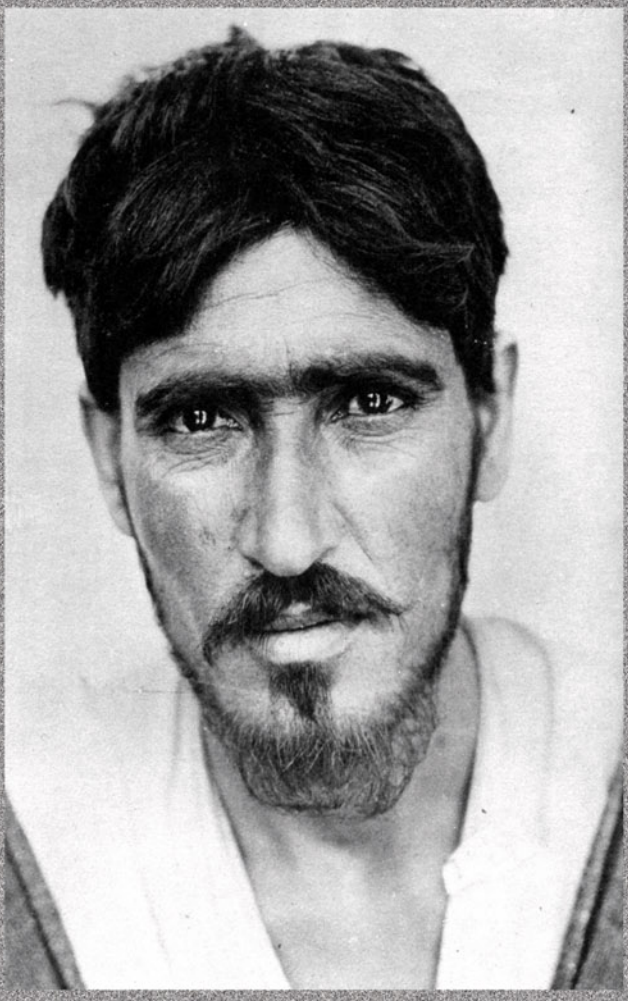
The Anthropology of IRAQ

The Upper Euphrates



HENRY FIELD

The Anthropology of IRAQ

Informed by the author's extensive fieldwork in Iraq, this work is an invaluable resource for all those interested in the anthropology of Iraq. Providing the reader first with important background information about the geography and climate of Iraq, the author goes on to give a detailed account of its peoples, presenting information on their physical characteristics and health in clear prose as well as in numerous readable tables. The work is supplemented by appendices which describe Iraq's mammals, insects and plants.

Henry Field was Curator of Physical Anthropology at the Field Museum of Natural History, Chicago.

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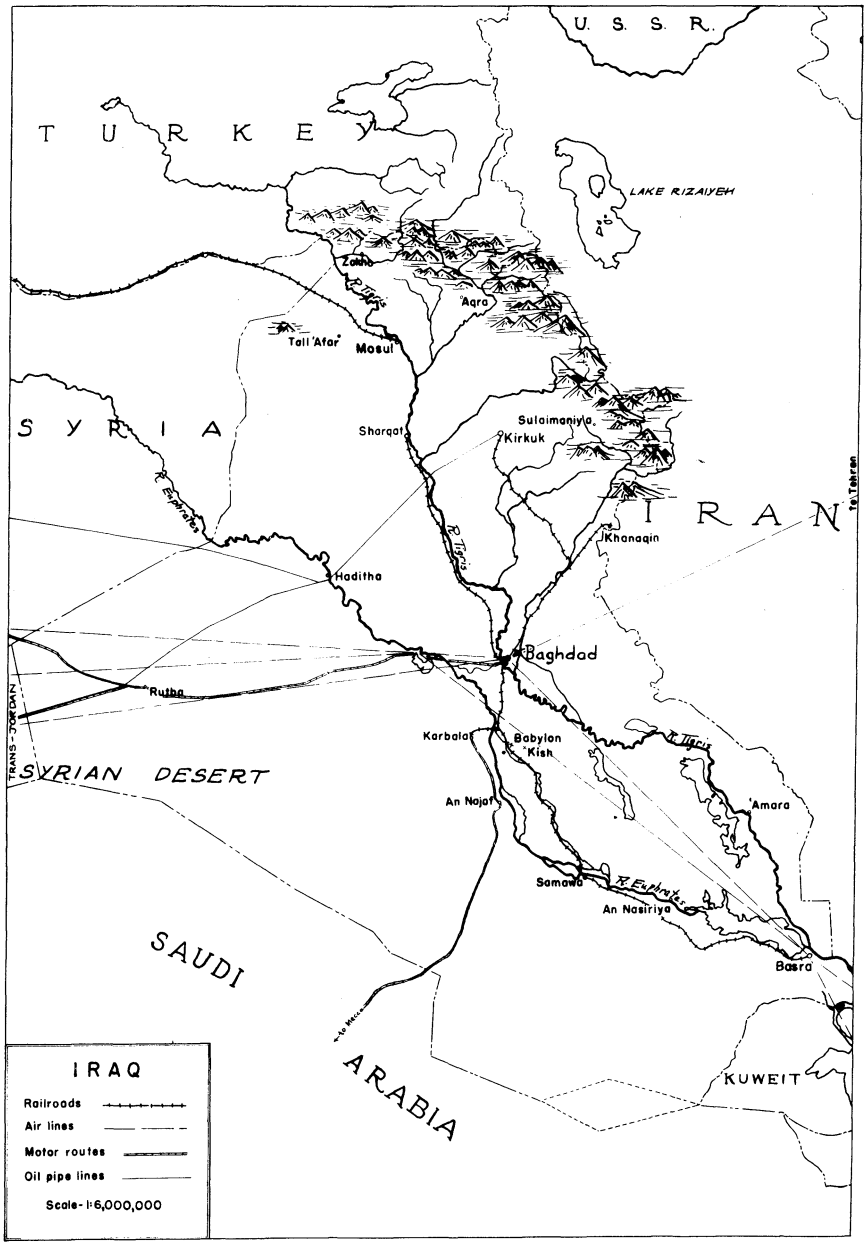
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The Anthropology of IRAQ

The Upper Euphrates

HENRY FIELD

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PREFACE

In December, 1925, Dr. L. H. Dudley Buxton, Reader in Physical Anthropology at Oxford, accompanied me to Iraq, where the Field Museum–Oxford University Joint Expedition was excavating the ancient city of Kish, which lies eight miles due east of Babylon. Our trip was financed by my great-uncle, Mr. Barbour Lathrop, a firm believer in the benefits of practical experience. During our brief visit to the Expedition we were enrolled by Professor Stephen Langdon as volunteer physical anthropologists.

At that time excavations were in progress in the Babylonian levels of mound "W" and on the southern flank of the great temple complex dedicated to Harsagkalemma. Dr. Buxton instructed me in the technique of excavating human skeletal remains. Several questions arose in relation to the physical appearance of these ancient dwellers in Mesopotamia. Were they similar to, or different from, the modern Arabs of the Kish area? Had the basic population of Mesopotamia, now Iraq, remained unchanged during the past six thousand years of recorded history? In addition, how were the modern inhabitants of Iraq related to their neighbors and, in general, to the peoples of Asia, Africa, and Europe?

Since no anthropometric data from this area were in existence Dr. Buxton and I decided to measure a small series of our Kish workmen. Shortly afterward, we obtained permission from the Officer Commanding the Iraq Army Camp at Hilla to measure some of the soldiers. Thus, Dr. Buxton examined Iraq Army soldiers, while I acted as recorder. These anthropometric data, published by Buxton and Rice (see pp. 81–82), revealed the numerical inadequacy of our samples.

On January 10, 1926, I accompanied Professor Langdon to Jemdet Nasr, which lies in the desert about eighteen miles northeast of Kish. Early in the afternoon we unearthed four complete painted vessels, and several pictographic tablets in linear script (Field, 1926). No human remains were found.

During the season 1927–28 I was attached to the Kish Expedition as physical anthropologist. In March, during excavations at Jemdet Nasr we found several human skeletons (Field, 1932c). At the close of the season I examined 398 Arabs of the Kish area, 231 Iraq Soldiers at Hilla Camp, and 38 Ba'ij Beduins (see pp. 76–89; also Field, 1935a and 1939b).

The results obtained seemed to warrant a continuation of the anthropometric survey of Iraq. Dr. Berthold Laufer, my former chief, approved this project and on April 1, 1934, the Field Museum Anthropological Expedition to the Near East, under my leadership, began work in Baghdad. The Expedition was financed by Mr. Marshall Field. The first four and one-half months of the anthropometric survey were spent in Iraq, where, in addition to our anthropological work, we collected botanical, geological, and zoological specimens. Similar researches were conducted in Iran (Field, 1939b) and among the North Ossetes and Yezidis of the Caucasus, U.S.S.R.

Mr. Richard A. Martin, now Curator of Near Eastern Archaeology at Field Museum, was in charge of collecting zoological specimens (see China; Uvarov; and Schmidt, 1939) and also accompanied me throughout the Expedition in the capacity of photographer. The excellence of the photographs illustrating this publication is entirely due to his technical skill and patience in dealing with these Arabs and Beduins.

Mr. S. Y. Showket, of Basra, acted as interpreter. His knowledge of English, Arabic, Kurdish, Persian, and Chaldean, combined with his finesse in dealing with recalcitrant subjects, made him an invaluable member of the Expedition.

Dr. Walter P. Kennedy, of the Royal College of Medicine in Baghdad, examined the Dulaim and Anaiza blood samples (Field, 1935a, p. 460).

Yusuf Lazar, an Assyrian, was in charge of collecting herbarium specimens and insects (see Uvarov; China).

Technical questions regarding anthropometric measurements and observations were discussed at Harvard with Dr. E. A. Hooton, and in England with Sir Arthur Keith and Dr. L. H. Dudley Buxton.[1]

Prior to our leaving the United States, Mr. Wallace Murray, Chief of the Division of Near Eastern Affairs in the Department of State, had very kindly notified Mr. Paul S. Knabenshue, United States Minister in Baghdad, of our scientific mission. At Mr. Knabenshue's intervention I was granted private audiences with His Majesty the late King Ghazi; the Prime Minister; the Minister of the Interior; the Minister of Education; the Director-General of Health; and the Chief of Police.

[1] Dr. Buxton's premature death from influenza in 1939 came to me as a great shock and personal loss. His students, scattered throughout the world, will always remember his inspiring leadership and stimulus.

As a result of these interviews a special permit was issued enabling members of the Expedition to conduct anthropometric studies throughout Iraq, to collect zoological, botanical, and geological specimens, to take photographs, and to compile tribal maps (see Maps A and B).

During our work in Iraq the Expedition received unusual cooperation from Iraqi officials, as well as from many private individuals. Among the many persons who rendered valuable assistance were: Ali Jaudat Beg, Sir Kinahan Cornwallis, Mr. C. R. Grice, Major W. C. F. Wilson, Sir John Burnett, the late Wing-Commander A. R. M. Richards, Dr. Walter P. Kennedy, Dr. T. H. McLeod, and the *Mutasarrifs* of the Mosul, Kirkuk, Erbil, and Amara *Liwas*.

A letter from the Air Minister in London, Lord Londonderry, to the Air Officer Commanding in Iraq served as an introduction to the members of the British Royal Air Force.

Another valuable letter of introduction was from Mr. John Skliros, Managing Director of the Iraq Petroleum Oil Company in London, to Mr. G. W. Dunkley, General Manager in the Near East, who facilitated our work. During our three weeks in the desert we were guests of the Company.

Appreciation must also be expressed to the late Dr. F. R. S. Shaw, Chief Medical Officer of the Company, and to the late Dr. H. C. Reid, who made possible our work on the Dulaimis at Haditha and to Dr. M. Don Clawson, Chief Dental Surgeon, who rendered assistance in numerous ways.

Through the courtesy of the late Professor James H. Breasted, Director of the Oriental Institute of the University of Chicago, the Expedition was kindly lent a station-wagon by Dr. Henri Frankfort, Director in Iraq of the Oriental Institute Expeditions. This automobile was driven by Mr. H. Mihran. Mr. Gabriel Malak also gave generous assistance.

Dr. B. H. Rassam of the Royal College of Medicine in Baghdad kindly gave me his anthropometric data on 497 individuals measured by him in the Royal Hospital, Baghdad (see Appendix D).

In conclusion, I must record my deep gratitude to His Majesty the late Ghazi ibn Faisal and to his Ministers, who made possible my studies on the physical characters of the modern peoples of Iraq.

At the end of July Mr. Martin, Dr. Kennedy, Yusuf Lazar, and I left Baghdad for Tehran. In Iran we continued our research (Field, 1939). On September 13, we entered the Union of Soviet

Socialist Republics at Baku. The anthropometric data obtained in the Caucasus will appear in a forthcoming Museum publication.

Following our return to Chicago in December, 1934, preparations were begun for the publication of the results obtained by the Expedition.

During the writing of this report I have had the benefit of discussing the general arrangement of the material with Dr. Paul S. Martin, Chief Curator of Anthropology at Field Museum.

Since 2,500 individuals had been studied in Iraq, Iran, and the Caucasus, it was decided to accept the invitation of Dr. Hooton and to have the statistics tabulated on the card system for sorting by the Hollerith machines at the Anthropometric Laboratory in the Peabody Museum at Harvard. During 1935 and part of 1936 the data were prepared for the machines and the introductory sections written. From September, 1936, to June, 1937, I worked on this material at the Peabody Museum. Mr. Donald Scott, Director, facilitated my work in every possible manner.

Throughout this period I had the benefit of numerous conferences with Dr. Hooton, who supervised the preparation of this report and from time to time offered many valuable suggestions, particularly in regard to the methods to be employed in the presentation of these data.

I am also grateful for opportunities to discuss numerous problems with Dr. Carleton S. Coon and with Dr. Carl C. Seltzer, who calculated the statistical tables.

I wish to thank Miss Elizabeth Reniff, my former research assistant, who worked on this report both at Field Museum and at Harvard.

The greater part of the typing was done by Miss Ethel Brady, who arranged the statistical tables, and by Mr. Theodore Scully, who completed the remainder of the manuscript.

Miss Dorothy Pedersen rendered valuable assistance throughout the preparation and proofreading of this publication.

I wish to express gratitude to Miss Eunice Zimmerman, who assisted with the final checking of the report.

I also gratefully acknowledge the aid of Miss Lillian A. Ross, Staff Editor of the Division of Printing, in seeing the manuscript through the press.

My wife has generously assisted in proofreading the greater part of the manuscript.

During the Cambridge meeting of the British Association for the Advancement of Science, in August, 1938, I had the benefit of discussing the preliminary results with Sir Arthur Keith, to whom, because of his encouragement and advice during the past seventeen years, I owe a lasting debt of gratitude.

In Berlin during the same month I had the pleasure of visiting Baron Max Freiherr von Oppenheim, whose first volume on the Beduins has appeared recently (see Bibliography). His chapter on the Anaiza should be read as an introduction to my section on these desert tribesmen.

I wish, also, to record my gratitude to the librarians of the following institutions who facilitated the reference work in every possible manner: Field Museum of Natural History; Oriental Institute, University of Chicago; Peabody Museum, Widener Library, and Institute of Geographical Exploration, Harvard; New York Public Library; Library of Congress; Bodleian Library, Oxford; University Library, Cambridge; London Library; Royal Geographical Society; Royal Asiatic Society; Royal Central Asian Society; Musée de Trocadero, Paris; Instituto di Antropologia della Reale Università, Rome; Palais Azem, Damascus; and Iraq Museum, Baghdad.

Three maps (Frontispiece; Figs. 2, 3) were drawn specially for this publication by Mr. Peter Gerhard, a volunteer assistant. Figure 1 was drawn by Dr. Erwin Raisz, of Harvard University, and Figure 4 by Mr. David Tuch.

The large map (A) showing the distribution of tribes in Iraq has been distributed with the map (B) of Iran since there is an overlap between these two sheets.

Map A, compiled from all available sources, was drawn at Field Museum by Mr. Richard A. Martin.

Wherever possible I have checked the tribal information but in a task of this complexity and magnitude a certain degree of variation must occur, since even the best qualified informants vary in their oral tradition (cf. von Oppenheim).

Furthermore, during the past decade many tribal changes have taken place within the confines of Iraq. To the best of my knowledge, however, there have been no large tribal movements in Iraq comparable to those ordered by Riza Shah Pahlavi in Iran. This does not include the movements of the Assyrians to the Khabur. In Iraq the general trend has been to restrict the wanderings of the nomads in an attempt to make them become settled groups. In this manner conflicts over pasturage or wells can be avoided.

Alphabetical lists of tribal names appearing on these two maps have been prepared by Miss Dorothy Pedersen and by Mr. Peter Gerhard respectively.

The list of the tribes and sub-tribes of the Anaiza (Figs. 5–10) was rewritten by Dr. A. Frayha at the Oriental Institute of the University of Chicago. The transliteration, prepared by Dr. Frayha, was redrawn by Mr. Richard A. Martin.

The place names conform to the spelling adopted by the Permanent Committee on Geographical Names of the Royal Geographical Society of London. As the question of orthography is by no means settled and many names are not yet included in the published lists of the Society, standard practice as adopted by the most recent British map-makers has been used.

All diacritical marks, with but few exceptions, have been omitted throughout the text, but are included in the Glossary (p. 198).

In conclusion, I must express my gratitude to Mr. Abdul-Majid Abbass, and to Mr. Jassim Khalaf, Iraq Government students at the University of Chicago, who checked and made additions to the native names listed in the text and in the Glossary.

HENRY FIELD

THE ANTHROPOLOGY OF IRAQ

PART I, NUMBER 1

THE UPPER EUPHRATES

I. INTRODUCTION

In order to present the results of the anthropometric survey of Iraq it has been decided to arrange the data according to the following plan in the Parts and Numbers of Volume 30 of the Anthropological Series of Field Museum.

THE ANTHROPOLOGY OF IRAQ

		Males	Females
PART I			
No. 1.	Upper Euphrates		
	(*a*) Dulaim	137	0
	(*b*) Anaiza	23	0
	(*c*) Individuals in Royal Hospital, Baghdad	439	143
	(*d*) Arabs of Kish Area	459	0
	(*e*) Iraq Soldiers, Hilla	222	0
	(*f*) Ba'ij Beduins, near Kish	35	0
No. 2.	Lower Euphrates–Tigris Region		
	(*a*) Marsh Arabs	271	3
	(*b*) Subba (Mandeans)	92	33
	(*c*) Individuals in An Nasiriya	126	26
PART II			
No. 1.	Northern Jazira		
	(*a*) Shammar	299	129
	(*b*) Sulubba (Sleyb)	39	10
	(*c*) Turkomans	64	31
	(*d*) Yezidis	235	77
No. 2.	Kurdistan		
	(*a*) Kurds	609	33
	(*b*) Assyrians	106	137
	(*c*) Jews	111	52
	(*d*) Armenians	4	2
	(*e*) Gypsies	6	4
	(*f*) Chaldeans	1	0
	Total	3278	680
No. 3.	Comparative Data		
	Conclusions		

Miss Winifred Smeaton, now Mrs. Homer Thomas, measured 588 females and some of the males. Miss Smeaton was attached to the Expedition from April 1 to July 20, 1934. (See also Appendix E.)

Both parts will be arranged on the same general plan, each section containing chapters on the land and the people, the physical anthropology of the various groups, and a list of the tribes and subtribes within the area prescribed.

This report (Part I, No. 1), based on the anthropometric data obtained in May, 1934, is concerned with the physical characters of the peoples of the Upper Euphrates region of Iraq and Syria.

There is no need to compile a chronological survey of references to this area during the past two thousand years,[1] since the reader has ready access to classical sources, to the writings of early travelers,

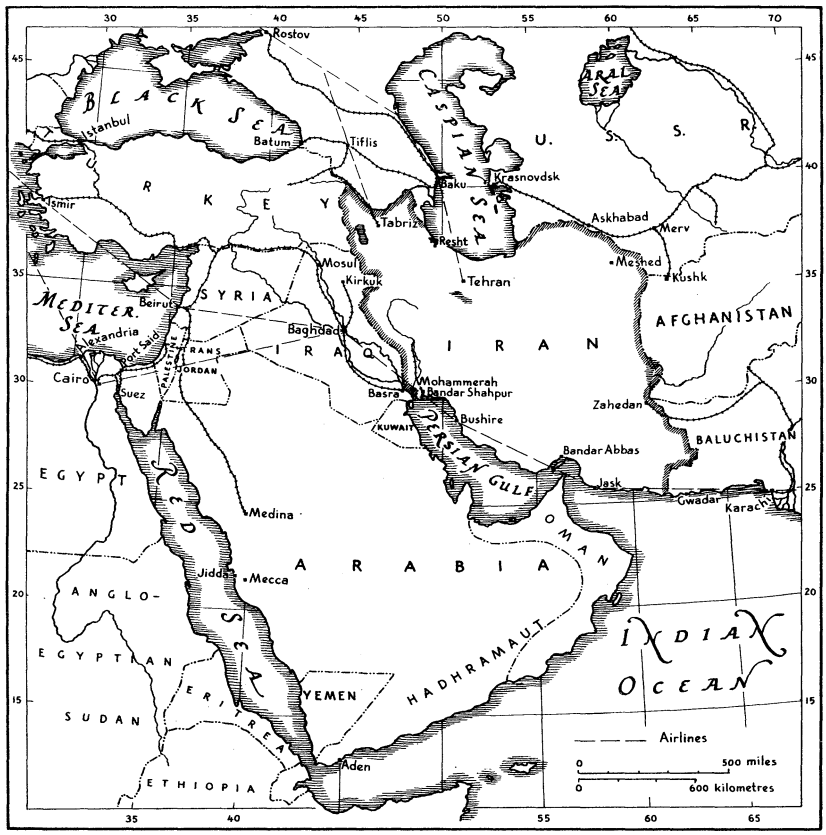

FIG. 1. Geographical position of Iraq.

and to those of Buckingham, Sir Wilfred and Lady Anne Blunt, Mark Sykes, Doughty, Musil, Lawrence, Grant,[2] von Oppenheim, and many others.

[1] For references to the Middle Euphrates during the Assyrian period and down to Ibn Battuta and other Arabic authors see Musil, 1927b, pp. 197 et seq.

[2] Dr. Christina Grant (1937) has compiled almost complete references to the caravans, early travel, and recent exploration of the Syrian Desert.

Chapter II deals briefly with the general location of Iraq, and in particular with the boundaries, physical geography, climate, flora, and fauna. There is also an outline of the recent history of the Upper Euphrates area.

Chapter III contains the anthropometric data on the Dulaimis and on the Anaiza tribesmen. The revised tables of the Kish Arabs, Iraq Soldiers, and Ba'ij Beduins, who were measured in 1928, are placed in Chapter IV.

I was fortunate to be granted access to full and unpublished lists of the tribes and sub-tribes in Iraq. The compilers of these data in Chapter V preferred to remain anonymous.

Appendix A contains the figures of registered and unregistered populations to the end of November, 1935. The number of the total population (3,560,456) is based on these data, which were sent from Baghdad by Major C. J. Edmonds.

Appendix B gives the classification of land surface and the population with the mean density per square kilometer of the cultivated region. These figures were compiled in 1930 by Sir Ernest Dowson.

Appendix C, a description of the health conditions among the Arabs of the Kish area, is based on data compiled during 1927–28 when I was attached as physical anthropologist to the Field Museum–Oxford University Joint Expedition to Kish.

Appendix D contains the anthropometric data on 497 individuals obtained during 1932 by Dr. B. H. Rassam in the Royal Hospital, Baghdad.

In Appendix E Miss Smeaton presents the anthropometric data obtained on 32 males and 52 females during 1935 in the Royal Hospital, Baghdad.

Appendix F consists of a list of mammals collected in Iraq either during the 1934 Expedition or as a result of our subsequent appeals for additional specimens for the Museum study collections. The identifications have been made by Mr. Colin C. Sanborn, Curator of Mammals.

A report (Field Mus. Nat. Hist., Zool. Ser., vol. 24, pp. 49–92) on the reptiles and amphibians was published during 1939 by Mr. Karl P. Schmidt, Curator of Amphibians and Reptiles.

The large collections of insects obtained during 1934, and subsequently from Yusuf Lazar, are being determined at the British Museum through the cordial co-operation of Captain N. W. Riley

(see Appendix G). Two papers have been published by Field Museum: "Hemiptera from Iraq, Iran, and Arabia," by W. E. China; and "Orthoptera from Iraq and Iran," by B. P. Uvarov.

In Appendix H, Mr. Paul C. Standley, Curator of the Herbarium, has classified the flora collected during the 1934 Expedition and herbarium specimens obtained subsequently from Yusuf Lazar. This list is of particular importance, since in many cases the localities indicate new ranges for genera and species.

In 1937 Field Museum published a report by David Hooper and Henry Field, entitled "Useful Plants and Drugs of Iran and Iraq."

Additional reports on botanical, geological, and zoological specimens are now in preparation.

The reader is referred to a recent publication by Père H. Charles entitled "Tribus Moutonnières du Moyen–Euphrate." (Institut Français de Damas.) This important work deals with the tribes adjoining those referred to in the present report, and for this reason it should be used as a complementary account.

In the same series published in 1934 by the Institut Français de Damas appeared Mr. Albert de Boucheman's monograph entitled "Matériel de la vie bédouine receuilli dans le désert de Syrie (tribu des Arabes Sba'a)." This volume contains an excellent account of the material life of the Sbaa Beduins.

Indexes of the numbers of individuals and plate numbers of the Dulaimis and the Anaiza (p. 207) have been prepared.

The comparative data and the conclusions based on the anthropometric survey of Iraq will be discussed in Part II.

A detailed knowledge of the physical characters of the modern peoples of Iraq and their relationship both to their neighbors and to the ancient dwellers in Mesopotamia not only will throw light on numerous historical problems but also will be of assistance in determining the true racial heritage of the Mediterranean Race.

Furthermore, the European races trace part of their physical and cultural origins to an area extending from the Punjab to the Nile Valley.

Southwestern Asia may well have been one of the nurseries of *Homo sapiens* (Field, 1932b, 1939b).

II. THE LAND[1] AND THE PEOPLE

The Upper Euphrates region may be described as the stretch of the Euphrates River between Raqqa and Al Falluja with an arbitrary boundary in the desert on both the right and left banks of the river (Fig. 3).

In general this area, which covers approximately 22,000 square miles, consists of a steppe-like plateau with rocky outcrops, similar to South African kopjes, some of which rise to a height of 200 or 300 feet above the level of the surrounding country.

Through the center of this inhospitable area flows the Euphrates River, following a general southeasterly course (cf. Ionides, pp. 37–111). Along its banks and those of its tributaries are to be found stretches and patches of cultivated land.

In the course of centuries the river has carved out a trough-like depression through the desert. According to the resistance offered by the geological formation of the land, this valley varies in width from more than ten miles to a narrow precipitous gorge scarcely a mile across.

In the wider sections of the valley, the river meanders, frequently changing its course and forming numerous islands and rapids in the river bed, as well as ledges of rich, alluvial soil near the banks where the land is cultivated.

At Abu Kemal the valley begins to narrow, and the course of the river is due east until it reaches Ana; from here it again flows southeast. The gorge gradually opens out in the neighborhood of Ramadi, where the river flows through a fertile, irrigated, alluvial plain, until the limit of the area is reached at Al Falluja.

As far south as the Tell Aswad reach, the river bed is rocky, with numerous ledges and rapids, but beyond this point the bed of the river and both banks consist of alluvial soil.

The country on the left bank of the river is known to the local inhabitants as the Island (*Al Jazira*),[2] so-called because it lies between the Tigris and the Euphrates, and the country on the right bank is known as *Al Shamiya*, as it is situated on the Damascus (*Sham*) side of the river.

[1] For general description see Lyde (pp. 268 et seq.); Carruthers (1918); Blanchard (1925, 1929, especially the bibliography, p. 231); Stamp (1929); and Boesch (1939).

[2] Throughout the remainder of this report *Al Jazira* and *Al Shamiya* are referred to as the Jazira and the Shamiya.

The Euphrates has only two tributaries of any importance, the Belikh and the Khabur, both of which join the parent stream on the left bank, the former in the neighborhood of Deir-ez-Zor and the latter about eight miles upstream from Meyyadin.

Numerous wadis from the desert uplands join the river on both banks. They are dry during the greater part of the year, but after a heavy rain, which may occur miles away in the desert, they are liable to sudden and unexpected floods which render them impassable for an indefinite length of time, from one or two hours up to as much as five days.

The chief canals, few in number, leading from this section of the Euphrates, are the Aziziya, Saqlawiya, Abu Ghuraib, and Ridhwaniya, details of which are as follows:

(1) The Aziziya Canal leaves the right bank of the Euphrates half a mile upstream from Ramadi, and flows in a general south-southeasterly direction into Habbaniya Lake, five miles southeast of Ramadi. Both banks of the canal are extensively cultivated.

(2) The Saqlawiya, one of the largest and most important canals on the Euphrates, is of modern construction. Its intake is six and a half miles upstream from Al Falluja, on the left bank of the river. The canal flows in a general easterly direction, terminating in the Aqarquf, ten miles northwest of Baghdad. The canal head is controlled by sluice gates and has a concrete blockhouse on either bank, where it is crossed by a stone bridge on the main Baghdad-Al Falluja road. This canal, which attracted many sections of the Dulaim tribe from the banks of the Euphrates, waters one of the most fertile tracts of country in the whole area.

(3) The Abu Ghuraib Canal leaves the left bank of the Euphrates four miles downstream from Al Falluja and proceeds in a general easterly direction until due south of Khan Nuqta, when it flows northward. Both banks of the canal are cultivated by Zoba tribesmen.

(4) The Ridhwaniya Canal has its head on the left bank of the Euphrates nine miles downstream from Al Falluja and follows the general direction of the river until it reaches Imam Hamza, where it tails off into a series of distributaries. The Zoba are the chief cultivators on both banks of the canal.

The sudden inundations of the Euphrates are an important factor in the life of the people. There are two flood seasons. Dur-

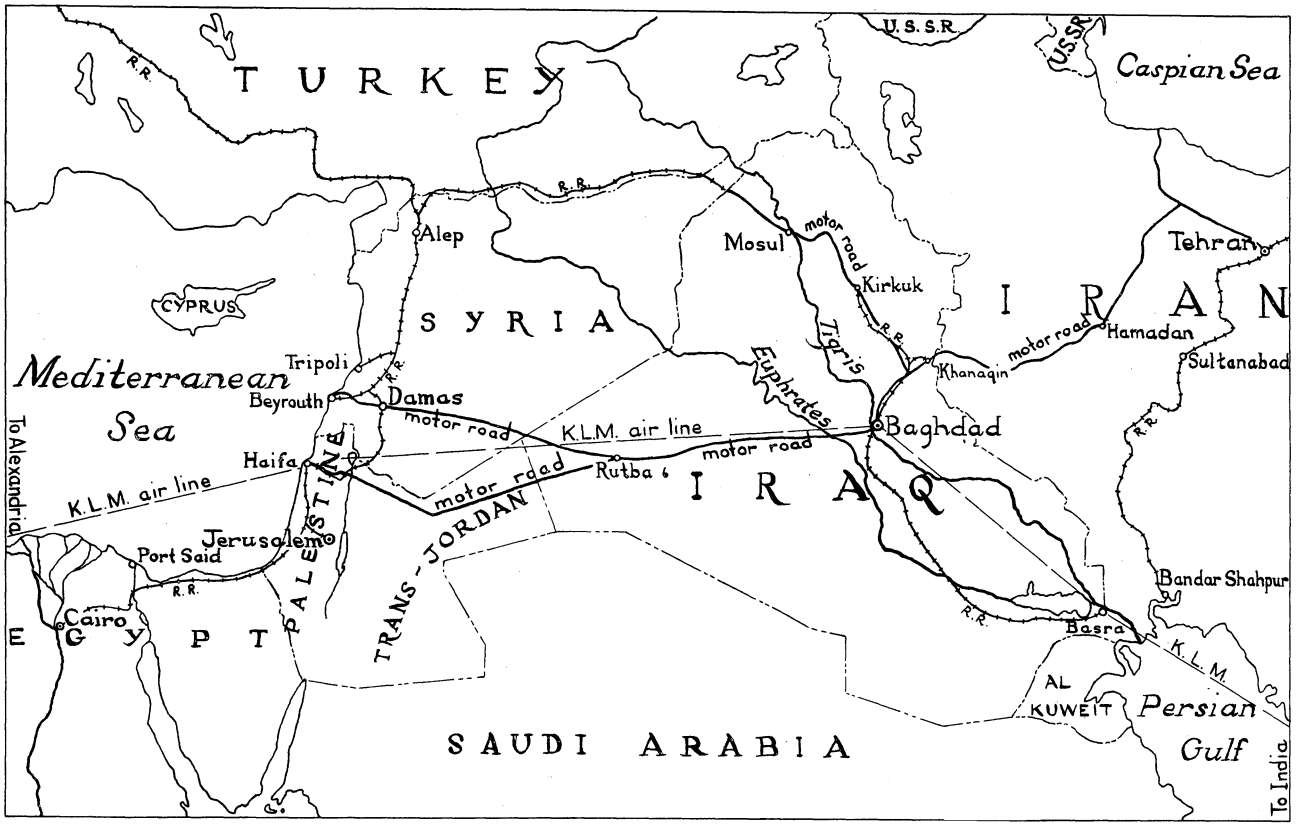

FIG. 2. Communications with Iraq.

ing the first season, occurring between November and February, the rises in the river are caused by the sporadic, but often violent, winter rains. These inundations are usually of short duration. The longer flood season begins about the middle of March and continues to the end of June. The river is usually at its highest during May, and there is a considerable daily recession during the month of June.

During July, August, and September there is a steady decrease of water in the river, the lowest level usually being reached about the middle of October. The river gauge then remains stationary until November, when rains may cause freshets involving a rise of five or six feet in forty-eight hours, in many cases leaving the channels and crossings changed.

In July and August the channels change continually. This is the most difficult period for river navigation, while September, October, and November are the best months.[1]

In this region on the Euphrates, the thermometer readings may range from below freezing to above 120° F. in the shade. The hottest months are usually August and September, while the greatest degree of cold is experienced in December and January. The temperature varies considerably throughout the area, that at Deir-ez-Zor being 10° less than that at Ramadi during the summer months.

Between Raqqa and Al Falluja the climatic conditions are those of a subtropical, inland area semi-arid in character, although an appreciable amount of rain falls in the winter months. The area lies in the shadow of the high plateau to the north and west, and thus the summer temperature is not as extreme as it is in lower Iraq. There is, however, considerable difference in temperature at Raqqa and Al Falluja.

The relative humidity of the atmosphere is extremely low, and even in the wet season rain is not very abundant. Sometimes the first rain may fall in October, but usually the heavy downpours come in November. The rainy season continues until April or early May, after which no further rain occurs until the following October.

Snow is rare in this region, but on February 11–13, 1920, a light fall was recorded at Ana. On January 11, 1926, I was in a heavy hailstorm west of Ramadi.

[1] See Willcocks and Ionides for detailed information on the general hydraulic survey of the Euphrates and Tigris rivers.

The general direction of winds throughout the summer is from the northwest, because atmospheric pressure in the eastern Mediterranean is considerably higher than that in the Persian Gulf during this season. This northwest wind descends from the plateau upon the Jazira like a dry, scorching blast from a furnace, frequently bearing with it a cloud of dust (cf. Coles).

Southern hot winds, from the Persian Gulf, usually alternate with the northwest winds throughout the summer. The influence of these hot winds is particularly noticeable in August and Sep-

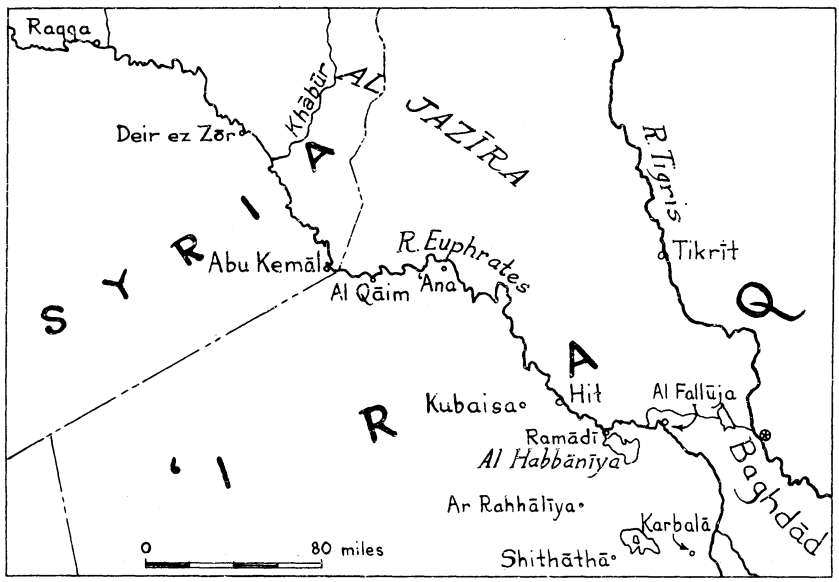

FIG. 3. The Upper Euphrates region. Scale 1:4,000,000.

tember, when they help to ripen the date crop. They are felt as far north as Abu Kemal, the northern limit of the cultivation of *Phoenix dactylifera* (see Dowson). The prevailing wind passes over the plateau of Anatolia and descends on the plains as a dry current of air, rapidly becoming warmer as it descends from the level of the mountains. During the winter months the direction of the wind varies considerably, and breezes often spring up from the south.

Calms rarely occur and the wind generally attains its maximum velocity during the day. In the evening, the wind diminishes to a gentle breeze which gradually gathers speed after dawn on the following morning.

During the summer months, sand storms of considerable intensity frequently occur, and the burning sand, driven along with a cloud of dust, provides a most unpleasant experience (cf. Coles). For hours visibility may be limited to a few hundred feet.

The agricultural crops of this area on the Upper Euphrates, cultivated under the most primitive conditions, comprise chiefly wheat (*huntah*) and barley (*shair*), a certain amount of maize (*ithra*), and a limited quantity of red and white rice (*timmin*), sesame (*simsim*), mash (*mash*), beans (*buqul*), and cotton (*qutn*). There are some brinjals (*badinjan*), cucumbers (*khiar*), melons (*battikh*), onions (*bassal*), and radishes (*fijil*). Date palms (cf. Dowson) are cultivated extensively at Abu Kemal and along the Euphrates, and, to a lesser extent, apple (*shajarat tiffah*), pear (*shajarat armut*), mulberry (*shajarat tukki*), and pomegranate (*shajarat rumman*) trees.

For agricultural purposes the rainfall is insufficient and irrigation becomes an absolute necessity between May and October. The Belikh and Khabur, tributaries of the Euphrates, never become quite dry, making possible the growing of crops sufficient to maintain a settled population on the banks of these streams.

The three principal methods of irrigation in use on the Upper Euphrates are: by water lift (*charid*); by water wheel (*naura*);[1] and by canal.

A *charid* is a water lift constructed on the river bank, usually where it descends steeply to the river. The lift is worked by a pony or mule. The water, raised to the bank in a large skin, is carried away in a small, narrow channel from which smaller distributaries take the water to the cultivated fields. Where the *charid* is the only form of irrigation, water can be carried only from one to one and a half miles inland from the river.

In the construction of a water wheel[2] (*naura*) a series of masonry weirs is built out into the river for a distance of about ten yards, with a masonry trough extending along the top. At the end of this projection into the river is a water wheel (Pl. 48). The force of the current in the stream turns the wheel, on which is fastened a series of small buckets to lift the water. On the turnover of the wheel the water is emptied into an extension from the trough (Pl. 48, upper) and thence conveyed through ordinary channels to

[1] Cf. Laufer (1934) for origin and history of the noria or Persian wheel.

[2] Cf. H. Charles, pp. 140–146.

the land to be irrigated. Working day and night, each wheel irrigates about five acres. The cost of maintenance of one wheel is said to be approximately $200 annually. A masonry dam, built out into the river in prolongation of the weirs, raises the water level enough to ensure at low water a sufficient current to turn the water wheels. A series of these weirs and dams built out from both banks toward the center of the river tends to raise the water level and to produce a swift current in the center of the river between the heads of the dams, rendering the passage of boats both difficult and dangerous. In many places the weirs and dams become ruined and submerged, further increasing the dangers of navigation. Norias are not used downstream from Hit.

In spite of their usefulness in cultivation, there are remarkably few canals of any size on the Upper Euphrates (see p. 18). A tribesman will cut a small channel leading from the river to irrigate his crops where this is practicable, but unless the Government displays some interest and activity in the construction of a large canal he will show little initiative in this direction.

The rain produces a desert crop capable of supporting more than a hundred thousand grazing sheep and several thousand camels. During the late autumn, winter, and early spring, after heavy rains, this desert is covered with grass, various desert wild flowers, spinifex, and numerous shrubs which provide excellent grazing for camels.

During this period water can be obtained from depressions in the ground or from the beds of wadis where it collects after rains. At this season, Beduins, principally from the Anaiza and Shammar tribes, wander in well-defined areas grazing their extensive flocks of camels and sheep.

About the end of April or the beginning of May the desert becomes parched, brown, and dry. During the rainless summer months the grazing is thus quickly exhausted and Beduin herdsmen must be continually on the move, compelled to pasture their flocks near the river.

The fauna of Iraq has not yet been studied extensively but numerous papers have been published in the Journal of the Bombay Natural History Society and by specialists of the British Museum (Natural History).

The mammals living in this region include gazelle, hyena, jackal, wild boar, fox, badger, and cheetah. There are many species of