain equipment from Germany.
3/ Acetylene now produced from imported calcium carbide.
4/ Small scale production visualized to supply lower grades (not for tires).
5/ Figures for formaldehyde.

Source: Ministry of Commerce and Industry, Government of Israel.

Appendix I

SUMMARY OF TYPES OF PRODUCTS IN THE METAL TRADES OF ISRAEL[1/]

Although there are about 4,000 establishments in the metal trades in Israel, many of these are small workshops rather than manufacturing plants. Those concerns which operate according to a well-defined production plan, approved by an established management, number only about 700 or 800. Of these 689 belong to 5 manufacturers' associations as follows:

1. Israel Manufacturers' Association
2. "Koor" Enterprises (Histadrut-controlled)
3. Cooperative Center
4. Artisans and Minor Industries' Association
5. "Hameshavek" Marketing Organization of Labor Settlements (Histadrut-controlled)

The 689 concerns are distributed among the following fields:

1. Semi-finished goods (171 firms): iron, steel and malleable castings; nonferrous castings and parts; wire; profile iron and extruded aluminum parts.

2. Finished consumers' goods (198 firms): enamel kitchen utensils, aluminum ware; pressure cookers; electroplating ware; tinware; cutlery; domestic furniture; office furniture; safes; electric cooking equipment; electric domestic and commercial refrigerators; electric lamps; electric bulbs; radios; razors; watches; and washing machines.

3. Transport (18 firms): automobiles; jeeps; trucks; bus bodies; pistons and rings; bicycles; motorcycles; bell wire; batteries; cranes; and pulleys.

4. Industrial equipment (159 firms): woodworking machinery; lathes; grinding machinery; drilling machinery; mechanical saws; presses; compressors; polishing machines; shoe machinery; textile machinery; tinplate-processing machines; wire-processing machines;

1/ Adapted from J. Barbash, "Metal Industry," The Israel Economist Annual, 1953.

food-canning machinery; electric and autogenous welding equipment; oil-processing machinery; bakery equipment; electroplating equipment; tools and dies; precision instruments; tools; spare parts; electric motors; steam boilers; oil burners; spare parts for ice and cold storage equipment; oscillators; laundry machines.

5. Building (84 firms): cement mixers; tile manufacturing equipment; ironmongery; metal shutters; bathtubs; faucets and valves; electric appliances; metal kitchen sinks; stainless steel kitchen sinks; steel construction; V. J. R. cables; Bergman pipes and steel conduits; water heaters; elevators; nails and screws; fire extinguishers; and wire and wire netting.

6. Agricultural equipment (37 firms): cultivators; fertilizing equipment; agricultural carts; sprayers; mechanical sowers; and mechanical vegetable sorters.

7. Electrical goods (18 firms): electric motors; transformers; electric cables and wire; and measuring instruments.

8. Medical equipment (4 firms): surgical instruments; hospital equipment; and dental drills.

APPENDIX TABLES

Appendix Table 1

ISRAEL IMPORTS, EXPORTS, AND ADDED VALUE[1] FOR 1953-54 AND BUDGET FOR 1954-55

(In Thousands of Dollars)

		Adjusted Actual for Fiscal Year 1953-54[2]	Budget for Fiscal Year 1954-55
1.	Total expenditures for imports	$346,000	$346,000
2.	Total exports	58,000	78,000
3.	Imports for export[3]	26,000	30,000
4.	Added value for total exports	32,000	48,000
5.	Citrus exports	24,000	29,000
6.	Imports for citrus exports	4,000	9,000
7.	Added value for citrus exports	20,000	20,000
8.	Noncitrus exports	34,000	49,000
9.	Imports for noncitrus exports	22,000	21,000
10.	Added value for noncitrus exports	12,000	28,000
11.	Total imports less imports for export (1 minus 3)	320,000	316,000
12.	Percentage of noncitrus added value to total imports less imports for export (10 divided by 11)	4%	9%

1/ Added value defined as net foreign currency earned by exports over imports for exports.

2/ Actual for July 1953 to March 1954, projected to 12 months.

3/ Includes diamonds, automobiles, and one-half of remaining balance of imports; this assumes that half of "imports for export" are actually consumed in Israel.

Source: Adapted from data obtained from United States Operations Mission in Israel.

Appendix Table 2

MAIN IMPORTS INTO ISRAEL BY COMMODITY GROUPS
AND MAIN COUNTRIES OF ORIGIN, 1953
(Countries Listed in Order of Volume)

Commodity Group	Country of Origin	Value
All commodities	All countries	$311,772,575
Grain and flour	All countries U.S.A., Canada, Turkey, Argentina, Italy, Holland, West Germany, Belgium, and United Kingdom	39,493,972
Feeding stuffs for animals	All countries Turkey, U.S.A., Norway, Holland, and Argentina	29,493,972
Meat	All countries Argentina, U.S.A., France, Holland, United Kingdom, Switzerland, and Turkey	4,275,449
Animals, live--for food	All countries Turkey	406,510
Dairy products	All countries U.S.A., Holland, Belgium, Switzerland, and Sweden	6,756,263
Fresh fruits, nuts, and vegetables	All countries Turkey, Italy, and Belgium	805,020
Beverages	All countries United Kingdom and Holland	58,509

Appendix Table 2 (Cont.)

Commodity Group	Country of Origin	Value
Other foodstuffs	All countries U.S.A., United Kingdom, France, Norway, Holland, Belgium, West Germany, Sweden, Italy, Turkey, Argentina, Switzerland, and Austria	$ 25,872,605
Tobacco and tombac	All countries U.S.A., Turkey, and United Kingdom	705,894
Coal	All countries United Kingdom and U.S.A.	382,642
Other nonmetalliferous mining and quarry products	All countries U.S.A., Canada, United Kingdom, Italy and Holland	911.341
Metalliferous ores and scrap metal	All countries Turkey	268,831
Wood and timber	All countries Austria, Finland, Turkey, Sweden, Canada, Italy, Belgium, U.S.A., France, and West Germany	7,958,779
Textile materials	All countries U.S.A., Turkey, Belgium, Italy, Holland, United Kingdom, and Switzerland	5,142,407

Appendix Table 2 (Cont.)

Commodity Group	Country of Origin	Value
Seeds, beans, and nuts for oils, gums, and resins	All countries U.S.A., Turkey, West Germany, United Kingdom, Holland, Belgium, Italy, and Sweden	$ 25,143,115
Hides and skins, undressed	All countries U.S.A., Argentina, Holland, and United Kingdom	1,699,250
Miscellaneous raw materials and articles mainly unmanufactured	All countries United Kingdom, U.S.A., Holland, West Germany, Turkey, Switzerland, Finland, Argentina, France, Italy, Belgium, Canada, and Sweden	17,230,640
Coke and manufactured fuel	All countries West Germany, Belgium, and Holland	121,066
Ceramic ware, glass, and manufactured quarry products	All countries United Kingdom, West Germany, U.S.A., Switzerland, France, Italy, and Holland	1,403,861
Iron and steel and manufactures thereof	All countries U.S.A., Belgium, West Germany, United Kingdom, Sweden, France, Austria, Italy, Holland, Switzerland, and Canada	20,954,242

Appendix Table 2 (Cont.)

Commodity Group	Country of Origin	Value
Nonferrous metals and manufactures thereof	All countries	$ 4,471,810
	United Kingdom, West Germany, U.S.A., Belgium, Sweden, Holland, Switzerland, Italy, Canada, and Austria	
Cutlery, hardware, implements, and photographic films	All countries	3,586,030
	U.S.A., United Kingdom, Switzerland, West Germany, Sweden, Austria, France, Holland, and Italy	
Electrical goods and equipment	All countries	6,646,430
	U.S.A., United Kingdom, Belgium, Switzerland, West Germany, Sweden, France, Austria, Italy, Finland, Holland, and Canada	
Machinery	All countries	34,063,151
	U.S.A., United Kingdom, Switzerland, Belgium, Sweden, West Germany, Austria, France, Italy, Finland, Holland, and Canada	
Manufactures of wood and timber	All countries	6,630,719
	Austria, Finland, Italy, Belgium, Sweden, U.S.A., Norway, France, Switzerland, West Germany, and Holland	

Appendix Table 2 (Cont.)

Commodity Group	Country of Origin	Value
Cotton yarn and manufactures thereof	All countries Italy, Switzerland, U.S.A., Belgium, United Kingdom, and France	$ 6,747,790
Woolen and worsted yarn and manufactures thereof	All countries Austria, Belgium, France, Italy, United Kingdom, Switzerland, Argentina, and U.S.A.	1,458,050
Silk yarn, artifical silk yarn, and manufactures thereof	All countries U.S.A., Switzerland, Italy, Holland, West Germany, Austria, France, United Kingdom, Norway, and Sweden	3,094,056
Manufactures of textile materials, other	All countries United Kingdom, France, Italy, U.S.A., Holland, and Switzerland	428,277
Apparel	All countries U.S.A., Canada, United Kingdom, Austria, West Germany, Finland, Sweden, Switzerland, and Holland	3,344,446

Appendix Table 2 (Cont.)

Commodity Group	Country of Origin	Value
Chemicals, drugs, dyes, and colors	All countries U.S.A., West Germany, United Kingdom, Belgium, Switzerland, Holland, Italy, France, Sweden, Norway, Austria, and Canada	$ 9,504,449
Oils, fats, and waxes, manufactured	All countries U.S.A., United Kingdom, Holland, and France	14,353,562
Leather and manufactures thereof	All countries Argentina, U.S.A., United Kingdom, France, Turkey, Switzerland, and Holland	1,330,456
Paper and cardboard and manufactures thereof	All countries Finland, U.S.A., Austria, Norway, Sweden, Canada, United Kingdom, Holland, Switzerland, and Italy	3,976,804
Aircraft, ships, and vehicles	All countries U.S.A., United Kingdom, France, West Germany, Sweden, Argentina, Italy, Austria, and Switzerland	13,223,510
Rubber manufactures	All countries U.S.A., France, United Kingdom, West Germany, and Holland	727,177

Appendix Table 2 (Cont.)

Commodity Group	Country of Origin	Value
Miscellaneous articles, wholly or mainly manufactured (incl. diamonds)	All countries	$ 9,101,490
	U.S.A., United Kingdom, Sweden, France, It[illegible], Switzerland, Holland, West Germany, Austria, Finland, Norway, Canada, and Argentina	

Source: Central Bureau of Statistics and Economic Research, Government of Israel.

Appendix Table 3

MAIN EXPORTS FROM ISRAEL BY COMMODITY GROUPS AND MAIN COUNTRIES OF DESTINATION, 1953

Commodity Group	Country of Destination	Value
All commodities	All countries	$ 57,534,064
Grain and flour	All countries	13,538
Dairy products	All countries	13,238
Fresh fruits, nuts, and vegetables	All countries	21,924,599
	United Kingdom	11,692,884
	Norway	1,680,753
	Finland	1,354,934
	Belgium	999,040
	Sweden	812,146
Beverages	All countries	2,130,596
	United Kingdom	1,970,041
	U. S. A.	35,126
	Finland	21,664
	Norway	8,232
Other foodstuffs	All countries	950,141
	Finland	390,824
	United Kingdom	263,088
	U. S. A.	105,333
	Belgium	14,386
Other nonmetalliferous mining and quarry products	All countries	18,312
Metalliferous ores and scrap metal	All countries	215,029
Textile materials	All countries	177,573
	United Kingdom	81,110
Seeds, beans, and nuts for oils, gums, and resins	All countries	1,100
Hides and skins, undressed	All countries	3,763
Misc. raw materials and articles mainly unmanufactured	All countries	120,912
	U. S. A.	71,546
Ceramic ware, glass, and mfd. quarry products	All countries	1,406,129
	Turkey	1,232,888
	Finland	19,866

Appendix Table 3 (Cont.)

Commodity Group	Country of Destination	Value
Iron and steel and manufactures thereof	All countries	$ 269,615
	Turkey	181,112
	U. S. A.	31,013
Nonferrous metals and manufactures thereof	All countries	247,209
	Turkey	96,835
	Finland	54,942
Cutlery, hardware, implements, and photographic films	All countries	482,353
	Finland	111,546
	Turkey	106,030
	Norway	28,098
	U. S. A.	20,244
Electrical goods and equipment	All countries	491,126
	Turkey	437,080
	Finland	52,623
Machinery	All countries	148,506
	United Kingdom	49,812
	Turkey	27,213
	Finland	17,018
	U. S. A.	14,185
Manufactures of wood and timber	All countries	591,567
	United Kingdom	463,280
	U. S. A.	33,863
Cotton yarn and manufactures thereof	All countries	942,234
	Finland	520,339
	Turkey	335,860
	Sweden	42,162
	Norway	6,807
Woolen and worsted yarn and manufactures thereof	All countries	1,334,600
	Finland	581,300
	United Kingdom	13,401
	Sweden	5,342
Silk yarn, artificial silk yarn, and manufactures thereof	All countries	30,072
	Finland	21,050
Manufactures of textile materials, other	All countries	143,035
	Turkey	101,156
	Finland	8,403

Appendix Table 3 (Cont.)

Commodity Group	Country of Destination	Value
Apparel	All countries	$ 2,974,770
	Finland	1,671,622
	U. S. A.	237,390
	Sweden	173,922
	United Kingdom	61,443
	Norway	37,736
	Turkey	32,813
	Belgium	9,332
Chemicals, drugs, dyes, and colors	All countries	1,063,404
	Turkey	663,916
	United Kingdom	66,707
	Finland	53,354
Oils, fats, and waxes, manufactured	All countries	429,391
	U. S. A.	72,976
	United Kingdom	51,724
	Turkey	41,950
	France	34,390
	Finland	33,426
	Norway	3,948
Leather and manufactures thereof	All countries	25,665
	U. S. A.	4,068
Paper and cardboard and manufactures thereof	All countries	15,336
Aircraft, ships, and vehicles	All countries	5,309,900
	Turkey	3,580,861
	Finland	529,427
	France	282,022
Rubber manufactures	All countries	914,586
	Turkey	822,298
	U. S. A.	40,821
	Finland	13,048
Miscellaneous articles, wholly or mainly manufactured	All countries	15,080,573
	U. S. A.	11,346,745
	Finland	382,714
	United Kingdom	195,748
	Belgium	121,394
	Turkey	113,434
	Norway	62,773
	France	51,198
	Sweden	44,638

Source: Central Bureau of Statistics and Economic Research, Government of Israel.

Appendix Table 4

FOOD BALANCE SHEET OF ISRAEL, 1952-53[1]
(Quantities in Metric Tons, Unless Otherwise Stated)

Commodity	Total Available Supply					Disposal of Available Supply			
	Production	Change in Stocks[2]	Gross Exports	Gross Imports	Total Supply	Feed and Seed	Industrial	Losses	Food (net)
Cereals and Products[3]									
Wheat	29,500	+6,496	--	285,635	308,639	30,500	--	3,500	225,200
Wheat flour	--	+2,287	--	19,905	17,618	--	--	--	17,618
Pearl barley	468	--	--	324	792	--	--	--	792
Oat flakes	756	--	--	--	756	--	--	--	756
Buckwheat	--	--	--	160	160	--	--	--	100[4]
Rice	--	+230	--	3,507	3,277	--	--	--	3,066[4]
Starchy Foods									
Potatoes	55,400	+6,000	--	14,521	63,921	12,500	--	1,300	50,121
Corn flour	757	--	--	413	1,170	--	--	--	1,170
Sugar and Honey									
Sugar	--	+3,424	--	46,930	43,506	215	9,072	--	34,219
Honey	725	+375	--	--	350	--	--	--	350
Pulses and Oil Seeds									
Pulses	900	-837	--	6,643	8,380	450	--	--	7,930
Sesame seed	400	+250	60[5]	2,240	2,330	6	1,717	--	607
Groundnuts, unshelled	5,650	+3,500	--	--	2,150	175	--	--	1,975
Sunflower seed	850	--	--	9,964	10,814	75	9,247	--	1,492
Vegetables	203,000	--	1,500	1,417	202,917	5,500	--	4,200	193,217
Fruits									
Bananas	10,900	--	325	--	10,575	--	--	1,050	9,525
Citrus Fruits									
Oranges	272,800	--	209,100	--	63,700	--	--	1,600	62,100
Grapefruits	56,400	--	38,000	--	18,400	--	--	450	17,950
Lemons	10,700	--	300	--	10,400	--	--	250	10,150
Other citrus fruits	12,100	--	--	--	12,100	--	--	300	11,800
Watermelons and Sugar Melons	57,000	--	--	--	57,000	--	--	1,400	55,600
Miscellaneous Fruits									
Olives, table	2,900	--	--	--	2,900	--	--	--	2,900
Grapes	22,200	--	--	--	22,200	--	9,500	--	12,700
Deciduous fruits	6,000	--	--	--	6,000	--	--	--	6,000
Other fruits	5,000	--	--	--	5,000	--	--	--	5,000
Dried and canned fruits	--	--	--	285	285	--	--	--	285

Appendix Table 4 (Continued)

Commodity	Total Available Supply					Disposal of Available Supply			
	Production	Change in Stocks 2/	Gross Exports	Gross Imports	Total Supply	Feed and Seed	Industrial	Losses	Food (net)
Meat									
Beef, fresh and frozen	1,290	-50	--	7,100	8,440	--	--	--	8,440
Veal	280	--	--	--	280	--	--	--	280
Sheep and goats	170	--	--	--	170	--	--	--	170
Lambs and kids	470	--	--	--	470	--	--	--	470
Poultry(dressed, not drawn)	7,500	--	--	--	7,500	--	--	--	7,500
Eggs	20,350	--	--	--	20,350	650 6/	--	--	19,700
Fish									
Fresh (live weight)	7,600	--	--	--	7,600	--	--	--	7,600
Frozen and cooled	--	-76	--	10,722	10,798	--	--	--	10,798
Canned and sardines	--	-668	--	244	912	--	--	--	912
Salted	--	+5	--	3,345	3,340	--	--	--	3,340
Milk and Milk Products									
Cow milk	132,200	--	--	--	132,200	5,880	11,000	--	115,320
Goat, sheep milk	24,700	--	--	--	24,700	3,300	3,350	--	18,050
Milk, whole, dried	--	--	--	467	467	--	50	--	417
Milk, skim, dried	--	+1,247	--	13,712	12,465	1,500	7,300	--	3,665
Cheese, soft, skim milk	4,772	--	--	--	4,772	--	--	--	4,772
Cheese, soft, whole milk	3,250	--	--	--	3,250	--	--	--	3,250
Cheese, salted	1,395	--	--	--	1,395	--	--	--	1,395
Cheese, hard	950	--	--	--	950	--	--	--	950
Cheese, other	788	--	--	541	1,329	--	500	--	829
Leben	600	--	--	--	600	--	--	--	600
Lebenia	10,900	--	--	--	10,900	--	--	--	10,900
Oils and Fats									
Vegetable oils	18,150	-859	--	5,162	24,171	--	10,717	--	13,454
Margarine	12,856	--	--	--	12,856	--	914	--	11,942
Butter	881	-38	--	4	923	--	31	--	892
Miscellaneous									
Chocolate and cocoa powder	2,218	--	1,189	--	1,029	--	--	--	1,029
Sweets	3,111	--	260	--	2,851	--	--	--	2,851
Jam	8,722	+2,462	225	2,859	8,894	--	--	--	8,894
Beverages									
Wine (Hectolitres)	51,313	+6,898	2,337	144	42,222	--	--	--	42,222
Beer (Hectolitres)	30,344	+82	--	426	150,688	--	--	--	150,688

1/ Excluding food parcels and "Scrip."
2/ A plus sign (+) indicates the increase and a minus sign (-) the decrease in supply at the end of the year, in comparison with t the year.
3/ Maize, sorghum, barley, oats, and rye do not appear in the balance sheet since they were used mainly for feeding.
4/ Difference between gross and net food supply is due to extraction losses.
5/ The quantity used for the production of halva for export.
6/ Eggs for hatching.

Source: Central Bureau of Statistics and Economics Research, Statistical Bulletin of Israel, June 1954, Table 6, pp. 162-166.

Appendix Table 5

PLAN FOR FOOD IMPORTS AND MATERIALS FOR FOOD PRODUCTION IN ISRAEL
HARD-CURRENCY BUDGET, FISCAL YEAR 1954-55

Commodity	Consumption per Month (grams)	Yearly Consumption (tons)	Domestic Production (tons)	Planned Imports (tons)	Price (dollars)	Value ($1,000)
Grains and flour, total						20,000
Wheat—Turkey, Canada and U.S.A.	15,000	310,000	43,000 1/	267,000	73	19,350
Corn flour	600	1,000		1,000	80	80
Quaker oats	60	1,250		1,250	80	100
Rice	100	2,350		2,350	200	470
Oil seeds, total						6,630
Oils	600	14,380	4,000	10,380		6,630
Sugar and products, total						4,240
Sugar	1,950	40,000		40,000	106	4,240
Meat, total						3,000
Frozen meat, boned	130	6,000		6,000	500	3,000
Fish, total						3,730
Frozen fish	200	4,100		4,100	165	678
Fillet	220	4,500		4,500	380	1,710
Herring	200	4,100		4,100	170	697
Canned fish	25	500		500	350	175
"Bakala" fish	50	1,000		1,000	470	470
Poultry and dairy products, total						2,180
Cheese	300	6,000		6,000	60	360
Whole milk powder	30	600		600	700	420
Skim milk powder	400	8,160		9,000	60	540
Baby food	40	80		80	1,125	90
Butter	500	11,000		11,000	70	770

Appendix Table 5 (Cont.)

Commodity	Consumption per Month (grams)	Yearly Consumption (tons)	Domestic Production (tons)	Planned Imports (tons)	Price (dollars)	Value ($1,000)
Raw Materials, food industry, total						900
Raw materials						900
Beverages, total						3,435
Tea	50	800		800	1,300	1,040
Coffee	50	1,200		1,200	1,300	1,560
Tobacco						420
Barley and dura for beer						400
Fruit for juice						15
Miscellaneous, total						3,135
Pulses	400	8,440	3,000	5,440	160	865
Food for ships						450
Materials for margarine						100
Materials for soap						1,720
Reserve, total						750
Grand total						48,000

1/ Includes 33,000 tons Israel-grown wheat, 10,000 from stock.

Source: Ministry of Commerce and Industry, Government of Israel.

Appendix Table 6

HARD-CURRENCY FOOD BUDGET OF ISRAEL
FISCAL YEARS 1953-54 AND 1954-55
(In Thousands of Dollars)

Commodity	1953-1954 Budget	1954-1955 Budget	Actual Expenditure for Nine Months July 1953-March 1954
Grains and flour, total	22,400	20,000	18,260
Wheat—Turkey, Canada and U.S.A.	21,600	10,640	
		5,760	
Rye		2,950	
Corn flour	100	80	
Quaker oats	200	100	
Rice	500	470	
Oil seeds, total	8,760	6,630	6,817
Soybeans		3,900	
Cotton seed		320	
Peanuts		960	
Linseed		850	
Sunflower seeds		600	
Sugar and products, total	4,200	4,240	3,400
Sugar	4,200	4,240	
Meat, total	4,560	3,000	3,592
Frozen meat	2,760	3,000	
Poultry (feed imports)	1,800	--	
Fish, total	3,960	3,730	2,845
Frozen fish	1,020	678	
Fillet	1,820	1,710	
Herring	900	697	
Canned fish	220	175	
"Bakala" fish	--	470	
Poultry and dairy products, total	2,660	2,180	917
Cheese	550	360	
Whole milk powder	300	420	
Skim milk powder	1,150	540	
Butter	500	770	
Baby food	160	90	

Appendix Table 6 (Cont.)

Commodity	1953-1954 Budget	1954-1955 Budget	Actual Expenditure for Nine Months July 1953-March 1954
Raw materials, food industry, total	1,270	900	1,210
Glucose		52	
Sesame		62	
Cocoa beans		361	
Cocoa cakes		125	
Molasses		105	
Riboflavin		50	
Citric acid		50	
Potato flour		45	
Misc. materials		50	
Beverages, total	3,330	3,435	1,900
Tea	880	1,040	
Coffee	1,170	1,560	
Tobacco	800	420	
Barley and dura for beer	480	400	
Fruit for juice		15	
Materials for soap manufacturing, total	1,700	1,720	1,470
Acids		885	
Carbonates		9	
Phosphates		30	
Soda ash		120	
Carboxy methyl cellulose		36	
Dodecyl benzine		480	
Caustic soda		160	
General Reserve		750	
Miscellaneous, total	2,160	1,415	759
Pulses	1,320	865	
Potatoes	270		
Food for ships		450	
Materials for margarine	100	100	
Oil cake	470		
Grand total	55,000	48,000	41,170

Source: Ministry of Commerce and Industry, Government of Israel.

Appendix Table 7

LIVESTOCK ON FARMS IN ISRAEL
January, 1954

Livestock	Jewish Farms	Other Farms	Total
Cattle			
Milk cows	37,169	11,000	48,169
Heifers in calf	8,113		
Heifers	24,360		
Bulls and steers	521	16,500	50,037
Heifer calves	543		
Beef cattle	2,637	4,000	6,637
Total	73,343	31,500	104,843
Sheep and goats			
Goats	16,297	70,000	86,297
Sheep	56,465	18,000	74,465
Stable			
Mules and horses	12,493	4,500	16,993
Donkeys	5,525	n.a.	n.a.
Camels	-	4,000	4,000
Poultry			
Layers	2,543,000	100,000	2,643,000
Cockerels	510,000	n.a.	n.a.
Chicks	413,000	n.a.	n.a.
Water fowl	24,000	n.a.	n.a.
Turkey	45,000	n.a.	n.a.
Breeding cocks	46,000	n.a.	n.a.

Source: Ministry of Commerce and Industry, Government of Israel.

Appendix Table 8

IMPORTS AND PRODUCTION OF THE MILK MANUFACTURING INDUSTRY IN ISRAEL 1949-53

(In Thousands of Units)

Commodity	Unit	October 1949-September 1950	October 1950-September 1951	October 1951-September 1952	October 1952-September 1953
Production					
Leben	lt.	248	190	601	575
Fat leben	lt.	393	1,427	--	—
Lebenia	kg.	2,264	14,620	13,050	10,931
White lean cheese	kg.	1,124	4,520	4,730	4,770
White fat cheese	kg.	311	1,920	1,501	3,273
Salty cheese	kg.	628	760	1,123	1,121
Melted cheese	kg.	137	67	913	960
Other cheeses 1/	kg.	117	396	386	470
Butter	kg.	110	513	718	881
Raw Material Imports 2/					
Butter fat	kg.	--	--	123	9
Imported butter	kg.	--	--	403	--
Margarine	kg.				1,061
Skim milk powder	kg.	1,424	5,021	6,514	6,548
Whole milk powder	kg.	484	1,927	347	1

1/ Hard cheese, especially Edam, Kashkaval, Tilsit, Romodor. Only a small portion is produced from local sheep and cow milk.

2/ Raw materials are imported mainly from the United States and are used to manufacture the milk products listed above.

Source: Ministry of Commerce and Industry, Government of Israel.

Appendix Table 9

IMPORTS AND PRODUCTION OF THE EDIBLE OIL EXTRACTION INDUSTRY IN ISRAEL 1951-53

Commodity	Major Source	Imports 1951 Metric Tons	Imports 1951 Thousands of Dollars	Imports 1952 Metric Tons	Imports 1952 Thousands of Dollars	Imports 1953 Metric Tons	Imports 1953 Thousands of Dollars	Domestic Production 1951 Metric Tons	Domestic Production 1952 Metric Tons	Domestic Production 1953 Metric Tons
Copra	Philippines	12,465	3,420	21,862	3,872	13,997	3,215	--	--	--
Sunflower seed	Turkey	4,493	616	416	25	13,783	1,821	7	71	--
Cottonseed	Sudan, Iran, Turkey, Mozambique	11,354	1,194	2,483	262	[illegible]29	442	--	--	--
Sesame seed	Turkey, Middle and South America, Middle Africa	154	32	938	194	1,241	277	--	--	--
Soyabeans	U. S. A.	17,407	2,314	18,435	2,687	18,231	2,185	--	--	--
Peanuts, shelled	U. S. A.	304	82	505	137	--	--	991	88	--
Peanuts, in shell	--	--	--	--	--	--	--	--	--	--
Safflower seed		--	--	--	--	--	--	6	786	476
Corn germ		--	--	--	--	--	--	--	16	19
Linseed	Abyssinia, Turkey, U. S. A.	919	211	941	193	1,250	195	--	--	--
Castorbeans	East Africa	--	--	247	63	258	53	--	--	--
Tallow	U. S. A.	718		1,372		1,127		--	--	--
Fatty acids	Australia, Norway, South Africa, U. S. A., Holland, Belgium, Germany, Sweden	1,557	267	1,491	519	2,784	664	--	--	--
Rosin, tall oil	U. S. A., Norway	45		50		50		--	--	--

Source: Ministry of Commerce and Industry, Government of Israel.

Appendix Table 10

FRUITS AND VEGETABLES MARKETED FRESH TO THE CONSUMER IN ISRAEL
October - September 1951-52, 1952-53
(In Metric Tons)

Commodity	1951 - 1952 Total Marketed (tons)	1951 - 1952 Consumption per Capita (grams)	1952 - 1953 Total Marketed (tons)	1952 - 1953 Consumption per Capita (grams)
Vegetables				
Onions and garlic	3,084	194	4,712	284
Potatoes	30,179	1,913	26,336	1,846
Tomatoes	33,073	1,991	36,158	2,138
Cucumbers	17,029	1,022	19,522	1,133
Carrots	8,446	511	15,621	913
Beets	3,805	231	5,361	313
Squash	5,406	324	5,077	296
Cabbage	7,583	459	16,017	938
Cauliflower	5,157	324	7,573	444
Radish	5,804	356	6,468	379
Spinach	1,214	75	1,578	92
Kohlrabi	2,205	136	1,566	92
Green onions	3,839	231	4,928	287
Gambo-peppers	6,722	408	7,025	403
Egg plant	9,214	552	8,859	517
Miscellaneous vegetables	14,480	875	15,216	865
Total	157,240		182,017	
Fruits				
Citrus fruit	73,188	4,254	85,603	4,912
Bananas	5,970	346	8,343	475
Grapes	7,821	460	7,795	453
Plums and apricots	3,647	218	2,492	144
Apples	2,585	154	2,165	124
Water melons	12,874	765	10,222	620
Melons	4,624	276	7,229	419
Miscellaneous fruit	2,882	171	3,299	192
Total	113,591		127,148	

Appendix Table 10 (Cont.)

	1951 - 1952		1952 - 1953	
	Total Marketed (tons)	Consumption per Capita (grams)	Total Marketed (tons)	Consumption per Capita (grams)
Miscellaneous				
Olives	1,842	101	3,388	191
Peanuts	451	27	1,773	97
Total	2,293		5,161	
Grand total	273,124		314,326	

Source: Ministry of Commerce and Industry, Government of Israel.

Appendix Table 11

PRODUCTION OF PRESERVED FRUITS AND VEGETABLES IN ISRAEL
October, 1951 to June, 1954
(In Metric Tons)

Commodity	Oct. 1951-Sept. 1952		Oct. 1952-Sept. 1953		Oct. 1953-June 1954	
	Domestic	Export	Domestic	Export	Domestic	Export
Canned Vegetables						
Peas	718		1,133		1,284	
Peas and carrots	155		264			
Beans	302		666		210	
Miscellaneous	1,964		1,837		310	
Tomato products miscellaneous	4,100	129	1,716	150	679	127
Processed Vegetables						
Tomatoes	565	44	158		41	
Cabbage	533		1,652		4	
Cucumbers	3,540		3,276		1,300	
Miscellaneous	154	396	273	243	9	189
Olives	1,650		3,105		1,234	
Canned Fruits						
Miscellaneous	831	838	1,238	520	799	1,187
Grand Total	14,512	1,407	15,318	913	5,870	1,503

Source: Ministry of Commerce and Industry, Government of Israel.

Appendix Table 12

FRESH CITRUS EXPORTS FROM ISRAEL
1953-54
(Cases)

Destination	Shamuti Oranges	Jaffa Late Oranges	Grapefruit	Lemons	Others	Total
United Kingdom	2,648,094	444,442	723,794	46,835	8,825	3,871,990
Eire	87,066	--	12,922	--	--	99,988
Belgium	218,705	75,587	104,010	5,159	--	403,461
Holland	304,422	161,726	49,975	6,645	171	522,939
Denmark	256,603	41,618	15,175	1,500	--	314,896
Iceland	8,060	750	100	206	--	9,116
Norway	402,861	--	16,496	--	--	419,357
Sweden	416,009	124,460	21,173	650	5,461	567,753
Finland	188,087	110,934	13,788	--	--	312,809
U.S.S.R.	469,010	138,132	5	--	--	607,147
Poland	100,000	--	--	--	--	100,000
Rumania	7,596	10	3,305	9,026	--	19,937
Bulgaria	--	--	--	3,350	--	3,350
Yugoslavia	35,815	--	--	17,500	--	53,315
Hungary	8,333	--	--	13,275	--	21,608
Austria	76,940	50,000	3,300	250	2,032	132,522
Germany	212,850	50,000	18,950	--	--	281,800
Switzerland	--	--	88,525	--	--	88,525
France	99,451	75,250	89,700	--	--	264,401
Eritrea	3,600	--	--	--	--	3,600
Nigeria	5	--	--	--	--	5
Canada	555	--	5	--	--	560
Argentina	35,714	--	4,506	--	--	40,220
Total	5,579,776	1,272,909	1,165,729	104,396	16,489	8,139,299

Source: Citrus Marketing Board of Israel, Tel Aviv, Israel. Based on information available May 20, 1954.

Appendix Table 13

EXPORTS OF SPECIFIED CITRUS PRODUCTS FROM ISRAEL BY COUNTRY OF DESTINATION
January 1 to September 1, 1953
(In Metric Tons)

Country of Destination	Concentrated Orange Juice	Concentrated Grapefruit Juice	Concentrated Lemon Juice	Pasteurized Juices	Fruit Cells	Pulps	Peels in Brine	Canned Fruits (slices and segments)	Essential Oils	Value Pounds Sterling	Percent
United Kingdom	2,186.0	83.0	32.0	962.9	94.2	--	--	33.0	57,521	753,173	91.33
Austria	3.0	--	--	--	--	10.0	17.2	--	990	2,984	0.36
Australia	--	--	--	--	--	--	--	--	680	727	0.09
Bulgaria	--	--	--	--	--	--	--	--	1,010	1,581	0.19
Ceylon	--	--	--	1.4	--	--	--	--	--	163	0.02
Curacao	--	--	--	(0.014)	--	--	--	--	--	13	--
Denmark	--	--	--	22.0	--	19.9	--	5.0	150	3,497	0.42
Finland	10.5	8.0	--	27.4	0.2	0.1	1.6	0.7	1,195	12,342	1.50
France	--	--	--	0.1	--	--	--	7.2	7,451	12,356	1.50
Holland	--	--	--	--	6.0	--	--	--	902	2,112	0.26
Iceland	--	--	--	72.0	--	--	--	--	--	8,000	0.97
Italy	--	--	--	5.2	--	--	--	0.1	--	426	0.05
Yugoslavia	--	--	--	--	--	--	--	--	840	1,428	0.17
Norway	3.0	2.0	--	--	10.0	--	--	--	1,067	2,921	0.35
Malta	--	--	--	1.0	--	--	--	--	--	107	0.01
Sweden	3.0	--	--	--	--	--	--	--	50	935	0.11
Switzerland	--	--	--	--	--	--	--	--	696	1,108	0.13
Poland	--	--	--	--	--	--	--	--	2,500	2,750	0.33
Rumania	10.5	10.5	--	--	--	--	--	--	--	6,302	0.76
South Africa	--	--	--	--	--	--	--	--	270	311	0.04
Turkey	--	--	--	--	--	--	--	--	610	1,865	0.23
U. S. A.	--	--	--	--	--	--	--	--	3,492	9,759	1.18
Total	2,216.0	103.5	32.0	1,092.0	110.4	30.0	18.8	46.0	79,424	824,860	100.00

Source: "Citrus Industry of Israel," Economic News. Tel Aviv, Israel, April 1954.

Appendix Table 14

EXPORTS OF CITRUS BY-PRODUCTS FROM ISRAEL
January 1 - July 31, 1954

Products	Quantity 1/	Pounds Sterling 1/
Orange concentrate 65° brix (tinned)	1,191 tons	295,535
Orange concentrate 6:1 (barrelled)	796 tons	207,350
Orange concentrate 5:1 (barrelled)	3 tons	515
Orange base and orange raw juice	7 tons	675
Grapefruit concentrate 4:1	47 tons	8,600
Grapefruit concentrate 7:1	1 ton	200
Grapefruit concentrate 6:1	74 tons	16,365
Lemon concentrate 4:1	65 tons	10,400
Orange oil	72 tons	50,880
Grapefruit oil	2 tons	3,600
Lemon oil	3 tons	13,080
Orange, grapefruit, and lemon cells	222 tons	12,220
Peels in brine	182 tons	7,870
Orange and lemon pulp	11 tons	620
Bitter orange pulp	6 tons	240
Orange slices (A2 cartons) 2/	3,920 cartons	3,745
Orange segments (A2 cartons) 2/	1,750 cartons	2,390
Grapefruit segments (A2 cartons) 2/	40,870 cartons	71,990
Grapefruit segments (A10 cartons) 3/	100 cartons	210
Pasteurized orange and grapefruit juices (A10 cartons) 3/	30,200 cartons	47,200
Pasteurized orange, grapefruit, and blended juices (A2 cartons) 2/	107,665 cartons	135,845
Total		889,530

1/ Approximate.
2/ Cartons contain 24-A2 tins of 570 grains each.
3/ Cartons contain 6-A10 tins of 3 killograms each.

Source: Citrus and Canned Products Association, Tel Aviv, Israel.

Appendix Table 15

PRODUCTION AND RAW MATERIAL IMPORTS OF THE CONFECTIONERY INDUSTRY IN ISRAEL
1951-53
(In Metric Tons)

Industry and Products	1951	1952	1953
Chocolate			
Imports			
Cocoa butter	327	263	218
Cocoa beans	485	484	615
Powdered milk	270	248	136
Glucose	26	6	36
Sugar	875	758	909
Production	1,700	1,580	1,832
Sweets			
Imports			
Vegetable oil	86	38	14
Powdered milk	312	76	12
Glucose	875	504	313
Sugar	1,289	1,798	2,721
Production	2,882	2,617	3,300
Glucose			
Imports	111	255	507
Production	1,257	106	8
Sugar			
Imports	28,040	33,770	49,649

Source: Ministry of Commerce and Industry, Government of Israel.

Appendix Table 16

PRODUCTION OF BEER, WINE, AND OTHER SPIRITOUS LIQUORS IN ISRAEL
1949-53
(In Thousands of Liters)

Year	Lager Beer 1/	Malt Beer 1/	Total Beer 1/	Wine 2/	Other Spiritous Liquors 2/
1949	8,915	2,390	11,305	6,501	1,566
1950	12,280	4,114	16,394	3,078	3,119
1951	14,525	4,491	19,016	7,466	2,472
1952	15,397	3,464	18,861	5,455	2,684
1953	11,611	2,783	14,394	3,864 3/	2,100 3/

1/ Prospectus of Palestine Brewery Limited, 1954.
2/ Jerusalem Post, May 25. 1954.
3/ Estimated.

Appendix Table 17

DAILY WAGE RATES FOR TEXTILE WORKERS IN SELECTED COUNTRIES[1]

Israel, July 1954	Israel Pounds	Dollars
Spinning		
Skilled operators:		
Men (After 1 year)	6.230	3.46
Women (After 1 year)	4.980	2.77
Men (After 5 years)	6.720	3.73
Women (After 5 years)	5.470	3.03
Unskilled operators:		
Men	5.400	3.00
Women	4.150	2.30
Laborers:		
Men	5.400	3.00
Women	4.150	2.30
Weaving[2]		
Men	6.920	3.84
Women	4.980	2.77
Women working on winding machines	4.980	2.77
Knitting		
Skilled	7.550	4.20
Unskilled	5.660	3.15
Women working at preparation work		
Skilled	4.980	2.77
Unskilled	4.150	2.30

Note: Converted at the rate of 1.80 Israel pounds to 1 dollar. The employer pays 32.0 percent for social benefits, and the employee 3.4 percent.

1/ All rates based on an 8-hour day unless otherwise noted.
2/ For 1,000 pics, 32 mils minimum.

Source: Ministry of Commerce and Industry, Government of Israel.

Appendix Table 17 (Cont.)

Germany, July 1954

Male		Female	
Unskilled	Skilled	Unskilled	Skilled and Semiskilled
$2.07-$2.56	$2.22-$2.74	$1.44-$1.92	$1.73-$2.24

Note: Converted at the rate of 4.20 marks to 1 dollar. Piece rates and earnings average about 15 and 10 percent respectively. Highly skilled workers likely earn 10 percent above average skilled workers. Average total social costs per employee equal in amount to 25 percent of the gross payroll, with about 11 percent for employer's social insurance contribution. Estimated social costs, excluding social insurance, about 7 percent for small and medium-sized firms to 10-14 percent for large establishments. Part of the social security costs are paid directly to the employee, but they are included in average hourly earnings.

Source: Office of the High Commissioner, Bonn, Germany, July 23, 1954.

Sweden, 1952

	On Hourly Rates	On Piece Rates	Including Vacations, Overtime, Shift, and Other Bonuses
Male			
Spinning	$4.25	$4.48	$4.96
Knitting	4.25	4.94	5.36
Weaving	4.25	4.48	4.97
Female			
Spinning	3.39	3.85	4.32
Knitting	3.32	3.78	4.02
Weaving	3.52	3.85	4.32

Note: Converted at the rate of 5.18 kronen to 1 dollar.

Source: American Embassy, Stockholm, Sweden, July 20, 1954.

Appendix Table 17 (Cont.)

France, April 1954

	Male				
	Unskilled		Skilled		
	Ordinary Worker 1/	Special Worker 2/	Special	Qualified	Highly Qualified
Paris	$2.80	$3.00	$3.28	$3.38	$4.40
Provincial	2.34	2.46	2.64	2.96	3.52
	Female				
Paris	2.68	2.80	3.00	3.28	3.80
Provincial	2.10	2.32	2.48	2.54	2.76

Note: Converted at the rate of 350 francs to 1 dollar. Hourly rates for overtime increase 25 percent from 40 to 48 hours, and to 50 percent for work over 48 hours. Average length of work week for wage earners (beginning April, 1954) - 42.1 hours; average total of premiums and bonuses excluding overtime, by industry expressed as percentage of average hourly wage - 9.2. Fringe benefits: (a) Social insurance and family allowances, employer contribution, 10 percent for health and retirement insurance, and 16.75 percent for family allowances on wages up to 38,000 francs (108.57 dollars). (b) Workman's compensation, depends upon accident records. (c) Wage tax, 5 percent on all payrolls. (d) Apprentice tax, 0.4 percent levied on all payrolls. (e) Transportation bonus, 800 francs paid by all employers to all employees in the Paris region. (f) Paid vacations, salaried and adult workers paid a legal minimum of one work day vacation per month worked. The minimum may be exceeded under collective agreements.

1/ Without previous experience.
2/ Special physical strength required.

Source: United States Operations Mission in France, July 23, 1954.

Appendix Table 17 (Cont.)

Japan, July 1953 1, 2/

	Women		
	Unskilled	Skilled	Hours Worked
Spinning operator	$14.00	$24.08	195
Loom operator	16.23	24.09	213
Knitting machine operator (men and women)	17.43	30.91	201

Note: Converted at the rate of 360 yen to 1 dollar. All employees receive year-end and summer bonuses totaling about 2 months wages. Monthly earnings are increased approximately 17 percent by these bonuses. Current average employer expenditures for social welfare costs equal 5 percent of payroll. Fringe benefits including company housing, company store, clinics, cooperatives, and dining facilities cost the employer 9 percent of the payroll.

1/ Monthly wage rates. Tokyo and Osaka rates considered as typical.
2/ National wage level increased 7 percent since 1953.

Source: American Embassy, Tokyo, Japan, July 26, 1954.

Appendix Table 18

NUMBER OF ENTERPRISES AND NUMBER OF WORKERS IN THE CHEMICAL INDUSTRY OF ISRAEL, 1954

Category	Number of Enterprises	Total Number of Workers Employed
Accumulators and batteries	5	80
Alcohols 1/	5	20
Auxiliary products for textile and leather	10	40
Basic chemicals and fertilizers	9	900
Candles	10	70
Ceramics	18	650
Cleaning and water treating materials	8	25
Cosmetics	35	300
Dental materials	5	100
Detergents 1/	6	150
Disinfectants and insecticides	16	65
Essential oils and essences	10	100
Fine chemicals	3	20
Fire extinguishers	5	25
Food chemicals	2	10
Glass	10	900
Glue	10	170
Matches	2	160
Miscellaneous (photographic, metal polishing materials, and others)	15	120
Paints and lacquers	23	350
Pharmaceuticals	23	500
Pigments	10	50
Plastics and plastic products	57	300
Printing inks 1/	5	50
Rubber products and latex	40	1,500
Waterproofing materials	6	15
Waxes and boot polish	25	80
Totals	373	6,750

1/ Figures for number of firms and employees were estimated by Stanford Research Institute.

Source: Ministry of Commerce and Industry, Government of Israel.

Appendix Table 19

WORLD PRODUCTION AND CONSUMPTION OF POTASH (K_2O)

For Years Ending June 30

(In Metric Tons)

Continent	1951-52	1952-53	1953-54	1954-55 1/
Production				
Africa	0	0	0	0
Asia	440	40,440 2/	80,700 2/	81,000 2/
Europe	3,669,548 3/	3,900,576 3/	3,944,600 3/	4,000,000 3/
North and Central America	1,251,000	1,471,000	1,633,000	1,750,000
Oceania	0	0	0	0
South America	17,410	19,410	21,910	24,000
Total	4,938,398	5,431,426	5,680,210	5,855,000
Consumption				
Africa	33,424	27,578	32,656	35,000
Asia	189,782	266,028	283,968	300,000
Europe	2,764,489 4/	2,848,838 4/	2,930,420 4/	3,000,000 4/
North and Central America	1,532,359	1,686,749	1,836,176	2,000,000
Oceania	21,825	20,345	22,040	25,000
South America	31,992	35,199	36,683	40,000
Total	4,573,871	4,884,737	5,141,943	5,400,000

1/ Estimated by Stanford Research Institute.
2/ Includes Israel's estimated production.
3/ Includes approximately 1.5 million tons for Soviet Zone of Germany.
4/ Includes approximately 0.4 million tons for Soviet Zone of Germany.

Source: Food and Agriculture Organization of the United Nations, An Annual Review of World Production and Consumption of Fertilizers - 1953, Rome, November 1953.

Appendix Table 20

WORLD PRODUCTION AND CONSUMPTION OF PHOSPHORIC ACID (P_2O_5)[1]

For Years Ending June 30

(In Metric Tons)

Continent	1951-52	1952-53	1953-54	1954-55[2]
Production				
Africa	170,530	170,422	176,550	180,000
Asia	299,664	276,672	320,640	350,000
Europe	2,769,105[3]	2,793,904[3]	2,939,559[3]	3,050,000[3]
North and Central America	2,181,669	2,376,290	2,614,822	2,850,000
Oceania	479,195	480,862	479,750	480,000
South America	67,537	67,521	70,521	70,000
Total	5,967,700	6,165,671	6,601,842	6,980,000
Consumption				
Africa	171,567	168,881	177,568	180,000
Asia	322,684	353,517	367,795	375,000
Europe	2,517,509[3]	2,684,154[3]	2,800,585[3]	2,900,000[3]
North and Central America	2,157,753	2,363,370	2,576,138	2,750,000
Oceania	474,184	478,153	483,662	485,000
South America	96,464	99,307	101,119	105,000
Total	5,740,161	6,147,382	6,506,867	6,795,000

1/ Phosphoric acid supplied by superphosphates, basic slags, and other forms of phosphate (excludes ground rock phosphate).

2/ Estimated by Stanford Research Institute.

3/ Includes only small quantities for Soviet Zone of Germany.

Source: Food and Agriculture Organization of the United Nations, An Annual Review of World Production and Consumption of Fertilizers - 1953, Rome, November 1953.

Appendix Table 21

WORLD PRODUCTION AND CONSUMPTION OF NITROGEN (N)

For Years Ending June 30

(In Metric Tons)

Continent	1951-52	1952-53	1953-54	1954-55 1/
Production				
Africa	17,500	20,600	28,350	35,000
Asia	494,013	589,775	620,803	650,000
Europe	2,386,822 2/	2,473,898 2/	2,623,393 2/	2,750,000 2/
North and Central America	1,272,140	1,430,400	1,635,000	1,850,000
Oceania	15,774	15,900	14,010	15,000
South America	276,136	278,047	283,500	290,000
Total	4,462,385	4,808,620	5,205,056	5,590,000
Consumption				
Africa	151,158	153,525	164,572	175,000
Asia	650,899	801,346	835,580	875,000
Europe	1,944,468 2/	2,043,365 2/	2,148,848 2/	2,250,000 2/
North and Central America	1,387,599	1,604,873	1,762,338	1,950,000
Oceania	21,327	18,905	18,789	20,000
South America	78,843	80,784	82,312	85,000
Total	4,234,294	4,702,798	5,012,439	5,355,000

1/ Estimated by Stanford Research Institute.

2/ Includes approximately 200,000 tons for Soviet Zone of Germany.

Source: Food and Agriculture Organization of the United Nations, An Annual Review of World Production and Consumption of Fertilizers - 1953, Rome, November 1953.

Appendix Table 22

MAIN CHEMICAL EXPORTS FROM ISRAEL
BY COMMODITIES AND MAIN COUNTRIES OF DESTINATION
1953

Commodity	Country of Destination	Value[1/]
Artificial teeth	All countries	63,700
	Austria	19,500
	Finland	10,700
	Yugoslavia	16,200
	Others	17,300
Cement	All countries	453,300
	Turkey	405,500
	Others	47,800
Detergents	All countries	29,800
	Greece	13,300
	Turkey	10,900
	Others	5,600
Essential oils	All countries	195,100
	Belgium	32,800
	Poland	16,500
	United Kingdom	18,500
	Others	127,300
Paints and lacquers	All countries	91,400
	Turkey	89,000
	Others	2,400
Pharmaceuticals	All countries	163,600
	Greece	55,300
	Turkey	88,700
	Others	19,600
Rubber tires	All countries	318,400
	Turkey	289,000
	Others	29,400
Glass—plate and safety	All countries	30,400
	Turkey	28,400
	Others	2,000

1/ In Israel pounds at rate of 2.80 dollars to the pound.

Source: Central Bureau of Statistics and Economic Research, Statistical Bulletin of Israel, February 1954.

Appendix Table 23

NONFERROUS METAL FOUNDRIES IN ISRAEL, 1953

Description	Number
I.	
Nonferrous metal foundries:	
Bronze and brass	44
Zinc and mazak	4
Aluminum	4
Mixed	72
Connected with iron foundries	17
	141
II.	
Smelters for all nonferrous metals	12
Sand foundries	127
Sand pressure die-casting and die-casting	14
	153

III.	Noncaptive	Captive
Foundries with:		
1 furnace, under 5 laborers	19	68
2 furnaces, under 10 laborers	8	24
2 furnaces, more than 10 laborers	2	18
3 furnaces, more than 10 laborers	2	12
	31	122

IV.	
Foundries of importance to:	
Machine building industry	28
Printing materials	2
Communications (automobiles, etc.)	8
Sanitary installations and building	88
Ornaments, luxury articles (ash tray industry)	27
	153

Source: Ministry of Commerce and Industry, Government of Israel.