QUEST FOR SETTLEMENT

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Summaries of Selected Economic and Geographic Reports on Settlement Possibilities for European Immigrants

1948

REFUGEE ECONOMIC CORPORATION

570 Lexington Avenue • New York 22

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QUEST FOR SETTLEMENT

PRINTED IN THE UNITED STATES
BY GANIS AND HARRIS, NEW YORK

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FOREWORD

Our primary purpose in creating the Refugee Economic Corporation and its affiliate, the Refugee Assistance Fund, was to explore and implement the economic approach to the refugee problem. Founded in 1934 by a group which included the late Felix M. Warburg, the Corporation has consistently adhered to its original objective. We have engaged in five types of activities:

1.) selective immigration (of persons with skills needed in the receiving country),
2.) the granting of loans for agricultural, industrial and commercial enterprises,
3.) the establishment of agricultural settlements,
4.) the building of homes for refugees, and
5.) geographic studies of localities throughout the world suitable for development by European settlers.

The activities under the first four headings listed above are described in the series of periodic reports previously published by the Corporation. This booklet concerns itself only with the work embraced under heading 5. Its purpose is to summarize a group of economic and geographic studies made principally during the period 1938 to 1946 with a view towards determining suitability of various lands for colonization and settlement. Financed by our grants to the Johns Hopkins University, the studies were conducted under the auspices of the President's Advisory Committee on Political Refugees. Most of the studies summarized in this booklet were made pursuant to these grants.

The selection of competent authorities was assured when this responsibility was entrusted to Dr. Isaiah Bowman, President of the Johns Hopkins University and the acknowledged dean of American geographers. He had been conducting for ten years or more a series of scientific studies on the undeveloped or under-developed lands of the world. They were objective in character and non-political. They assumed a more or less normal extension of population into lands where settlement was possible.

We gratefully acknowledge the valued contributions of the scientists who carried out their work under the Refugee Economic Corporation grants. Their biographies are set forth along with the respective summaries. These summaries present economic and scientific findings without discussion of any political factors involved in the settlement problem. In the

preparation of this book the Corporation was fortunate in having the services of one of its own directors, Mr. F. Julius Fohs, distinguished oil geologist and engineer, who had prepared the reports on the Middle East. Mr. Fohs supervised the condensation of the exhaustive material on file into short summaries – a difficult task as most of the reports are technical and detailed. He is also the author of the introductory essay on settlement.

Detailed studies of certain vast, developed countries – such as the United States, Canada and some of the larger countries of South America – are not included in this report. It is obvious that those countries could maintain larger populations. The possibilities of settlement in those regions have been treated in *The Limits of Land Settlement* – a study which all interested in the subject should read – published in 1937 under the direction of Dr. Isaiah Bowman.

Settlement on the land is undoubtedly the most costly means of establishing immigrants in a new country, but from the long-range point of view it is the most effective manner of producing wealth. Some years ago our Corporation made an intensive study of the cost of land settlement throughout the world, based on historical experience and collection of data. For the year 1939 the cost varied from an average of $1,000. per family in the lower cost countries, to $5,000. in countries of a higher standard of living, and even more in a few countries of the highest standard. Today the figures are necessarily very difficult to estimate on the basis of exchange and the varying costs in different countries, but the 1939 findings afford an approximate range of relative costs.

We believe the presentation of these summaries is timely. While the reports on which they are founded were originally undertaken to assist the victims of the Hitler persecution, they may now be consulted in connection with the rehabilitation of all displaced persons. Beyond this, they may prove to have a wider application in relation to the historic problem of population pressure and food supply.

The statement that "Food will win the War" did not carry conviction to all during hostilities. But there are few today who will dispute that "Food will win the Peace". We offer these studies in the hope that in some degree they may prove useful in bringing together human and material resources – the basis not only of winning but of maintaining the peace.

CHARLES J. LIEBMAN, *President*

New York, April 15, 1948

FACTORS OF SETTLEMENT WITH A RESUME OF POSSIBILITIES

By F. Julius Fohs

Pioneering is still practical in what appears a mature world; it is both practical and necessary. Largely because of fundamental differences of viewpoint, whether because of color, religion, political ideology or otherwise, prejudices have proven the greatest source of the inhumanity of man to man. As bad as prejudices themselves may frequently be, the uses made of them, whether because of greed of wealth or love of power, have resulted in even greater injustices and inhumanities. And so it has been necessary through the centuries for groups of people to migrate from their long established homes and settle in distant and foreign lands, where they may be free to live their own thoughts, to establish their own churches, practice their own political forms, develop the land and create new industries.

It was largely under such conditions and principally by such groups that the United States was settled and has become a great nation. As Dr. Alvin Johnson has said, "Business makes business", and so many lands now only partially developed, and even some approaching maturity as parts of our own country, can still absorb new peoples: Texas, for example, has land and resources for three times its present population. There is room for many Tennessee Valley Authorities, not only in the United States but a Jordan Valley Authority in Palestine, a Tigris-Euphrates Valley Authority in Iraq, similar projects in many of the Latin American countries, and others* elsewhere to create great new sources of hydroelectric power and irrigation to care and care well for large numbers of people now displaced. It is a way of saying that the earth is large enough for all of its inhabitants.

New developments, particularly during World War II, point the way to improving conditions in areas now uninhabitable by white men and others. Extermination and control of man-attacking insects, with the aid of D.D.T. and other chemicals, make it possible to reduce to a minimum tropical diseases in

* Willard R. Espy, "A Lever That Can Lift The World", *The Atlantic,* July 1947, p. 29.

areas long infested and therefore previously impractical for colonization. The use of modern agronomic methods are effective in improving soils, controlling erosion, destroying unwanted vegetation, and in restoring and preventing "dust bowls". It is only a question of time until these improved methods will increase and even double present crop yields. For example this year in Kentucky, the use of 2, 4-D to destroy weeds in corn fields demonstrated increased yields compared with fields not so treated. The roots of the corn were increased from six inches to over a foot and there was a saving of $5 to $7 per acre for hoeing. This will permit two rows to be planted hereafter against one row heretofore. Doubling crop potential means less land required per family than is called for by present standards. This happened under unusually wet conditions and would be especially applicable in the tropics. The present lack of transportation facilities can be overcome by modern road building methods; tractors and other machines have revolutionized these methods.

The will to do and to work is all important. The economic aid so necessary can, for the most part, be established on an ultimately *self-liquidating basis* as has been planned in our T.V.A. and the irrigation of the Columbia River Bend.

The urgency to resettle is great. Certain countries and colonies offer easier and less costly means than others to accomplish this, and it is to these that first attention should be given.

Difficulties encountered in certain countries, though great, can nevertheless be overcome. We have seen this demonstrated in Palestine where the will and great necessity of the Jews accomplished miracles for themselves and at the same time raised the standards of the Arab natives.

Since displaced persons of Western Europe still number 1,100,000 and fall into three main categories – Roman Catholics 40 per cent, Protestants 20 to 25 per cent and Jews 20 to 25 per cent – these religious groups are all involved and have a common interest in an immediate solution of this problem.

What of the failures of past resettlement schemes? Such will always exist, but proper planning of new schemes and special training efforts for the new rural workers are required. Elaborate high-standard schemes, such as the U. S. Resettlement Administration provided, are both unnecessary and harmful. A reasonable minimum standard and only *such aid as is necessary for self-help* should be provided; this may be

implemented by long-term loans to the settlers. Otherwise, the costs will be inordinate, ultimate failure certain, and parasitism — not self-dependency — becomes the certain result. As a means of implementing the success of new developments in states not now possessing them and particularly in new areas so as to deal directly with local conditions, the establishment of agricultural Experiment Stations is strongly urged. In connection therewith, the use of district instructors, similar to the county agents of the U. S. Department of Agriculture, to help settlers with their problems, should prove most helpful.

There are five great deterrents to accomplishment of resettlement and to the ultimate establishment of a peaceful world: racial, political, ideological, religious, and economic antagonisms. It is urgent to reestablish freedoms in a democratic spirit and thereby to eradicate fears that a majority, or more often a minority, may establish rules making living together impossible. To this end, we plead that all nations severally, and UNESCO of United Nations especially, make every effort to educate citizens to greater tolerance.

Other factors which also govern fall into two groups: (1) attitudes of the government and people toward receiving immigrants, and (2) attitudes of the immigrants after arrival. Both of these involve psychological adjustment factors and in the case of the immigrants adjustment to new physical factors.

As to attitudes of government and natives: the fear of the natives, and particularly of labor groups, makes large immigration at one time, except in unusual instances, impossible. Not only does it take time to overcome some of the intolerances and fears of which I have previously spoken, but new labor must be gradually absorbed into industry, markets expanded and exports gradually increased in order that the economic development may have proper growth without extraordinary disturbances.

As to the immigrants, time is required for the adaptation to new surroundings, but particularly so in the case of the development of marginal lands, where the labor necessary is heavy.

Another deterring factor in accomplishment of maximum development and hence ultimate absorptive capacity is that the large funds necessary may not become available except over a period of time; the press for new capital for development is very great, and since it can only be accumulated through work and development of resources, it is necessary to allocate it where the need is most pressing.

Many of the schemes are matters in which adjoining countries must cooperate for the common good; particularly is this true of hydroelectric and irrigation works, but also transportation, sanitation, etc. This can be accomplished by joint economic commissions and special treaties, without invading the sovereignty of states taking part. These matters have to be viewed in a spirit of bold engineering and pioneering, and will require the establishment of joint funds for their accomplishment. By demonstrating that cooperative efforts will yield mutual benefits, surely any objections can be overcome. There are two principal methods of financing these projects: (1) grants from states directly benefiting from the colonization, and (2) aid from United Nations institutions or from some of the great states.

The recently reported arrangement by Egypt to obtain a private loan for the hydroelectric works at Assuan illustrates the possibility of private financing. Government operations generally afford a slower method of development of natural resources. Petroleum affords a special case where the risks are great and technical skills, as well as huge capital, are required. Contrast with this government development, the private development of our oil fields and the resulting contributions in supplying cheap sources of mobile power for the masses. In many instances, a combination of private and government financing are necessary. In such states as Venezuela, Iran, Iraq, and Saudi Arabia the employment of oil royalties' income as received or as a security for financing long-term loans offers a basis for financing new hydroelectric, irrigation, and other works. Grand Coulee, T.V.A. and our other governmental works distinguish extra long-term, low-risk, semi-socialized government developments from higher-risk, private enterprise developments.

Sometimes governments make large investments, as was done particularly in the Northeastern Drought region by Brazil, and by Iraq at Koot dam, which are not followed up by the necessary additional outlays to bring them into practical use. Such projects, particularly, need early implementing, and require relatively small investments to care for considerable groups of settlers.

* * *

The papers here listed and briefly summarized were variously prepared with less adequate data available for some than for others. The opinions given on colonization are usually on the conservative side. The urgency and importance of finding

homes for several million displaced persons is so great that it was deemed advisable to print this bibliography now to call public attention to this group of studies. Some reports have very good maps, others not. Certain areas reported on lend themselves to immediate development for settlement purposes, others fall into the category of the long-range projects discussed in the preceding section of this foreword.

Additional grants are recommended to further these studies, particularly with a view of localizing opportunities in the more favorable areas. Such studies should be based on both a uniform plan and set of maps. Further studies of additional countries and colonies are desired, and relationships require coordination. Enough has been done, through these and previous investigations by others, to show that ample living-room exists in various parts of the world to care for all without injury to present inhabitants. And in almost every case, the newcomers would, if properly established, improve native standards. Even a rural over-populated country like Mexico would benefit from a reasonable influx of immigrants, who because of their need to succeed and different background would contribute the pioneering spirit so necessary for the regeneration of the land.

The resumes of the several contributions are purposely brief — merely to indicate content and possibilities — the purpose being that investigators, whether from United Nations staffs or others, will make use of the original material.

Since the figures given in the various reports are for agricultural families, it is easy to estimate that for each such family at least two and frequently three others are necessary for industry and services. Hence, the total number of families that can be successfully employed eventually will be at least three times the number called for in the reports. For each settler on the land another two may be needed for industry and services.

Lands studied fall into two categories: (1) those with large undeveloped areas, and (2) those that lend themselves to more intensive development either because of new methods or uses, or because of present sparse settlement. Both types must be called upon to absorb displaced persons; the second type, to care for those requiring immediate placement which may be distributed among all nations. Such nations, except where requiring persons of special skills, might make a regulation that immigrants shall agree to remain on the land for a minimum of five years. The first type requires longer-range planning and financing.

Countries Offering Settlement Possibilities

These studies have been confined principally to: (1) certain portions of Africa, particularly the former German colonies, Libya, and the Island of Madagascar, (2) Middle East covering Palestine, Transjordan, Levant States and Iraq, (3) Southwest Pacific inclusive of Australia, New Guinea, New Caledonia, New Zealand, and a part of Mindanao (P.I.), (4) Central American States and Dominican Republic, (5) South America covering only Venezuela, a small portion of Brazil, Bolivia, and Ecuador and (6) in North America, Canada (see p. 18) and Lower California (Mexico).

From these studies it is possible to point out (without excluding other lands) the countries offering more favorable conditions for settlement.

Though we have mentioned previously some of the obstacles to colonization, additional factors also require stressing: some of the figures given below are figures of *ultimate absorptive capacity*. By this is meant the number of people that can have fair living standards when the development of a country has been brought to its practical maximum. This demands that the agricultural development inclusive of irrigation, the development of hydroelectric and other sources of power, the development of water and other natural resources, the building of industrial plants, shall all have carried forward so that the proper population relationships exist and are employed; it means that the relations of agriculture, industry and services are finally in balance. Since most of these states seeking or requiring additional immigration are in the process of growth, a long period of time may elapse before many of such lands can absorb a maximum population.

The term "settlers" or "immigrants" as used herein represents the number of individuals that can be newly settled on the land and still allow for normal population increase. The term "family" represents an average family of four to five persons. Where "farms" are used, each would cover one family's requirements.

I have already discussed other inhibiting factors due to attitudes of government, natives, and immigrants.

Increase in population is included in ultimate figures only. All other figures are based on the assumption that the amount to be absorbed will still permit normal population increase. The withholding of such large acreages for normal increase such as proposed by Quebec authorities and reported by Pro-

fessor Hurd, I consider a conservatism which must mitigate against any early development of that province. A state builds its wealth on development, and its people as a whole benefit with each increase in wealth and proceed with this as a new base.

Certain states are anxious for and require population increases; they can advantageously absorb a goodly number at an early date. Some of these states are prepared to aid immigrants by at least partial subsidies.

Special cases exist, particularly now because of the displaced persons situation. Some of the countries and their natives, as well as the immigrants, will make sacrifices and adjustments to remedy the present unbearable situation.

Care must be used in considering the figures given and terms used to distinguish between those which represent a reasonable and early settlement and "ultimate" figures.

In Africa: Southwest Africa, now part of the Union of South Africa, and Madagascar offer best opportunities, with the Cameroons and Libya (Cyrenaica) next. Southwest Africa offers the more immediate possibilities since much of it may be settled without irrigation; with a population of 315,000 of which only 31,000 are whites, and with 159,000,000 acres of lands, settled and suitable for settlement, its possibilities for a large ultimate population are very good, while a considerable number of settlers could be accommodated at an early date. Madagascar would require irrigation and flooding projects and hence requires time for development.

In Central America: Costa Rica, Panama and Honduras all need colonists to properly and effectively develop their resources, and each of these can care for 150,000 – 200,000 settlers, with Panama, according to the Roberts report, capable of absorbing in time 1,000,000 people. Costa Rica, according to Waibel, has 5,300 square miles unoccupied and awaiting settlement.

Possibilities exist for 10,000 to 20,000 settlers each in Nicaragua, British Honduras, and Guatemala.

Dominican Republic can support considerable additional population; the report specifies two 100,000 acre areas for immediate colonization, one for intensive cultivation by 25,000 families, the other for subsistence crops with grazing, minor fruits, coffee, etc., to care for 3,500 families.

Based on my studies of Palestine, Transjordan, Levant States and Iraq, the Middle East possesses potentialities for a renaissance of great proportions, particularly if a peaceful settlement of the Palestine problems is soon obtained. The Jews of

Palestine have demonstrated what intensive cultivation and industrial development can accomplish. Hydroelectric power amounting to 750,000 KW (of which 300,000 KW would be available for Palestine) can be developed. The oil and gas of Iraq is ample, after the large contemplated exports, to supply power for industries for a long period of years. As the table under Middle East indicates, Palestine can ultimately care for *two and one-half times* and Syria *thrice* its present population. Iraq, as Mr. Herbert Hoover, one of the world's great engineers, Dr. Walter C. Lowdermilk, international authority on soil conservation, and I agree, offers in the fertile valley of the Tigris-Euphrates rivers the opportunity of the Arab people of all the Middle East to raise their living standard; and instead of a meager population of 3,750,000, Iraq can become with adequate development a modern state of more than thirty million people. Based on an irrigation system planned by such great engineers as Sir Wm. Willcox and A. Burton Buckley, and already partly built, it is possible to acquire irrigable land in Iraq at one-fifth its cost in Palestine.

Because of the already advanced state of the irrigation system, it will require less time and less additional capital to care for an early large group of settlers. The recent request for a loan from the International Bank by Iraq for such development is a step in the right direction.

From reports on Canada, it is apparent that at least 187,000 farms (320 to 480 acres each) are available for settlement without irrigation, and at least another 37,500 (80 acre average) if irrigation works are built, making a total of 224,500 farms; and this does not touch marginal areas lying further north which can still be acquired at a low per acre cost. Mechanization of the farms on a cooperative basis would assist in reducing first investment costs. Canada with a present population of twelve million, could ultimately use to advantage double its present population. A recently published article points out Canada's ability to absorb, after allowing for normal population increase, as reported by the economists, Professors Fortin and Thompson of McGill University, a net of 39,000 immigrants annually for a period of fifteen years. A much larger early absorption would hasten the rise of Canada to the position that its natural resources justify.

Lower California (Mexico) has at its eastern end the delta region of the Colorado River with 1,324,000 irrigable acres of land of which 191,000 acres have been cleared. Lake Mead (Boulder Dam), which supplies the farms of the Imperial

Valley, contains in addition sufficient water to supply these 1,324,00 acres. It may be some treaty arrangement would be possible for purchasing this water from Boulder Dam. There remains, if irrigated, over 1,000,000 acres which could be intensively cultivated and would care for 85,000 people. Other portions of this region would, if irrigated, care for another 140,000 people. By allowing one-fourth for immigrants and the balance for natives, the immigrants would set an example that would greatly facilitate development. Hydroelectric power should be developed in the mountains, as additional power is a prime Mexican need.

In South America, Venezuela offers immediate possibilities for settlement of 250,000 families; this is much needed for its proper development. In Ecuador, a lesser but still a considerable number can be accommodated. In Northeastern Brazil, several hundred thousand settlers can be cared for on irrigated lands which require some additional investment and development. Other portions of Brazil were not included in these studies, but should receive attention. Bolivia has been investigated for the establishment of two settlements to care for 500 to 550 settlers.

In the southwest Pacific, Australia particularly requires a large number of settlers, and can support to advantage almost double its present population; the report gives much basic data. Northeastern New Guinea certainly has both a large area and considerable possibilities, possibilities which have been heightened by what our army proved could be done there. New Caledonia is believed able to care for 25,000—30,000 immigrants.

The Mindanao (Philippine Islands) report on the Bukidnon plateau offers a specific project of 250,000 acres for the settlement of 10,000 immigrants.

* * *

The special studies herein outlined were planned prior to World War II when the need appeared already great to find homes for refugees and displaced persons, chiefly with the plight of Jews and other white Europeans in mind. With World War II, the problem of Jews, Poles, Baltic peoples, East Europeans, has become vastly intensified. If there is added to this the displaced persons of Asia — Indians, Chinese, Koreans, Japanese, Indonesians, etc., — with excessive populations in some of the Asiatic states, it is seen that the problem is world-wide in the broadest sense. The settlement of these problems calls for intensive scientific studies of all countries of

their absorptive capacity and ability to accommodate additional peoples. It further calls for application of business methods to the problems of immigration, emigration and resettlement, and for statesmanship of the highest order. If there is to be world peace and less of propagandizing of various ideologies, a beginning must be made in again giving *on the individual and family level,* a feeling of innate security which only comes from the right to live somewhere unmolested, with freedom to work and earn a living as well as freedom to think and worship as the conscience dictates. The fear of slave labor and the concentration camp and the fear of attack from neighbors for religious or political differences must forever be allayed. To accomplish this there must be reorientation for a large number of people either in their own lands or in other lands. To this end all nations must open their doors, based on absorptive capacities, to a reasonable number of such people.

The studies herein have necessarily stressed only lands covered by them. Many other countries have equal or greater possibilities as well as the need for a greater population. In the United States there are other states than Texas which would benefit from immigration. North Dakota has just signified its need for accepting immigrants. Intensification in many areas will repay the costs both of the development and the additional population it calls for. Brazil with only 43,500,000 people needs development and new settlements on a vast scale, as do many other South American countries.

Even some of the older states of Western Europe where there is a manpower shortage are now using a portion of the European displaced persons to real advantage.

Employment of new capital and work by greater numbers is the sure way to a sound improvement of many undeveloped or partially developed areas. Further studies of such regions is an immediate need.

The Americas

LOWER CALIFORNIA

FREDERICK NUTTER COX, *Lower California and Its Natural Resources.* Berkeley, 1939. 68 pp.; annexes and maps.

Frederick Nutter Cox was a civil engineer who received his formal education in England and acquired his experience principally in overseas areas. For four years he was Chief Engineer for the Public Works Department in the Punjab, India; later he spent fifteen years as British Consul in Costa Rica. Following his retirement, he lived in Berkeley, California, and spent much time in Lower California studying the topography and resources of that region. His maps and other material concerned with that locality were given to the University of California upon his death in 1940.

SUMMARY. The total estimated capacity of Lower California for additional settlers in the agricultural regions of the Colorada Delta, the Northwest and the Cape is 225,000.

The territory's advantages are fertile soil and mild temperature. The soil yields abundant crops wherever water is available for irrigation. Temperatures over most of the sparsely populated, 800-mile long peninsula are so mild, with severe frosts absent, that conditions favor a large variety of temperate, tropical and subtropical fruits, as well as grains; and in the south, cotton, bananas, pineapples, and coconut palms.

Disadvantages are extended droughts and poor transportation facilities. With a desert climate, except in the northwest and extreme south where a steppe climate prevails, much of Lower California is subjected to droughts lasting from one to six years. However, the country is mainly mountainous and these mountains are important for supplying irrigation and for their great hydroelectric power potential, particularly in the San Pedro Matur Mountains of the Northwest Region. Lack of roads and the absence of satisfactory boat service along the coast render marketing costly and uncertain. A 1206-mile auto highway connecting the north and south of the peninsula is of major importance in developing Lower California as a settlement area. This would cost about $18,000,000.

The most promising and largest single body of agricultural land is the Colorado Delta Region, in the extreme northeast. The Imperial Valley of California is the upper part of the Colorado Delta Region. They are analagous in soil and climate. The Imperial Valley, irrigated from the Colorado waters impounded in Lake Mead by Boulder Dam, is by far the most productive and prosperous farming area in the United States. Lake Mead contains sufficient water to supply all of the irrigable 1,300,000 acres of the Colorado Delta Region's rich plains. Much of this land belongs to the Mexican Government which in 1938-39 had cleared and planted 190,750 acres in wheat, barley, alfalfa, cotton and flax. American enterprise and capital have successfully developed large-scale agriculture about Mexicali, in the northern delta district, which has a railroad connecting with Yuma, Arizona.

If one million acres of the Colorado Delta Region were made available and the Imperial Valley population density (73.2 persons per square mile in 1935) applied, the population capacity would be about 85,000. Further, under full irrigation the produce of this region could supply over twice this number.

140,000 settlers could be placed in the Cape Region and in the northern, middle and southern portions of the Northwest Region. Combined with the 85,000 estimated for the Colorado Delta Region, the total capacity of Lower California for additional settlers becomes 225,000. About 18,000 of these would be employed in fisheries, road-building, house construction and goldmining at El Alamo.

CENTRAL AMERICA

GEORGE M. MCBRIDE and MERLE A. MCBRIDE, *Possible Central American Zones for Settlement of Refugees.* Los Angeles, 1939. 64 pp.

OWEN LATTIMORE, Abstract of *Possible Central American Zones for Settlement of Refugees.* Baltimore, 1939. 4 pp.

Professor George M. McBride is this country's leading authority on the agrarian systems of Latin America. He has taught geology and geography in Chilean, Bolivian and American

universities. He was at one time Librarian of the American Geographical Society and Assistant Editor of the *Geographical Review*. He has served on various boundary commissions in Latin America and is presently United States technical advisor on a government mission in Peru. Since 1922 he has been Professor of Geography at the University of California. He is a frequent contributor to scientific journals in this hemisphere and holds offices in various learned societies. His books are well known: *Agrarian Indian Communities of Highland Bolivia* (1921); *Land Systems of Mexico* (1923); *Chile: Land and Society* (1936). His son, Merle A. McBride, is Professor of Geography at the University of Kansas.

Owen Lattimore has been Director of the Walter Hines Page School of International Relations at the Johns Hopkins University since 1938. He has travelled extensively in the frontier regions between China and Russia in Manchuria, Mongolia, and Chinese Turkestan (Sinkiang). He is the author of many books on the Far East, including *Inner Asian Frontiers of China* (1940) and *China, a Short History,* in collaboration with Eleanor Lattimore, (1947). He is a Gold Medalist of the Philadelphia Geographical Society (1934) and The Royal Geographical Society (1942).

SUMMARY. This report covers Costa Rica, Panama, Honduras, Nicaragua, Guatemala, and British Honduras. The authors deal only with regions which, by reason of altitude and shelter of mountains, do not suffer from tropical heat or torrential rainfall. They assume that the refugee settlers would be chiefly of urban origin. In order to settle successfully under rural conditions they would need training and capital investment in the form of road building, housing, sanitary water supply, hospitals and schools, as well as investments in clearing and fencing land and in creating market facilities. Credit would have to run for several years before economic returns could be expected.

Settlement would not necessarily imitate established local forms. The high average intelligence of the settlers, backed by capital, would create new economic opportunities for both themselves and the existing population. The authors draw particular attention to the development of tropical and subtropical fruits, for which world demand is increasing.

Costa Rica. The country should be able to receive and support 120,000 to 150,000 settlers. The cool highland population

of Costa Rica is of almost unmixed Spanish descent. Of this population, 63% is closely settled in an area measuring 20 by 45 miles. Cultivation is therefore intensive. Within 50 or 60 miles of this well developed territory, a number of similar areas, at present thinly developed, could be brought up to the same high standing. The opportunities include corn, fruit, cattle (for dairy products and meat) and at lower altitudes coffee, sugar and tropical and sub-tropical fruits.

Costa Rica is volcanic, but there is less danger from volcanic eruption than there is from earthquakes. The hazard of earthquakes can be largely overcome by proper building.

The best areas for settlement are largely separate from the present areas of population, though not far enough distant to be economically handicapped. The authors consider Costa Rica to be the best Central American prospect for refugee settlement.

Panama. Opportunities exist for about 10,000 settlers in an area of 350 to 400 square miles on the western (Pacific) side. Present population of this area is about 3,000. It is about 30 miles distant from David, third city of the republic, with which it is connected by a railway and an auto road. The Panama Canal Zone can be reached in one day by car or in one hour by train. Roads within the district are still unimproved. Present vegetation of this region is "a heavy forest of oak and other broad-leafed trees. The cost of clearing this region is normally several times the original cost of the land. Land can be bought for $5.00 or $6.00 per acre. It is probably the forest which has prevented the native people from spreading into this highland belt. Colonists from North or Central Europe should not find such forests a serious obstacle and should find, it would appear, good returns for their efforts, after a period of development." Possibilities include mixed farming of coffee, fruit, and vegetables. Coffee is now "by far the most important crop". There is a shortage of native labor.

Honduras. Area: 44,000 sq. miles. Population: just under 1,000,000. Opportunities exist for 100,000 to 200,000 settlers.

The cool highlands are covered with rather open forests, varied by grass. The people of European extraction, largely mixed now with Indian blood, live mainly in these regions. Because there are no specially favored areas, the population is more scattered than in most Latin American countries. Much

of the interior has been occupied by cattle ranches, rather than by agricultural holdings.

In view of these conditions, new settlers would probably have to be widely dispersed in small groups. There are many areas that could take a few score or a few hundred colonists, but few that could take 10,000.

Besides cattle ranching, the subsistence crops are corn, beans, vegetables and many tropical fruits such as bananas, avocados and mangoes. Coffee, sugar, and rice could be developed as commercial crops.

The unusually rugged character of the country makes it difficult and expensive to build roads, but on the other hand few parts of the country are more than 100 miles from the sea. The authors believe that increased settlement would contribute to the country's political stability.

Nicaragua. There is only one promising district. It borders the already developed coffee district about the town of Matagalpa. It lies 3,000 to 5,000 feet above sea level, and is decidedly rugged. There is a good summer rainfall, and in consequence much of the area is covered with heavy forest. This region could probably support two or three groups of 10,000. The settlers should be prepared to face frontier conditions. They could develop a subsistence agriculture, with coffee and tropical fruits for export, but at present most of the region can be reached only by foot and on horseback.

Guatemala. The absorptive capacity is estimated at 10,000 to 20,000 settlers. There are two suitable areas, the Alta Verapaz Highlands and the Pacific Volcanic Range Foothills. The former already has a considerable Indian population, but "there is still land lying idle even after many coffee farms have been developed". The latter has had considerable difficulty with malaria, which probably accounts for the lack of Indian settlement. There are, however, a number of foreign farms and cattle ranches. With proper precautions, the malaria difficulty can be dealt with.

"There are several reasons why the proposed districts may not prove suitable for refugee immigration. Both already contain many German coffee and cattle farms, and the owners of some of these are not likely to welcome the suggested settlement. Furthermore, unoccupied lands are not contiguous,

and immigrants could hardly be settled in compact communities."

British Honduras. This British Crown colony could accommodate from 10,000 to 20,000 settlers. Principal exploitation up to the present has been lumbering. Principal obstacles are difficulty of transport and endemic malaria. The authors assert that settlement must be directly proportionate to developments of transport. In the higher areas, malaria could probably be controlled by drainage. Given transport facilities, a wide variety of crops could be grown. Grapefruit is already a successful export product. "The Government of British Honduras is eager to have the country become more self-sufficient."

BRITISH HONDURAS

LEO WAIBEL, *Report on British Honduras.* New York, 1941. 40 pp.; maps.

LEO WAIBEL, *The Hinterland of Punta Gorda.* New York, 1940. 6 pp.; map.

LEO WAIBEL, *The Mahogany Lands of British Honduras.* New York, 1941. 10 pp.; maps.

Since 1946 Dr. Leo Waibel has been studying problems of colonization in Brazil under contract with the Conselho National de Geografia. He is also engaged in training young geographers in the field. He was formerly Professor of Geography at the Universities of Kiel and Bonn. He came to this country in 1939, served two years as Research Associate at the Johns Hopkins University and for the period 1941 to 1946 he was Visiting Professor at the University of Wisconsin. His publications deal principally with the regional geography of Africa and with agricultural geography in general.

SUMMARY. Despite its long history, British Honduras is a "new land" that offers great opportunities for further development. For about three centuries, forestry has been the most important industry. The country's development is handicapped by a labor shortage, a heavy dependence on imports, an extreme lack of internal communications and by the concentration of over 50% of the population (about 58,000, includ-

ing 600 whites) in the few towns. Possibilities for white settlement differ greatly in the four natural regions which have a total area of 8,598 square miles.

The Central and Southern Coastal Plain and the Toledo Region, which together compose one-fifth of the country's area, lack conditions suitable for white settlement.

In the Northern Lowland, which comprises one-half of British Honduras, the Cohune Ridge country along the Belize River offers the best communication facilities and will probably attract the first settlers. The Cohune Ridge consists of dense evergreen hardwood forests on the alluvial soils along the river banks. These soils form the best agricultural land of the Northern Lowland. The 25,000 inhabitants of the lowland region live on the alluvial Cohune Ridge. All of the good lands are owned by individuals or lumber companies, which have been exploiting the hardwood forests from the earliest times. Mahogany trees thrive on the Cohune Ridge, and are the chief commercial timber. Elsewhere in the Northern Lowland, only the sandy soils of the watershed areas are not suitable for agriculture. An open park-like forest of oak and pine called the Pine Ridge country is found here.

The Northern Lowland lies below 200 feet, except in the west, and forms a rolling country built up of soft limestone. The climate is believed to be relatively healthy because of the prevalent trade winds, the moderate rainfall of 55 to 80 inches and the long dry season from November until May. Almost the entire area is covered by forests. In between the forests designated as Cohune Ridge and Pine Ridge, there is the intermediate forest called Broken Ridge. This is partly mahogany land. However the Broken Ridge soils are less favorable and more shallow than the alluvial soils of the Cohune Ridge.

Although it comprises one-third of the country, the Maya Mountains region, 1200 to 3800 feet high, is largely unsettled and is supposedly the most healthful area. Remoteness from the sea, dissected terrain and heavy rainfall probably explain this.

However, one section, the Northwestern Limestone Plateau, holds promise for white settlers. This 1200 to 2100 foot plateau, with its reportedly salubrious climate, is composed of limestones which produce a fertile soil especially in the valleys. Mahogany trees occur in the luxuriant forests along the river

banks, while hillsides are more open. Practically every hillside is terraced showing much evidence of Mayan occupation. Today the region is exploited only for chicle and mahogany. With tractor and truck roads penetrating much of the exploited area, it should be relatively easy to open this area for white settlement. Mixed farming should be employed, raising corn and cattle and producing a cash crop such as coffee. From the start, settlers should guard against soil erosion. The land in the Northwestern Limestone Plateau and elsewhere in the Maya Mountains region belongs to the Crown.

COSTA RICA

LEO WAIBEL *Costa Rica, The Natural and Historical Conditions of Settlement and Possibilities for Further White Colonization.* New York, 1939. 26pp.; maps.

For biographical material concerning Dr. Leo Waibel, see page 28.

SUMMARY. Costa Rica is the only tropical country where a native-born and largely white peasant population has developed. Two-thirds of the entire population have crowded into 1,600 square miles, or 8.3% of the country's area, on the central highlands. Throughout the country, only 6,680 square miles or 34.6% of its total area of 19,300 square miles are settled.

Of the remaining unoccupied 12,620 square miles, 5,300 square miles are in the healthful highland regions of the tierra templada and tierra fria, awaiting development by white settlers.

This land, however, varies greatly in its suitability for the white man. The districts most favorable for white colonists lie in the unsettled 1,390 square miles of the highly favored tierra templada region of the Pacific slope. They are on the western slope of the Cordillera de Guanacaste, in the southern regions of the Euros de Candelaria and in the upper parts of the Valla de Diquis and its surrounding mountains. Perhaps the Cerros de Turrubares and the Cordillera Brunquena, with about 620 square miles, can also be settled by whites, but from a scientific standpoint these are practically unknown.

The dense, wet jungles of the whole Atlantic slope of the Cordilleras de Guanacaste, Central and Talamanca and the

tierra fria region of the Pacific slope of the Talamanca cover about 3,300 square miles. These are only moderately suitable for native-born highland dwellers and less so for immigrants. A large number of highlanders settled on the Atlantic slope down at an elevation of about 1,900 feet in the 1880's when the railroad from San Jose to Limon was built. By 1936, only 5% of the total population lived there.

GUATEMALA

LEO WAIBEL, *Guatemala.* New York, 1940. 35 pp.

For biographical material concerning Dr. Leo Waibel, see page 28.

SUMMARY. While the Southern Highlands and the Pacific Slope of Guatemala are densely peopled, 51% of the country is practically unoccupied. The regions of sparse settlement are El Peten (a part of the Yucatan Peninsula), the Northern Highlands, and the Central Depression; their total area is 55,600 square kilometers.

El Peten is a flat tableland, 100 to 250 meters above sea level, composed of horizontal limestone beds with underground drainage. A series of large lakes are located in an east-west depression. The one meteorological station, El Paso Real, located at an altitude of 80 meters, shows a moderate rainfall of 1,720 millimeters, 70% of which falls between May and October. The vegetation consists of evergreen forest sprinkled with large and small areas of open grassland, characteristic of poor soils. The humid, hot climate is unhealthful. Despite the large population situated there during the first Mayan Empire, El Peten will probably continue to be thinly peopled for a long time to come.

The Northern Highlands rise steeply from the southern lowlands of El Peten and extend in an east-west direction. Old limestone and other sediments form a level plateau 2,000 to 2,500 meters high, dissected by rivers. In the east, the plateau consists of limestones and volcanic rocks with fertile soils in valleys and depressions. The rainfall recorded at five stations on each slope averages about 3,600 millimeters on the eastern slope and approximately 4600 millimeters on the northern

slope. The tradewinds are responsible for this high rainfall. There is no marked dry season and the climate is super-humid. Evergreen broadleaf forests and in the drier parts open deciduous forests of oaks and pines are the characteristic vegetation.

In the Northern Highlands, it is largely the northern and eastern slopes which are uninhabited, probably because of excessive rainfall and dense vegetation. The highlands are undoubtedly capable of absorbing a considerably larger Indian population than they now have. It is doubtful, however, whether white small farmers would find satisfactory economic and social conditions there, since they would have to compete with Indian labor. The few hundred Germans who lived there before the war were all engaged in coffee cultivation on a plantation basis.

The Central Depression, drained by the Motagua River toward the Caribbean, separates the Northern from the Southern Highlands. Lying in the rain shadow of the two highlands, the Motagua River depression is semi-arid with the one station recording only 764 millimeters of rain, 87% of which falls from May to October. There is a marked dry season in winter. The upper and middle Motagua river valley has a vegetation of tall cacti interspersed with scattered low shrubs and bunch grasses. This type of vegetation ends in the east at Zacapa. Savannas are found in the lower Motagua river valley.

The uninhabited portion of the Central Depression is largely in the warm and unhealthful lowlands, especially in this lower valley and along the Caribbean Coast. Neither the Mestizos nor the Indians have shown much inclination to leave the highlands and settle in the lowlands.

J. G. White Engineering Corporation, *Report on the Project for the Irrigation and the Supply of Electric Power for the Plains of La Fragua.* New York, 1927. 31 pp.; appendices, maps and photographs.

The J. G. White Engineering Corporation renders professional service to private enterprises and public authorities in all parts of the world, that professional service being in the fields of investigations or report studies, engineering studies, engineering design, or construction. Work has been done in France, Turkey, Ethiopia, China, India, Brazil, Colombia, Venezuela, Guatemala, Nicaragua, Mexico, Canada, Cuba, Porto Rico, Haiti, Netherlands West Indies, Hawaiian Islands

and Philippine Islands, as well as in all sections of the United States. Large scale purchasing has been done also on behalf of clients overseas.

SUMMARY. This report deals with the utilization of the Motagua River as the source of irrigation and electric power for the plains of La Fragua in southeastern Guatemala.

The area of irrigable land is approximately 40,000 acres. Most of the soils are volcanic, containing medium amounts of potash, sufficient in lime but deficient in organic matter, phosphorus and nitrogen. With proper treatment, including irrigation and fertilization, nearly all of the land could meet crop requirements. At present, this semi-arid region is used for grazing and rudimentary agriculture. The principal crops are corn, beans, sugar cane and tropical fruits.

A variety of crops, among them sugar cane, cotton, corn, alfalfa, pineapple and henequen (sisal) could be grown in the Motagua District if properly irrigated. The report also recommends establishment of a cotton-ginning plant, a sugar factory, and fruit-packing houses and canning factories, estimated to cost $917,000. The cost of constructing dams, canals, hydroelectric plant, etc. is placed at $1,346,000, railroads at $15,000 per kilometer and a main highway traversing the district at $1,444,500.

PANAMA

GEORGE E. ROBERTS, Excerpts from *The Republic of Panama.* Panama City, 1933. Excerpts, 16 pp.

The chairman of the commission of investigation which undertook this study was George E. Roberts, then President of the National City Bank of New York.

SUMMARY. Panama needs capital and labor to develop its rich natural resources which are as yet hardly exploited and not fully known. There is little surplus labor and new enterprises of any magnitude will require imported labor. Panama desires thrifty home-builders on the land, since they already have enough merchants and town laborers. The immigrants should be experienced in the production of garden crops, fruit, poultry, pigs, dairy products, and other foods.

Panama is a mountainous country and largely forested. It lies within 10 degrees of the equator and tropical products will readily grow there. Bananas, coconuts, pineapples, cacao, coffee and rubber are indigenous to Panama; they provide the best possibilities of production for export. It is encouraging to note that despite primitive agricultural methods, crop yields are good.

One obstacle settlers will probably face is confusion over land titles and squatters on the land.

Panama has made substantial progress toward a modern transportation system. The shape and topography of the country indicates that the movement of commodities between distant localities and the Canal cities will always be mainly by coastwise shipping. The country is not much more than 100 miles wide at any point and the rivers afford a number of small harbors. The cattle industry has been the main support of shipping service between Panama City and Chiriqui Province, most promising of the settlement areas.

Chiriqui, which enjoys comparative freedom from jungle conditions, has the finest roads and the best start in settlement and production. The Pacific section of Chiriqui Province is the most fertile in Panama. The region about the coastal city of David is ideal farming country. From the coast the land rises gradually to the mountains, about 40 miles inland. Stretches of forested hill-lands alternate with large tracts of gently-rolling grassy plains, and streams are frequent. Excellent cattle country results. Throughout this section the rich top soil is six feet or more in depth.

The uplands of Chiriqui are well suited to settlement by colonists from the temperate zones. The climate is agreeable and healthful and all fruits, vegetables and other plants familiar to such colonists can be grown on the fertile volcanic soils. This region has received an important number of settlers from the United States, Germany and other countries, who are principally interested in coffee growing.

East and north of this Province, the uplands consist largely of clay soils, which would support good agriculture except for the extremely hilly topography. Panamanians grow successfully a large variety of crops in numerous small clearings. Higher up are good tree and grass lands that could be used extensively for cattle-raising. The river bottoms, where well-

drained, are suited for corn, rice, cacao, vegetables and fruits. The lower, wetter portions of the river lands could possibly be used for rice with inexpensive drainage systems. Alluvial soils have been adapted for growing cacao trees.

All in all, Panama is undoubtedly capable of supporting a population of millions in contrast to its present population of merely 600,000.

EL SALVADOR

LEO WAIBEL, *Salvador*. New York, 1940. 53 pp.

For biographical material concerning Dr. Leo Waibel, see page 28.

SUMMARY. El Salvador is the smallest and most densely populated country in Central America. 1,862,980 people inhabit El Salvador's 8,225 sq. miles. This population is 62% rural. A great number of the people are small landowners whose primary occupation is coffee growing. Stock raising is a secondary industry. El Salvador has the best transportation facilities in Central America. Its people are noted for their devotion to democratic principles.

The four geographic regions of El Salvador run generally from west to east, parallel to the Pacific: the narrow Coastal Lowland, with a maximum width of 18 miles; the partially active Volcanic Coast Range, whose steep slopes and basins support a dense population on their fertile soils; the Middle Lempa River Depression, 600 to 1,500 feet high; and the Basalt Plateau, 2,400 to 9,000 feet high. The climate of El Salvador is not well known. High temperatures and humidities prevail throughout most of the country.

The dense population of El Salvador is more or less equally distributed. Concerning refugee settlement prospects, the author says: "There are no uninhabited areas left in El Salvador and in this small, densely peopled country there is definitely no room for immigration."

DOMINICAN REPUBLIC

HENRY D. BARKER, WILLIAM P. KRAMER, and A. E. Kocher, *Report Covering Field Investigations of Settlement Possibilities Existent on Selected Lands in the Dominican Republic.* New York, 1939. 58 pp.

The members of the Commission were all members of the United States Department of Agriculture, which generously granted them leave of absence for the purpose of conducting this field investigation. Dr. H. D. Barker, Chief of the Commission, was Principal Pathologist of the Bureau of Plant Industry. For 13 years he had been in the Agricultural Service of Haiti and was at one time Director of the Agricultural Experiment Station in that country. William P. Kramer, Chief of the Division of Operations, Forestry Service, had been for 11 years Chief of the Insular Forest Service of Puerto Rico. He had an extensive background of field study in the Dominican Republic, while his colleagues had both visited the country before. A. E. Kocher of the Bureau of Chemistry and Soils, Soil Conservation Service, had previous experience in tropical agriculture in Haiti and Mexico. During the two and one-half years he spent in Mexico he was in charge of irrigation investigations and land classification.

SUMMARY. The northeastern section of the Dominican Republic offers the best colonization possibilities and the next most desirable region lies northwest of Ciudad Trujillo, the capital.

In the first area, extending from Sabana de la Mar to beyond Rio Maymon, four sites designated as Maymon, Guaquia, El Valle and Las Lizas are recommended for settlement. These lands, largely government owned, include about 100,000 acres. By purchasing desirable tracts of intervening private land, this area could easily be increased to at least 500,000 acres of agricultural land. At 20 acres per family, this land would accommodate approximately 25,000 families. Despite good rainfall, desirable soil and other suitable physical features, the region is little populated and largely undeveloped.

The second region is quite accessible, being traversed by the principal highway from Ciudad Trujillo to Santiago. The sites here, designated as Piedra Blanca, Los Ranchos, Las Matas and Caterey, have an elevation which makes for a more favorable

climate than that of the Northeastern region and results in excellent drainage. This area is suitable for subsistence crops, fruits, coffee, cacao and vanilla, for grazing and for permanent forest reserves. Such reserves, as well as crops similar to coffee and cacao, should cover much of the land to protect and control water resources. The 100,000 acres here would support about 3,500 families.

A considerable increase in the carrying capacity of the two regions recommended might be brought about by the introduction of vanilla culture, oil palms and tropical insecticide-producing plants, and through the careful extension of valuable cash crops such as bananas and coconuts. Both regions possess valuable trees to supply immediate construction needs as well as a small-scale furniture industry.

The Dominican Republic is a mountainous country with only a small coastal plain and narrow river valleys leading to the highlands. About 40% of the land lies between elevations of 200 and 1500 meters, with the larger part between 200 and 700 meters. Forests and to a lesser extent savannas are two characteristic types of vegetation. The soils are generally suitable to intensive cropping where the topsoil is deep enough and the slopes not too steep. Subsoils commonly lie only 10 to 12 inches beneath the surface. Moderate temperatures and a rainfall that varies from 20 to 100 inches are typical.

A settlement removed from the centers of population, where settlers would generally remain at home, would tend to relieve the natural apprehension of the country's business and professional men that their business opportunities might be encroached upon. The sites mentioned which lie in the northeastern part of the island would best realize that condition.

BRITISH GUIANA AND SURINAM

KARL J. PELZER, *Settlement Possibilities in British Guiana and Surinam.* Baltimore, 1939. 12 pp.; map.

Dr. Karl J. Pelzer is Associate Professor of Geography at Yale University, where he is engaged in the University's Foreign Area Studies. During the war he served the United States Government as Agricultural Economist in the Office of Foreign

Agricultural Relations and as Senior Regional Specialist in the Office of War Information. He was formerly Research Associate at the Johns Hopkins University and the Institute of Pacific Relations. Dr. Pelzer's field of specialization is anthropogeography, including migration and land settlement. His principal work is *Pioneer Settlement in the Asiatic Tropics,* 1945, which he wrote after a field trip through Southeastern Asia.

SUMMARY. Settlement possibilities in British Guiana and Surinam, on the northeastern coast of South America, are negligible. Most of the cultivable land, and hence the bulk of the population, are located in the low, narrow coastal belt.

Sugar and rice are the main crops. Plantations and farms owned by Negroes, Javanese, British East Indians and Chinese already occupy the best land. Prospective European settlers could not compete with prevailing low-cost labor without greatly reducing European living standards. $15,000. to $30,000. is required to establish a farm in the coastal belt sufficiently large to permit a reasonable income for a European family.

Tropical rainforest comprises the largest area of the two colonies. It is uninhabited by whites except for a few lumbermen and bauxite, gold and diamond miners. Poor soils, lack of transportation and tropical diseases are the principal obstacles to settlement.

The hinterland savanna, which has recently attracted the attention of land seekers, has limited settlement possibilities. Low fodder-value grasses, climatic extremes of floods and droughts, isolation from the coastal markets and reportedly poor soils constitute serious obstacles to both agricultural and pastoral activities. In 1934 an Assyrian settlement commission estimated that the interior savanna of British Guiana could ultimately accommodate about 1,000 families, providing existing conditions for agriculture, livestock and marketing were considerably improved.

VENEZUELA

ROBERT STRAUSZ-HUPE, *Settlement in Venezuela.* Washington, 1945. 38 pp.; appendix.

WILLIAM E. RUDOLPH, *Settlement Conditions in Venezuela with Particular Reference to the Highlands of Lara, Falcon and Adjacent Zulia.* Larchmont, 1943. 67 pp.; maps.

Dr. Robert Strausz-Hupé is Associate Professor of Political Science at the University of Pennsylvania. He is widely known for his studies in the fields of international relations and statistics. During the war he was associated with the "M" Project, under which settlement materials in the Library of Congress were surveyed. Among his publications are: *Axis America,* 1941; *Geopolitics,* 1942; and *The Balance of Tomorrow,* 1945.

William E. Rudolph is a civil engineer who has done extensive work on water resources in Bolivia, Chile and Venezuela. He is at present with the Anaconda Copper Company. Between 1922 and 1944, he was associated with the Anaconda Copper Mining Co. in Chile, a consultant to Patino Mines and Enterprises and Chief Engineer for Mauricio Hochschild & Co. Ltd. of Bolivia, and advisor to the Ministry of Public Works of the Government of Venezuela on transportation and agricultural studies for northwestern Venezuela.

SUMMARY. Despite rich natural resources, which include the largest oil reserves in South America, Venezuela lacks sufficient population for normal growth and trade. It is a land of 352,000 square miles with only 3,840,000 people.

It has three principal areas suitable for settlement: the grasslands of the Central Plains in the Orinoco basin, with 30% of the area and 18% of the population; the little known Guayana Upland southeast of the Orinoco River, with over half of the total area and only 5% of the population; and the Andean foothills (above 1000 feet) with 12% of Venezuela's area and the bulk of its population.

According to Rudolph, the best opportunities for immediate settlement are in the Andean foothills, adjacent to the Lake Maracaibo oil fields. He estimates that 20,000 families could be settled on 25-acre tracts in this practically unused farming area. These settlers would supply food for the oil workers. Its disadvantages are lack of roads and difficult road building

conditions, large non-progressive wealthy ownership, tropical diseases and lack of irrigation.

Strausz-Hupé is more optimistic about settlement possibilities in Venezuela. He estimates that the agricultural zone comprises 250,000,000 hectares. Assuming that only 2% of this land is readily available for agricultural exploitation, about 5,000,000 hectares could be settled. Counting 20 hectares per family, he places the settlement capacity at 250,000 families (1,000,000 to 1,250,000 persons). In addition, the Central Plain outside the agricultural zone might provide for 25,000 families engaged in a cattle economy on 110,000 square miles of land. And the Guayana Upland might accommodate another 25,000 families in the Imataca region, which has rich iron deposits.

Some attempts at colonization have failed because of inadequate planning and lack of agricultural training.

BRAZIL

RAYE R. PLATT, *Settlement Possibilities in the Drought Region of Northeastern Brazil.* New York, 1939. 26 pp.

Dr. Raye R. Platt has been associated with the American Geographical Society since 1923. He is a Research Associate of the Department of Hispanic-American Research. He is widely known for his work on the Latin-American sheets of the Millionth Map. Many years of work on that project have gained him an intimate knowledge of Latin American geography. He is the author of *Peru From the Air,* 1930, and of "Opportunities for Agricultural Colonization in the Eastern Border Valleys of the Andes" in *Pioneer Settlement,* 1932; and co-author of *The European Possessions in the Caribbean Area,* 1941.

SUMMARY. Brazil, with an area of 3,275,000 square miles and only 45,300,000 population, has large development possibilities although tropical conditions mean that there are many difficulties to be overcome. The country deserves a series of further studies.

This paper deals only with the drought region of Northeastern Brazil, an area of 193,000 square miles with 2,000,000

people (10.5 per square mile). The report indicates that with proper care several hundred thousand additional people may be settled here within ten years. Since the writing of the report, the author has pointed out that the malaria menace no longer exists, because of recent Rockefeller Foundation effort.

Since 1910 the government of Brazil has spent a large but inadequate sum, in the neighborhood of $70,000,000 for road building and dam construction, the latter to create reservoirs for irrigation. Many more dams are necessary. However, with some additional expenditure for canals, etc., water from these dams could be used to irrigate areas of considerable size. Further surveys by competent engineers are suggested, since irrigation is a prime requirement for colonization in this region. Brazilian estimates of the cost of irrigation is about $63. per acre. Irrigated lands could grow all tropical and subtropical crops. Platt states that sufficient water is available to provide for most of the arable land throughout the dry seasons.

ECUADOR

ALEC GOLODETZ and CYRIL Q. HENRIQUES. *Report on the Possibilities of Jewish Settlement in Ecuador.* London, 1936. 44 pp.; appendices and maps, 72 pp.

Alec Golodetz, an economist, and Cyril Q. Henriques, an irrigation engineer, conducted a two month field investigation of settlement possibilities in Ecuador during the spring of 1936. For two years prior to their departure, they had been interested in the activities of a small group of people in London who were engaged in the study of overseas settlement for European refugees. The scope of their investigation included the questions of receptivity of the government and the people to European immigration, availability of suitable settlement areas, number of immigrants to be established, the cost of settlement and placement other than on the land.

SUMMARY. There are several hundred thousand hectares of fertile, accessible, healthy land in Ecuador available for settlement. Settlement costs per family of four range from $288 for cooperative groups of 50 families to $372 for an individual family. Cost of living in Ecuador is extremely low, hence these figures.

Most immigrants will have to settle on the land since opportunities in business and industry are restricted until the agricultural population increases.

Settlement prospects are best in the Sierra, less promising in the Coastal Plain, and poor in the Oriente.

The Sierra consists of the land rising rapidly from the coastal plain to 13,000 feet. It includes the West Andes, the central Quito Valley and the East Andes to the Oriente. The Andes are covered with dense forest and for the most part are at present uninhabited and impenetrable. Once communications are opened, development will be relatively easy. This is demonstrated by various important clearings; for example the settlement at Santo Domingo de Los Colorados. The central Quito Valley, lying between the two mountain ranges at an elevation of 6,500 to 10,000 feet, has a climate of eternal spring and is thickly populated.

Settlement is recommended on the vast unoccupied western slopes of the Andes between 4000 and 10,500 feet. These areas consitute about 10,000 square miles. Here, all temperate and most semi-tropical crops can be grown. Settlers will be able to raise practically all of their food requirements and cash crops such as bananas, sugar cane and yucca in the lower altitudes, vegetables and fruit in the middle altitudes, and sheep and cattle in the higher altitudes. Settlement is impractical on the Cordillera slopes below 4,000 feet because of malaria hazards.

Five areas were examined for early settlement prospects; two areas on the western slopes of the Andes were selected. One is the country along the new Quito-Saloya-San Domingo de los Colorados Road, where 212,500 acres are available. The other is the Los Alpes area, along the old track from Quito to Santo Domingo de los Colorados, where 16,250 acres are available. Both of these regions are above the malaria zone and have good soil, composed of three inches to several feet of humus overlying volcanic ash.

The first area is connected with Quito by the new motor road. Some of the land is private but can be purchased at a very low price. The remainder is government land and can be had free. Much timber awaits cutting. Water for domestic use and power is plentiful.

The Los Alpes area is partially developed with about one-fourth of the land cleared or partly cleared. A motor road to Quito also runs through this area. The price per acre is about $1.00.

The Coastal Plain, about 425 miles long by 62 miles wide, has much unhealthy swamp land and thick woods north of Manta. The forests contain vanilla, Panama Hat palm, ivory nut, and other valuable trees. Agricultural products of the Coastal Plain are cocoa, coffee, bananas, cotton, castor oil and sugar cane. Although the Equator passes through Ecuador, the climate is mild due to the Humboldt Current from the Antarctic.

Africa

CAMEROONS

LEO WAIBEL, *Report on the Former German Colonies in Africa (Part 1, The Cameroons)*. New York, 1940. 62 pp.; maps.

For biographical material concerning Dr. Leo Waibel, see page 28.

SUMMARY. Occupied by the Germans in 1884, the Cameroons passed under French and British control in 1916. The two present-day colonies have an area of 200,600 square miles, approximately the size of France. They form a rough triangle whose apex is at Lake Tchad in the north. They have a population of 3,208,000, mostly natives with only a few thousand whites. The British Cameroons comprises only the small western portion of 34,081 square miles, with 869,000 population.

There are three principal zones of vegetation. The Tropical Rainforest, or Lowland, is covered by dense, non-deciduous trees and crossed by numerous streams navigable only for short distances. This region is unhealthful for settlement because it is infested with the tse-tse fly. Savanna, or open grassland with scattered deciduous trees, is found in the high northwest portion of the Plateau Country, which forms approximately one-third of the Cameroons. The elevation varies from 3,000 to 6,000 feet. The savanna has an intermittent rainfall of 30 to 50 inches, with a dry season from November to March. The third zone is the Thornbush Steppe. This type of vegetation is found in the lowland region around Lake Tchad with an altitude of 900 to 1500 feet, a low rainfall of 12 to 20 inches, and a very dry season which lasts for nearly nine months. Temperatures run unusually high, with a 120° Fahrenheit being recorded occasionally. In the country immediately south of Lake Tchad, rich alluvial soil is found.

Throughout the rainforest of the tropical lowland population density is less than 5 persons per square kilometer. Population is densest along the northwest border of the forest land where there are 50 or more persons per square kilometer. Products of the tropical lowland are cocoa, palm kernels, palm oil, timber, rubber and bananas.

In the savanna lands population density is similar to that of the tropical lowlands, except in the north where large centers of trade are found, and in the southwest corner. Products of the savanna are coffee, groundnuts, sesame, maize, cattle and hides, tin and gold.

The Lake Tchad lowland has a population density of 20-50 persons per square kilometer. Products of this region are rice, cotton and tobacco; and from the towns, leather and bronze articles.

There are only about 275 miles of railroad lines in the Cameroons. Permanent roads in the French Cameroons are estimated about 2,400 miles, with about 1200 additional miles of seasonal roads. A main road runs from Yaounde north to Garoua. Yaounde is the hub of a 3000 mile roadnet. A second main road runs along the border of the forest in an east-west direction connecting Bertoua in the east with Dschang in the west. White settlement prospects are best and living conditions most healthful in the high Plateau Country of the northwest, in the Contact Zone between the Tropical Lowland and the Plateau Country, and perhaps in the northern Lake Tchad Lowlands adjacent to the Lake. European agricultural enterprises already exist in the first two regions mentioned. Coffee and bananas are the main products of the Contact Zone, cattle raising is the principal activity in the northwest Plateau Country. The savanna about Dschang offers great possibilities for stock raising. 18,000 cattle are raised here at present by European farmers, who provide Douala with meat and the entire forest land with butter. The fertile alluvial soil about Lake Tchad could probably support additional acreage of rice, cotton, and tobacco.

The French Cameroons offers greater settlement possibilities. There are only two large plantations in the French Cameroons, the remaining Europeans occupy individual farms. The French colony has the larger area and it is better developed with respect to health measures and communication.

The report contains two maps, one showing location of principal types of settlement areas, the other the present population distribution.

TOGOLAND

LEO WAIBEL, *Report on the Former German Colonies in Africa (Part II, Togoland)*. New York, 1940. 37 pp.; maps.

For biographical material concerning Dr. Leo Waibel, see page 28.

SUMMARY. Togoland, regarded by Germany as her model African colony, was occupied by the French and British in 1914. The boundary generally follows the rim of the Central Mountain Range, 3,000 feet high, which traverses the country from southwest to northeast and divides it into two triangular lowland areas. The area of the French colony in the east is 21,916 square miles, and of the British 13,040 square miles; in 1938 the populations were 780,200 and 370,300 respectively, with about 500 whites in both countries.

The annual rainfall is low. During the dry winter months, northeast tradewinds blow from the Sahara to the sea, bearing red dust and drying out all natural growth. Most of the rain falls in the summer months, from April to October, the heaviest fall occurring on the southwest slopes of the Central Range.

Most important economically are the southern regions of both colonies. In British Togoland cocoa cultivation is the principal activity; cotton, peanuts, corn and yams are also grown. The cocoa trade has been greatly stimulated by the development of a network of good roads totalling 1000 miles.

French Togoland, which has even better road and rail communications, is rich in oil palm and coconut palm and many varieties of food crops. Central French Togoland produces cotton, the country's main cash crop, as well as cocoa, coffee, and maize. Livestock is the greatest asset of the northern region.

Togoland offers limited settlement possibilities.

Two maps accompany the report, one of major physiographic divisions and the other of crop distribution.

TANGANYIKA

CLEMENT GILLMAN, *White Colonization in East Africa with Special Regard to Tanganyika Territory.* Dar es Salaam, 1938. 12 pp.

ERNST MILLER, *Colonization of Former German East Africa.* (Archiv Für Wanderungswesen, January – March, 1932, pp. 113-127, and April – June, 1941, pp. 52-62). 10 pp.

LEO WAIBEL, *The Southern Highlands of Tanganyika Territory as a Region for White Settlers.* New York, 1940. 9 pp.

Clement Gillman, scientist, government administrator, and a pioneer in African affairs, died in Tanganyika on October 5, 1946. Mr. Gillman went to Tanganyika in 1905 as a surveyor for a German railroad construction company. Following years of valuable service he rose to the position of Chief Engineer of the Railway Department of the Territorial Government. Gillman made innumerable journeys of exploration and inspection through the Tanganyika Territory. He was one of the first men to recognize the oasis character of the life of the East African native and firmly to refute the fallacy of "teaming millions in a land of plenty". He was appointed Water Consultant to the Territorial Government when that post was created in 1938, following his comprehensive "Report on the Investigation of the Proper Control of Water and the Reorganization of Water Boards in the Northern Province of Tanganyika Territory," published with E. O. Teale in 1935. He was a frequent contributor to British, German and American scientific periodicals.

Biographical data concerning Ernst Miller was not available at time of publication.

For biographical material concerning Dr. Leo Waibel, see page 28.

SUMMARY. Former German East Africa is a country of open savannas and steppes with a very diversified topography. It consists of Tanganyika (British), 360,000 square miles with 5,500,000 people and Ruanda Urundi (Belgian), 21,000 square miles with 3,750,000 people. There are only 1500 white settlers in the two territories. Miller estimates that these territories have 20,861,000 acres of land suitable for white settlement. This area would provide for about 20,000 families on

the basis of 1000 acres per family. Large acreage is essential because soil and climatic conditions necessitate emphasis on livestock breeding. Only a small garden plot would be cultivated, and this for the farmer's own food requirements.

While cattle raising is the principal industry in Ruanda Urundi, certain vegetable and fruit crops are raised. In 1930 only 16% of the total area was cultivated, yet settlement possibilities are limited because of the dense Negro population and poor communications. Nonetheless, Miller estimates that with the building of roads and the intense cultivation of small holdings Ruanda Urundi might support 1,000,000 whites.

Tanganyika produces cotton, sisal, coffee, peanuts, and rice. Gillman states that in 1936 there were 2,082 non-native holdings of agricultural and pastoral land averaging 950 acres apiece and totaling 1,985,000 acres. Miller believes that the promising areas for white settlement are portions of the East African Graben in the northeast (particularly uplands 4,500 to 6,000 feet in altitude) and the Southwest Highlands.

The East African Graben. The most suitable region is the Usambara range which has 80,000 acres of first class land at 4500 to 5500 feet and could sustain several hundred white settlers. Livestock, food and grain are easily produced. The lower slopes of the two extinct giant volcanoes of Kilimanjaro and Meru are designated by Gillman as one of the most important areas for additional white settlement and plantation enterprise. The altitude varies from 2600 to 5100 feet, with coffee dominating the upper and middle reaches and sisal and maize the lower slopes and foot plains. Railroad transportation is available to these mountains. Elsewhere there are 440,000 acres available for grazing and some forest culture. The discovery of potable water in the extremely dry Massai Steppe would make possible the settlement of 4,000 families on 40,000 square kilometers of land.

The Southwest Highlands. The district of Uhehe has available for settlers an estimated 1,400,000 acres of land, enjoying a good climate. Wheat, vegetables and fruits thrive equally well in its grass-growing, water-rich, fertile savanna. Inadequate communications are the greatest handicap. The region about Ubena, with less water and poorer vegetation, has 150,000 acres which might be suitable for settlers. Another 200,000 acres of adequate land are found in the Livingstone Mountains and the Matengo Highland. Gillman points out that British

and German colonists have established themselves in the savannas at altitudes ranging from 4550 to 6500 feet about Dabaga, Mufindi, Tukuyu, Mbeya and Mbozi. These scattered settlements are linked by the "Great North Road" connecting Tanganyika with Kenya and Northern Rhodesia. Mixed farming with some emphasis on tobacco and tea prevails.

Gillman's comments on the climate and soil of Tanganyika merit the consideration of prospective white settlers.

He indicates that since most of the territory lies in the marginal, semi-arid, semi-humid region, the variability of rainfall is pronounced and the uncertainty regarding its incidence and volume is therefore high. These vagaries of the climate frequently permit only one remunerative harvest every three years.

The maintenance of human vigor on the coast is aided by its exposure to the relieving trade winds during the greater part of the year and by an annual temperature range which is greater than might be expected.

In the highlands, the great variation of temperature and humidity repeated twice daily, the decreased air pressure, the increased intensity of solar radiations, and the dust-filled air during the winter months all present problems to settlers.

Neither on the Coast nor in the highlands can the majority of Europeans, particularly Northerners, regularly perform manual labor. A recuperative change of climate at not too long intervals is essential for this majority. Children born in East Africa benefit greatly if they can spend the years of pubescence in a more temperate climate at low altitudes.

Tropical soils are generally deficient in important minerals, the absence of which affects both the plants grown on them and those who eat the plants. Further, the wonderful luxuriance of tropical rainforests is largely the result of a careful balance of soil and vegetation. This balance is destroyed by commercial crops which rapidly deplete the soil's substance. Fertilizers would be expensive and result in ever increasing overhead charges.

SOUTHWEST AFRICA

JOHN SIMONS, *Report on Southwest Africa.* New York, 1934. 60 pp.; maps.

LEO WAIBEL, *Report on the Former German Colonies in Africa* (Part IV, Southwest Africa). New York, 1940. 47 pp.; maps.

The study by John Simons was undertaken to determine the suitability of Southwest Africa for Jewish colonization and the possibility of securing land for that purpose. The funds for the study were provided by Walter S. Mack, George W. Naumburg, Harold M. Phillips, Arthur Hays Sulzberger, and Lewis L. Strauss. Mr. Naumburg and Mr. Strauss have since become directors of the Refugee Economic Corporation and trustees of the Refugee Assistance Fund. Biographical data concerning John Simons was not available at time of publication.

For biographical material concerning Dr. Leo Waibel, see page 28.

SUMMARY. Southwest Africa, now part of the Union of South Africa, lies in the sub-tropics and its climate is therefore suited to white settlement. It has an area of about 330,000 sq. miles and a population (1936) of about 315,000, including some 31,000 whites. The reports indicate that the absorptive capacity of the country is large, with possibilities of accommodating a considerable number of settlers at an early date.

There are three distinct geographic regions each running from north to south.

The Coastal Strip, 30 to 80 miles wide, comprises the Namib, one of the most monotonous deserts in the world. There are two main harbors – Swakopmund and Walvis Bay – in the center of the coast. Luderitz, in the south, is also an important coastal point. North and south of Ludentz along the coast, there are two large diamond areas which stretch about 15 miles inland.

The Interior Highlands are 5,400 to 6,000 feet where they border the coastal strip. These highlands hold most of the white settlers who are engaged primarily in stock raising. This stock raising is necessarily extensive since 25 to 45 acres are required per head of large stock and from 2 to 5 acres per head of small stock. Rainfall is extremely variable and undepend-

able with 20 to 16 inches in the North, 13 to 8 inches in the Center, and 6 to 3 inches in the South. Dense grasslands prevail in the north and east and there are deciduous trees and bushes with some palms. In the Central Highlands this vegetation gives way to park-like low grass country studded with thorn trees. This decrease in vegetation is marked in the south highlands. There are only a few rivers which carry surface water all year round. However the water below the stream beds or in pools has the greatest economic importance for the country. The interior highlands have favorable health conditions for whites, since the extreme dryness destroys all disease germs, and the nights are cool and refreshing even during the dry season from March to November. Important copper mines and very important vanadium mines are situated in the Otavi Mts. between Tsumbed and Otavi in the extreme northeast highlands.

The Kalahari Basin, east of the interior highlands, is filled with sandy deposits densely covered with grasses, shrubs and some trees in the north. Lack of surface water characterizes this desert-like basin and makes the country inaccessible from the east.

Until 1929-31 Southwest Africa was a mining monoculture country. However, it has since become an agricultural export country. Cattle raising is of primary importance, and in recent years the Karakul sheep industry has also achieved importance. There is also a dairy industry. Meat, valuable sheep pelts and butter are exported. Crop culture is unimportant because of the variability and uncertainty of the rainfall. Edible fish are plentiful in the area extending west from Walvis Bay 100 miles to Sandwich Harbor. At present there is only small scale commercial fishing, but the potentiality for expansion is excellent.

There are about 1250 miles of railroads which traverse the Interior Highlands and connect them with the coast at Swakopmund and Walvis Bay, and at Luderitz. Practically all the farms in the Central Highlands about Windhoeh, the capital, have good trade connections.

The 31,000 whites are located as follows: 50% in the central highlands, 29% in the south highlands, 10% in the north highlands, and 11% in the Namib.

In 1937 the total area settled or suitable for further settlement comprised 159,000,000 acres.

MADAGASCAR

LEO WAIBEL, *Report on Madagascar.* New York, 1941. 44 pp.; maps.

For biographical material concerning Dr. Leo Waibel, see page 28.

SUMMARY. Madagascar, a French colony, is the fourth largest island in the world. It covers 240,000 square miles with a population of 3,800,000; its capital is Tananarive. The Island has a series of mountain ranges constituting the Central Highlands, with an eastern coastal plain 10 miles wide, largely lagoonal and poor, and a western alluvial plain extending 100 miles seaward with two good harbors; the west offers the best chances for settlement. While the climate is principally tropical, because of the altitudes in the Highlands of 1,000 to 2,000 meters, there is a considerable climatic range. The southwest part of the Island has 20 inches or less of rainfall and is semi-desert. About 3,000,000 acres are under cultivation.

The moderate temperature Highlands have been mostly cleared of forests and are now grasslands partly suitable for colonization. Some excellent woods exist in the remaining forest. The west coast and intermediate hills have less rainfall, and high temperature, even in winter.

Agricultural possibilities in five-sixths of the Island are limited, due to thick red soils, now a man-made prairie. Small isolated spots in the northern and central highlands have good volcanic soils. The high plains of Ankaizina, part of the northern highlands, have reasonably good soils, are nearly unsettled and have 62,500 hectares available for cultivation. Some 30,000 natives live in this region, grazing 200,000 cattle, cultivating 4,000 hectares of rice and 410 hectares of coffee. Provided the necessary roads are built, a few thousand families could be settled here; they should be allowed 25 hectares per family and would have to import native labor.

Minerals are graphite, mica, phosphates, gold and radium.

Principal resettlement for natives (some have already moved into this area) and new settlement for whites, are the rich alluvial and marsh lands of the west coast. 4,000,000 hectares of good fertile soils exist in Madagascar; 1,500,000 are already under cultivation, leaving the considerable balance of 2,500,000

available for cultivation and settlement. Further, natural harbors make world markets accessible. The report contains a soil map and a geologic map.

Madagascar offers grassed-uplands, a large irrigable area, and natural harbors, providing good, if somewhat limited, settlement possibilities. The author concludes that Madagascar is underpopulated.

LIBYA

A. J. BRUMAN, *Settlement in Libya.* New York, 1944. 9 pp.

A. J. Bruman, formerly of the United States Department of Agriculture and now a member of the staff of the Refugee Economic Corporation, is a graduate of the University of Nebraska. During 1929 and 1930 while on leave of absence from the Department of Agriculture he was engaged in colonization and resettlement work in the Ukraine and the Crimea under the sponsorship of the Joint Agricultural Corporation. Since 1937 he has been General Manager of the Compania Agricola Costarricense, a Refugee Economic Corporation subsidiary operating a 45,000 acre cattle and grain ranch in Guanacaste Province of the Republic of Costa Rica.

SUMMARY. Settlement in Libya means colonization in the water-favored northern provinces of Tripolitania and Cyrenaica; elsewhere to the south there is the desert. Most of the habitable regions are only slightly inland from the coastal towns. Libya has a population of less than a million: 86% are native Mohammedans, 3.4% native Jews and 10% Italians. Over a third of the population is urban.

The Italian Government settled 1800 specially selected Italian families (about 20,000 persons) in Libya in 1938. Prior to their arrival, all necessary installations were completed and the land readied for farming. The settlers produced olive oil, grapes, wheat, barley, alfalfa, and peanuts. The individual farms cost from $6,750. to $9,250. The total cost to provide 1800 farmsteads on 160,000 acres was approximately $20,000,000.

Estimates of the maximum number of Italians who could have made a living in Libya vary from 200,000 to 500,000. Three principal problems faced such a project: lack of water, scarcity

of good soils, and Arab resistance. The winter rainfall is insufficient and the supply of underground water is uncertain. The sandy, porous soils of Tripolitania are easily worked but quickly subject to severe erosion once their natural grass cover is removed. The compact soils of Cyrenaica stick to the plow. Well drilling is complicated by the underlying rock strata. The Arabs resent loss of their favorite summer grazing lands to the colonists. Serious attacks on the settlements have resulted.

The colonization experience of the Italian Government is well described in *La Colonisation Italienne en Libye — Problèmes et Méthodes.* Preface de M. August Bernard, professeur de geographie et colonization de L'Afrique du Nord à la Faculté de Lettres de Paris. Larose Editeurs. Paris, 1935.

Middle East

MIDDLE EAST

F. JULIUS FOHS, *Development and Land Settlement Potentialities of Syria and Iraq.* Houston, 1943. 73 pp.; maps; 1946 revisions, 44 pp.

F. JULIUS FOHS, *Development and Land Settlement Potentialities of Palestine.* Houston, 1943. 37 pp.; maps and appendices; 1946 revision, 10 pp.

F. JULIUS FOHS, *Development and Land Settlement Potentialities of Transjordan.* Houston, 1943. 18 pp.; maps.

F. Julius Fohs, consulting geologist and engineer, has been associated with the Petroleum Industry for thirty-five years, directing the finding and development of oil and gas pools. He reorganized the Petroleum Division of American Institute of Mining Engineers in 1925 and 1926, and was a Director and a Vice-President of the Institute to 1930; made detailed study of natural resources of Palestine in 1919, and further studies later; special consultant on water problems and water development for irrigation since 1929. In 1943 he prepared the reports on Palestine, Transjordan, Syria and Iraq, with revisions in 1946. Author of many reports and papers on mineral, oil and water resources. In 1947 Mr. Fohs became a director of the Refugee Economic Corporation and a trustee of the Refugee Assistance Fund, Inc. Offices: Houston, Texas, and New York City.

SUMMARY. For the four areas, Palestine, Transjordan, Levant States and Iraq, all available data has been carefully studied and fairly definitive conclusions reached. The following two tables summarize the ultimate land and population probabilities:

Land Classification

(Areas in hectares)

Country	*Total*	*Irrigable*	*Cultivable*	*Grazing & Forest*	*Desert*
Iraq	45,350,000	4,049,000a	3,021,000	2,779,000	24,000,000
Latakia	569,500				
Syria	18,339,070	603,150	5,976,224	2,206,445	7,119,392
Palestine	2,615,800	470,000	761,400	251,000	1,133,400
Transjordan	9,000,000	51,000	575,000b	280,000	8,094,000c
	76,784,120	5,261,150a	10,481,324		

a. An additional 5,000,000 ha. available with proper flood control in the Tigris-Euphrates Valley.
b. Includes 133,000 ha. for winter dry farming.
c. Part ultimately reclaimable.

	Population	Ultimate Capacity	
	Present	*Rural*	*Total*
Iraq	3,750,000	9,000,000	31,750,000
Latakia-Syria	2,850,000	3,186,800	9,370,000
Lebanon	1,050,000	498,000	1,500,000
Palestine	1,850,000	1,291,675	5,000,000
Transjordan	400,000	396,300	800,000
Totals	9,900,000	14,371,475	48,420,000

To make effective the figures given above for Land Classification and Ultimate Capacity, the most important requirement is the development of irrigation and hydroelectric works. In Palestine, most of the present irrigation depends on wells, and while their use has not been exhaustive, the use of river waters, on which large irrigation must depend, has thus far proven negligible. Springs supply some water, but their use also can be greatly increased. In Syria and Lebanon some greater use of river water has been made, and likewise in Iraq, but the use of such waters for irrigation has barely begun.

Palestine, a land of 10,000 square miles represents only 0.7% of the Arab lands of the Middle East. It is a land of great contrasts from reasonable rainfall of 28 inches in its highlands to two-fifths of an inch at Aqaba at its southernmost tip. Its lands vary from the fine colloidal Mediterranean earth of the Sharon plain to the sandy desert of the Negev and from the highlands of Galillee (with good lime and volcanic soils), of Carmel, and the northwest of Nablus to the greatly eroded Judean Hills. Irrigation with intensive cultivation is the answer, and fortunately the Litani and Jordan Rivers can provide this, as well as 72,000 k.w. of hydroelectric power. Sufficiently definitive studies of the large irrigation project have been made by several competent engineers to know that it can be done. Wells already drilled have demonstrated what irrigation will do, but *wells are not enough.*

Some 280,000 k.w. can be produced hydroelectrically, partly from dams to be built on the Litani and Jordan Rivers and partly from the diversion of Mediterranean Sea water to the high cliffs overhanging the Dead Sea. By dropping the Mediterranean water 1200 ft. to the Dead Sea 130,000 k.w. would be obtained. The annual irrigation cost from river waters will be approximately the same as in southern California, though cost of land and installation of works is high.

At present diesel-powered electric plants are the chief source

of industrial power; the cost could be greatly cut if the price of oil were lowered to a reasonable figure instead of using a base price three times that in the United States. Industry, to a great extent developed through Jewish efforts to assist Britain in the war effort, covers a broad field. In addition to the chemical industry of the Dead Sea with its potash, bromine and magnesium, and the cement plants, there are food processing, textiles, clothing, machinery and metal works, woodwork, leather, printing and paper, electrical and power station appliances, chemicals and edible oils, diamond cutting and others. In 1947, there were 65,000 Jews employed in industry, and the investment was $150,000,000. In 1942, the annual gross output was $145,000,000 for the Jews against $22,000,000 by the Arabs.

With the proper building of irrigation works and the correlative extension of industry and services, Palestine can care for an ultimate population of 5,000,000 as against a present population of 1,850,000.

Transjordan: The uplands of western Transjordan because of adequate rainfall provide good cultivable lands. A number of springs in eastern Transjordan provide isolated habitable spots, while proper drainage and irrigation of the Wadi Siran and of El Djafar to the northeast would add greatly to use of the oases there. In line with the springs, wells could be dug to supply water from the long eastward dipping beds and provide additional irrigable oases. A large phosphate rock deposit occurs near Es Salt. Irrigable lands are principally those of the Jordan Valley, and of the eastern oases.

Lebanon, with the irrigation works in process and those planned for joint use with Palestine, can care for a greatly increased population. Syria, Latakia and Djebel Druse can jointly care for both greatly increased populations and higher living standards if properly developed agriculturally. Because of good volcanic-derived soils the Hauran region in south Syria, Djebel Druse and to some extent adjoining Transjordan can again become, as in Roman times, the wheat belt for these states and Palestine. Northern and eastern Syria also has a good belt for cereals.

Syria, principally an agricultural state, has water available, with proper irrigation works, for about 700,000 ha., only one-seventh of which is now irrigated. These lands will provide citrus and other fruits, vegetables, increased cereal output and

long staple cotton. Reclamation and irrigation works and conservation of water are necessary to bring much of this land into cultivation, while considerable sums will be required to make the program effective. Very little industry other than handicrafts exists. Some 35,000 to 40,000 horsepower from hydroelectric works are possible from four sites.

Oil possibilities chiefly occur in northeast Syria, an extension of the Iraqian fields. Western Syria east of the Anti-Lebanon mountains has very limited possibilities because of the great amount of faulting.

Iraq offers principally agriculture and petroleum but no other consequential resources.

1. The Tigris-Euphrates-Shatt el Arab Delta, with proper additional irrigation works, can be made to produce much food, ample for home use and for export; also a greatly increased quantity of cotton for export. In addition, there is a farming area in the Mosul region, and irrigable lands on the upper Tigris and Euphrates Rivers, and their tributaries. Of the more than 18,000,000 acres of irrigable lands, only 500,000 acres are in use: this represents the greatest single undeveloped irrigable area in the Middle East. Its early and steady development is highly important as a place of habitation for the considerable increase in population indicated.

2. Iraq has ample petroleum to supply diesel and electric power, to provide a basis for chemical industries for a long period, and for export. A refinery at Kirkuk and others just over the border at Abadan and Kermanshah, produce all petroleum products. The petroleum reserves are very large, constituting one-third to one-fourth of the Iran-Iraq field. That field is part of the Persian Gulf oil reserve, one of the greatest of all the partially-developed oil reserves of the world.

3. Hydroelectric power may be developed from mountain streams in northeastern Iraq, in the mountains just eastward in Iran, and northward on the Euphrates in Turkey. Damming for this purpose would conserve much water for land reclamation in Iraq.

4. The country will necessarily build up a certain amount of trade and services which will employ its urban population.

5. In addition to textile plants for its own products, Iraq may build other industry by importing raw materials, partly from

Turkey, Iran and India. It will have to depend, as in the past, largely on brick for building, but may use native stone: a fuel oil cement plant using native limestone and clay should be built.

6. Iraq's agricultural and irrigation possibilities are adequate to support a rural farming population of over 9,000,000 in addition to a nomad group of 250,000. Allowing for industry and services, a population of 30,000,000 is possible in the foreseeable future as against 3,750,000 now.

Sir William Wilcox proposed that 1,410,000 hectares be covered by irrigation works, and Mr. A. Burton Buckley in 1918 proposed additional selected works of 550,000 hectares. The Tigris-Euphrates delta assures ample water supply for all irrigation works.

To carry out the program necessary for these works would probably require an expenditure of $175,000,000, and would enable the settlement of a rural population in excess of 4,500,000 on irrigated land.

Early supplementary installations of drainage ditches, pumps and sprinkler systems to cover districts in which the main flood prevention works and larger canals are already completed, are particularly called for. Included is Koot Dam, completed at considerable cost to make available 250,000 hectares for irrigation in the Hai district, but for which no irrigation ditches have yet been supplied, and hence little advantage taken of the large investment already made. Concentration over the next five to ten years on works implementing those already completed is recommended, to be followed by the completion of other major works as planned by Wilcox and Buckley.

The necessity of importing people to build up future Iraq is unquestioned, both to develop its lands and to bring experience to cover necessary methods, since present workers are inadequately prepared. The leaven would eventually raise the standard of all. Instruction on up-to-date methods, especially on cotton, soybeans and other new crops, will be most helpful.

Arabs from Palestine, Egypt and Lebanon could find in this development a much higher standard of living, and Iraq would greatly benefit from such immigration.

It is clear that Iraq with its unused fertile lands offers the most promising field for agricultural development and, together with its oil development, bids fair to become the greatest state of the Middle East.

Southwest Pacific

AUSTRALIA

ROBERT G. BOWMAN, *Prospects of Settlement in Australia.* Baltimore, 1941. 103 pp.; maps.

Robert G. Bowman is Associate Professor of Geography at the University of Iowa. He has also held teaching posts at the Universities of California and New Zealand. Prior to the war he conducted field studies for the Refugee Economic Corporation on settlement possibilities in Australia and New Zealand. This report and its companion study on New Zealand are the product of those field investigations. During his war service, Dr. Bowman was at one time associated with the U. S. Army's farm program in the South Pacific; in 1946 he published an article on that subject in the "Geographical Review". Recently, he wrote the New Guinea report (also summarized in this booklet) based on his researches and his wartime experiences.

SUMMARY. Australia is almost as large as the United States, but it has only seven million people, largely concentrated about the urban centers.

Less than one-fourth of the Australian continent is suitable for intensive land use and close settlement. The southeastern part now contains, and seems destined to contain, the bulk of the Commonwealth's population. In this southeast, and to a lesser extent in the Southwest Division of Western Australia, the resources of the country are overwhelmingly concentrated.

Three-fourths of Australia, comprising the arid interior and most of the land within the tropics, is capable of sustaining only a sparse population engaged in pastoral or mining enterprises. These lands are already over-grazed; moreover, the mineral deposits of the interior are probably not sufficient to permit large increases in the mining population. Economists claim that Australia could readily support between 15 and 20 millions, or two to three times its present population.

It is clear that the present population is inadequate for the proper development of the country. An excellent sketch map outlines the settlement areas effectively.

Queensland. The possibilities here appear to lie largely along the east coast in the heavier rainfall country. Intensive agriculture is limited to this region, the tablelands east of the Dividing Ranges, some of the inter-range valleys, and the open downs and valley flats in the southeast near Brisbane. The wetter coastal lowlands of the northeast are used for sugar cultivation; the areas around Townsville and Rockhampton for stock fattening; the valleys and tablelands near the southeast coast for tropical fruits, citrus and dairying; the Callide Valley for cotton growing; the Atherton Tableland in the northeast for maize; and the gentle western slopes and downs with 200 miles of the coast for fodder crops. In nearly all these regions, there is opportunity for intensification of agriculture and for closer settlement. In Queensland the production of crops is limited not so much by rigid environmental controls as by the availability of markets and cheap transport facilities. Four-fifths of Queensland, particularly the drier southwest, is suitable only for a pastoral economy.

The government already owns over 95% of the land in Queensland, and eventually it may acquire all the land. However, this will not deter land settlement as long as the government maintains its policy of generous leasehold terms and relative security of tenure.

New South Wales. This state contains more of Australia's resources than any other state and has a relatively high population density. The prospects for closer settlement and population increases are most promising here. However, half or more of the lands in New South Wales – such as the low coastal plateau north and south of Sidney, much of the crest of the Dividing Ranges west of Sidney, and practically all of the western third of the state – are almost useless or capable of supporting only the most extensive forms of economy. Possibilities for development and closer settlement in the irrigation areas of south-central New South Wales would be large if sufficiently valuable markets could be found for the plant and animal products. There are about a million acres of potentially irrigable land in the Riverina District between the Murray and Murrumbidgee Rivers. Water is available for irrigation from the Hume Reservoir near Albury. The soils vary in productivity, but there are at least several hundred thousand acres of good soil.

Victoria. Victoria, like New South Wales, is one of the more prosperous Australian states. It has the greatest density of

population (22 per square miles), the highest percentage of agricultural land, the largest acreage under irrigation, the most reliable rainfall, and the highest living standard.

The poorest parts of Victoria are the extreme northwest corner and some of the forested country in eastern Gippsland. The best prospects for closer settlement and increased production in Victoria lie in the irrigation districts along the Murray and Goulburn Rivers, the safer wheat growing areas north of the Dividing Ranges and in the recently developed dairying country of the southwest.

Southwest Division of Western Australia. Here there still remain several hundred thousand acres of forest land that could be cleared and cultivated. However, settlement is difficult because of the high cost of clearing the land, the need for heavy fertilization, and the oversupplied local market for dairy products, fruit and most vegetables. Opportunities exist for taking over abandoned, marginal group settlement blocks, but the same market problems would have to be met. Should the demand for tobacco, fruit or some other cheaply produced, exportable product rise sharply, there is room in the Southwest for thousands of settlers, willing to give hard work for a modest return.

The report is accompanied by maps showing relief and drainage features, mean temperatures, rainfall, growing period, soil types, vegetation, group settlements, population distribution, and settlement prospects.

NEW ZEALAND

ROBERT G. BOWMAN, *Prospects of Land Settlement in New Zealand.* Baltimore, 1941. 98 pp.; maps.

For biographical material concerning Dr. Robert G. Bowman, see page 69.

SUMMARY. New Zealand, about 1200 miles east of Australia, consists of North Island, South Island and a number of small outliers. The two large islands have a total area of 102,373 square miles and a population of about 1,625,000, including 88,450 Maori natives.

New Zealand lies within the temperate zone and has a marine climate with narrow temperature range. Most of the country receives 25 to 60 inches of rainfall. The soils are essentially immature over a fairly large portion of the country. Dairying and sheep raising are the basic agricultural activities. The prewar British market absorbed over 80% of New Zealand's exports.

About one-half of South Island is mountainous country with some elevations over 10,000 feet. Alluvial lowlands occupy less than one-quarter of the area and are widely-scattered, isolated "fragments". One-third of South Island is unsuited for farming; one-third permits only light sheep grazing; the remaining third, in the east and south, is devoted to agriculture. Settlement possibilities in South Island are few.

North Island is less mountainous, its ranges reaching about 6,000 feet. A volcanic plateau, 1,800 to 4,000 feet high, forms a large part of the interior. Scattered alluvial lowlands, which include a number of productive areas, are more plentiful than on South Island. Over 90% of North Island is used for agricultural and pastoral activities. The major unfarmed lands are on the interior plateau and in the higher mountain ranges.

The author recommends closer settlement on about 22,000,000 acres in the occupied areas. Of this figure, 19,000,000 acres are already cultivated. This acreage is largely planted to English grasses and clover for stock, producing the bulk of the meat and dairy products of New Zealand and much of its wool. Limited closer settlement is possible through irrigation, improved grasses, and better fertilization, particularly if the trend toward dairying and away from sheep farming continues. On the 3,000,000 acres not yet cultivated, probably half is sheep raising land.

Several hundred families could thus be established on farms in different parts of New Zealand. Group settlements appear to be out of the question.

The report is accompanied by maps showing annual rainfall, climatic types, topography, land utilization, and settlement prospects.

NEW GUINEA

ROBERT G. BOWMAN, *Prospects for Settlement in Northeastern New Guinea.* Iowa City, 1947. 153 pp.; maps and photographs.

For biographical material concerning Dr. Robert G. Bowman, see page 69.

SUMMARY. New Guinea, lying just north of Australia, is the second largest island in the world.

Northeastern New Guinea with an area of 93,000 square miles is about twice the size of Pennsylvania. The population is approximately 600,000, including 4,500 whites. Only a few thousand of the natives and almost none of the whites live in the most promising area of settlement, the Markham and Ramu valleys, which lie west of Lae, chief port and capital, on Huon Gulf. Along the Ramu river and throughout the valley of the Markham river, the valley floor is remarkably flat in cross section. The floor averages about 9 miles in width over a distance of 200 miles. The Markham and Ramu valleys, together with the adjacent mountain slopes and plateau valleys, are well watered. Drought is unknown and the occasional short, dry spells are a help to agriculture. Temperatures in the Markham and Ramu valleys are often high during the day, but moderate at night. The average annual shade temperature for the corridor is probably in the low 80's. The humidity is fairly high.

A vast extent of grassland is one characteristic of the vegetation of these valleys. However, the grasses are usually low in fodder value. Where there are some good pasture grasses, they are frequently intermingled with many worthless varieties. Therefore dairying and high quality meat production would probably require replacement of existing grasses with more nutritious grasses or supplementary feeding with concentrated foods.

Some of the soils of the Markham and Upper Ramu valleys and of the plateau valleys adjacent to them are alluvial. Several feet deep, they appear to be well supplied with most of the necessary plant foods. The soils in these areas may have potentially high agricultural value. Their fertility is not consistent, as there are some large areas having shallow, stony soils resulting from stream overflows. These, however, may be used for pasture. The fertile soils, where shallow, could support shallow rooted crops and, where deep, the reverse would be

true. Swampy soils could support wet rice. However, even the fertile soils tend to lose their initial fertility quickly in a continuously humid climate which causes leaching of the soil nutrients necessary to plant life. The value of the crop must be able to bear the cost of fertilizer to replace soil minerals lost through wash-out. The problem of soil fertility and its maintenance requires thorough investigation prior to the establishment of farm settlements. This investigation might reveal the existence of soil elements such as boron, cobalt, copper, manganese, molybdenum, zinc and selenium. These minor elements, which if not present in the soil in minute, but yet very important amounts, may result in crop failure or deficiency diseases in livestock.

Another measure to be effected, preferably prior to white settlement in the Markham and Ramu valleys, is the control of the tropical diseases which constitute the major hazards in these regions. The partially effective measures taken by the U. S. Army against these diseases presents a good guide for future efforts.

A limited but concrete example of prospective white farming is provided by the wartime experience of a U. S. Army farm located between the Markham and Ramu rivers near Gusap. Fifteen acres of land on an alluvial fan were planted in corn, melons, beans and tomatoes. The harvest showed that climate and soil were favorable for vegetable production. The land near Gusap appears especially well suited for intensive cultivation with farm machinery. The vast grasslands are easily cleared, the rainfall is not excessive, the soil is deep, well-drained and amply supplied with organic matter. The 1200 ft. altitude, together with the fact that mountains enclose the valley on the north and south, results in lower temperatures and humidity than are found farther down the valleys. To white settlers the area would be attractive: longer dry spells prevail here, as well as cooler nights and somewhat cooler days.

Because the highland valleys have a large native population, there would be insufficient land for more than a dozen or so farms of 20 or 30 acres each for white settlers. These settlers could produce vegetables for the lowland settlers and engage in dairying.

Fortunately, there is sufficient room in the highland valleys for the establishment of rest camps and recreational facilities for the settlers. Such establishments are considered one of the most important keys to successful white settlement of the Markham and Ramu valleys.

In the lower valleys, where land is more plentiful, a few hundred acres would probably meet the needs of several thousand settlers. The area of cultivable land in the Markham Valley is estimated at 723 square miles or almost 463,000 acres. There is probably as much additional cultivable land in the Upper Ramu Valley between Dumpu and Gusap. An assumption may be made that 50 acres would suffice as the average amount of land required per farm family. There would then be room in the Markham and Ramu valleys for some 12,800 farm families (64,000 persons). When the number of additional settlers needed in the service professions is added to the 12,800 families, the Ramu and Markham valleys might prove capable of supporting 100,000 people or more. The Markham and Ramu valleys and the plateau nearby could be made accessible from a good port on the seacoast by the construction of an all-weather highway which offers no complicated engineering problems.

Various parts of Northeastern New Guinea can probably grow most of the ordinary subsistence and commercial crops. The more fertile soils of the well-drained alluvial lowlands could probably grow many tropical plantation crops, together with most tropical subsistence fruits and vegetables, and some temperate truck crops.

It is possible that with adequate facilities for refrigerated storage and distribution two farms of 750 to 1000 acres apiece, one located in the Upper Markham Valley and specializing in tropical fruits and vegetables, and the other on the plateau specializing in crops better suited to a cool climate could produce the food requirements for all the settlers. The bulk of the settlers, those not engaged in food raising on these two farms, could then engage in raising cash crops for export abroad. However it must be noted that most of the crops which can be grown on New Guinea can be grown as well, and some better and more cheaply, on other islands and lands in the general vicinity.

NEW CALEDONIA

JEAN GOTTMANN, *Report on Settlement Possibilities in New Caledonia.* Princeton, 1943. 20 pp.

Jean Gottmann is an Associate Professor of Geography at Johns Hopkins University. Trained by eminent geographers at the Sorbonne, he was an Assistant in Geography there from 1936-1940. He has also taught at Princeton, and his association with Johns Hopkins goes back to 1943. During 1946-1947 he was Director of the Division of Studies and Research, Department of Social Affairs, of the United Nations. His main interests are in the field of human and economic geography, especially problems of settlement, irrigation in dry areas, and geography of raw materials. He has travelled extensively in Europe and Latin America, and his publications are numerous, among them a book on the French Colonial system.

SUMMARY. New Caledonia, a French island of 4,000,000 acres, is one third cultivable, one third grasslands, while the remaining area contains some deposits of nickle, cobalt, and chromium. Most of the island is a hilly plateau, dissected with deeply-cut valleys and fringed with coastal plains which to the north and east are warm tropical regions. In the southwestern part of the island, with its temperate and balanced climate, the French settlers live under healthful conditions. Total population is 50,000, of which 34 per cent are whites. Of the 520,000 acres of good quality lands, 300,000 acres remain available for white settlement, though not all of it is equally good. Main temperate crops are wheat, corn, vines, olive and mulberry trees, potatoes and vegetables; tropical products are rice and plantation crops of cocoa, vanilla, coffee, and bananas. Thus far, production costs have been high, nevertheless holdings of 25 to 60 acres have proven profitable to a large number of the 12,000 Europeans who came to New Caledonia during the last fifty years. A concession is granted settlers who satisfactorily develop the land for a period of five years.

Although existing conditions are not promising, under favorable conditions 25,000 to 30,000 immigrants could be settled here.

PHILIPPINES

O. D. HARGIS, STANTON YOUNGBERG, ROBERT L. PENDLETON, HOWARD F. SMITH, HUGH J. CASEY, *Report of the Mindanao Exploration Commission.* New York, 1939. 72pp.; maps.

O. D. Hargis served as Chairman of the Commission. He had a background of 25 years of experience in charge of agricultural work for the Goodyear Rubber Company in the Panama Canal Zone, Sumatra, Java, and the Philippines. He had started the Goodyear Rubber plantation in Mindanao.

Dr. Stanton Youngberg, Executive Secretary of the Commission, went to the Philippines in 1907 as a veterinarian, was Director of the Philippine Bureau of Agriculture, 1925-1932, and on the staff of the Governor General as advisor on agriculture and animal husbandry, 1933. After the Commission completed its work, Dr. Youngberg returned to the Philippines as special representative of the Refugee Economic Corporation to negotiate terms of settlement with the Government. He was caught in Manila at the outbreak of war and was interned throughout the Japanese occupation. Recently he served on a committee of experts who studied the problems of reconstructing the abaca industry in the Philippines.

Dr. Robert L. Pendleton was Professor of Soil Technology at the University of the Philippines, 1923-1935, and technical advisor to the Government of Siam, Department of Agriculture and Fisheries, 1935-1939.

Dr. Howard F. Smith, health and sanitation expert, was Chief Quarantine Officer at Manila.

In 1939 Hugh J. Casey was a captain in the U. S. Army and hydroelectric expert of the Engineers Corps. He later rose to the rank of Brigadier General, distinguishing himself in the fighting on Bataan.

SUMMARY. On the Island of Mindanao, the areas suitable for European colonization are located in the three adjacent provinces of Bukidnon, Lanao and Cotabato. Ranging in elevation from about 1,000 to 3,000 feet, they consist of undulating plains, low and rolling hills and terraces, and level valley floors.

The leased public lands in Bukidnon Province, a prime cattle producing region, are the most desirable. They are mainly

grasslands, with a moderate to cool climate. They are accessible by sea and by land and centrally traversed by a main national road. Feeder roads can be cheaply constructed. The moderately uniform high rainfall of 100 to 110 inches annually results in good water power possibilities. Porous clays, derived from weathered lava, characterize the excellent crop producing soil of the Bukidnon Plateau area. The colonists might attain economic self sufficiency within 12 to 18 months on the grasslands where immediate plowing is possible. They could grow numerous tropical tree crops as well as rice, corn, potatoes, peanuts, tobacco and sesame. Dairying would be profitable, even more so than cattle raising.

An estimated 10,000 settlers could be accommodated on 100,000 arable acres of land in that area. These settlers would have to become Filipino citizens. The preliminary cost estimate for the colonization of approximately 250,000 acres of privately owned or leased grazing lands to be settled ultimately by 10,000 refugees would total $5,580,000 to $6,080,000. For an initial group of 600, the total would be $410,000.

Tropics

TROPICS

MAX SALVADORI, *White Colonization in the Colonial Territories of the Tropics.* Canton, New York, 1939. 18 pp.

Dr. Max Salvadori is Professor of Political Economy at Bennington College, and Visiting Lecturer in History and Sociology at Smith College. During the late 1920's he organized an underground movement against Fascism in Italy. He left Italy in 1933 and became manager of an agricultural colony in Kenya. He was Privat-Docent at the University of Geneva, 1937-1939, then Associate Professor at St. Lawrence University, 1939-1941. He volunteered for the British Army in 1943, serving with commando troops in North Africa and Italy. He received many distinguished awards, including the Military Cross and the D. S. O. His writings range from history and political economy to demography and colonization.

SUMMARY. Most of the 34 million square kilometers which form the total area of the Colonial territories lie within the tropics. The entire white population is probably under a million and, with a few exceptions, it is difficult to find as much as one European per square kilometer. Whites do not and cannot form a majority of the population in any of the tropical territories because they are unable to subsist without the economic collaboration of a coloured or half-caste population to do the manual labor.

Climatic, economic and demographic factors have greatly influenced white colonization in the past and will continue to do so in the present.

The climate narrows the field of activities which can be exercised by the settlers and their descendants. In the lowlands few economic functions are open to Europeans; in the highlands more. Climate, too, has a direct relationship to the capital investment required for the settlement of white people. The healthier the climate, the greater the employment opportunities, and the smaller the cost of settlement. Southern Rhodesia is such an example.

The economic structure of a country depends largely on the natural resources and the accumulation of capital. Where both are present, a highly developed economy results in which industry, trade, and banking are important. These offer whites many employment opportunities for which they are suited even in the tropics.

European settlers found, in French Indo-China, Malaya, Ceylon and the Netherlands Indies, an already advanced native society based on the development of the rich natural resources of these areas. Such countries can support a large European population. In Africa, however, only the colonies in the hot damp zone adjoining the Gulf of Guinea and the Congo Basin are somewhat similar to the colonial territories of Southeastern Asia with regard to natural resources. However, capital accumulation here and elsewhere in tropical Africa has been practically nil.

Three demographic factors will principally determine the size of European communities in the tropics.

The percentage of white settlers to the total population will largely depend on the national group to which they belong. A tropical country can probably offer a better living to a greater number of Southerners such as Portuguese, Spaniards, Italians or Greeks, than to Northern Europeans.

Since Europeans can form only a fraction of the total population, the size of the white community will be chiefly dependent on the size of the native one. The largest white colony in tropical European possessions is in Java where the natives are very numerous.

The social development of the natives will result in competition with Europeans in activities which provide a living for the latter. On the other hand, natives' progress is particularly important in the colonial territories of Southeastern Asia, where a numerous native population and a comparatively highly developed economic organization should favor the establishment of large white communities.

—INDE

Country and Regional names



MAP —

spond to summaries in text

