

GENERAL INTRODUCTION

I. AIM AND SCOPE OF THE INVESTIGATION

The observations presented in this report were made for the most part during two seasons' field-work on the northern Cyrenaican coast, in 1947 and 1948. Little work had previously been attempted either on the Palaeolithic archaeology or the Pleistocene geology of this region; and although the archaeological material obtained can be supplemented to some extent from published and unpublished sources in territories to the east and west, in Marmarica and Tripolitania; the results are in the main of a pioneering character.

The primary object of our work was to examine the Cyrenaican coast for signs of ancient shorelines, which might serve to co-ordinate any traces of archaeological and natural events found within the area, and conceivably might also provide a basis for correlations with other parts of the Mediterranean. In addition, it was hoped to contribute to two problems of wider significance: the correlation of the North African cultural sequence as a whole with that of Western Europe, and the question of alleged worldwide fluctuations of sea-level during the Pleistocene Age.

This last problem is of fundamental importance to many different aspects of Quaternary research, since any traces left by such fluctuations should provide a means of direct correlation between widely separated coastal areas. It has been suggested, moreover, that the supposed changes of sea-level may be directly connected with the advances and recessions of the Pleistocene ice-sheets. If such a connexion could be proved, it should then be possible to extend the correlations to glaciated areas lying far inland. Unfortunately, however, the reliability of much of the earlier work in this field is now widely regarded as by no means above question. It therefore seemed to us that a careful and objective examination of an entirely new stretch of coastline might provide a valuable check of earlier conclusions. Both the geology and the topography of the Cyrenaican coast encouraged us to believe that a clear record of ancient shorelines might be found there, if the area were to be explored with this specific end in view.

From the archaeological aspect, also, the region appeared to have definite advantages. The widespread occurrence of limestone suggested that even the thinnest of superficial deposits might have been so consolidated, by the action of lime-bearing waters, that their contents would have been protected from later accidental intrusions. Again, the limestone could be expected to contain caves, in which archaeological and organic remains might be preserved. Finally, the

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geographical and ecological characteristics of the Gebel Akhdar made it seem likely that traces of human activity might occur in sufficient abundance to show a significant relationship to those in adjacent areas of settlement in the Nile Valley and the Atlas Mountains.

These, then, were the main considerations at the start of the investigation. As the work proceeded, however, it became clear that certain aspects of the inquiry would have only a limited interest, while others began to assume greater importance.

The traces of high sea-levels were on the whole satisfactorily preserved, and appeared to represent a period of time much greater than that of the human occupation. Moreover, these traces, as had been hoped, were of a kind which enabled conclusions to be drawn whose interest extended beyond the immediate problem of correlation within the Mediterranean region.

The Pleistocene continental deposits, on the other hand, were almost wholly confined to the final phases of the period. At the same time, despite their short chronological span, these deposits also provided a surprising amount of miscellaneous information, especially with regard to changes of climate and to a movement of the sea-level to a position far *below* that of the present day.

A corresponding deficiency was noted in the archaeological evidence from all sources, and no remains were discovered which could be assigned to a period earlier than the Middle Palaeolithic. In compensation, a certain number of finds from this and later periods shed unexpectedly clear light on coastwise cultural relationships. Finally, the evidence from the Siwa depression and Tripolitania provided interesting evidence regarding the post-Pleistocene 'Neolithic' stage—hitherto largely lacking from Cyrenaica itself—as well as some indications concerning the earlier periods in these regions also. It is accordingly possible to sketch in broad outline the geographical pattern of cultural activities in northern Libya, from the Middle Palaeolithic stage onwards.

In short, both branches of the research developed into something more than the essays in correlation originally intended. The problem of correlation remains none the less the most important single question dealt with; and although results were only fully realized and applied in the Upper Pleistocene, it is hoped that the descriptions and discussions of the methods used may themselves prove of practical assistance to archaeologists and others besides specialists in Quaternary geology.

For the information of future workers in the region, it is probably true to say that the geological and geomorphological evidence has by now been fairly thoroughly examined over about two-thirds of the stretch of coast between Benghazi and Derna.

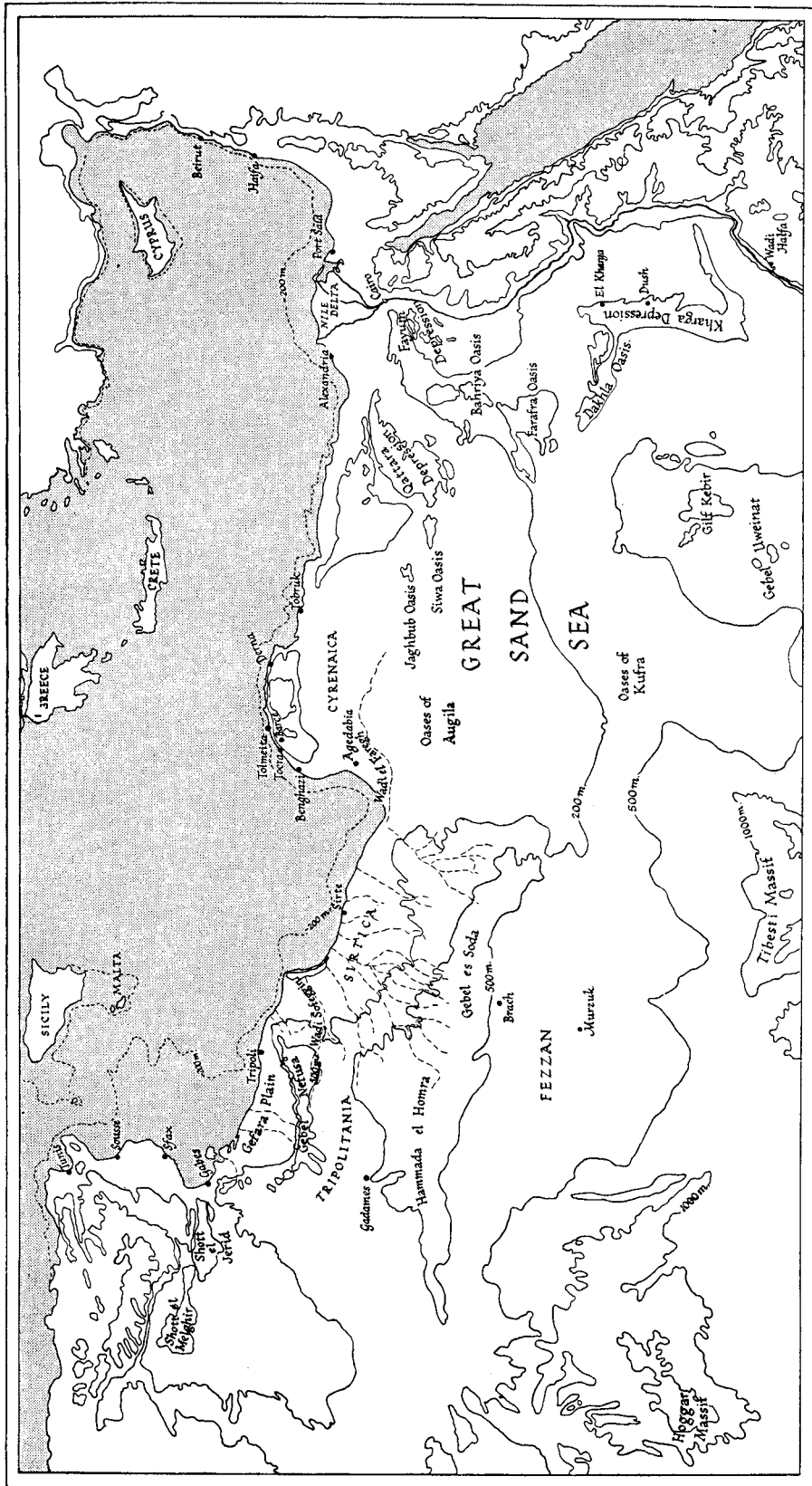


FIG. 1. General map of eastern North Africa

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The same can hardly be claimed for the archaeological and palaeontological data. In the nature of things the traces of prehistoric cultures are appreciably more sporadic and less predictable in their occurrence than the traces of geological phenomena. As a result the cultural sequence contains a number of gaps and tantalizing uncertainties, and there can be little doubt that the region reserves many unsuspected features for future investigators. Nevertheless, it seems likely that the character of some of the main episodes during the second half of the Stone Age in northern Libya are now sufficiently well established to be of use to prehistorians working in other areas of North Africa, and to provide a reasonably reliable starting point for further researches in Cyrenaica itself.

In preparing the material for publication our main purpose has been to provide a clear presentation of the facts, and confine discussion to the more immediate issues. A departure from this policy is offered by Chapter xv, dealing with archaeological material of 'Neolithic' type. Here it seemed that some attempt at a critical analysis of current facts and theories in neighbouring territories was desirable for an intelligible presentation of the new material. Elsewhere, however, the observations are described with the minimum of comment.

At the same time, circumstances of discovery and methods of investigation have often been described at some length. The inclusion of such descriptions has been considered justifiable on several grounds. Apart from their practical interest to others working under similar conditions, such details are often essential for the precise appreciation of field results, particularly in an initial investigation of new territory such as ours.

Finally, a word may be said concerning investigations still in progress in Cyrenaica and neighbouring areas. These are mainly concerned with the new method of radiocarbon dating. An attempt is being made to obtain reliable absolute dates for the later phases of the Stone Age in the Atlas massif, and concurrently from our area also.

It is clear that some time must elapse before the full implications of this work can be assessed, both as regards the results obtained and the potentialities of the materials offered by the region. Since many of the problems dealt with in the present report lie outside the range of the new researches, it was considered inadvisable to withhold publication of the former until they are available, or for that matter until the full examination of certain newly-discovered sites. The latter may contribute important new elements to the archaeological record, but little is known as yet of the time required for their investigation—even supposing practical circumstances will permit it—or the precise nature of the results they

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may be expected to yield. Carbon readings and other evidence available and relevant to the present work at the time of publication has been included as far as possible in appendices and footnotes.

2. THE GEOGRAPHY OF CYRENAICA IN RELATION TO
NORTHERN AFRICA IN GENERAL

Before describing more particularly the main area under examination, it will be convenient to recall briefly the wider geographical pattern of which it forms part (Fig. 1). For so large an area, the topographical and climatic distributions of northern Africa offer a comparatively simple design.

The transition from tropical forest to desert along the southern margins of the Sahara at the present time forms a zone of moderately watered savannah some 300–400 km. wide, falling roughly between the 13th and 18th parallels. The Sahara proper, to the north of this zone, comprises an area some 5000 km. from east to west and 2000 km. from north to south, of which about one-third is true waterless desert, and the remainder desert steppe of extremely arid character. Topographically the greater part is a plateau between 200 and 300 m. in altitude, with little relief apart from a single discontinuous line of hills, starting, with the Hoggar massif, a little north and west of the centre, and extending via the Tummo, Tibesti and Ennedi ranges to Darfur in the south-eastern part of the desert.

North and east of the desert zone the two most important habitable regions are the Atlas massif—or Maghreb—and the Nile Valley. The former comprises an area of mixed prairie and scrub some 2000 × 400 km., while the latter provides the main line of access between the Levant and Central Africa. Along the greater part of the 2500 km. of coast separating the Nile Delta from the Gulf of Gabes and forming the littoral of the ancient province of Libya, the desert is divided from the sea by only a narrow margin of extremely arid steppe. Surface water is here available at most for a few weeks in the year.

There is indeed only one important break in the desolate character of the Libyan littoral—that provided by the Gebel Akhdar or ‘Green Mountain’, on the coast of Cyrenaica. Here the hilly topography gives rise to an area of greater rainfall and fertility over an area of some 300 × 100 km. Within this region the rainfall ranges between 200 and 550 mm. per annum. Eastwards and westwards along the coast the isohyets of mean annual rainfall at 150 and even 100 mm. lie within a few km. of the coast, and the zone of sparse steppe vegetation rarely extends further than 75 km. inland. The only other area at all comparable to the Gebel Akhdar along the Libyan coast is that of the Gebel Nefusa, of Northern

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Tripolitania. The fertile area is here both less marked and very much smaller in extent than that of the Gebel Akhdar, and forms in effect a minor outlier of the Maghreb.

Inland of the Gebel Akhdar, to the south and south-east, lies the most arid portion of the Sahara, sometimes termed the Libyan Sand Sea—a region some 1700 × 700 km., virtually waterless, and occupied in large part by immense dune-fields. A few oases occur in a widely scattered group in the angle between the lower Nile and the coast east of the Gebel Akhdar, and west of the Sand Sea at Augila and Kufra, respectively 200 and 800 km. inland from the Gulf of Sirte. Apart from the last-mentioned oases, the country to the west is but little less inhospitable than the Sand Sea itself, until the more numerous oases near the edge of the Hammada el Homra plateau and the Fezzan depression are reached. These western oases form a chain southwards from Tripolitania to the Tummo and Tibesti Hills mentioned above. Between the Hoggar, at the north-western extremity of the range, and the Maghreb proper, are again a few widely scattered oases, but west again between the Hoggar and the Atlantic littoral lies the second most important expanse of consistently desert conditions.

Before any conclusions regarding the effect of this geographical pattern on the development of human settlement can be drawn, it is of course necessary to form some idea of the extent to which it may have been altered by different climatic and ecological factors in the past. In the earlier days of Saharan exploration, considerable attention was attracted by a variety of indications of former greater abundance of water. It was moreover natural that these should be to some extent connected with historical evidence of former greater fertility along the Mediterranean littoral.

Many of these indications have been to a large extent discounted by more recent investigations. It has for instance been shown that the arrangements for dealing with the run-off in Roman times do not greatly differ from those required at the present day,¹ while a much greater share in causing the spread of the desert is now assigned to soil erosion consequent on over-grazing, deforestation, and the break-down (for social reasons) of former elaborate irrigation installations. Again, dry watercourses that may be found in many parts of the desert can be explained in part by the torrential character of the downpours that still occur at widely separated intervals, even far inland.

There remain, none the less, a number of striking indications that cannot be explained in this fashion, and are generally admitted to demonstrate an appre-

¹ 'La plupart des sources qui alimentaient les centres romains, existent encore... Leur débit a-t-il diminué depuis une quinzaine de siècles?... de rares constatations permettent de croire qu'en divers lieux ce débit ne s'est pas modifié.' S. Gsell, quoted in E. F. Gautier, 1946.

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cial difference in the pattern of precipitation at more than one period in the geologically recent past. The latest of these seems to have been of minor significance and to have occurred no later than the archaeological stage associated with the earliest spread of pastoral and agricultural activities. Of more importance are the indications associated with the Middle and Lower Palaeolithic Culture stages, while signs have been noted in several areas of a still greater rainfall at some period in the Lower Pleistocene, perhaps before the appearance of tool-making man.

Although nothing approaching a reliable climatic sequence for any considerable part of the Sahara is yet in sight, it is generally agreed that the wetter episodes just mentioned were interspersed with others in which desiccation was as great as or greater than at present. It is now usually held that even during the more favourable periods the larger part of the Sahara scarcely rose above the level of fertility of a dry steppe or prairie.

The conclusion seems to be that, although the relative extent of scrub, prairie and desert zones may have altered on several occasions, the changes were not such as to modify the broad ecological pattern as we see it today. The main areas of human settlement and biological activity in general would be substantially the same, and the main routes of natural intercourse also.

Conclusions regarding these latter are clearly of great importance for the correct interpretation of events in any one area. From what has just been said there can be little doubt that the main east-to-west line of communication lay along the Mediterranean littoral, close to the shore. A subsidiary route further to the south, starting in Tripolitania and running eastwards to Augila and thence along the northern fringe of the sand sea to Siwa and the Egyptian oases, is still used by camels, and probably played some part under favourable conditions in the past.¹

The north-to-south route along the Atlantic littoral has been studied little as yet, but it is known that an important inland route from north to south in Roman times started in Tripolitania and followed the oases to the Fezzan, continuing thence via the Hoggar or the Tummo Hills to Central Africa. There is also some evidence, at a late prehistoric stage, for the use of a route from southern Tunisia and Algeria along the Tazilli Plateau south-eastwards to the Hoggar. Thence in Neolithic times movement could certainly take place due south through Aïr to the Niger, and south-east along the hills to Darfur.²

As regards the Gebel Akhdar it can be said with some confidence that there is at present no sign of an ancient north-to-south route there or indeed anywhere

¹ See Chapters XVI and XVII.

² This is proved *inter alia* by the Neolithic site at Tamaya Mellet (Kelley, 1934).

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between the Nile and the Hammada el Homra plateau. The existing Augila—Kufra—Tibesti route is of very recent origin.¹ The interest of the Gebel Akhdar is thus enhanced by its character of principal staging post between the Nile and the Maghreb—whatever movements took place between the two it is here that they are likely to have left their clearest traces. Moreover, the distances between Cyrenaica and the two areas in question are such that most major events in either are likely to have found some reflection there also.

3. TOPOGRAPHY AND GEOLOGY OF CYRENAICA

Emphasis has been laid in the foregoing section on the importance of rainfall as the principal controlling factor in the density and character of human settlement. A cursory comparison between topography and rainfall distributions along the whole North African littoral reveals at once the close correspondence between the two; indeed it is clear both here and elsewhere in the Sahara that topographical relief plays an important part as an ultimate factor in human affairs.

The relevance of solid geology to human affairs is of a less direct kind in North Africa. It plays nevertheless a leading role in the present discussion owing to its close connexion with the manner in which the traces of cultural and natural events are preserved, and the background which it supplies to the geological events of the Pleistocene.

It will accordingly be convenient at this point to give a brief introductory account of the topographical and geological features of the area under discussion. Further details relating to particular districts will be given later as required.

The main topographical features of northern Cyrenaica are shown in Fig. 2.² As can be seen from the inset, this is a region of generally simple relief. The only area of high ground is that which occupies the most northerly part of the territory, and which is known as the Gebel Akhdar; this is, indeed, the only large area of high ground in the whole of the 2500 km. of flat coastline between Homs, in Tripolitania, and Mount Carmel, in Palestine. In plan, the Gebel is roughly elliptical, and its length from west to east is about 250 km.

The highest points of the Gebel, some of them over 800 m. above sea-level, all lie to the north, within 50 km. of the coast. Southwards, the ground falls away very gradually towards the line of depressions which contain the oases of

¹ This route seems to have been first opened by a native of Jalo named Shehaymah, acting for Sabun Sultan of Wadai, about 1810. (See Evans-Pritchard, 1949.)

² The best available maps of northern Cyrenaica are in an Italian series to the scale of 1:100,000. For regions south of Benghazi, it has been necessary to use the series G.S.G.S. 2465, to the scale of 1:1,000,000.

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Marada, Augila, Jaghbug and Siwa. To the east, the fall is still gradual, towards the much lower plateau of Marmarica (the hinterland of the coast east of the Gulf of Bomba). It is only on its northern and western sides that the limits of the Gebel are sharply defined by steep slopes, and these slopes take the form of two successive escarpments.

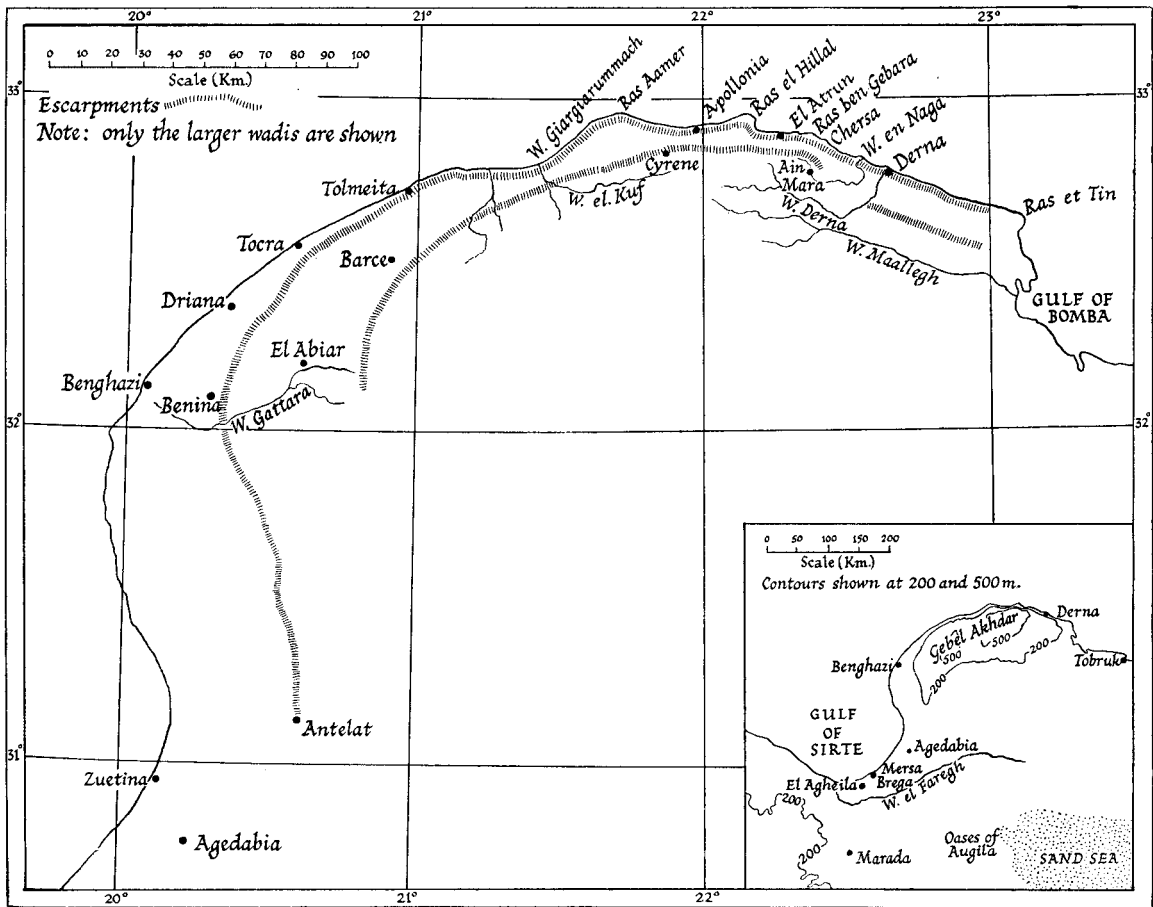


FIG. 2. Map of the area investigated

Inset. Map of Cyrenaica, showing position of the Gebel Akhdar.

The very great extent of these escarpments can be seen from Fig. 2. The lower and outermost of the two runs for over 400 km., between Ras et Tin and Antelat; in the whole of its course, its continuity is unbroken except by the gorges of innumerable wadis. From Ras et Tin to Tolmeita, it runs very close to the sea. South of Tolmeita, however, it gradually retreats from the coast, from which it is here separated by a gently sloping plain. The maximum width of the plain is

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about 50 km.; at its southern end it merges into the low-lying country at the head of the Gulf of Sirte. The upper escarpment is only about 300 km. long, but this also is continuous for nearly the whole of its course.

The geology of Cyrenaica to the north of the oasis depressions is reasonably well known. The latest general accounts are those of Desio¹ and of Marchetti;² the best available geological map is that which is included in Desio's book.

Of the rocks exposed on the surface, all are of sedimentary origin, and almost all are marine limestones. The oldest beds known are of Upper Cretaceous age; these are confined to two inliers on the crest of the Gebel, and a few localities on the north coast. Eocene and Oligocene beds occupy much larger areas, though these again occur only in and around the Gebel. The greater part of the region is covered by rocks of Miocene age, those of the Middle Miocene being especially widespread. Younger beds, on the other hand, apart from those of the Pleistocene, are only doubtfully present, and must in any case be of very limited distribution.

Most of the region appears to have a very simple geological structure, the beds showing nothing more than a gentle southerly dip. Tectonic complications are known only from Marmarica and from the Gebel itself. In the latter area, with which this report is chiefly concerned, these complications are mainly in the form of faults and monoclines, sometimes of considerable downthrow and extent.

4. HUMAN ECOLOGY OF CYRENAICA IN MODERN AND HISTORIC TIMES

Documentary evidence regarding the distribution, size and character of the human communities inhabiting Cyrenaica is available at various periods over the past four thousand years. The classical and earlier sources were exhaustively examined by Oric Bates over thirty years ago in what is still the standard work on the subject.³ Italian and other statistical reports on the recent state of the country are analysed by Professor Evans-Pritchard in the introduction to his recent study of the Sanusiya religious order.⁴ Other summaries have been provided in the last few years by the publications of the British Military Administration. From these and other sources it is possible to form an idea of the relationship of culture and environment in the territory, which is also not without relevance to the more remote periods with which this report is concerned.

The most striking single feature of this picture is the remarkable constancy of the dominant mode of existence. De Agostini, in his statistical summary of

¹ Desio (1935).

² Marchetti (1938).

³ Bates (1914).

⁴ Evans-Pritchard (1949).