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THE GEOGRAPHY OF EGYPT

A Thesis

Submitted to the faculty of Oberlin
College in partial fulfillment of
the requirements for the degree
of Master of Arts

By

Walter W. Ristow
Oberlin College
Oberlin, Ohio

1933

PREFACE

The purpose of this thesis is to describe the physical landscape, to portray the character of the people, and to interpret the influence of the natural environment upon the life of a country which since the earliest times has been based principally upon one industry; the agricultural "Land of Egypt."

Many references have been used in the gathering of information for this paper for which credit is accorded in the footnotes and bibliography. The data for the agricultural crop maps were obtained from "Annuaire Statistique de l'Egypte for 1927-1928". The Egyptian land unit of the "feddan" has been retained because of the slight difference between it and the acre (one feddan equals 1.038 acres), as well as for the purpose of adding local color to the paper.

The spelling of local place names on the index map and in the text has been adopted from the 1:100,000 Map Series, published by the Survey of Egypt.

The writer is indebted to Doctors George D. Hubbard, Fred Foreman, and Reuel B. Frost of Oberlin College for suggestions and criticisms of the textual material, and to Miss Harriet S. Colburn for helpful suggestions in connection with the cartography. He

wishes especially to express appreciation to Dr. J.
Russell Whitaker of the University of Wisconsin for
the loan of the 1:100,000 Series Map of Egypt, and the
two French books to which frequent reference is made.

W. W. R.

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INTRODUCTION

A land of burning desert sands and green fields; a land of "eternal sunshine" and well watered valley; areas barren of population and others teeming with life; cradle of early culture and civilization, yet to-day backward and illiterate; Egypt is indeed a country of contrasts. But with all these paradoxes there is a certain stability evident both in the land and the people. Despite invasions by peoples of different customs and religions, the real character of the peasant remains unchanged, and to-day he cultivates the same fields, sows much the same crops, and practices the same primitive methods of agriculture as did his ancestors in the days of the Pharaohs.

This stability is fostered by the character of the country. Bounded on two sides by desert, partially cut off from the Mediterranean by the Delta,

the Nile valley, during long periods, has been more or less isolated, able to work out its own problems with infrequent outside interference.¹

The independent and Sovereign state of Egypt, one of the three free states of Africa, occupies the northeastern part of the continent, and includes within its boundaries also the Peninsula of Sinai which is the connecting link between the continents of Africa and Asia. (Plate I) The Mediterranean Sea forms the northern boundary of the country, while the Gulf of Akabah, the Gulf of Suez, and the Red Sea limit it on the east.

The land frontiers are in the main artificial, and are the result of treaties with the various bordering nations. The northeastern boundary was fixed by the Turkish-Egyptian Commission of October 1906, and extends almost in a straight line from a point near Rafa on the Mediterranean shore to another point near Taba at the lower end of the Gulf of Akabah. The twenty-two degree parallel of north latitude separates Egypt from the Anglo-Egyptian Sudan, deviating slightly towards the north, however, to include Faras. The boundary separating Egypt from

1. Marion I. Newbigin, The Mediterranean Lands, 75.

Italian Libya on the west, leaves the Bay of Sallum, passes thru the Oasis of Malfa, follows then the twenty-five degree meridian of east longitude, and continues south to intersect with the twenty-two degree parallel of north latitude.²

Included within these boundaries, Egypt has an area of about 350,000 square miles, or about eight and one half times the size of the state of Ohio. Only about 12,250 square miles or three percent of the area are cultivable and capable of supporting a fixed population, however, for the remainder is occupied by arid desert, in large part uninhabited, and hardly furnishing subsistence to the Nomadic Arabs who wander over it.³

Egypt proper, therefore, consists only of the valley and Delta of the Nile wherein live over 99 percent of the inhabitants of the country. The country is truly, therefore, the gift of the Nile, for of the soil on which the Egyptians live, from which they draw their nurture, and on which they wrought their great works of the past, little has been furnished by the land which it has made fruitful and habitable, but

2. Annuaire Statistique (Egypt) 1927-1928.

3. Ibid., 1.

all has been carried and deposited within the Nile trench by the great river which both literally and figuratively has been the making of Egypt.⁴

Along with the great importance of the Nile, the physical factor which has exerted and still exerts the greatest influence on the life of the country, is its geographical position at the crossroads of the great commercial routes which join Europe to the interior of Africa and to the Orient.⁵ The maintenance of a stable and orderly government in Egypt is therefore a matter of concern to all the leading world powers. It was to insure such a state of affairs that first the French and later the English occupied the country during the nineteenth and the early part of the twentieth centuries. Beginning with the reign of Mohammed Ali Pasha in 1805, supported by the armies of the European powers, the Egyptian lands have enjoyed a peace which they had not been able to experience during the preceding centuries.⁶

This stability, along with the enlightened views of the rulers, and the aid of foreign capital and intelligence, has brought about a great change in the

4. James Baikie, A History of Egypt, I, 6.

5. Annuaire Statistique, *op. cit.*, 1.

6. J. Lozach and G. Hug, L'Habitat Rural En Egypte, 10.

economic life of Egypt by arousing the country from the lethargy in which it was plunged, and without transition throwing it into the modern life.⁷

7. Ibid., 9.

CHAPTER I

PHYSICAL LANDSCAPE

General Topography

The most striking topographic feature of Egypt is the long ridge of steep volcanic hills, capped with a jagged crest of sedimentary rocks, which runs approximately parallel with the Red Sea some twenty miles from the shore, and which reaches at some points an elevation of 4,000 to 6,000 feet. The short, arid seaward slope leads down to the narrow littoral which is composed mainly of recent corals.¹ The ancient rocks which compose the core of the ridge have been affected both by folding and fracturing, and because of their elevated position have been subject to erosion both in recent time and at an earlier period when the rainfall was probably more abundant. The result

1. D. G. Hogarth, The Nearer East, 78.

is a youthful type of country greatly cut up by innumerable valleys and ravines.²

From the crest of the ridge the land slopes toward the Nile in plateaus of sandstones and limestones, dissected by wadis,³ often of great length and depth, and usually half filled with pebbles and sand.⁴

In the Peninsula of Sinai the land rises gradually to the south into a highly-dissected limestone plateau, and terminates in the great escarpment of El Tih, which in some parts rises to almost 5,000 feet above sea level. South of El Tih the peninsula is composed of rugged granitic mountains intersected by deep ravines. The mountain peaks in this region have greater elevations than any of the mountains in Egypt proper, rising to over 8,600 feet.⁵

The area to the west of the Nile is characterized by long chains of impassable sand dunes which extend as much as 300 miles in a north-northwest, south-southeast direction. In general, the land continues to descend toward the west to end in a series of depressions in which wells and springs furnish water

2. A. J. Herbertson and O. J. R. Howarth, Oxford Survey of the British Empire--Africa, 321.
3. Valley of an intermittent stream.
4. Almanac for the Year 1932 (Egypt), 40.
5. Ibid., 41.

in sufficient quantity to irrigate small areas. The central of these basins, the Faiyum, is watered by means of a large canal, the Bahr Yusuf, which taps the Nile. In the extreme southwest corner of Egyptian territory a granitic peak rises to over 6,200 feet.⁶

With the exception of the igneous and metamorphic rocks of the eastern highlands, most of the formations of Egypt are of sedimentary origin. In general, to the south of Isna sandstones of Cretaceous age predominate, while to the north of this point Eocene limestone is the outstanding rock. These sedimentary rocks dip gently to the north at a steeper angle than the general fall of the country, so that successively younger strata appear towards the north. In the extreme north of the country, non-resistant sands and limestones of comparatively recent age form a country of low relief, in which conspicuous land forms are rare.⁷

Nature did not bestow great mineral wealth upon Egypt, for the country possesses no good steam coal, no iron ore, no copper, and no precious minerals. There are, however, several mining districts within

6. Ibid., 39

7. Herbertson and Howarth, op. cit., 322.

the country exploiting local deposits of various minerals. The only development in the Libyan Desert is of the natural soda deposits which occur in the lakes of Wadi Natrun. In the eastern Desert region, petroleum deposits are being worked at various places along the Gulf of Suez. Phosphate deposits also occur in this desert near Safaga, while small quantities of manganese and petroleum are produced in the Peninsula of Sinai.

The limestone and sandstone cliffs of the Nile furnish building stones which have been used for construction and monumental purposes since antiquity, the pyramids being built of local limestone. Likewise, the crystalline range of the Arabian Desert furnishes granites.

The most common building material within the country, however, is the alluvial soil of the Nile which is utilized by the majority of the people in the construction of dwellings, either in the form of baked or sun-dried brick.

The Nile River And Valley

"Egypt is the Nile," remarks one author with truth, for the country owes to the river its principal geographic aspects and its agricultural prosperity, on which depend practically all the life of

the country.¹ Within its valley walls and upon its Delta live 99% of the people, whose very existence is dependent upon the life-giving waters and fertile soil brought by the provident river.

The Nile is the second longest stream in the world, extending for over 4,000 miles from its most remote source near Lake Tanganyika to the Mediterranean Sea. Its basin covers over a million square miles, or an area about three-tenths the size of Europe. It stretches from 4° south latitude to 31° north latitude and thus traverses many types of climate, vegetation, and animal life.

In Egypt proper, the Nile flows for 930 miles between Wadi Halfa in the extreme south to Rosetta and Damietta on the Mediterranean coast. Between the southern limit of the country and Cairo, the river is enclosed by rocky cliffs which vary in height from 150 to 950 feet above the river.² South of Aswan the stream cuts through sandstone and granite, and because of the resistant character of the rock, the valley width here is only six-tenths of a mile.

1. Paul F. Gemmil, "Egypt is the Nile," Economic Geography, III, 1927, 210.
2. Almanac, op. cit., 39

North of this point the river flows in an alluvial plain and at Idfu has a width of three and seven-tenths miles between the high limestone bluffs which bound the valley.³

North of Idfu, limestone cliffs continue to form the limits of the depression which widens as one descends downstream. Between Asyut and Cairo it has a width of over twelve miles, and in this portion of its course, the Nile flows through a fertile and highly cultivated area. For this distance, the river occupies the western margin of its valley, with all drainage lines of any importance coming in from the east on the right bank.⁴ The limestone bluffs furnish the stone and the lime used for construction.

Fifteen miles north of Cairo the valley opens out into the Delta, and the Nile divides into two branches, the Damietta which empties into the Mediterranean Sea in the northeast part of the Delta, and the Rosetta, whose mouth is east of Alexandria. The Delta measures about 150 miles from Alexandria to Port Said, and about 110 miles from Cairo to the most northern point,

3. Capt. H. G. Lyons, The Physiography of the River Nile and Its Basin, 299.
4. Ibid., 293.

and covers an area of about 9,200 square miles, including the lakes.⁵ In contrast to this, the valley of the Nile from the frontier of the Sudan to the Delta does not cover even half this area.⁶

This entire delta area contains no rock except the limestone of Alexandria which forms a low ridge in this part of the coast and extends west as a low line of hills parallel to the shore. The rest is formed of the alluvial mud and fine sand brought down by the Nile, and which rests upon a thick deposit of yellow quartz sands of varying coarseness and includes also layers of gravel and lenticular masses of stiff clay.⁷

On the seaward end of the Delta there is a narrow crescent-shaped belt of rock and sand banks on which a few wild and stunted date palms form the only vegetation. This zone is separated from the fertile lands by the four border lakes or lagoons, Mariut, Edku, Borollos, and Menzaleh. On the interior shores of these lakes there is often deposited by evaporation a white crust of salt to form the so-called

5. Ibid., 336.

6. Henri Lorin, L'Egypte D'Aujourd'hui, Le Pays et Les Hommes, 16.

7. Lyons, op. cit., 338.

"barari" lands. They are suitable for cultivation only after an intense washing which lowers the salt level below the level reached by the plant roots.⁸

The cultivable area of the Delta is so cut up with drainage and irrigation ditches that it is difficult to distinguish with certainty between river arms and artificial channels, especially as an existing waterway may include lengths of both in its course.⁹

The Nile has been called "an anomaly among rivers" since it floods during the dry season. This problem puzzled the geographers of classical times and remained unsolved until the latter part of the nineteenth century when it was found that the floods were due to the spring rains on the far-away mountains of Abyssinia.

The water supply of the Nile may be divided into two parts; that brought down by the Bahr el Gebel from the Lake Plateau of Uganda and Kenya, and that brought down by the tributaries rising in Abyssinia. Because of the flatness of the greater part of the Sudan much of the rain which falls there is evaporated or transpired by vegetation, and therefore does

8. Lorin, op. cit., 17.

9. Lyons, op. cit., 336.

not drain into the river.¹⁰ Below Berber the river receives no addition to its supply, and in its course through Egypt it loses forty percent of its volume, part in irrigation canals and the rest through the great evaporation of spring and summer.¹¹

The level of the Nile proper is maintained by the White Nile which has its sources in the Equatorial Lakes of Africa, in a region of forty to eighty inches annual rainfall. This tributary is the principal source of the low stage supply of the river and during the lowest month in Egypt (April) it contributes on the average eighty percent of the water supply. In addition to furnishing water, the White Nile also contributes sand which is deposited in bars to form the underlying soil at the head of the Delta.¹²

The summer floods of the Nile are due to the monsoon rains blowing in from the Indian and Atlantic Oceans toward the low pressure area located to the north of the equator. Upon striking the Abyssinian Highlands their moisture is condensed, flooding the Atbara, the Blue Nile, and their tributaries, and inundating Egypt from June 22 to November. The larg-

10. Almanac, op. cit., 46.

11. Lorin, op. cit., 14-15.

12. Ellen C. Semple, The Geography of the Mediterranean Region, 158, and Almanac, op. cit., 48.

est volume of water is contributed to the Main Nile by the Blue Nile which has an average discharge at Khartoum of 2185 cubic yards per second (1912-1930). Its average discharge for August and September, however, is about 7,455 and falls to 145 cubic yards per second in April. During September, the month of highest water level on the Main Nile, the proportions contributed are roughly: Blue Nile 69%, Atbara 20%, and White Nile 11%. The flood waters from the Abyssinian Highlands carry the fertile red soil, washed from the great cap of volcanic rock, and deposit it in Egypt as a light top dressing to the underlying sand. This load of silt, however, makes the storage of water in reservoirs very difficult, for it makes it necessary to clean the deposits of silt at least once a year.¹³

The yearly fluctuations in water level of the Nile, with the regular overflowing of the silt-laden waters, has built the fertile flood plain which is the real "Land of Egypt."

The Climate of Egypt

In the larger classification, Egypt is included

13. Semple, op. cit., 158, and Almanac. op. cit., 46.

in the low latitude desert type of climate, being merely a continuation of the Sahara Desert which borders the country on the west, and the Arabian Desert toward the east. However, there are great enough differences in rainfall and temperature conditions between Upper and Lower Egypt to warrant several local climatic divisions.

The atmospheric pressure decreases normally during the entire year from north to south, which causes perennial winds from a northerly point, generally northeast. In summer it is very rare that the wind blows from a different direction, but in winter and spring the pressure is much less constant by reason of the cyclonic storms which move in the low pressure trough of the Mediterranean basin. Practically all the rain which falls in Egypt is due to these lows which accounts for the decrease in annual precipitation as one leaves the coast. Usually the rain clouds are of short duration, but occasionally a low becomes stagnated for several days on the eastern end of the Mediterranean, and the rainy and variable weather may then last for three or four days.¹

1. W. G. Kendrew, The Climates of the Continents, 15, 24, and Annuaire Statistique, op. cit., 6.

The north coast of Egypt has a Mediterranean climate of an arid type characterized by a mild winter with a little rain and hot summers with no precipitation. The rainfall along the coast (6 inches to 8 inches) is generally sufficient to permit the cultivation of fall sown barley. From time to time heavy rains fall in April and May and cause considerable damage to the young cotton plants.²

The temperature of the maritime portion of the Delta is modified by proximity to the ocean being neither as cold in winter, nor as warm in summer as Middle Egypt. The warmest period of the year is the end of July, while January is the coldest month. Autumn is considerably warmer than spring, as everywhere on the Mediterranean.³

South of the coastal region and extending to about 28° north latitude, is the Egyptian climatic region which is transitional between the Mediterranean or oceanic type to the north and the continental or Saharan type to the south. Situated farther from the tempering waters of the ocean, its winters are colder and its summers far warmer than along the coast. The

2. Annuaire Statistique, op. cit., 7, and Kendrew, op. cit., 40.

3. Lorin, op. cit., 27, and Annuaire Statistique, op. cit., 7.

air is very dry for practically the entire year and already at Cairo the annual rainfall is only one inch, and above this point it is practically nil, although in the latitude of Faiyum light sprinklings of rain pock mark the desert every winter.⁴

The Saharan region, including most of Upper Egypt, is true desert, being hot and arid, since it is reached neither by the rain bearing winds of the monsoon nor by those of the Mediterranean depressions, and northerly winds prevail throughout the year with clear skies and hot dry weather.⁵ Rain falls occasionally in heavy convectional downpours, but years may pass without the slightest precipitation.

The valley of Upper Egypt has clear bright skies and an invigorating atmosphere. "The small burden of vapors with which the north wind is charged, when it reaches the African coast, is precipitated before the current has ascended a hundred miles above the Delta; and as the rarer south airs have to cross enormous arid tracts ere they attain even the second cataract of the Nile, they rarely have anything to discharge

4. Kendrew, op. cit., 40; Herbertson and Howarth, op. cit., 324; and Hogarth, op. cit., 116.
5. Herbertson and Howarth, op. cit., 324.

in Nubia or Upper Egypt.⁶

Both Middle and Upper Egypt have great variations in temperature. The reflection of the sun's rays from the bare rocks of the desert causes high temperatures during the day, but there is a rapid decrease as night falls. This produces great ranges of temperature, both diurnal and seasonal. This variation is considerably augmented towards the south, and in Middle and Upper Egypt the nights and mornings are colder than in the Delta. Lower nightly temperatures are recorded at Aswan and Wadi Halfa in winter than at Alexandria, although the mean temperature is lower along the coast.⁷

Meteorological phenomena occurring very rarely in Egypt, include electrical storms, hail, and sleet, while frost occurs in certain low places due to air drainage. When the frost is especially severe it damages harvests and fruit trees. Fogs are common during the mornings in spring and early summer, but they lift soon after sunrise.⁸

The "Khamsin" winds are phenomena associated with the cyclones of the Mediterranean basin. They are hot dry winds which blow from the high-pressure area which

6. Hogarth, op. cit., 116.

7. Annuaire Statistique, op. cit., 7.

8. Ibid., 8.

lies over Upper Egypt towards a depression moving along the Mediterranean not far from the Egyptian coast. With the approach of the low, the wind blows strongly at first from the southeast veering gradually to the south and southwest. As the cyclone passes away to the east the wind shifts rapidly into the north, blowing with much diminished force, and being associated with cooler weather. Although the south winds cause considerable discomfort they cannot be said to be dangerous as a rule.⁹

abundant waters, but the full advantages of these are not gained without continuous and toilsome work, and to the patient and industrious fellah falls the task of developing these resources.² Four-fifths of Egypt's population belong to this class, and in mental and physical aspects they are very much like their early ancestors who sweated under the Pharaohs.³

The Egyptians have occupied the valley of the Nile...

1. "Fellah" (plural "fellahin") is derived from the Arabic word "fallaha" which literally means "tilled," "labor," "work of the fields." The fellah is truly the worker of the earth, the landman, the cultivator, the laborer.
 Lozack and Aug. 22, 1812, 71.
 2. Wallis, op. cit., 10.
 3. Frederick Simpson, "Along the Nile, Through Egypt and the Sudan," The National Geographic

9. Herbertson and Howarth, op. cit., 331.

CHAPTER II
THE FELLAHIN¹

Egypt owes much to the Nile for its gifts of fertile land and abundant waters, but the full advantages of these are not gained without continuous and toilsome work, and to the patient and industrious fellah falls the task of developing these resources.² Four-fifths of Egypt's population belong to this class, and in mental and physical aspects they are very much like their early ancestors who sweated under the Pharaohs.³

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2. Baikie, op. cit., 19.
3. Frederick Simpich, "Along the Nile, Through Egypt and the Sudan," The National Geographic Magazine, XLII, Oct. 1922, 393.

Nile for thousands of years and are possibly the most ancient living race of the earth. The origin of the race is not exactly known, but in spite of invasions by many conquering peoples throughout its long history, the fellahin have conserved the characteristics and customs of the ancient type.⁴ This type was determined since earliest times, for on a soil which owes everything to the periodic inundation and to the deposits of a mighty stream, the human groupings were obliged to distribute themselves along the valley and to follow agriculture.⁵

The stability of the climate and the isolation from other countries by seas and deserts have helped to conserve the distinctive traits of the race while the customs have survived because of social and political orders.⁶

Because the Egyptians are a composite race there is no such thing as a typical fellah as regards outward appearance. Representatives of many types of people are evident from the more beautiful Mediterranean or Caucassian race, which constitute the aristocracy of the villages, to the darker skinned Bar-

4. Annuaire Statistique, op. cit., 9.

5. Lorin, op. cit., 29.

6. Annuaire Statistique, op. cit., 9.

barins of the south, who are more or less mixed with negroes.⁷

The fellah is a tireless worker, and labors day after day in the fields to provide food for himself and family. His diet consists of coarse bread of either wheat or barley, vegetables such as beans, onions, and garlic, occasionally supplemented by such fruits as figs or grapes, and olive oil. He is of necessity vegetarian since the only animals he possesses are beasts of burden which pull the crude plows to turn the heavy alluvium, or operate the irrigation water pumps. The grating noise of the latter continually echoes through the valley.⁸

The native dress of both the upper and lower classes in Egypt consists of undergarments of cotton, over which is worn the long tunic with full sleeves, and which covers the wearer from head to foot. The women wear large gowns, of dark blue or black, which trail in the dust. A piece of black cotton cloth called the "milaya" is wrapped around their body, and this is pulled over the head when they wish to hide their face,⁹

7. Lorin, op. cit., 31.

8. Henry S. Pritchett, Observations In Egypt, Palestine and Greece, 506, and Lorin, op. cit., 30.

9. Ralph M. Odell, Cotton Goods In Egypt, 9-10, and Lorin, op. cit., 97.

The fellah lives a very simple life, with little knowledge of the outside world, dividing his time between the crude peasant needs and the conversations with his fellow laborers, which constitute his only recreation.¹⁰ The majority of the Egyptians speak Arabic and are followers of Islam, but this language and religion do not constitute ethnical characters, since the original and unchanging type of fellah was defined well before the present language and religion had penetrated into Egypt at the time of Mohammed.¹¹

In spite of great advances made in the social and economic life in the last century, tradition continues to influence very strongly the life of the fellah, and it is rarely that one gets him to modify his habits suddenly.¹² The improvement and increase in means of transportation and communication are aiding more than anything else in transforming the peasant spirit. Around the larger cities, and especially near Cairo, the evolution of the fellah seems to be most rapid and profound.¹³

The fellah is however distinctly attached to the

10. Lorin, op. cit., 197.
11. Ibid., 30.
12. Lozach and Hug, op. cit., 17.
13. Ibid., 18.

land and apparently has no desire to live apart from it, since there is practically no migration from the country to the towns. He has no interest in the government, and his entire outlook on life is bounded by his own personal affairs.¹⁴ "As long as there is ample water from the Nile, as long as the cotton crop is good, and as long as taxation is low, there is happiness in the land of Egypt."¹⁵

The Beduin¹⁶ or nomad in Egypt is the exception, numbering only about 40,000 for the entire country.¹⁷ Between the class of the sedentary fellahin and the true nomad there is a chain of individuals who do not answer to either description. One type remains permanently in the valley, moving only short distances and changing residence only to procure better pasturage for its flocks. A smaller number have winter and summer camps, and travel between the oases and the Nile furrow. They usually leave the valley at the end of spring when the harvest of wheat and corn have been gathered, load the sacks of grain on their

14. M. Travers Symons, Britain and Egypt, 65-66.
15. E. W. P. Newman, Great Britain in Egypt, 281.
16. The stem word of "Beduin," "badaouy" means "desert," and thus the Beduin is one who lives in the desert. Lozach and Hug, *op. cit.*, 71.
17. Almanac, *op. cit.*, 57.

camels and set out for the oasis. In the autumn after the dates have been gathered they return and pass the winter on fields rented for pasture, or even cultivate strips on the more unprofitable land.¹⁸

Numerically the foreign population is insignificant since there are less than 200,000, or about one-seventieth of the total population.¹⁹ However, since they live in the cities and are prominent in the commerce and industry and liberal professions of Egypt they have an influence far beyond their numbers.

The Greeks, Italians, British, and French have the largest representations within the country while there are smaller numbers from the other leading European nations, and from America.

The census of 1927 lists 76,000 Greeks. They are found in all the hamlets and cities, especially in the Delta, and are the traders or small shop proprietors. The 52,000 Italians are also found in both the large and small cities, where they are outstanding in the liberal professions as well as in arts. The British group of 34,000 consists mainly of the military personnel of the corps of occupation. The French number 24,000, most of whom occupy important

18. Ibid., 72.

19. Almanac, op. cit., 57.

posts in teaching, industries, and construction. There is a very small number of Syrians, but they are quite influential in the affairs of the country since most of the newspapers are run by them.²⁰

The native Egyptians in the cities have adopted European styles of clothing, but have retained as a headpiece the red tarboosh adopted from the Turks, and now regarded as characteristic of Egyptian nationality for all classes.²¹

The total population of Egypt, according to the census of 1927, is 14,168,756, of which 99 percent or 14,040,775 inhabit the valley of the Nile, the Delta, the Province of Faiyum, and the zone of the Suez Canal. In the valley of the Nile and the Delta, there is an average population density of 1060 per square mile, while in the Province of Minufiya there are 1725 inhabitants per square mile.²² (Plate II) Densities per square mile for other countries are as follows: England 734.2, Belgium 686, France 191.4, and the United States 41.3. This is all the more striking when it is recalled that Egypt is dominantly an agricul-

20. Lorin, op. cit., 199-200

21. Ibid., 198.

22. Annuaire Statistique, op. cit., 10; and Lorin, op. cit., 33.

tural country.

Outside the above-mentioned zones, there are 127,981 persons scattered in the deserts, Sinai, and the localities dependent upon the Frontier Districts. The deserts have an average density of less than one person per square mile.²³

23. Annuaire Statistique, op. cit., 10.

CHAPTER III
AGRICULTURAL EGYPT

With sixty-two percent of the workers of the country engaged in tillage at present, agriculture continues to maintain the dominating importance in the life of the Egyptians that it held even before the dawn of history at least 7000 years ago.¹ The narrow strip of fertile land of the Nile valley, watered and nourished by the periodic flooding and deposition of silt by the river is the geographic heritage responsible for this dominance. Without the beneficence of the Nile, Egypt would be as barren as the deserts which border the valley on the east and west.

In consequence of this "the life of Egypt from the earliest times has been arranged in its smallest

1. Gemmil, op. cit., 295, 310.

details of cultivation and human establishment not merely in spite of, but in expectation of, the rise of the Nile. The flood is still a real flood with its violence and its dangers but it is so closely associated with all the creative and agricultural economy of Egypt that the inhabitants not only take account of it but they discount it, and their fear is lest the Nile remain in its bed and the periodic flood of muddy water should not rise high enough to submerge their fields.²

Irrigation

Until the end of the last century, the basin system, which had been practiced since earliest times, was the method of irrigation employed along the entire valley of the Nile. In this system, the rising water of the stream is led into basins or "hods" through short canals and breaks opened in the earth levees. The water remains there six or seven weeks permeating the underlying soil. With the fall of the waters of the Nile the surplus from the basins is led back to the bed of the stream and the fine mud carried in sus-

2. Jean Brunhes, Human Geography, translated by T. C. LeCompte, 610-611.

pension at flood time is allowed to settle on the soil.

Now the fellah comes to the aid of the Nile, and sows the seed broadcast in the still liquid mud, and without further watering, the crop is ready to be harvested several months later. Thus, wheat sown in October is ripe in February, although some other plants remain in the earth until the beginning of May.

This is the winter harvest, or "chitwi" and after the crops have been gathered, the land remains fallow until the next annual flood.³ The "chitwi" period is important for cereal culture, mainly wheat and barley, although beans and bersim (Egyptian clover) are important also in Upper Egypt.⁴

Under basin irrigation, there is a great waste of water as well as a loss of time since but one crop per year can be grown on the land. The time of high Nile also is not suited to some special crops such as cotton and sugar, and it was mainly to insure an adequate water supply for these two crops that the perennial system of irrigation was inaugurated. Basin irrigation suffices to furnish the food supply

3. Lorin, op. cit., 118, and Almanac, op. cit., 322.

4. Annuaire Statistique, op. cit., 183

of the Egyptians, but in the modernization of the country cash crops were desired and it is these which in the main utilize the additional supply of water made available by the extensive irrigation projects.

As far back as the XII dynasty man dreamed of "bridling the Nile" and regulating its flow, but it was the latter part of the nineteenth century before any concentrated work was done in this direction.⁵ Greater advances came with British control, and between 1900 and 1925 great dams were built at Aswan, Isna, and Asyut.⁶ (Plate III)

At present the Nile supply of water is controlled by the Aswan Dam, the Isna, Asyut, Delta, and Zifta Barrages, and (during summer) by two earthen sudds or dams in the Rosetta and Damietta Branches of the Nile near the sea.⁷

The Aswan Dam is located about 750 miles from the Mediterranean at the first cataracts of the Nile, where the river flows over a bed of granite which gives a suitable foundation for the masonry.⁸ At

5. Wallace N. Stearns, "The Remaking of Egypt--The Nile Irrigation Project," North Dakota University Quarterly, II, 247.
6. Gemmil, op. cit., 302.
7. Almanac, op. cit., 275.
8. Nelle G Hudson, "The Nile Dam At Aswan," Journal of Geography, XV, 94.

this point also the river narrows to a width of about a mile, and the dam connects with granite bluffs on the east, and limestone rock on the west. The wall of the dam is 2150 yards in length and rises 130 feet above the foundation, and varies in thickness from 98 feet at the bottom to 23 feet at the top.⁹

The function of the dam is to collect and store clear water during the winter months to be used to supplement the supply of the river during the summer months. At the beginning of high Nile the gates are left open and floods of water and silt pass through. The gates are closed by December first when the water is comparatively clear, and the lake fills by February first and it is then ready to put the water in requisition the latter part of April.¹⁰

The first barrage is located at Isna, 105 miles north of Aswan. Its purpose is to raise the level of low floods to permit the water to enter the canals on the east and west sides and fill the basin systems to the north of the barrage.¹¹

Two hundred and fifty miles south of Cairo at Asyut, there is another barrage which controls both

9. Stearns, op. cit., 251.

10. Almanac, op. cit., 275; Stearns, op. cit., 251.

11. Almanac, op. cit., 275.

the summer and low flood water and commands the Ibrahimiya Canal, which perennially irrigates the western side of the valley (including Faiyum) down to the Delta Barrage.¹² In addition to these two barrages there are a number of large feeder canals which divert the water directly from the river to feed the basin systems dependent on them on either side of the river.¹³

The water for the Delta is controlled by the Delta Barrage, which is really two barrages, built across the heads of both the Rosetta and Damietta branches of the Nile. From the barrage the central canal of Rayah Mimufiya leads out between the two main branches of the stream. This canal is especially adapted to navigation, and from it lateral canals lead both east and west. On a map, the pattern of the Delta irrigation network is that of five fingers of a right hand of which the index and fourth would be the stream branches and the other three the artificial channels.¹⁴

(Plate IV)

The two earthen sudds near the mouths of the two branches serve to prevent drainage and leakage water from coming into the branches (when the Delta Barrage

12. Ibid., 175.

13. Ibid., 375.

14. Lorin, op. cit., 18.

is completely closed) and to prevent the salt water from mingling with the fresh, and thus rendering it unfit for irrigation purposes.¹⁵

Perennial irrigation now covers the entire Delta, and a large part of Middle and Upper Egypt. Of the 5,300,000 feddans¹⁶ of cultivated land in Egypt, 4,000,000 are perennially irrigated while the remainder receives but one flooding and grows but one crop per year under basin irrigation.¹⁷ In spite of this new irrigation plan, much of the water is still raised to the fields by ancient methods, either by man power with shadoufs and the Archimedes screw, or saqias turned by animals, where simple gravity does not suffice.¹⁸

The system of perennial irrigation has in large measure done away with the "sharaqi" or fallow period in the Egyptian agricultural year, and has substituted for it the summer or "sefi" crop period which includes the months from March to October. Cotton and sugar cane are the outstanding crops of this period although rice and sorghum also come under this regime.¹⁹

15. Almanac, op. cit., 276.
16. One feddan equals 1.038 acres.
17. Almanac, op. cit., 275.
18. Lorin, op. cit., 136.
19. Annuaire Statistique, op. cit., 182.

Where the "sharaqi" period is still a part of the agricultural program the land is allowed to lie idle and rejuvenate. The sun is master of the soil during this time, and dries it, concentrates it, and cracks it so it may be deeply impregnated with the water from the rising Nile.²⁰

From July to the end of October or November is the period of "Nili" crops, so called because the water comes directly from the stream. During this period the industry of the fellah is applied to extend the benefit of the inundation above the zone directly reached by the flood. Such rustic methods and devices as the "shadoufs" and "saqias" aid in raising the water and in irrigating thus, without submersion, the relatively high lands along the stream.²¹ The "Nili" harvest is the least abundant of all the agricultural periods. Crops grown during this period include corn (maize) and rice on the Delta, and corn and sorghum in Upper Egypt.²²

The agricultural year in Egypt always begins at the beginning of autumn in September or October when cereals, (wheat, and barley) are sown on one type of

20. Lorin. op. cit., 119.

21. Lorin, op. cit., 119.

22. Annuaire Statistique, op. cit., 182.

land, and bersim, herbs, and vegetables on another. The harvesting of the cereals is in February, followed by the gathering of beans in April, while the bersim is cut three or four times during this period and then turned over to pasturage in June. In March the new perennial irrigation enters with the turning of the earth by the fellah and the planting of cotton. Sugar cane shoots are also planted some time between the end of January and April. Thus during the summer months there will unfold in all Nilotic Egypt a cycle of vegetation unknown before perennial irrigation.²³

Agricultural Limits and Methods

Because of perennial irrigation, giving a twelve month growing season, Egypt proper is able to produce practically all the foodstuffs consumed by her population in spite of the fact that one-third of the land is devoted to cotton, the chief cash crop.¹

Agriculture in Egypt is limited to the Delta, the valley of the Nile, and the province of Faiyum, including in all about 12,250 square miles. (Plate V)

23. Lorin, op. cit., 135.
1. Gemmil, op. cit., 298.

Although there is some oasis agriculture in scattered portions of the deserts, these large areas are undeveloped barren waste, principally because of the absence of water in any form. Since the controlling factor in the settlement of the land is the water supply, the limits of habitation are the farthest limits to which the waters of the Nile can be carried. This line is usually the bluff of the Nile and there is a clean cut line between the green vegetation of the valley and the barren sandy or stony deserts which border it on the east and west. The irrigated belt is at times narrow but in other places broadens out to an average width of ten to fifteen miles.²

Petty agriculture is the rule in Egypt and the majority of the fellahin cultivate small plots of land averaging two to three acres.³ This is partly due to the fact that the favorable conditions of soil and climate, with perennial irrigation permit the growth of several crops per year, and partly because of the process of land subdivision promoted by Mohammedan law under which no man may bequeath real estate to one of his children to the exclusion of the rest.⁴

2. Ibid., 296.

3. Alfred Pearce Dennis, "The Land of Egypt," National Geographic Magazine XLIX, 283.

3. National Geographic Magazine XLIX, 283.

4. Pritchett, op. cit., 505.

The latter fact is coming to be of grave importance in the economic life of Egypt since the average holding dropped from 3.2 feddans in 1916 to 2.4 feddans in 1930, and of a total of about two million landholders in the country 68% possessed under one feddan each. In the present state of world affairs this is insufficient to furnish subsistence for a family and the fellah is faced by the greatest financial crisis of recent years.⁵ As a consequence the majority of the fellahin are in debt, and poverty prevails in Egypt. Causes of this poverty, according to Mr. F. M. Edwards, include: 1. the ignorance, illiteracy, improvidence, and early marriage of the people; 2. fragmentations of the land-holdings and endless boundary disputes; 3. borrowing and purchasing on credit; 4. rapid increase in population (46% gain in 30 years to 1927); absence of initiative and cooperation; 6. taxation.⁶

In contrast to the American farmers, the fellahin do not live in scattered farmhouses on the land they cultivate, but in little crowded mud-walled villages

5. F. M. Edwards, "The Egyptian Rural Problem," Contemporary Review, XVI, 191-192.

6. Ibid., 192-197.

which are scattered thickly over the land. This custom tends to reserve the more valuable land for cultivation, and (more in the past than at present) to afford protection against marauders.⁷

The introduction of cotton and sugar cane cultivation with their requirements of large amounts of capital and extensive development has given rise to a class of large land-holders. It is however quite a small group since there are less than ten thousand proprietors with holdings of fifty feddans or more.⁸ The larger estates employ day laborers and furnish dwellings for them, or rent the land to individuals and bind them by contract. Another class of proprietor goes shares with the workers, furnishing all the seed and equipment, and taking four-fifths of the harvest with exception of corn which is the main food of the worker. If the fellah furnishes his own equipment and seed the proprietor receives but 50% of the harvest.⁹

The soil of Egypt is uniform throughout the cultivated area, since it is all formed by the sediment

7. V. C. Finch, "Agriculture On The Nile Delta," Journal of Geography, XVI, 244.
8. Edwards, op. cit., 192.
9. Lozach and Hug, op. cit., 111

brought down by the Nile. It is typically, a heavy black, sticky clay, which bakes and cracks when exposed. It is difficult to work, but exceedingly fertile as shown by the fact that it has been continuously cropped for six thousand years.¹⁰ The black top soil is between five and twenty feet thick and is rich in calcium, iron, carbon, and alumina.¹¹

Under basin irrigation, the soil was renewed each year, but with the "white water" from the large storage reservoirs the losses in fertility, due to cropping are not made good. It is therefore necessary to fertilize the fields especially where such exhaustive crops as cotton are grown.

The small number of farm animals plus the fact that the dung is usually dried for fuel in the absence of any coal or wood, makes it necessary to use commercial fertilizers. Thus, fertilizers valued at L. E. 2,418,000 form an important item in the list of imports for 1920.¹²

10. Thos. H. Kearney, and Thos. H. Means, "Crops used in the Reclamation of Alkali Lands in Egypt," United States Department of Agriculture Yearbook, 1902, 576-577.
11. J. E. Guardia, "The Agricultural Nile Delta," Bulletin of the Geographic Society of Philadelphia, XXV, 165.
12. Almanac, op. cit., 171.

The demand for fertilizer is responsible also for the arches or shelters for wild pigeons which are frequently seen about the country. These houses are more elaborate than the ordinary peasant dwelling and are crowned with bells or silver pots. Some of them furnish roosting places for ten to twenty thousand pigeons. Each day an attendant comes and feeds the pigeons with millet or corn, and gathers the dung or guano which is in great demand for fruit and market gardens. Because of the expense of building a pigeon house only the more wealthy can afford them.¹³

Agriculture in Egypt is mainly hand work, a response to several geographic and economic factors. The small plots of land and the poverty of the fellah prohibit the extensive use of machinery. Also, deep plowing is harmful, especially on the Delta, for it stimulates the rise of salt to the surface by capillary action.¹⁴ Even on the large estates there is not much machinery except threshing machines, because of the lack of fuel and the inefficiency of mechanics.

Agricultural equipment therefore consists of

13. Lozach and Hug, op. cit., 151-153.

14. Lorin, op. cit., 151.

some device for raising irrigation waters, the hoe or "fass" which has a variety of uses, a plow, a scythe and a wooden pitchfork. Farm animals include one or two water buffalo to draw the wooden plow and furnish dairy products, and sometimes a donkey, several chickens, ducks, turkeys, or pigeons, all of which occupy the same dwelling as the fellah and his family.¹⁵

Land Utilization

Although only a very small percentage of the entire area of Egypt is cultivable, eighty-four percent of the cultivable area of six and a half million feddans is under cultivation.¹ Within the fertile area of the Delta and the valley, there is some variation in the percentage cultivated, but with the exception of the margins of the Delta there is no section with less than 70 percent of the area of the markaz² in crops. (Plate VI)³

The most intensive cultivation is in the central part of the Delta between and bordering the two bran-

15. Lozach and Hug. op. cit., 16, 111.

1. Almanac, op. cit., 275; and Annuaire Statistique, op. cit., 207.

2. A markaz is a political division corresponding to a county in the United States. (Plate III)

3. Data for this and succeeding crop maps are from Annuaire Statistique de L'Egypte for 1927-1928, 198-207.

ches of the stream where 90 to 95 percent of the land is utilized for crops. Percentages over 90 are also found in the markaz of Beni Suef and between Asyut and Sohag in the Nile valley. The areas of lowest utilization are the "barari" or swamp lands on the outward limits of the Delta, where poor drainage and alkaline soils are responsible for relatively barren landscape. Markazes including parts of these lands have less than fifty percent of their area in crops.

In comparing figures of the total area cultivated and the total area in crops it is noted that the area devoted to crops covers 157 percent of the land actually cultivated.⁴ This is explained by the twelve month growing season provided by perennial irrigation, which makes it possible to produce as many as three different crops on the same land during the course of a year.

"The various crops which characterize Egyptian agriculture are in some measure responses to conditions of climate and soil, though irrigation has done much to render them less directly dependent on their geographic environment."⁵

4. Annuaire Statistique, op. cit., 207.

5. Finch, op. cit., 243.

A large number of crops are grown in Egypt, but the main dependence of the people is on corn (maize), cotton, wheat, and forage crops (mainly bersim or Egyptian clover) which take up over three-fourths of the area devoted to crops. The corn and wheat serve as food crops for the people, the forage crops provide sustenance for the animals, and the cotton is the principal cash crop of the country.

Cotton is a relative newcomer on the Egyptian agricultural scene since it was first introduced in the first half of the nineteenth century, with the development of perennial irrigation, in order to provide a money crop. Its development has been very rapid however and it now occupies thirty percent of the total cultivated land, and nineteen percent of the entire crop area.

Its importance in the economic life of the country is even greater, however, for cotton and cotton seed make up over 90 percent of the exports of Egypt. In world production and export Egypt ranks third exceeded only by the United States and India.

This important position in the cotton world trade is chiefly due to the high quality of the cotton which possesses a long silky cream colored fiber. The staple averages one and a half inches in length and is suitable

for spinning into fine counts of yarn, which when woven into very fine cloth, resemble silk.⁹

Egypt's advantages as a cotton producer are the result of favorable geographic factors, including an excellent soil, an unsurpassed climate embracing a year-round growing season with continuous sunshine, and a fairly adequate supply of hard-working laborers.⁷

6. L. A. Wheeler, "International Trade in Cotton," United States Department of Commerce Trade Promotion Series #13, 22; and Louis Bader, "British Colonial Competition for the American Cotton Belt," Economic Geography, III, 217-218.
7. Wheeler, op. cit., 22.

CHAPTER IV
AGRICULTURAL REGIONS

The Delta

The simplest divisions of Agricultural Egypt would differentiate between the Delta and the valley of the Nile, for the former with its wider expanse of land, and a climate modified somewhat by proximity to the sea is a distinct unit. Although sixty per cent of the population inhabit the six mudiriyas¹ of the Delta, the agricultural territory is not so avidly disputed as in Upper Egypt, and on the margins especially there are expanses of uncultivated land. The central part between the two branches of the Nile, however, have the greatest density of population and the highest percentage of cultivated land in the en-

1. Mudiriyas are the larger political divisions of the country. (Plate II)

tire country. (Plates VI and VII)

The Delta is truly created land, for all the relief and most of the waterways, as well as the vegetation, are the product of man's labor. Banks of earth bound the canals and the stream branches, and with other larger artificial mounds furnish sites for the villages and individual settlements. During the flood the Delta thus presents the appearance of a large checker board, cut into squares and with groups of houses on animated hills.²

Central Delta: The mudiriyas of Minufiya and Qalyubia in the center of the Delta and the southern parts of the other Delta mudiriyas, (Plate II) have attained the highest stages of development of the entire area drained by the Nile. Here the ideal conditions of a fertile soil, warm summer, lack of excessive frost or violent winter winds, and level land which presents few obstacles to irrigation yet with enough relief to provide good drainage, very early made of this a region of intensive cereal culture which in more recent years has been supplemented by cotton, vegetables, and

2. Lorin, op. cit., 77.

fruits.³

The greatest production of cotton is in the Delta where three-fourths of the crop of the country is grown, and where it is the leading crop. (Plate VIII) The "Sakellaridis" variety is outstanding since it is most favored in Europe because of its long fiber.⁴

The entire crop is grown under irrigation and high yields are obtained, averaging twice that in the United States and four times as great as India.⁵ In recent years, however, there has been a decline in the yield, due to three factors: 1. the degeneration of the soil because of monoculture, the rise of the water table of the Delta, and an insufficient supply of good fertilizers; 2. the ravages of insect pests, principally the pink boll worm; and 3. agrarian troubles caused by political unrest.⁶

Planting of the cotton in both Upper and Lower Egypt takes place from February to April after the "chitwi" harvest. The crop is picked on the Delta during September and October while in Upper Egypt the

3. Lozach and Hug, op. cit., 10

4. Lorin, op. cit., 148.

5. V. C. Finch and O. E. Baker, "Geography of the World's Agriculture" United States Department of Agriculture Publication, 54.

6. Wheeler, op. cit., 22.

harvest begins in August and extends through October.⁷ The land is usually watered before plowing, a second time when the seed is planted, and again after twenty days. No water is applied then for a period of forty days after which irrigation waters are led on every fifteen days until the annual flood. During high water dikes permit the water to enter only at stated intervals.⁸

Corn or "dura Shami" is the basic cereal for the majority of the fellahin, being consumed in many different forms, and from boiled corn to thin flat cakes. For this reason it covers a wider area than any other crop, cotton not excepted, averaging about 38 percent of the cultivated land and 25 percent of the total area devoted to crops in the country. Only in the intensely cultivated central part of the Delta does cotton surpass it. The cultivation is entirely by means of irrigation and extends over all the Delta and most of the valley with the greatest production in the central part of the Delta, Faiyum, and as far south as Asyut. (Plate IX)

Corn serves a double purpose for in addition to providing human food, the leaves and stocks are fed to the farm animals. This crop is grown during both

7. Almanac, op. cit., 344-345.

8. Finch and Baker, op. cit., 51.

the "Nili" and "sefi" periods, although mainly during the former, with the seed being planted in July and August and harvested in October, November, and December.⁹

After corn, beans constitute the most important element in the fellahin diet, while the forage is eaten by the beasts of burden. Eight percent of the cultivated land of the country is given over to this common food plant.

Egypt was in ancient times the granary of the civilized world, and cereal agriculture is still important throughout the cultivated area. Wheat has its greatest development in the central part of the Delta where it is grown as a "chitwi" crop between the months of October and June. (Plate X) It enters into the diet of the fellah to a slight extent, but is more utilized as a bread food by the foreign and native population of the cities. Despite the large amount of land devoted to wheat growing, a small quantity of the cereal is imported to supplement the home supply.

Bersim or Egyptian clover is the principal forage crop of the country and is grown both to provide stock food and to restore the fertility of the soil. For

9. Lorin, op. cit., 136-137.

the latter reason it is often grown in rotation with cotton, being sown after the picking of the cotton in September, October, and November, and occupying the land as one of the "chitwi" crops until May or June. (Plate XI) In Qalyubiya and Minufiya it is grown mainly on the better elevations.

Stock raising is combined with cultivation in Minufiya in greater proportion than any other part of the country. The Minufiya cattle are the most beautiful in Egypt, and are suitable both for beef and draft purposes as well as providing leather.¹⁰ The industry is mainly developed by large proprietors with the encouragement of the public powers since the fellah is not much given to specialized animal raising.

Vegetables and fruits are grown around the larger cities, and the islands of the Nile above the Delta Barrage are famous for the excellence of their melons.¹¹

The better lands in the central Delta have been cultivated for centuries, and are therefore cut up into many small plots from one half up to five feddans. The large number of cities in this region likewise is evidence of the intensive agricultural development,

10. Lorin, op. cit., 83.

11. Ibid., 11.

for there is no other basis for their existence. In Minufiya, Minuf and Shibin el Kom, two cities of 20,000 inhabitants each, are separated by less than ten miles.¹²

Throughout the land of Egypt, three principal types of human groupings are to be found. The first is the large village or concentrated type of settlement, the second is the more scattered grouping, and the third is a combination of the first two. The large village is a survival of former times and is found in the central part of the Delta and in the older settled regions of the Nile Valley. The large areas of more recently reclaimed lands of the Delta margins, Faiyum, and the sugar lands of Upper Egypt are included in the second group. The mixed type is found where the lands of ancient culture are being transformed by newer methods of irrigation and cultivation.

In Lower Egypt, the provinces of Qalyubia and Minufiya (Plate II) illustrate best the concentrated grouping, and only rarely is an isolated dwelling seen in this area, and the rectangular fields extend in long bands.

12. Ibid., 83.

The grouping by large distinct villages is related both to past and present factors. During the long years when Egypt was subjected to Turkish rule, the land was in chaos, and the peasants were led to group themselves in villages for protection both from the Turks and the preying Beduins. Also since the land was regarded as a source of food and income by the Turks, all the fertile land had to yield a return and could not be used for dwellings. Grouping of the population in villages also made the collection of taxes a simpler task.

Factors which are important to-day include the danger of flood and the necessity of collective surveillance of the dikes and the prevalence of theft, due to the poverty of the people. This latter fact makes some sort of police system necessary, and the fields are more easily guarded at night if there are no dwellings on them.

The modern system of controlled irrigation does away with the flood danger and the lands levelled for the irrigation ditches offer no one site more desirable than another. Likewise the network of canals and the ability to reach water by shallow wells favors the dispersion of the houses. With the greater security offered by a stable government the need of

grouping for defence has also vanished.

Perennial irrigation with more intensive cultivation is also leading to dispersion in the more densely settled parts. With a system of crop rotation which utilizes the land during the entire year, it is an advantage to live on the land. The small holdings will perhaps be a check on any very great transformation in these regions, however, since all the land must be put in cultivation to eke out an existence.

The villages of the country differ only in detail, since they all exist as dwelling places for the agricultural workers, gathering places for the agricultural products, and distributing points for imports.

They are usually of irregular form, with the houses grouped together in a disorganized manner with no definite pattern or central nucleus. A characteristic feature is the circle of trees around the limits and which is the first thing which strikes the eye.

Minarets and cupolas of the Mohammedan Mosques, along with the twin towers of a Copt church stand boldly in silhouette above the dwellings and lend a picturesque air to the village. Its real function as a center of an agricultural region, however, is reflected in cotton storage warehouses, and the market

for grains, vegetables, cotton, and poultry. The storage tank for petroleum is common along the railroad or on the bank of the canal, and is evidence of the declining importance of the camel and donkey.

The gourn or public threshing area is ever present, as is the disease breeding pond or pool. Small shops of grocers, clothiers, carpenters, weavers, and basket makers cater to local needs. The hotel and cemetery complete the village pattern.

In addition to the countless number of villages and hamlets in the country, there are two large cities, Alexandria and Cairo, the combined population of which is almost twelve percent that of the entire country.¹³

Cairo, the capital of the country is located at the head of the Delta, and has been the site of a city since the oldest Egyptian antiquity. In addition to its importance as the center of government and all the governmental bureaus, it is commercially important as the chief distributing point for the large volume of trade in Upper Egypt.

Alexandria, likewise is of ancient origin, but owes its importance at present to being the port of entry for practically all of the imports of the coun-

13. Cairo 1,064,567; Alexandria 573,063 (1927).

try. It is somewhat handicapped because of lack of space for expansion and is beginning to spread out to the sand dune areas on the east to accomodate the rapidly increasing population.

The Rural Dwelling: The environmental background of a country is often reflected in the type of dwelling of the people, and it is "especially the rural house and the isolated house which best show the characteristics of this dependence upon the geographic environment."¹⁴

In Egypt, the house of the fellah has changed little through many centuries. It is still a rather squalid dwelling, constructed in large part of the earth which is the basis of the peasant's existence.¹⁵ But it serves well the purpose of the fellah for whom it is but a shelter for the night. In this land of continuous sunshine where the soil is never idle, the peasant spends every day of the year in the field returning only in the evening to the small mud hut in the village.

In addition to the absence of any great need for

14. Brunhes, op. cit., 75.

15. Lozach and Hug, op. cit., 23.

a shelter, the house of the fellah is related to the lack of any suitable material for construction. The country is practically without wood, and the cost of importation is prohibitive to the poor fellah. Also, there are few outcrops of rock in the Delta or valley of the Nile, where the thick bed of alluvium covers all the level land.

It is to the Nile mud then he turns for building material, which he finds quite satisfactory in many ways. It is easily obtained, molds readily, and dries fast. The most common dwelling is therefore of pressed earth or sun dried brick (Plate XII), and is composed of four bare walls with a hole in one side for a door. The form of the house is usually rectangular with variable dimensions. (Plate XIII) The houses average thirty feet in length, eighteen feet in width, and ten feet in height.¹⁶ The small size is a reflection of the intensive use of the land which is too valuable for crops to use as a site for a large dwelling. The low rainfall throughout the country however, permits of a flat roof which is usually composed of a mixture of durra straw and mud laid upon several wooden beams or a framework of

16. Lozach and Hug, op. cit., 27.

branches.

The flat roof serves another purpose besides that of covering the house. Either over the entire house, or a part of it, this roof forms a terrace or platform which is used as a granary, for the storage of fuel, tools and other articles, as a roosting place for poultry, and as a general catch-all. At times even it may provide living quarters for the family sheep or goat, and during the summer serve as a sleeping porch for the family. The refreshing coolness of the desert night can be enjoyed more fully here than in the poorly ventilated interior of the dwelling.

On the more substantial houses of baked brick, the roof may have a semi-cylindrical or cupola form. While this type is more solid, it is less desirable to the fellah since its smaller flat surface is less useful for storage purposes.

Because of the limited size of the house and the absence of any other buildings which are so common to American farms, the dwelling does not serve the fellah as a true homestead. The village is really a common farmstead, for it is in the commercial square or "gourn" where the harvest of grain is deposited and threshed, where the corn is husked, and where the reed-grass is dried. Each fellah may occupy a corner of

the "gourn" for a short period, and it is this public domain which takes the place of the farmyards of our agricultural workers.¹⁷

The house of pressed brick is by far the most common in the Delta, as well as throughout the country. For very obvious reasons, stone dwellings are practically unknown here except in a small area around Alexandria and along the southern borders adjacent to the deserts where limestone may be found.

Margins of the Delta: Travelling toward the margins of the Delta in any direction from Minufiya or Qalyubiya, one notices that the population decreases steadily, and finally ends in the "bararis" where people are rarely encountered.¹⁸ (Plate VII)

The mudiriyas of Sharqiya, Daqahliya, Gharbiya, and Beheira include within their borders portions of the more fertile lands as well as the swamp and lakes of the poorly drained "bararis". (Plate II) Thus, in these provinces, the percentage of land unfit for cultivation is respectively fifty-seven, twenty-three, forty-three, and forty-seven, in contrast to the more

17. Lozach and Hug, op. cit., 21, 31.

18. Lozach and Hug, op. cit., 4.

intensive utilization of the central Delta.¹⁹ (Plate VI)

In contrast to the small land holdings in Qalyubiya and Minufiya mudiriyyas, the marginal lands of the Delta are characterized by large estates of ten or twenty thousand feddans under the control of large proprietors. These large holdings have been settled quite recently, and are the result of gifts to state workers, or to anyone who would undertake the task of reclamation. Early attempts to improve these lands were unsuccessful and they were largely given over to hunting, fishing, or pasture. It is only since the beginning of the twentieth century that satisfactory results have been obtained.²⁰

The reclamation of the alkaline lands requires both time and money, since one to four years are required and an average of fifteen to thirty dollars per acre must be expended. All the water must be drained from the land and it must then be flooded and washed repeatedly with fresh water. Crops which are capable of growing in partly alkaline soils are planted during the reclamation period in order to help defray

19. Ibid., 41.

20. Lozach and Hug, op. cit., 47-48.

the great expense. Among these are several varieties of swamp grass which are used in making mats and baskets, rice, clover, and in the later periods, when the land is less than one percent alkaline, cotton may be planted.²¹

The "bararis" also differ from the lands of the central Delta in the agricultural crops grown. Cotton is relatively unimportant although the area under this crop is increasing with the drainage of more swamp land. (Plate VIII) Corn likewise has a lighter distribution but it maintains its position as chief food crop of the fellah. (Plate IX)

In the more sandy portions, barley is grown and this region is one of the principal barley growing areas in the country. (Plate XIV) The sandy coastal lands near Alexandria are especially important. This cereal is not desired as a food by the fellahin, and therefore most of the crop is exported to England to supply the breweries.²²

Rice is a crop especially suited to the swamp lands. However, because of its large water requirement it is grown only with the sanction of the govern-

21. Kearney and Means, op. cit., 573-588.

22. Lorin, op. cit., 30.

ment, and in years of low water may even be prohibited entirely. During the agricultural year 1926-1927 six percent of the cultivated land was sown to rice. The food is not used much locally and most of the crop is exported to Palestine, Syria, and Turkey.²³

The large production of forage crops consists of bersim, which is grown on the lands in process of reclamation, as well as wild swamp grass. (Plate XI) Sheep are pastured on the infertile lands, and wool is a minor article of export. Other domestic animals include water buffalo, donkeys, cattle, goats, camels, horses, and mules.²⁴ The most useful of all the animals to the fellah is the water buffalo, since it provides milk as well as serving as a beast of burden to draw the plow, tread out the grain, and operate the water wheels. It is found in large numbers in all the provinces from the Mediterranean to the southern limits of the country.

In the southern part of Sharkiya Mudiriya, which is in the eastern part of the Delta (Plate II) there is quite an animal industry. Asses and buffalo, as well as camels appear in numbers, while flocks of sheep

23. Ibid. 138-139.

24. Monthly Agricultural and Economic Statistics, Feb. 1927, 32-33.

led by Beduins are brought in from the dry steppes to the east. The Wadi Tumilat, along the southern border of the province, is the natural route of caravans toward the Isthmus of Suez.²⁵ The swamp lands along the border of Lake Menzaleh provide a means of recreation for week-end hunters of wild fowl.

Zagazig the leading city of the province is distinctly rural in its physiognomy, and each morning the roads leading to it are crowded with peasants bringing vegetables, fruit, and cages of fowl, for sale at the open air markets.²⁶ It also has a slightly modern air with a European quarter, Christian churches, modern administration buildings, cotton warehouses, and auto garages.

Daqahliya resembles Sharkiya in its general development, but in its northern extent around Damietta the province has a slightly different character, with rice as an important crop. Mansura, a city of sixty thousand, serves as the concentrating point for cotton gins. Its population is intelligent and awake to new agricultural ideas, and the city is therefore

25. Lorin, op. cit., 84.

26. Ibid., 85.

also the intellectual center of Lower Egypt.²⁷

Gharbiya occupies the lower part of the region between the Damietta and Rosetta branches. Its southern portion around the city of Tanta is a region of variable culture with the greatest emphasis on cotton. In the "bararis" of the north are a number of great domains, including state-owned agricultural experiment farms. The government is making a valiant effort to educate the fellah in the efficient utilization of these marginal lands.²⁸

Beheira the western province of the Delta is a very level plain area. Damon Hur, its chief city with 48,000 inhabitants, has grown, under recent stimulus, to an important regional center with grain mills, cotton gins, and cotton warehouses.²⁹

The rural dwellings, in the outer margins of the Delta, also differ from those in the more populous interior region. Here burned brick is found almost exclusively in certain areas, for example in the north of the Delta near the mouths of the two Nile branches. (Plate XII) Here more humid conditions make a more substantial material a necessity. Around the larger

27. Ibid., 87-88.

28. Ibid., 89-90

29. Ibid., 91.

cities one also finds houses of burned brick, where they usually typify greater wealth of the inhabitants. Near the smaller villages burned brick houses share the landscape with those of pressed brick for a like reason.

On the large estates also a different type of dwelling is found. Just as the work here is carried out scientifically and on a large scale, so the buildings have a more substantial and modern air than the mud huts of the average fellahin. They are large rectangular buildings of red brick and contain a number of well ventilated rooms. Between ten and thirty families occupy one building, each living in two or three rooms. In contrast to the usual custom of having the animals in the same building, a narrow court serves as a stable and poultry house. The "ezbah" is located near the fields of cultivation, and not far from it is the handsomely adorned dwelling of the overseer.³⁰

The extensive cultivation and large outlay of capital with skillful management leads to the grouping of the workers on the lands which they cultivate.

A small number of Beduins or nomads still live in tents which are usually seen in groups of four of

30. Lozach and Hug, op. cit., 40, 49.

five. With the changing seasons the tents are differently oriented, thus in summer the south, east, and west sides are closed against the sun, and the opening is to the north. In winter, the strong north and west winds must be kept out and the Beduin enters therefore at the east or south.³¹ The typical nomad is fast disappearing, since the railroad and automobile have destroyed the trade of the camel trains.

The Nile Valley

Middle Egypt: Above Cairo the cultivated area is confined between limestone or sandstone bluffs 130 to 150 feet high which rise abruptly from the level, fertile, alluvial valley bottom. Wherever the valley walls are far enough apart to permit cultivation on the flood plain there is intensive agricultural development and high population densities.

Topographic and climatic differences lead to a division of the valley into Middle and Upper Egypt, with the bend of Qena the dividing line. The middle region then includes the mudiriyas of Giza, Beni Suef, Minya, Asyut, and Girga, and the markazes of Nag Hammadi and Dishna of Qena mudiriya. (Plates II and III)

31. Ibid., 74.

The remaining markazes of Qena, and the mudiriya of Aswan are included in the region of Upper Egypt.

Above Qena the Nile flows in a gorge-like valley which is in places less than one mile in width. Here the steep, bare sandstone bluffs rise precipitously from the narrow cultivated plain.

Below the bend of Qena the aspect changes, and the borders spread until near Nag Hammadi the valley has a width of nine or ten miles, and at Beni Suef attains a maximum east-west width of fifteen miles.

Variations in width are caused by the different degrees of resistance of the confining rocks of the walls. Practically all the cultivated land of Middle Egypt lies on the west side of the stream since the Nile flows for most of this distance along the east side of the valley.

Although the entire valley from Aswan to Cairo experiences the same hot, burning sun with cloudless skies for the greater part of the year, yet there are slight differences in the climate between north and south. Middle Egypt, at least its northern portion, reflects the Mediterranean influence, with occasional winter cyclonic storms, drawn into the partial vacuum of the Nile opening, which cause greater humidity and occasional cold spells. Upper Egypt, on the other

hand, has stimulating continental conditions with great daily and seasonal ranges of temperature, and with the sun attaining the fullness of its strength through the clear atmosphere.¹

The same crops grown in the central part of the Delta, and the same primitive methods of tillage, are to be found along the Nile in Middle Egypt. Cotton remains the leading cash crop although its cultivated area is less than that of corn. South of Cairo the cotton production is fairly heavy as far south as Asyut but decreases above this point until it practically disappears above Qena. More rustic varieties, the "Ashmuni" and "Zagora" share the cultivated surface in the valley.² The relatively recent establishment of a sugar factory and of two irrigation societies at Nag Hammadi is about to transform this entire district. The sugar industry is equipped with the latest type machinery and intelligent management which leads to better and more uniform methods of cultivation by the farmers who grow the sugar cane consumed by the mills.³

1. Lozach and Hug, op. cit., 62.
2. Lorin, op. cit., 148.
3. Ibid. 48-49

Bersim is fairly abundant from the borders of the Mediterranean to Qena. Above this point bersim, like cotton, is only occasionally grown. (Plate XI)

Despite the fact that limestone cliffs border the alluvial flood plain, stone is of little importance in the ordinary dwelling, mainly because of the expense of cutting the stone and transporting it to the building site. Some buildings are however constructed of limestone when transportation is easy and relatively cheap.⁴

The large village type of population grouping and the large estates or "ezbahs" are found in the valley as well as on the Delta. In addition, other villages are arranged en echelon along the borders of the desert at the outer limits of cultivation, above the flood level.

The regions of scattered populations consist of the settlements of nomads and the large domanial estates. With the development of the public peace, and the reclaiming of new lands, plus the fact that the newer and better methods of transportation have destroyed their transport trade, the Beduins have gradually developed a sedentary type of existence.

4. Lozach and Hug, op. cit., 25.

The site of their hamlet is usually at the confines of the desert near the margins of the flood plain, where they form groups of four or five Arab tents or rude cabins and gain a living from both cultivating and herding.

Upper Egypt: A little above Aswan the Nile emerges from the granite formations which confine it to a narrow channel, and begins to erode through the Nubian sandstone. Though the valley here is much narrower than in Middle Egypt, it expands in several places to wide basins which are the centers of cultivation.

Such a basin is Kom Ombo, one of the newer developed regions of large estates devoted to the growing of sugar cane. The region to-day with its 35,000 inhabitants and its modern agricultural and refining equipment is in striking contrast to its aspect Twenty-five or thirty years ago when it was still a part of the desert.⁵

Sugar cane is the second cash crop of Egypt, and like cotton was not grown much before the nineteenth century, since it was dependent on the development of perennial irrigation to provide water during the sum-

5. Lorin, op. cit., 40.

mer months. Since sugar cane requires a warm climate throughout its long growing season, the largest production is in Upper Egypt, above Qena. It is grown on large modernly equipped plantations and most of the refining and milling is done near the place of production. For this reason the crop is in one sense of greater value to the country than cotton which is only ginned in Egypt, and exported for further processing. The home production of sugar does not entirely meet the demand, and some must be imported from Java.⁶

Sorghum is less restrictive in its soil and moisture requirements than the other cereals, and therefore is grown on the less desirable lands, principally in Upper Egypt, where a high production of sorghum is usually offset by a small area devoted to corn. It is one of the food crops of the fellahin by whom it is called the "dura Nili". About five percent of the cultivated land is devoted to sorghum, practically all of which is grown under basin irrigation.

Barley and wheat are also grown above Qena, mainly under basin irrigation during the "chitwi" period. Upper Egypt is one of the principal centers of the

6. Ibid., 145.

barley crop. (Plate XIV) Corn and cotton are almost lacking in the agricultural pattern in this region (Plates VIII and IX), and bersim, which in Middle Egypt and the Delta fits into the rotation with cotton, is likewise of little importance. (Plate IX)

In this region of basin irrigation there is need for the worker to be in the field only to sow and harvest the crop, and there is therefore no necessity for isolated dwellings. An adjustment to this type of agriculture appears in the migration from the villages to the agricultural plots each winter and spring. The fellah erects a temporary hut of straw to shelter him during the time he is cultivating his crop. By remaining near his work he effects a saving of time and transportation which compensates for abandoning the permanent house of the village, to which he returns after the harvest and during the period when the floods inundate the fields.⁷

The permanent dwelling is similar to that in other parts of the country, although the more arid conditions here are reflected in the absence of roofs on some of the houses.

The bend of Qena marks the point where the Nile

7. Lozach and Hug, op. cit., 76-78.

is nearest to the Red Sea and for this reason the city of Qena was the head of caravan routes and is now the terminal for auto roads from Kosseir and other ports on the Red Sea. Qena has appopulation of 30,000 and in addition to its commercial and trading importance, is famous for its pottery.⁵ Aswan, the site of the famous Aswan Dam and therefore a modern city of 11,000 inhabitants, is the most southerly city of Egypt.

Faiyum: Faiyum lies in a great depression of the Libyan Desert, just west of the province of Beni Suef. Although it is not a part of the Nile Valley, and is separated from it by a high gravelly ridge, the Faiyum depends upon the stream for its life giving waters which reach the depression through the Bahr Yusef.

Faiyum and the Valley do not resemble each other, in fact there are only contrasts in relief and hydrography, with dependent human adjustments, between the two regions.⁹ The former is an oasis, a land of waving palm trees and fertile fields, but by a network of irrigation ditches, and dotted with flourishing

8. Lorin, op. cit., 47-48.

9. Lozach and Hug, op. cit., 76-78.

towns and villages.¹⁰ Here everything is more artistic and better cared for than in Nilotic Egypt. Though its houses are of the same type, the arrangement and details of its walls of pressed earth show a more artistic taste.¹¹

In the northwestern part of the depression is Birket Qarun the only true lake in Egypt. At present it has a surface area of about eighty square miles and is the remnant of a greater lake which once covered all of Faiyum. This larger lake is believed to have been caused by the Nile cutting through the narrow ridge which separated the valley and depression in late Pleistocene times. The water which entered through the opening filled the depression to form ancient Lake Moeris. The silt-laden waters of the Nile also deposited their load to form a fanlike alluvial deposit over the lake floor, sloping slightly to the present lake which is about 75 feet below sea level.¹²

The drainage of Faiyum is therefore to the northwest through the two deep natural water courses of Wadi Tamiya on the east and Wadi Nazla on the west as

10. A. E. R. Boak, "Irrigation and Population in the Faiyum, the Garden of Egypt," Geographical Review, XVI, 353.
11. Brunhes, op. cit., 108.
12. Boak, op. cit., 356.

well as by the network of irrigation ditches to which the region owes its bejewelled verdantness.¹³ Despite the regular supply of water added to Birket Qarun the lake is shrinking steadily since evaporation consumes more water than is brought in through these channels. The waters of the lake are therefore brackish.¹⁴

The modern development of Faiyum is due largely to the period of British control when the elaborate system of irrigation was built which resulted in an expansion of cultivation and an increase in population from 200,967 in 1882 to 554,040 in 1927.¹⁵ The present cultivated area of 669 square miles is being increased by the reclamation and irrigation of the desert borders in the northeast and northwest sections of the depression. Because the plain is so saturated with seepage, it is possible to obtain water for cultivation by digging shallow wells to supplement the water from the ditches.¹⁶

Because the Faiyum was developed on a modern scale only quite recently, the land is not as intensely utilized as in Middle Egypt and the Delta. In

13. Lorin, op. cit., 59.

14. Boak, op. cit., 356.

15. Almanac, op. cit., 56; Boak, op. cit., 364.

16. Lorin, op. cit., 59.

addition to growing practically all the crops cultivated in other parts of the country, Faiyum is especially famous for its orchards. Fruits grown here as well as in other regions include grapes, oranges, lemons, pomegranates, figs, apricots, peaches, bananas, mulberries, and olives. The date palm is a characteristic landscape feature throughout the irrigated area, because the tree finds ideal conditions for its growth, with "its feet in the water and its head in the sun."¹⁷ All the tree crops require constant attention to guard against ravages by insect pests.

17. Ibid., 140.

CHAPTER V

THE DESERT REGIONS

The ninety-seven percent of the land of Egypt which is not included in the valley and Delta of the Nile supports but one percent of the population because it consists of three incorrigible desert areas, namely the Libyan or West Desert, the Arabian or East Desert, and the Peninsula of Sinai.

The Libyan Desert

To the west of the Nile stretches the extensive Libyan Desert, a stony plateau varying between 600 and 1000 feet above the level of the valley. Limestone is the chief underlying rock in the northern portion, while sandstone predominates in the south. A unique aspect is given to the desert by a line of sand dunes which extends for over 300 miles in a northeast-southwest direction, and which makes it

one of the most inhospitable regions of the world.¹

The deserts with their uninhabited wastes, devoid of all vegetation except the coarse spiny desert shrubs, furnish concrete examples of the fate of the entire land of Egypt were there^{is} no Nile to provide sustenance to plants and man alike.

The monotony of rock covered plateaus, or barren sand dunes is broken only by the several depressions in which wells and springs furnish water in sufficient quantity for the irrigation of small areas.

These depressions constitute the oases of Kharga, Dakhla, Farafra, Bahariya, and Siwa, which have been centers of settlement for many centuries. (Plate V) The majority of the oases are now joined to the Nile valley by automobile roads, and there is also a railroad line to connect Kharga oasis.

These oases have higher temperatures than the Nile valley, and a less healthy climate in general mainly because the winds blow into this area from the south and southwest rather than from the north and northwest. "The lusciousness of the Siwa dates itself pro-

1. Annuaire Statistique, op. cit., 3.
2. Hogarth, op. cit., 117.

claims that the region which bears them is a feverish swamp basking under the sub-tropical sun; for of such sort are the most famous palm gardens of the east."²

Other crops of the oases include olives, figs, wheat, and barley, while goats, sheep, and camels subsist on the meager vegetation. Dakhla the most populous of the oases has a population of about twenty thousand.

In the northern part of the Libyan Desert there are several depressions with floors below sea level. Included in this group are the Siwa Oasis, Faiyum, Wadi Natroun, and the Qattara Depression. The latter is a vast area of almost 7000 square miles lying about 435 feet below the level of the Mediterranean. At the present time it is being studied as a possible site for water power development by diversion of the waters from the sea, for a good source of power is a vital need in this land of no coal.³

Wadi Natroun is located just west of the Delta within easy communication distance of both Cairo and Alexandria. Its only inhabitants are connected with the exploitation of the salt and carbonate of soda. In ancient times the soda was used in preserving mum-

3. Annuaire Statistique, op. cit., 3.

mies, but it is now employed in the manufacture of soap.⁴

The coast of the Mediterranean west of Alexandria presents a different aspect than the rest of the Libyan Desert, because of the slight amount of rain which falls regularly each winter. A small group of settlements therefore is found along the shore, which forms a center of habitation for the pastoral Beduins who utilize the year-round pastures of the wadis in the vicinity. They are also stopping points on the shore route between Egypt and Cyrenaica. The development of an animal industry here in close proximity to the populous part of Egypt which has few cattle, is very desirable to the economic life of the nation.⁵

The Arabian Desert

The Arabian or East Desert presents much more diversity than the area to the west of the Nile. Here the principal physiographic feature is a chain of mountains composed of igneous and metamorphic rocks, which extends parallel with the Red Sea from the northwest of Abyssinia to near Suez, and appears also in

4. Lorin, op. cit., 99

5. Ibid., 98.

the Peninsula of Sinai. The southern portion is the most rugged and descends to the Nile by a series of wadis filled with the debris from the highlands.⁶

The arrangement of the valleys and mountains is more regular in the north, where the plateaus of sandstone and limestone are cut by valleys of great length and depth, and at times support a scattered vegetation.⁷ There is practically no settlement on the sterile plateau immediately east of the Nile and it is crossed only by occasional caravans.

Mining is relatively unimportant in Egypt, for less than one five-hundredth of the population is engaged in mineral extraction. The region about the Gulf of Suez and along the coast of the Red Sea offers the best opportunities for the mining industry. Within this area, mainly around Gimseh Bay and near Gebel Abu Durba on the west coast of the Peninsula of Sinai, petroleum is being produced, and in 1930 285,000 tons of Egyptian oil were processed in the large refinery at Suez.⁸ Manganese ores are also found in the Peninsula of Sinai in the same region, about twenty-

6. Hugh Robert Mill, editor, The International Geography, 929.
7. Annuaire Statistique, op. cit., 4.
8. Almanac, op. cit., 193.

five miles inland from the coast. In 1923 132,400 tons of high grade ore were extracted, most of which was exported to Europe to be used in the iron and steel industry. (Plate XV)

Phosphate is found at various places in the Eastern Desert as well as in the oases of the Libyan Desert. Centers of production are around Kosseir and Safaga in the Red Sea, and at Sibaiya near Isna, and the Oases of Dakhla and Kharga, in the Libyan Desert. Production reaches as high as 300,000 tons per year most of which is exported for the manufacture of superphosphate to be used for fertilizer. Some is prepared locally and sold for manuring purposes within the country. Workable areas are restricted to regions with good transport facilities.

Small deposits of gold, nickel, lead, zinc, peridotite, and talc are also known, but production is not encouraged because of the small amounts and the location in remote desert regions.⁹

In addition to the centers of habitation related to mineral resources in the Eastern Desert, the summer monsoonal rain on the hill slopes facing the sea also supports a pastoral industry, and even gives rise to

9. Annuaire Statistique, op. cit., 11.

arboreal vegetation which was of great importance to early boat builders.¹⁰

The Peninsula of Sinai

The Peninsula of Sinai, although politically a part of Egypt is in reality a prolongation of the Arabian desert and Asia. It is for the most part unproductive, and the fifteen thousand people of the province are nomads, or are engaged in the exploitation of the petroleum and manganese deposits.

The Isthmus of Suez which connects Sinai with Egypt proper is important because of the Suez Canal which has been cut through it. Port Said on the north and Suez on the south are functionally dependent upon the canal. The canal zone is under British administration.

10. Lorin, op. cit., 103-105.

CHAPTER VI
MANUFACTURING, TRANSPORTATION, AND FOREIGN TRADE

Manufacturing

The Manufacturing industries rank second to agriculture in importance, but they are a poor second, since less than five percent of the workers of the country are connected with manufacturing enterprises.

Obviously, the absence of deposits of coal and iron does not permit of the development of the heavier type of industries. Manufacturing in Egypt is almost exclusively dependent upon the raw materials supplied by the country, and these are processed largely to supply home needs.

The spinning and weaving industries employ over eighty thousand workers which constitutes the largest single group. Besides the small scale native weaving there are large filatures in various parts of the

country for the spinning and weaving of silk, cotton, wool, and linen cloths. Some of the outstanding cities, with this function are Mahalla el Kubra, Cairo, Alexandria, Abu Tig, and Damietta. (Plate III)

The weaving of cotton is of greatest importance, and large quantities of the lower grade cottons of the country are utilized in the manufacture of yarn and cheap white and brown calicoes for the domestic demands.

The woolen textile industry also uses native supplies. A rug making industry dependent on this raw material is making progress with its main centers at Cairo, Minya, Asyut, and Nag Hammadi. The dyeing trade, associated with the weaving, has grown up in almost every weaving village.

The tanning and processing of leather is also dependent upon hides produced within the country despite the fact that some hides are exported. In addition to the local centers employing ancient methods, there are larger plants at Cairo and Alexandria.

The introduction of sugar cane has given rise to the refining and manufacture of sugar, and the entire home production is now processed in Egyptian plants. The industry of the country is centered under one management and 10,000 tons of sugar, and 50,000 tons of molasses are produced per year.

The alluvial sands and clays of the Nile valley are employed in the manufacture of pottery, brick, and tile, and despite the fact that the majority of the fellahin still use mud bricks in home construction there is a large domestic demand for the products for the better class houses and for city buildings.

The ginning of cotton and the milling of flour must not be omitted for these industries are common in most of the villages of the country, and again reflect the native resources.

Oil presses are found both in Lower and Upper Egypt and in addition to cotton and linseed, lettuce, olive, oats, and sesame are pressed for their oils. Like the majority of the industries of the country most of the pressing is still done with primitive methods although modern factories have been established at Alexandria and Tanta.

Egyptian cigarettes are widely known throughout the world, but except for the fact that they are manufactured within Egypt, the name is a misnomer, since they are made by foreigners, from imported tobaccos. Because it decreases the fertility of the soil so rapidly, the growth of tobacco since 1890 has been prohibited by governmental decree.

Another industry dependent upon imported mater-

ial is that devoted to the manufacture of copper utensils. Most of the household utensils are made of this metal, and there is consequently a ready market for the product within the country.

Other minor industries include brewing, furniture manufacturing, button making, rice milling, paper making, distilling of liquors, and the refining of petroleum and the manufacture of soap which have already been mentioned in connection with natural resources.

Although the government is making efforts to develop the industries of the country by means of education and protective tariff, the majority of the manufacturing is still of the local handicraft type with ancient methods of work.

Transportation

Transportation in Egypt is provided by the Nile River, the larger irrigation canals, railroads, and roads. The Nile is of less importance in this respect than might be expected, however, for because of the rapids and dams, as well as the variation in water level, it is only open to navigation for part of the year. During open periods, however, it is a very satisfactory and cheap method of transportation, since

the boats can float down stream with the current, and sail upstream, propelled by the prevailing winds from the Mediterranean Sea.

The larger canals of both Lower and Upper Egypt are open to navigation practically all the year and furnish a good means of transportation between the various villages.

The alluvial soil of the Delta and the Nile Valley, and the periodic flooding of the land, are not conducive to the building of roads. There are, however, over four thousand miles of highway in the country, about 225 of which are macadamized. Because of the infrequent rainfall even the unpaved roads are almost continually serviceable. Automobile roads now join the main oases to the Nile Valley.

Previous to 1850 there were no railroads within the country but under French and British influence rapid development of transportation lines took place, with the greatest accomplishments between 1863 and 1879. With the completion of the line from Cairo to the First Cataract near Aswan in 1926, there are now 2065 miles of state owned roads in the country, in addition to 850 miles under private management.

The main lines connect
Cairo and Alexandria,
Cairo and Port Said, and Cairo and Shellal, with se-

condary branches joining the principal villages in Lower and Upper Egypt.¹

The railroads have done much in the modern development of the country by breaking down the system of isolation, and by mixing the population.

Foreign Trade

The foreign trade of Egypt during 1930 had a total value of L. E. 80,394,000,² which included imports of L. E. 47,488,000, exports of L. E. 31,942,000, and re-exports of L. E. 964,000. This represented a decrease in trade from the 1929 figure which totalled L. E. 110,062,000, explainable by the world-wide business depression.³

With so little manufacturing in the country, it is natural for manufactured products to compose over sixty percent of the imports. (Plate XVI) Within this group, clothing and textiles are outstanding followed by food and iron products.

The influence of the absence of any coal in the country is seen in the large percentage of fuel in

1. *Annuaire Statistique*, *op. cit.*, 8.
2. The Egyptian pound (L. E.) is equivalent to \$4.9431.
3. *Almanac*, *op. cit.*, 170.

the list of imports. Likewise the dearth of forests is reflected in the relative importance of building material imports.

Imports for tobacco are relatively important both because of the large consumption within the country and for the manufacture of cigarettes which are exported.

Great Britain and her possessions supply the largest amount of imports and in 1930 furnished almost twenty-nine percent of the total. (Plate XVII) Textiles are outstanding in the products received from the United Kingdom with coal, iron products, and building materials also important. Wheat and flour are furnished by Australia and New Zealand to supplement the home supply of cereals.

France supplies between nine and ten percent of the imports, and textiles, iron, and iron machinery are the leading items. Italy furnishes the same class of products and almost in the same amount.

Iron and iron manufactures, fuel, textiles and building materials are also received from Germany, the United States, and Belgium. Germany supplies fertilizer as does Chile with shipments of nitrate of soda.

Tobacco is obtained from Japan, Russia, and

Turkey, and wood from Turkey and Rumania. Minor imports are received from Czechoslovakia, Greece, Palestine, Syria, Austria, Switzerland, Holland, and Sweden, composed mainly of foods and manufactured products.

The dominating importance of cotton in the economic life of the people is strikingly shown in the value of total exports. (Plate XVI) Shipments of raw cotton and its seed by-products comprise over ninety percent of the entire amount of exports. This dependence of the country upon one cash crop has been viewed with alarm by economists for some time and its disastrous effect is noted in the present crisis in the country because of the depressed price of cotton.

Compared with cotton, the other exports are rather insignificant. In years of ample water supply when a large crop of rice is obtained it forms a notable percentage of the value of shipments from the country.

Onions are supplied to the European market in addition to filling an important place in the diet of the fellah. Early truck crops grown around the larger cities, also are exported in small quantities to European markets, and indicate the opportunity for future development of this industry. Benzine in small amounts is exported, practically all from the

refinery at Suez. The "Egyptian" cigarette has sufficient world renown to hold an appreciable position in the list of exports.

The United Kingdom and possessions hold first place as purchasers of Egyptian goods as well as sellers to Egypt, and almost forty percent of the value of shipments from Egypt are destined for ports in the British Empire. (Plate XVII) France, Germany, Italy, United States, and Russia are also large importers of Egyptian goods, each taking more than five percent of the total value. Smaller amounts are sent to Switzerland, Spain, Japan, and Czechoslovakia.

Alexandria, Port Said, and Suez are the principal ports of Egypt, with Alexandria handling about ninety percent of the foreign trade.

In connection with economic resources of Egypt, the tourist industry and the ancient monuments and records must not be neglected, for they are the sources of much wealth pouring into the country. These are again a reflection of the conditions of climate and topography. The early development of a high culture is related to favorable conditions which permitted the development of a sedentary agriculture as well as furnishing protection from less advanced peoples. The arid climate has been of importance in

the preservation of ancient monuments and records which would have been impossible in a more humid region.⁴

4. Data for this chapter is from The Egyptian Government Almanac for 1932, 170-176.

SUMMARY

In a study of the geography of Egypt, the one fact which stands out more than any other is the constant influence of the natural environment on the lives of the people. It was the Nile with its fertile valley and life-giving waters which made it possible for early civilizations to develop here, and it is still the Nile which is responsible for large groupings of population in an otherwise barren land.

With modern science and engineering, however, the fellah is no longer forced to adapt himself so completely to the whims of his great benefactor, but is able by intelligent control and direction to lead it to serve him more efficiently and profitably and to enable him thus to arrive at larger geographic relations and responses.

That the people of the Nile have not yet ceased their struggle for even greater control over the wa-

ters of the great river is evident from the proposed plan to harness the waters of Lake Tana near the source of the Blue Nile in the mountains of Abyssinia. This project, which is under consideration by the authorities of Egypt, the Anglo-Egyptian Sudan, and Abyssinia, would increase the supply of water, which reaches Egypt during the dry season, to almost twice that which is stored in the Aswan reservoir.¹

There is a real need in the land of Egypt for an extension of the agricultural resources because of the rapidly increasing population. This fact is augmented by the incessant subdividing of the already small plots of land to conform with Mohammedan law, until it is almost impossible for the fellah to gain even a meager subsistence from his land.

Another problem which must be solved in the not too distant future, is that of monoculture, with the very existence of the country at present dependent upon one cash crop.

The future development and prosperity of the country is thus dependent not upon the natural factors of land and the stream, but upon man and his intelligent

1. "Parley Opens on Ethiopia's Huge Dam Plan,"
Christian Science Monitor, January 16, 1933.

utilization of the bounties bestowed upon him by the
faithful Nile.

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