THE PASTORAL SYSTEM OF THE MEIDOB

by

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I wish to acknowledge the financial support of the Social Science Research Council, which provided for the initial preparation, the fieldwork and one year of writing up. The Wyse Studenship of Trinity College provided a further six months of writing up, and a grant from the Marion Ruth Courtauld Educational Trust enabled me to make an early start to preparation.

In the Sudan I was an Associate of the Institute of African and Asian Studies of the University of Khartoum, and I wish to thank the Director, Professor Yusuf Fadl Hasan for his assistance and Dr. Herman Bell for an introduction to the Meidob language. Dr. Muhammad Ibrahimm Abu Salim, Director of the Central Records Office, Khartoum, gave permission for the research in his capacity as Secretary of the Board of Anthropology, and he provided letters of introduction. Sayyid al-Tayyib al-Mardi, Commissioner of Northern Darfur Province, gave much needed assistance in practical matters such as transport between El Fasher and Malha, as well as spirited hospitality. He also allowed me access to and permission to quote confidential administrative files concerning the Meidob. Sayyid Jibril Tia Abd al-Gadir, Commissioner of Northern Darfur District, provided accommodation and hospitality on a visit to Kutum, and also made available to me the District Archives. The Rev. Dr. A.J. Arkell, Sir Duncan Cumming and Mr. Wilfred Thesiger have all given their reminiscences of Dar Meidob many years ago. Professor Ian Cunnison and Dr. R.S. O'Fahey made the initial suggestion of studying the Meidob.
The fieldwork on which this account of the pastoral system of the Meidob is based was carried out between May 1974 and August 1975. It was carried out together with my wife, who has her own research topic on the social organization of the Meidob. We have pooled the information we obtained, but in the process of writing up we have each made use of the information entirely independently. I can state, therefore, that this dissertation is my own work and includes nothing which is the outcome of work done in collaboration.

It has often been noted that fieldwork among pastoralists is difficult. Our experience was no exception, and in some respects it may have been unusually difficult. It was fortunate for us that the rains in 1974 were adequate, otherwise we should have studied the Meidob not in their Dari (home, territory) but several hundred kilometres to the south. When we arrived at Malha, the administrative centre and main market in Dar Meidob, it was the end of the dry season. In 1973 the rainfall had been meagre, as it had been for the previous several years in the Sahel drought. It took some time for the seriousness of the drought to become apparent to us. Certainly it was hot and dry, the vegetation was sparse and some of the trees appeared to have been blown over; but that was what one expected to find in an arid region in the dry season. What was deceptive was the impression gained from the behaviour of people at Malha that nothing was out of its normal pattern. Even our arrival was accepted, apparently, as part of the normal course of life. The relevance of the drought turned out to be, solely from the point of view of its effect on the research carried out, the
fact that whatever we observed was to some extent influenced by the particular conditions obtaining, and was not representative of the Meidob in normal conditions.

The fieldwork problems were part and parcel of studying a pastoral society. The most obvious of these was simply the problem of getting around. Settlements in Dar Meidob are small and extremely dispersed, which meant that almost every day we walked between five and fifteen kilometres. This was pleasant enough, especially in the mountains, but it was usually time spent unproductively. More than once we arrived at our destination to find that the people we had walked for a couple of hours to meet were not at home, or even that they had moved to another place. Travelling between the areas we studied and Malha invariably took one and a half days each way. It took six months to locate a camel to buy, after repeated promises of a loan or rental had fallen through. It was another six months before we found a second camel, and by then the first had developed saddle-sores from being overworked and usually over-loaded. Again, there was nothing irksome about having to use camels, but it used up precious time which would have been saved if our financial resources had enabled us to take a Land Rover.

In the dry season we had to spend virtually the whole of every fourth or fifth day fetching water from the wells, where it was often the case that everyone was too busy watering their herds to permit useful discussions. The outcome of all this is that the time we could actually spend gathering information was only a fraction of the time we spent in the field. The impossibility of travelling extensively throughout the Dar (in a reasonable time) was one reason why I abandoned my original plan to collect
systematic information on herds and vegetation.

The second problem, partly arising out of the first, was the matter of language-learning. The difficulty here was that of sustained practice, given that the members of any settlement, particularly the men, were frequently away for most of the day, and sometimes for several days at a time, visiting their herds or their farms, or another settlement or the wells. Basically, in no settlement apart from the market villages was there a 'good informant' who was regularly available. Apart from the first couple of months, which we had to spend in Malha for lack of any means to travel, and for a month or so about a year later, at which times we had the company of higher-secondary school pupils, we worked entirely without interpreters or assistants. In fact to have had a full-time assistant would have added to the problems of provisioning ourselves and fetching water. We were enough of a burden on the hospitality of the people as it was. Some of what is lacking in hard facts is, hopefully, made up in direct experience of the way of life.

More specifically on language, I decided early on to concentrate on Arabic, as this was the only way to learn more about the Meidob language (without an assistant). I eventually added Meidob terminology to my Arabic in conversations, in the same way as the Meidob incorporate Arabic loan-words in the vernacular. Even using Arabic, however, I am aware that my ability with the language was never perfect.

As regards the organization of the research, there are three levels in the detail of my knowledge. A very substantial part of the time was spent with a single group of families. When they moved, we moved with them or joined them soon after.
They spend the wet season and winter in the centre of the mountains, and we gradually built up a census of the people living in the same area. In the dry season, part of the group we lived with moved to the southern edge of the hills. This brought us into contact with another local community, and we made a census of part of this section of the Meidob with the help of two assistants. This is the part of my information which is least detailed, while my knowledge of the central mountain communities is more complete, and of course, I know best the small group with whom we spent most of the time.

Apart from the difficulty of sustained work in a very small group, I had a methodological reason for wanting to make a fairly extensive survey. I was convinced that a very restricted sample covered in depth would give only a partial insight into the full range of variation of pastoral activity. At the same time, of course, the extensive range of acquaintance is in some respects superficial. This will be appreciated when it is understood that I had to cover an area of about five hundred square kilometres to enumerate just over a thousand persons.

My interest in the topics I discuss in the dissertation stems from a brief period of fieldwork in Southern Darfur in 1972. Among the cattle-owning pastoralists there it was apparent that the range of spatial movement was closely related to the numbers of cattle owned by the members of households. The sedentary, transhumant and nomadic herd management patterns were related to the extent to which people had to rely on cultivation to supplement the income gained from their cattle. I interpreted these patterns, following Stenning's account of
the Fulani, in terms of household viability. To account for
the fact that there were some obviously non-viable households in
the transhumant and nomadic camps, I postulated an 'inertia'
in the transition between the management systems. This was an
error, based on my having interpreted too literally the term
'household viability'. But at any rate, it served to provide
an interest in the forms of domestic organization in pastoral
societies.

The choice of the Meidob as the subject of my research
was not immediate, simply because Darfur is an area where little
research has been carried out and the choice of areas and topics
for research is extensive. The Meidob had been referred to
frequently in the literature on Sudan, because they were
supposed to practice matrilineal inheritance and succession and
their language is one of a number of far-flung members of the
Nubian Group. The fact that they had not been studied in depth
was therefore a gap in the ethnography of Sudan. There was
also a more local reason for choosing them. Three of the
main neighbouring groups, the Kababish, the Berti and the Zagawa,
had been studied by anthropologists in the 1960s. A study of
the Meidob could therefore help to complete another of the
major jigsaw pieces in the ethnographic map of north-western
Sudan. Shortly before our fieldwork began a study of the
Zayadiya was completed, and I understand the results of this
research are in the course of publication. The choice of the
Meidob was appropriate in terms of my research interests, but
in another, and perhaps equally important, sense it was a
fortunate decision. Courtesy and generosity are universal in
the parts of Sudan I know. Among the Meidob, however, where
the presence of our household in a hamlet of three or four
houses placed an additional burden on people who had been
impoerished by drought, and where there was an intimacy which
may not arise in the anonymous surroundings of a large village,
the warmth of welcome and friendship was striking and gratifying.
The detachment necessary to write analytically about such
friends does not come naturally. The only justification I can
find is the hope that the understanding of their economic organi-
zation I seek to provide will one day prove of some practical
benefit to the Meidob. My ideas on the development of Meidob
pastoralism will be the subject of a separate report.

Our time with the Meidob was completed too soon. I knew
when I left the field that there were major deficiencies in my
knowledge, and more lacunae have become apparent in the course
of writing. This, then, is an interim report, and I hope it
will not be too long before I find an opportunity to continue
the research with further fieldwork.
A NOTE ON TRANSLITERATION

I have used the letters 'Ar.' and 'T.' to distinguish words in Arabic and 'Tiddi-n-al. Meldob is the name used by outsiders; the people call themselves Tiddi. Al means 'tongue', hence language, and the hyphenated -n is the genitive suffix. In most cases the translation is given in brackets. I have employed a simple transliteration which does not convey the exact pronunciation or tone. Even the name Meldob is misleading as it is spelt; this is however, the conventional spelling. The best approximation is 'Maydoab' or 'Maydowb'. Names of towns and other familiar Arabic words are given in the form usually applied in Sudan. Some very common words, such as jebel (mountain) and wadi (seasonal water-course) are treated as English. Some Arabic terms are given in what I take to be the correct transliteration but without diacritical marks.
CHAPTER ONE
THE GEOGRAPHICAL AND HISTORICAL BACKGROUND

1. WESTERN SUDAN

In the modern Democratic Republic of Sudan, the area west of the White Nile and north of the Bahr al 'Arab forms a single geographical region, referred to locally as 'Western Sudan'. It corresponds to the administrative Provinces of Darfur and Kordofan, each of which was bisected into Northern and Southern Provinces in 1974. The rural population of these Provinces pursues three patterns of productive activity, which often in the past have been treated as distinct. In the south are predominantly cattle-owning pastoralists, the Baqqara; in the centre cultivation is the main activity; while in the north are camel-owning pastoralists, the Jammala. At the extremes of the region, with swamps in the south and desert in the north, the land is not suitable for cultivation and is only occupied at certain seasons by the pastoralists. The staple crops in the central cultivated areas are millet and sorghum. The differences in economic production have been given some ethnic connotation, because the major groups among both the Baqqara and the Jammala are Arab, while some of the cultivators are of non-Arab tribes. But such distinctions overlook both the lack of ethnic economic specialisation and the fact that the different activities are a continuum. Virtually all the cultivators own some livestock, and the majority of pastoralists also cultivate. The differences are largely a matter of degree, the pastoralists at the northern and southern edges of the region owning in general larger numbers of livestock than the populations of the centre. The territories of all the tribes of the region include some area where cultivation is
normally possible.

Both Baqqara and Jammala pastoralists follow a similar regime of northward and southward movement of the herds related to the onset of the rains as the Intertropical Convergence Zone progresses northwards.1 In the south the rains begin in May and end in early October, bringing an average annual rainfall of up to 800 mm; in the northernmost settled area they last from mid-July to mid-September and on average bring about 200 mm of rainfall. The rainfall pattern north of the area of permanent settlement points up more graphically than do the available statistics the character of rainfall towards the north. In the desert proper rainfall occurs only in the wetter years and then only in very localised showers; in the semi-desert rainfall is more common but is extremely variable both in its local intensity and in its distribution during the season. At one station the lowest recent annual rainfall during the drought was one fifth of the long-term average, while in the year of the highest rainfall in the previous decade twice the average fell. In the south the variation rarely exceeds 20 per cent more or less than the average. This ecological difference between the areas of the Jammala and Baqqara pastoralists has important implications for their pastoral systems; the Baqqara have a very standardized transhumance system in which variations in different years and between different herd owners are a matter of local detail. Among the Jammala there is much less standardization and predictability, and flexibility in herd management is the keynote of success. The higher risks among the Jammala are reflected in a diversification of the types of animals herded. Thus while many Jammala consider themselves
as camel-owners, in fact sheep and goats are more important than camels for the majority of herd owners.

The cultivated lands in the centre of the area provide the pastoralists with their main source of grain. Here too the rainfall pattern has an effect on the style of the economy. It is often said by agricultural experts that 400 mm is the minimum annual rainfall required for successful millet growing, but much cultivation takes place far north of the average position of the 400 mm isohyet (see Map 1). Cultivation is more speculative towards the north, but because land preparation and weeding are less strenuous than in the south it is possible to plant seeds over large areas. If the rains are average, the yield is low but suffices; if the rains are above average, a great effort has to be made to tackle the weeding but the harvest will be bountiful, providing a large surplus for sale and for storage; if the rains are below average, the yield will be extremely low, but at least it will have required little effort to be made. In the south the effort required is consistently greater per unit of area, but the yields are higher and more reliable.

Two topographic features of the region require special mention. First there is the qoz, the great Central Sand Zone which covers an enormous area of the region and provides a soil suitable both for pasture and for hoe cultivation. At its northern edge it is bounded by the immature soils of the semi-desert, which vary between sand and stones depending on whether the underlying rocks are of Nubian Sandstone or of the Basement Complex. These rocks also form isolated mountain outcrops over the whole area. Some, like the Nuba Hills and the 'Northern
Map 1: Western Sudan.

Note: This map, compiled by the author was published in Adams and Hales, 1977. Drawn by Chris Odell.
Nubia' Jebels of Kordofan, are part of the Basement, others, notably in the north, are of Nubian Sandstone. At the south the gog merges into clay plain soils. The whole of the region is characterized by the seasonality of surface flow in the drainage channels, and everywhere the settlement pattern is closely related to the availability of water in the dry season.

The other main feature is the existence of several areas of Tertiary volcanic mountains, rising out of the Basement rocks to the west of the gog. The most extensive of these is Jebel Marra, which is sufficiently high to have more than twice the average rainfall for its latitude compared with the rest of the region. Jebel Marra forms the watershed between the Nile and Chad drainage systems, and watercourses radiate outwards from the highest areas. Most of these watercourses are seasonal, but in the mountains and to the southwest the flow is perennial. This water is used for irrigation in the dry season, and the inhabitants of Jebel Marra have a specialized horticulture and orchard economy alongside the predominant rain-fed hoe cultivation.

This specialized economy depends in an obvious manner on the particular ecological conditions of the locality, but it owes its present state of development to the existence of a pattern of trade both within the region and beyond. The same is true to a great extent of the current form of cultivation and pastoralism of the region as a whole. The unit of management of these activities is essentially domestic, but this does not mean that production is solely for domestic consumption, even though the technology of production is mainly unsophisticated.

Within the region trade takes the form of purchases of grain by the pastoralists and purchases of both grain and livestock...
by the townspeople. External trade is more important, the cultivators (and some of the cultivator/pastoralists) producing gum arabic, groundnuts and sesame, a large proportion of which is ultimately exported from Sudan, and the pastoralists producing livestock for the meat market. Considerable attention is being given to development of these productive systems at present, and livestock are perhaps the resource of the region being given greatest attention. There are several reasons for this. First there is the importance of livestock production in the region for the urban markets in Sudan and the growing opportunities for export as standards of living rise elsewhere in the Middle East. Secondly, there have long been fears expressed that environmental deterioration (soil erosion and 'desertification') is occurring at a dramatic rate in the region, and this has been until recently attributed mainly to the pastoralists owning excessive numbers of livestock. Recent investigation has shown that any attempt to deal with the problem must also involve changes in cultivation practices. Thirdly, and perhaps equally important, is the comparatively recent perception that the relative lack of tangible economic development in the region compared with other parts of northern Sudan has undesirable social and political implications.

The region has been linked by trade with other areas for several centuries at least. Today the main axis of trade is eastwards towards the administrative and commercial centre of the nation at Khartoum. In the past, however, the main direction of trade was to the north with Egypt and the Fazzan (Libya). A series of desert routes were established in the past along which camel caravans carried exports of gum arabic, ivory and ostrich.
and the re-direction of other trade through Khartoum, the desert routes declined in importance. Today they are used mainly by the Jammala for the export of camels on the hoof. Egypt was the main market for these camels, offering higher prices than current in Sudan and therefore attractive in spite of difficulties over currency exchange. More recently a very active trade with Libya has developed in connection with a number of livestock production projects financed by oil revenues. The most important of these is the sheep production project at Kufra, Libyan merchants bringing heavy vehicles direct to markets in Darfur to carry sheep for fattening. These projects have depended very largely on non-Libyan labour and the majority of labourers have come from Sudan, often taking their own camels for sale in Libya and doing some months of work before returning by truck⁵. The pattern of trade within the region and with other areas has been closely related to political organization. Most of the towns were simultaneously centres of commerce and administration. An historical approach shows the changes and continuities in the organization of the region.

There is a long history of state-formation in the region, with kingdoms centred on the Nile and on the mountains of Darfur. By the beginning of the eighteenth century there were two well-developed states influencing the region, the Sultanate of Darfur, centred on the Fur homeland of Jebel Marra, and Sinnar, centred on the area around the modern town of that name beside the Blue Nile⁶. Kordofan acted as a buffer between them, the eastern parts near the White Nile normally subject to Sinnar, the west subject
to Darfur but at times nominally independent under the Musabba'at, an exiled group of the Fur royal clan.

The Fur (Keira) dynasty in Darfur probably began as a tributary kingdom of an empire ruled by the Tunjur, whose centre may have been the city of Uri. The Tunjur, having replaced an earlier Daju dynasty, had apparently set up a long distance trade system, with Egypt and the Nile Valley in particular. For unknown reasons, Tunjur supremacy was rapidly supplanted by the Fur, under whom various political innovations were made and the trade system was developed. The first of the authentic Fur rulers is dated to about the middle of the seventeenth century. One of the major innovations was the division of the empire into provinces, over each of which was appointed a governor with hereditary succession. Consolidation of the empire was carried out largely by the governors using Fur levies for their armies. The subject tribes were placed under their own rulers, known (in Arabic) either as sultan or malik, and paid to the Fur provincial and central treasuries a tribute consisting of a crop tithe, a proportion of livestock, and/or a number of rolls of cotton cloth.

As the sultanate expanded into a multi-ethnic empire, the influence of the Fur aristocracy both at the court and in the provinces became a hindrance to the Sultans who needed to concentrate control of succession, military operations and trade in their own hands, and a non-Fur group developed around the Sultans as military leaders, court officials and provincial governors (the governors were given the title magdum and replaced the hereditary governors.). Many of these power-holders appointed by the Sultans were former court slaves, and another important group were immigrant Muslims whose literacy and religious and...
legal knowledge were valuable to the Sultans. The means for
arrogation of power to the centre was provided by trade, control
over which was held by agents of the Sultans, and in which the
Sultans were major traders. Slaves captured on raids south of
the Baqqara belt by merchants and others operating with the
sanction of the Sultans were exported to Egypt and the Fezzan,
and in return luxury goods and armaments were obtained for the
court and the Sultans' armies. Other commodities exported were
ivory and ostrich feathers. Much less is known about internal
trade in the sultanate, but salt was a major commodity, and it
can be assumed that there was an active market in cereals and
livestock as well as in manufactured goods such as iron tools
and hand weapons.

There is also very little information about the character
of administration within the non-Fur subject tribes. It is
clear that most of the sedentary tribes in areas adjacent to the
Fur were more markedly subject to the Sultans and their agents
than were the pastoralists. The Baqqara were never all fully
incorporated at any one time, and a succession of Sultans sent
punitive expeditions against them. Their importance was firstly
that their wealth in cattle and horses made very useful tribute,
and secondly that access to the slaving regions involved passing
through their territories. The northern pastoralists were nor-
mally more closely supervised because they could have posed a
threat to the desert caravan routes. However they were also more
readily controlled than the Baqqara because their dependence on a
relatively small number of permanent water sources in the dry
season gave them little opportunity for evasion of the Sultan's
supervision. The sedentary tribes on the fluctuating western and
and eastern margins of the sultanate were also liable to assert their independence, those on the west periodically coming under the rule of the Wadai sultanate and those on the east liable to attack by the Musabba'at.

In the spatial character of administration the Fur sultanate resembles Ibn Khaldun's classic model of the state. The ruling tribe occupied the central zone, around which were fully-subject tribes from whom taxation was regularly exacted. In the outer concentric zone were the tribes which were only nominally subject, which paid tax only when forced to do so. The outer tribes had an ambivalent relationship with the centre; a source of allies but also of opposition. In Darfur, as in Ibn Khaldun's model, many of those outer tribes were pastoralists, and it is reasonable to see at least part of the reason for their pastoralism in their political marginality.

The lack of information on local tribal affairs means also that little is known about movements of tribes within the sultanate. Most of the linguistic and tribal diversity of the area is explained by migrations before the 'historical' period. What is striking about the movements which are recorded is that tribes tended to move on an east-west axis within the same ecological zone. This was particularly clear in the later period when various groups moved from eastern Darfur into Kordofan, such as the Hamar, Bani Jarrar and Dar Hamid. It may be significant that most of the known substantial tribal movements were across Kordofan where there was no rigid administrative structure as in Darfur.

Although the population of Darfur includes a number of Muslim Arab tribes it was not primarily through them that Darfur
became Islamized. The first step in this process was the adoption of Islam at court, and this appears to have been one of the innovations of the first Fur Sultans. Initially the attitude was syncretic, aspects of the Sultans' role as divine kings persisting through to the beginning of the nineteenth century. As Muslims entered Darfur both from the west along the pilgrim route and from the Nile, court practice became more orthodox. An important aspect of the spread of Islam was the granting of estates (Ar. hawākīl, sing. ḥākūra) to holy men (A. fujāra, sing. fāqīḥ). A practice which became especially important towards the end of the eighteenth century. The majority of the estates appear to have been in the areas around the sultans' court at El-Fasher, among sedentary subject tribes and among the lowland Fur west of Jebel Marra. Frequently the Sultans gave assistance for the construction of mosques. Parallel with the spread of Islam, occurred the replacement of indigenous languages with Arabic, and it may be that the influence of the holy men was a major reason for the disappearance of the Berti and Birgid languages, among others. Certainly it is plausible that the relatively late adoption of Islam by the more remote non-Arab tribes is related to the fact that few estates were granted among them, especially among those which were pastoralists.

The inhabitants of the areas (or among pastoralists of the tribal sections) given as estates fell under the direct authority of the grantee, and paid their local taxes to him. Their former chiefs had no further rights in the collection of dues and were sometimes forbidden to enter the estates. Until more is discovered about the administration of the estates and the character of tribal administration prior to this, it will not be
possible to assess the implications of the change. But it can be assumed that among tribes, part of whose territory was given as estates, the strength of tribal identity and leadership was weakened by comparison with tribes outside the regions where estates were created. If this is so, it would imply that at the centre of the sultanate a process of de-tribalization was taking place. The effects of the estates were probably most important with regard to the political organization of tribes, and it is not at all clear what effect they may have had on clan or lineage structure, or on the closely related matter of blood-money. 14.

There is the same problem of a lack of detailed knowledge of local affairs in Kordofan as has been encountered in Darfur. Comparatively little is known about the larger scale political events and personalities, perhaps because of the lack of a continuous central authority. In the early eighteenth century Sinnar controlled the central part of the modern province, and merchants from areas of the Nile subject to Sinnar had established the towns of Bara and El Obeid as their commercial centres. In addition to slaves, ivory and ostrich feathers, the main exports of Darfur, the merchants of Kordofan also exported gum arabic and gold. However the development of such trade weakened the commercial monopoly of the Funj Sultans and was a factor in the decline of their power. 15. The Musabba'at attempted several times to create their own state in Kordofan, always unsuccessfully in the end 16. In the 1770s they succeeded in defeating the Sinnar forces near El Obeid, but after raising an army to threaten Darfur they were defeated in 1786 and Kordofan became a province of the Bur sultanate. In 1821 Kordofan was taken by the Turco-Egyptian regime, and from then on was always part of the wider
Sudanese state centred on Khartoum.

Darfur remained independent until 1874 when it was conquered from the south by al-Zubayr Rahma, a slaving magnate, and it was subsequently incorporated into the Turco-Egyptian state. It was not held for long, because in the early 1880s Muhammad Ahmad al-Mahdi gained his first successes in Kordofan, his army based on the support of Baqqara groups, and he soon took control of Darfur. Neither the Turco-Egyptians nor the Mahdists found it an easy province to govern, and regular military operations had to be undertaken by both regimes to subdue dissident tribes, as the Fur sultans had also found necessary. The last quarter of the nineteenth century was a period of major economic disruption, caused partly by the political instability and also by a succession of poor harvests, which resulted in widespread famine and the spread of epidemic diseases.

After the Anglo-Egyptian 'reconquest' of Sudan in 1898, 'Ali Dinar, the last sultan of Darfur, proclaimed the independence of Darfur, and this was recognized in 1900 subject to an annual payment of tribute. Finally, Darfur was conquered and incorporated into the Anglo-Egyptian Sudan in 1916 in a minor operation of the First World War.

In some respects the upheavals of this period may have had little effect on tribal political and economic organization, as the successive rulers of Kordofan and Darfur more or less stepped into each others' shoes. The appointment of District Commissioners, which elsewhere in the Anglo-Egyptian Sudan created a new intermediate level between the tribal chiefs and the Administration of the provinces, in Darfur was largely a replacement of the Fur regional governors, and the new Districts corresponded closely
with the old provinces of the Fur sultanate. The British also recognized most of the established tribal chiefs as their intermediaries with the rural population, and it is possible to argue that the importance of tribal chiefs was augmented under the new system. This particularly appears to be the case in those areas which had formerly been partly divided into estates. A series of Acts of legislation were passed which codified and formalized the powers and responsibilities of the tribal chiefs, and by the time independence was being planned they had so risen to fill their role that they were generally confirmed in power when Rural Councils were introduced in the early 1950s, composed partly of nominated and partly of elected representatives. An attempt to make these councils wholly elected in the early 1960s did not greatly alter their composition, and in 1971 the Peoples' Local Government Act provided for the abolition of all tribal chiefships, with the exception of those of certain major tribes, such as the Kababish, the Rizayqat and the Zaghawa. So far the Act has not achieved all its desired results in Darfur, where one of its effects has been to shift formal political status from the traditional leaders largely into the hands of progressive merchants. The traditional leaders have continued to be regarded as more representative, and often as more approachable, by the majority of their followers.\(^{17}\)

2. THE MEIDOB

"Au nord encore sont les pays de Mydaoub et de Berty, deux provinces assez etendues ..."

(al-Tunisi, Voyage au Darfour, 1845: 128)

The Meidob are one of the series of jammala groups in the sahel zone of Western Sudan. They are similar in many respects
to their pastoral neighbours, particularly in the overall form of their economic system and in their relations with the rest of the region. But there are also important differences, related in part to their history and to the particular ecological conditions of their territory, and many of these are reflected in their social organization.

The Meidob occupy the north east of Northern Darfur Province, and their Dar ('home', territory) is approximately 22,000 square kilometres in area. The population is very unevenly distributed over this area, most settlement being concentrated in and around the volcanic mountain mass known as Jebel Meidob, with a smaller group near the northern peaks of the Tagabo Hills. The average annual rainfall of the area is around 200 mm, and settlement is only possible because there are a number of permanent water sources. The location of the natural wells in the mountains and on their perimeter accounts for the localization of the settlements. As the correspondence of the names suggests, there is a close identification of the Meidob people and 'their' Jebel. When some of them expanded out of the Jebel it was virtually inevitable that they should have settled first in the northern Tagabo Hills, for this is the only adjacent place with permanent water sources. More recently, however, a number of bore-wells have been constructed on the plains and there has been a considerable movement away from the mountains to settlements around these wells, at some of which markets have been established. I estimate the present population to be around 38,000, based on the result of the 1956 Sudan Census to which I have added the net increase of 3 per cent per annum. Population growth is another reason for the progressive movement of settlement outwards from the mountains. Nevertheless,
the density of population remains very uneven and large areas have no settlement.

The Mheidob are semi-sedentary pastoralists, living in houses, which are permanent structures, grouped in small settlements. Following Lewis (1961: 56ff), I shall refer to these settlements as hamlets. The distribution of population is very closely related to the availability of water and pasture in the area around a water source. Seasonal changes in the availability of these resources and in the requirements of livestock mean that some Mheidob are transhumant, occupying two or more settlement sites in the course of a year. However, very few of those who move spend different seasons in different local areas, and a considerable number of people are completely sedentary. The hamlets change in size in the course of most years, the wet season being a time of congregation and the dry season of dispersal. During the rains most Mheidob make farms on the sand plains where they plant millet, but as I have suggested earlier the yields are not reliable. Millet porridge is the staple food of the Mheidob, and they take their farming seriously, though those who have fewer animals to exchange for grain probably take greater pains over their farms and feel more acutely a poor harvest than do the wealthy. But a poor harvest is the result of little rain, and this affects all Mheidob because it reduces the quantity and areal extent of pasture. As Madame Tubiana has said of Dar Zaghawa, to the west of Dar Mheidob: "La plus grande ressource de ce pays ... c'est l'herbe." (Tubiana, 1964: 11).

The Mheidob own camels, sheep, goats and cattle, and they are among the most prosperous pastoralists in western Sudan. Goats
and cattle are kept in the settled areas and provide milk and meat for domestic consumption. Virtually all families own some goats and/or cows. The cattle are not herded, but make their own way to pasture and return at night to their calves in the hamlets. The kids, like the calves, are kept in and immediately around the hamlets all the time, watched over by children too young to go out with the flock. Adult women have a considerable role in the management of cattle and goats, and they are almost exclusively responsible for donkeys. Most women have the use of two or three donkeys for carrying water from the wells to the hamlets. On the other hand, women are minimally involved in the management of sheep and camels. A family with a small number of sheep and camels may keep them in more or less the same way as goats and cattle, respectively. Baggage and riding camels (mature male animals) are also kept near to the settlements when their owners are using them. However, the majority of sheep and breeding camels are very rarely brought to the hamlets, spending all their time moving between pastures and visiting water sources when necessary. They are always herded separately and are managed by elder children and by adult men. I shall refer to the flocks of sheep and herds of camels which move independently of the families as 'split herds'.

The division of the livestock into settlement-based and split herds has important implications. Firstly, it means that only the sheep and camels have the complete mobility which enables them to minimize losses in years of poor rainfall and to maximize their gains in years of good rainfall. The relatively static cattle and goats are extremely vulnerable to losses resulting from insufficient pasture or from localized outbreaks of disease.
The settled areas tend to be heavily overgrazed, because the cattle and goats have a limited grazing radius consequent on the need to return to the settlements at night and on the need for the settlements to be within a day's round trip to the wells. The pastures more distant from the wells are more selectively grazed by sheep and camels, which can move further afield if fodder is scarce. The result of this is that in the long term the growth rate of flocks of sheep and herds of camels is faster than that of flocks of goats and the cattle. Secondly, the hamlets are dispersed within the area accessible to the wells so that goats and cattle can use as much as possible of the fodder in the area. Settlements tend to be small. One can also postulate, in principle, that the density of population will be lower in an area where people own many goats and cattle than in an area where more of the animal wealth is in sheep and camels. Thirdly, a family owning an appreciable number of each type of animal needs a large number of herders of the appropriate ages to manage its different flocks and herds.

These three elements of variation, the growth rates of herds, the human population density and settlement pattern and the availability of herders interact in a very complex manner. It is this interaction which is the main theme of my analysis. At this stage I shall merely describe the interaction in a simplified outline.

The different growth rates of herds of different types have the result that in the long term there are differences between the relative growth rates of the herds and of the human population owning them. A wealthy family able to keep a large part of its animals away from the settlement, will, other things being
equal, continue to increase in wealth. There is a good chance
that the growth rate of the herds will be equal to or greater
than the human population growth rate. The herds of a wealthy
man are managed in a way which 'minimizes the difference'
between seasons and between years of high and low rainfall. A
poorer man, owning a modest number of goats and cows only, depends
on good rainfall so that his flock has adequate pasture, and so
that by growing grain he can avoid having to sell animals to buy
it. If he is successful he may be able to augment his flock with
female animals purchased with cash he has gained by selling male
animals. But he has to be constantly frugal as well as lucky if
he is to provide for his descendants a set of herds of adequate
size and composition to avoid their being caught in the same set
of constraints. In years of low rainfall he may find not only
that little pasture grows, but that some of his wealthy neigh-
bours have brought their large herds to the settled area, where
they consume much of the pasture and then move away again. The
wealthy herd owner depends in a different way on his poorer
relatives and neighbours, because he may be able to employ their
children as his herders. However, people involved in several
flocks and herds tend to live in larger hamlets than people
who possess only goats and/or cattle. An elementary family
normally has enough labour to manage a flock of goats, but in
order to organize sufficient herders to manage goats and a flock
of sheep or a herd of camels, or both, several families may have
to co-operate.

I have sketched this outline in rather bold terms to suggest
the interdependence of people of different wealth and their herd
management practices. It is perhaps one of the remarkable
features of the Meidob pastoral system that the differences of wealth and herd management have not been transmuted into distinct sections of the population, perhaps living in different areas and in different ways, so that some would be sedentary, some transhumant and some nomadic. It is a fact that in the same locality, even in the same hamlet, there are neighbours whose economic circumstances are as different as I have described.

There are two important methodological points about this outline. The long term pattern is very difficult, if not impossible, to substantiate with data collected during a short period of fieldwork. One reason for this is that in the last sixty years there have been marked changes in the ratio of humans to animals and in the relationship of livestock numbers to pasture resources, so that it is inadmissible to assume that the levels of wealth, the range of herd sizes and the range of herd growth rates are the same now as they were in the past. Secondly, the differences of wealth are not polarized, as I have suggested, but in the short term form a continuum. Therefore the empirical data reflect only the tendencies underlying the pattern, and furthermore are subject to some factors I have omitted in this outline. One of these is the role of non-pastoral sources of income, though this appears to have become important only in recent years with the increase in opportunities for employment of adult men outside Dar Meidob. Another factor, which I mention but which I do not consider to be of critical importance, at least as shown by the short-term data I possess, is the difference in skill and energy among herd owners.

If one asks an informant "Where do the Meidob pasture their
animals at different times of the year?" the standard answer is more or less as follows:

"When the rains begin to fall in the areas south of Dar Meidob the animals are taken there to find fresh grass (late May to July). Then, when the rains are well-established in Dar Meidob and the grass has grown, the herds come back to the Dar and stay as long as there is water in the pools (August to October/November). In the winter they are taken to the jizu, northwards in the desert. If the jizu is good they may stay there for over four months, but sometimes they stay only one month. Then they come back to the wells and spend the dry season near them."

It will be clear from what I have already described, that this is an idealized account. In the first place, the movements out of Dar Meidob are made only by sheep and camels, and only a proportion of the Meidob own even a part of such herds. Secondly, the jizu grows only in years of high rainfall. The name refers both to the special pasture of succulent herbs which grow (remarkably) after the end of the rains, and to the area in the South Libyan Desert where they grow. The name is believed to be derived from the Arabic word jaz, meaning 'to survive without drinking, living on the juice of plants' (Baumer, 1968). But at the time my informants were giving their description, just after the Sahel drought, there had been no jizu for six years.

The account is illuminating, nevertheless, because it describes the herd management pattern which maximizes herd growth by maintaining a very high nutritional plane for up to nine months of the year. Jizu has a key role in the system, because it provides, when it is available, a source of fresh fodder at a time when elsewhere in the Dar all the herbs and grasses have
become standing straw, which is relatively poor in nutrients compared with the same plants in their green state. When the jizu grows the sheep and camels are dependent on straw for a very short period, and can graze it very selectively. When there is no jizu all the animals are dependent on the straw remaining from the growth of pasture during the previous rains, and grazing becomes less and less selective as the dry season progresses. When this happens many animals still go north of Jebel Meidob in the early winter, but they are only able to eat straw, and depend on a type of melon (Ar. handal, Bot. Colocynthus vulgaris) for their water intake, also having to make occasional visits to wells. This delays to some extent the arrival of the herds in the areas within reach of the wells, but does not make a substantial difference to the fact that when there is no jizu the animals are subjected to a long decline in the quality of their fodder. I should add that this decline is mitigated to some extent by browse, which is a major source of dry season fodder for goats and above all for camels.

The idealized account is also of interest because it asserts indirectly that Meidob have rights of access to pasture outside the Dar at certain seasons. It is however, the modern pattern, because there are indications that in the past Meidob herds spent the early and main parts of the wet season east and south east of the Jebel, rather than to the south of it.

The pastures to the east and southeast are now in Kordofan and are occupied mainly by the Arab Kababish and Kauhla. The border with Kordofan forms a nominal eastern boundary of Dar Meidob, but the effective limit of Meidob grazing is somewhat to
the west of the border. To the south and south west the boundary is also indistinct, as there is some interspersion of Meidob settlements with the villages and camps of the Zayadiya, Berti, Zaghawa and a few minor tribes. On the north west and north there is no permanent settlement and hence no boundary, but rather a shading off into the South Libyan Desert. By convention Korofan pastoralists going to the jitu keep well to the north of Jebel Meidob, so in practice any pasture available near to the northern side of the jebel 'belongs' to the Meidob. The pasture in their Dar is not used exclusively by the Meidob. Some Kababish and Kawahlal spend the dry season at well centres in the Dar, and a few also remain at other times of the year. The Zayadiya Arabs and the Berti who have livestock have long had rights of access in principle, but they do not at present choose to exercise such rights to any great extent because the Meidob are notorious as livestock thieves. Zaghawa pastoralists generally keep well to the west of Dar Meidob.

The position of Jebel Meidob, some forty miles across waterless and almost treeless sand plains from the nearest permanently settled area in the Tagabo Hills, gives the tribe an apparent remoteness. The physical isolation is, of course, only really relevant from an outsider's point of view, and even then it is rather misleading. The Meidob are probably more cosmopolitan in outlook than many peoples in Darfur (who are by no means parochial), well-informed of local events though visits to markets in Darfur, but also familiar with events at the national scale by virtue of their regular visits to Omdurman to sell animals. On a still wider scale, many men have visited Egypt to sell
camels, recently many have sold camels and worked in Libya, and (by comparison with most other people in Darfur) many men have made the pilgrimage to Mecca. This is not merely a recent phenomenon. The analogy I have drawn between the Sultanate of Darfur and the Morocco of Ibn Khaldun is instructive here. Geertz's comment that in Morocco "townsman and countryman did not live in different cultural worlds, but ... in the same one differently situated" (1968:5), is largely applicable to Darfur, though perhaps to a lesser extent than in Morocco, and probably more so today than in the past.

The Moidub were, in their relations with the Sultanate of Darfur, a paradigm case of Ibn Khaldun's 'wolves' (Gellner, 1969a: 137; 1969b: 6). This is most clearly apparent in the careers of a number of individuals of Moidub origin, who in the nineteenth century achieved high office at court and in the Fur administration. The most remarkable of these individuals was Adam 'Tarbush', who rose from being a slave page-boy in the palace to be a confidant of Sultan Muhammad al-Fadl (reigned 1801 to 1838). He was entrusted with securing the succession of the ageing Sultan's second son, and achieved this in the face of a counter-conspiracy. The successor, Muhammad al-Husayn, appointed Adam Tarbush his wazir (vizier), and it was in this capacity that he was killed, leading an army against the Rizayqat (baqara) in about 1856. Adam's son Bakheit, like his father almost forty years previously, was involved in the succession of Sultan Ibrahim, a son of Muhammad al-Husayn, though Ibrahim's position was overthrown about a year later by al-Zubayr's invasion in 1974. Nachtigal, whose account of Darfur is the source of the above
information (1971 trans: 306-310, first publ. 1889, cf. O'Fahey and Spaulding 1974: 174-181) also mentions a Meidobi named Hasan 'Abu Kabir', whom he describes as being in the service of the Abu Irrings, the Fur aristocrat who represented the people of north east Darfur at court. During Muhammad al-Husayn's reign he was appointed maqdam (governor) of the northern region of the sultanate, and he commanded an abortive expedition against the Rizayqat, carried out by an army from his region, prior to Adam Tarbush's. A Meidob informant spoke of a maqdam Hasan as the second maqdam of Meidob origin, after one named Segeri. They were the first two in a line of eight governors of northern Darfur, all of Meidob ancestry.

Firm evidence regarding the position of the Meidob in the Sultante is lacking. It can be assumed, however, that they were always integrated into the larger polity to a considerable extent. It would appear that the Meidob were part of the Tunjur empire before the Fur dynasty came into being. Arkell has located in Dar Meidob two ruined walled settlements, and he has identified similarities between them, notably the 'platform of audience' at each, and the city of Uri, which is attributed to the Tunjur. The larger of these ruins is an extensive area of circular stone-walled buildings, located defensively in a lava field beside Malha Crater. Arkell has suggested that this 'city' controlled the trade in salt produced at Malha (1952b: 250-251).

As regards the later period, I have already given one reason for the integration of the Meidob into the Sultante, namely their dependence on a limited number of wells in the dry season, which would have made it difficult for them to escape the attentions of the Sultans' tax collectors. It is maintained
today by Meidob that during the Sultanate their tax was paid direct to the central treasury. This reflects the peripheral position of the Meidob because other tribes appear to have paid tax to the regional governors or to the estate holders. It is also extremely significant that no section of the Meidob or of their land was given as an estate (hakura) which may be compared with the situation among the Berti and the Zayadiya in whose territories there were many estates (O'Fahy and Abd-al Chaffar, 1972, 1973). According to informants the tax in the time of 'Ali Dinar (1899 to 1916) was one in forty goats and sheep and one in ten cattle. A contemporary record is almost certainly more accurate, quoting the rates as one in forty goats, one in thirty sheep, 8 piastres per cow and one rial (= 20 piastres) per camel; in addition there was a poll tax (1914: 2 piastres per person; 1915: 1 piastre per person) and an annual requisition of one roll of cotton cloth per household. The same record states that the crop tithe was paid to the local king (MacMichael, 1915: SS-56). The fact that part of the tax was paid in cash implies that the pastoral system was partly monetized at that time. It is reasonable to postulate, however, that it was always market-orientated to some extent, since the Meidob would have needed to obtain grain and commodities such as pots, cotton for clothing, iron tools and weapons, and so forth, from areas further south.

They probably sold livestock and salt in exchange for these goods, the salt from Malmi, Uma Bayyada and also from Bir 'Atrum in the desert. Al-Tunisi records that Meidob salt (which might mean from any one of these places) was regarded as the best salt in Darfur, and was the most expensive (1845: 317-318).
One aspect of the incorporation of the Meidob in the Sultanate was the right of the Sultans to appoint their kings. It is said that a candidate was nominated and took presents to the Sultan to ensure his acceptance. The kings and some of their subjects were almost certainly required to attend the annual ceremonies which took place at the Fur court (O'Fahey and Spaulding, 1974: 144-145).

This discussion of some aspects of the history of the Meidob has served to introduce the perspective of their integration into a wider political (and cultural) entity. I shall have more to say on some aspects of their history in what follows, but I should draw attention to a change in emphasis. So far, taking what amounts to an external point of view, I have discussed the Meidob as a single entity, and I have said nothing about the political divisions which, from an internal perspective, are far more significant than unity. In the course of describing the internal framework I shall emphasise the distinctness of the Meidob as a tribal group. Having shown that they were always part of a wider society, I hope that this distinctness can be understood as a partial phenomenon, relative to the observer's point of view. The local viewpoint on distinctness, and especially on political divisions, is itself dependent to some extent on scale, down to a level of minute local particularities.

The Meidob have a common name for themselves, Tiddi, and refer to Jebel Meidob as Tiddi-n-or (or = mountain(s)). Their sense of unity as a tribe, or perhaps better as an ethnic group, is reflected most obviously in their language and in some features of their social organization, both of which set them
apart from their neighbours. Their language, to which I shall return below, is unintelligible to their (present) neighbours, who are all Arabic-speakers. The Berti did possess their own language (known as siga²⁵) until quite recently, but, in contrast to this, the Meidob language, tiddi-n-al (al = mouth), remains the first language of all Meidob children, except a few born in towns outside Dar Meidob. Secondly, up to the period of the Mahdiya, the Meidob practised uterine succession and inheritance, while elsewhere in Darfur it appears that agnatic succession and inheritance have been practised for a considerable time (though it must be added that too little research has been done in the area to prove that matrilineal descent has not been important elsewhere or at an earlier time). The Meidob have a system of matriclans which are dispersed throughout the Dar. In the past these were the groups involved in payments of blood-money, so that members of different political units were brought together in such payments. Today payments and receipts of blood-wealth are equally divided between the matriclan and the patriarchal clan, and succession and inheritance are predominantly agnatic. A third characteristic of the Meidob which sets them apart from their neighbours is and has been their hostility towards them, as I shall discuss in more detail below. One result of this is that there is still virtually no intermarriage with these neighbouring groups.

The language and the importance of matrilineal descent are both connected with the tradition that the Meidob are immigrants from Nubia, that part of the Nile between al-Debbah and Aswan. The circumstances of the immigration are also one
of the main features of the major internal social and political division. Modern informants state that the immigration took place about six hundred years ago. At that time Nubia was a Christian kingdom and succession was uterine. Tiddi-n-al is a member of the Nubian Group of languages (Tucker and Bryan, 1966: 313-328), and just as there are two dialects in Nile Nubian (Dongolese-Kenzi and Nobiin (Mahas-Fadicca)) there are two dialects in tiddi-n-al. I am not in a position to state whether the dialectal difference in tiddi-n-al corresponds to that in Nile Nubian, but, at any rate, informants imply that it does. Each of the two main political groups claims that its own origin was in the Mahas (northern) area, and that the other group came from the Dongola area. These two groups are the Urrti, who inhabit the northern and eastern parts of the mountains, and the Kargeddii, who occupy the southern and western edges of the mountains and, as an offshoot, the northern Tagabo Hills. These are the two largest groups today, and in the past they were the major kingdoms. The third group, also formerly a kingdom, is that of the Torti, who live adjacent to the Kargeddii in the south eastern part of the mountains. They claim that they originated in Mahas with the Kargeddii.

The Urrti and the Kargeddii have clear, but by no means convincing, traditions of their arrival in Jebel Meidob. The Urrti relate that their ancestor, Ahmad al-'Adoob, was leader of a group of people wandering in the desert north of Jebel Meidob. Part of the group went on to the west, but Ahmad and his party followed a cow (or an ostrich, or saw a fire on the Jebel) and came to a Daju village at Dardeif (see Map 2). Subsequently, the Daju left and the Urrti divided into three groups, each said
to be descended from one of Ahmad's three sons. The ancestors of the Kargeddi arrived as a group and were given their name because they were heard cutting trees (kar-ethan, kar = tree) by Ordati people who lived on a mountain top (see next para). A common theme in the variants of the story is that a woman in the party died, one version saying that she was buried at a place in torti-n-dando (place of the Torti animals), and the other saying that a large grave-mound at idero (Ar. Jebel Kaboija) is her's.

The origin of the Torti is more problematical, and I shall suggest that there are grounds for believing that they may be indigenous to the area. Arkell recorded a tradition that the Torti did not come from Nubia (Arkell Papers, folio 10). One line of support for this argument is the possibility that the name Ordati means simply 'mountain Torti' (T. or-torti). A second, and in some ways more interesting, line of reasoning follows on from the fact that the Torti had certain ritual responsibilities relevant to all Meidob, even though they were, at least in recent times, by far the smallest of the kingdoms. The malik of the Torti performed annual rites to produce rain, and was requested by other Meidob to perform these rites (Sarsfield-Hall, 1920: 225-227). Again the similarity between Ordati and Torti appears, for there remains an Ordati settlement at the foot of the mountain referred to in the story, and in the past a member of this settlement was the custodian (T. komerti, cf. tii-n-komerti, sheep herder) of a rock nearby at which rain-producing rites used to be performed (MacMichael, 1918: 1922: 40-41). The latter rite seems to have had a more local significance than the former.
Another ritual location of major significance in the past was a
cave at Awir, a mountain in Dar Torti, which used to be visited
by people from all parts of Dar Meidob to gain or increase
fertility (of women and herds) (Cumming, Ms in Arkell Papers,
folio 8). The Torti also possessed a sword and a copper drum
(Ar. nahas, a major symbol of chiefship throughout western Sudan),
which are said to have been found at some time long ago on the
saddle of an untended camel which was wandering in uninhabited
country near Dar Torti (Sarsfield-Hall, 1920: 225; Lampen: 1928).
It may be noted that the Torti do not claim to have once been more
numerous and powerful, and to have been equivalent in status to
the other kingdoms; their symbols of authority arrived
'miraculously'. I consider that these fragments of evidence are
a parallel to the division between ritual power, held by the
autochthonous population, and secular power held by immigrants,
which has been noted elsewhere in the same 'culture area' (e.g.

This brief summary of traditions of origins serves to show
one way in which kingdoms represent their separateness from each
other. The difference in dialect seems to indicate that the
major division, between the Urri and the Kargeddi, is of con-
siderable antiquity. There are some accounts of warfare between
the groups, which further emphasise the long history of the
division. One major battle, in which Urri defeated Kargeddi,
can be dated as late as the mid-nineteenth century, judging by
There was also animal theft between the kingdoms, attested by
Kargeddi informants who were able to describe the route taken
by the raiders, and by a stone barrier over a hundred metres long built across a valley on the raiders' route by the Urrti group who were preyed upon. At the time of the Mahdiya, the political division was widened by the appointment of the Urrti king, 'Ali 'Eisa, as the governor (Ar. 'amir) of north-eastern Darfur. The Kargeddi resisted the call to arms. Firstly, having been ordered to El Fasher, they were escorted eastwards in rawhide bonds. They managed to escape from their guards when a light shower of rain allowed the bonds to slacken, and they made their way back to the Jebel. Next they fought off a mainly Berti force sent to enlist them, and finally, after their wells were occupied by Mahdist soldiers (Ar. jihiadiya), they were forced to acquiesce, being the last group in northern Darfur to do so (Lampen, 1928: 50-60; Musa al-Muharek, 1970: 128-30).

At the time of 'Ali Dinar, it seems very probable that the kings of the Urrti and the Kargeddi were seen as equal in status. This is suggested by the fact that both kings were required to supply an equal number of camels, sheep and waterskins to a caravan going to Libya to obtain armaments from the Sanusi in 1915-16. Apparently the failure of malik Mansour Sulayman of the Urrti to supply the required number of each item led to his exile in Kordofan in 1915 (Arkell, 1922: 131-132). At this time the Torti had been placed by 'Ali Dinar under the authority of the Kargeddi malik, Jami' Kheir, and many of them also took refuge in Kordofan, then under Anglo-Egyptian control.

It may have been partly as a result of the absence of the Urrti and Torti kings when the British arrived in Darfur in 1916, that they regarded Jami' Kheir as the strongest of the kings. The Urrti and Torti kings were re-instated, but it was felt that
administration of such a small tribe should be carried out through a single chief. The Torti kingship remained, though really in name only. Malik Mansour of the Urri soon found himself in trouble with the British, first when some members of his section of the Urri (Teukeddı section) were caught trading slaves, and then, more decisively, when two Teukeddı men stole a woman slave of the Berti king. Mansour was ordered to bring the offenders to justice, but was unable to do so, apparently because one of his wives was a kinswoman of the thieves. The British threatened a punitive raid, and finally the thieves gave themselves up. Mansour was exiled from the Jebel for having failed to govern effectively, and Jamı' Kheir became responsible for collecting tax as the Amir of the Meidob. This was not disagreeable to the Kindirra section of the Urri and to the Temeleka sub-section of the Teukeddı, both groups having their own rivalries with the ruling Teukeddı section. The latter, however, strongly resented the threat to their autonomy, and the matter culminated with threats on the life of the District Commissioner.

In 1929, Jamı' Kheir was succeeded by his son Muhammad 'al-Sayyah' as Kargeeddı king and chief of the Meidob confederation. It seems that Muhammad's capability as a leader overcame some of the antagonism which existed between the groups, although the Teukeddı continued at intervals over the next thirty years to seek re-instatement of their kingship. Muhammad al-Sayyah died in 1959 and his brother Osman acted as Regent for Muhammad's son al-Tom, who was nominally king from then until the kingship was abolished following the enactment of the Peoples Local Government Act of 1971.
One result of the abolition of the Meidob kingship, first that of the Urtti in 1923 as a result of Teukeddi recalcitrance, then of the Torti in 1944 on the death of the incumbent, and finally of the Kargeddi, was to increase the status of the section chiefs. Each of the ancient territorial sections had a chief known as an okill (Ar. wakil, deputy), and these became administrative (tax collecting) divisions known as omodiya. There is no space to present in detail a description of each of these groups, but they are indicated on Map 2. The Torti had no subdivisions, and they are now half an omodiya. The Urtti had four sections, two of which have been amalgamated and one of which has been divided into two omodiyas. Within the Urtti group there is a division between the Usutti and Teukeddi and the Kindirra and Ikedi sections, not merely a matter of political rivalry but also a boundary across which there is little marriage. Among the Kargeddi there is a similar division between the Kondeidi and Kirra sections, which is explained by reference to political rivalry in the past, the chiefs of Dar Kirra being descendants of the early Tesetti matriclan dynasty of the Kargeddi, while Kondeidi is the section to which the subsequent dynasty of the Arangiddi matriclan belongs (cf. Lampen 1928: 58). An interesting feature of the section of the Kargeddi settled in the northern Tagabo Hills (an area known as (Ar.) Abu Garan 'possessor of horns', because of the tall volcanic mountains) is that this section is itself divided, each of these parts having been colonized predominantly by people from the other Kargeddi sections. The Kargeddi had five sections, including Abu Garan, but they are now seven omodiyas, one of these being the Torti
and the other additional one being centered on a recently developed market village.

There are thus eleven omodiyyas, each under an Omda. These men are the main spokesmen of the Meidob, exercising a kind of 'collective leadership'. The nature of this leadership was invariably apparent at local meetings, and was particularly obvious at a conference held in 1974 between the Meidob and the Kababish. This conference was one of a long series of meetings held every few years since the 1930s, at which unresolved cases of homicide and animal theft (mainly of camels) are settled. On the Kababish side the Nazir (the chief of the chiefs) and his deputy monopolized the discussion, and none of the other Kababish present said anything of consequence, at least in the main sessions. By contrast, on the Meidob side many of the delegates voiced their opinions, sometimes even arguing with each other. The Meidob delegation included not only the Omdas, but also a number of members of local magistrate's courts and Sheikhs, the latter being subordinates of the Omdas as tax collectors. Outside the formal sessions, whenever the Meidob deputation held discussions these tended to break up into Urrti and Kargeddi (plus Torti) groups, each group working out its stance on a particular topic before bringing it back to the general forum.

One of the points made by the Kababish at the conference was that they wanted the Meidob to have appointed a single individual to be responsible for apprehending camel thieves. Three candidates were nominated subsequently, two Kargeddi and one Urrti, and in the event it was the Urrti man, a relative of an earlier Teukeddi king, who was appointed. His official title
is 'Chief of the Meidob Court', but locally people began to refer to him as malik, and he added his name to the list of Urtri kings. Not surprisingly, his appointment is resented by the Kargeddi. This appointment occurred towards the end of my fieldwork, so I am unable to assess its implications. It seems unlikely, however, that the change will produce a drastic response like that of the Urtri in 1928, partly because of the extent to which Omdas have assumed authority in local affairs, and partly because political authority is itself much less concentrated in the person of one individual than it was in earlier times. Responsibility for tax collection, above the level of the Omdas, rests with an Assistant Executive Officer of the Rural Council. Other individuals are members of the Committee of the Rural Council (with its headquarters in Mellit). In the wider political context, the Meidob have local representatives of the Sudan Socialist Union, the only official political party, and a Meidobi is a member of the national Peoples Assembly.

3. CONFLICT BETWEEN THE MEIDOB AND THEIR NEIGHBOURS

Some account of Meidob relations with neighbouring tribes is necessary to explain certain aspects of their pastoral system, their settlement pattern and the way their territory has changed in size. In general these relations have been hostile, although there have also been agreements on grazing boundaries, which have attempted to limit conflict by controlling the movement of herds. I shall concentrate on the conflict between the Meidob and the Kababish, which has been a fundamental aspect of Meidob life since the two tribes first came into regular contact seventy years ago. Earlier conflicts with other tribes have also had
important implications, one of which is that they set the scene for relations with the Kababish.

The area occupied by Meidob in Abu Garan was Berti territory at some time in the past, known to the Berti as Kibran. I was unable to establish when Meidob first began to colonize this area, but according to Holy (1974: 64) the Berti inhabitants started to retreat southwards in the mid-nineteenth century. They left because of Meidob raids on their grain stores, and it seems from accounts of these raids that people from the Jebel were involved as well as the colonists. The Berti are able to store considerable quantities of millet after a good harvest, and for storage they dig pits (Ar. matamir, sing matsura). These pits are undetectable once they have been filled and the surface covered over with sand. The Meidob tactic was therefore to drive away the Berti men and force the women left in the villages to reveal the locations of the matamir.

Today relations between the Meidob and the Berti are peaceful, with a considerable amount of exchange of animals or cash for grain. Holy mentions that the Berti experience thefts by individual Meidob (1974: 142). The people of Abu Garan have been notorious for the last sixty years, to other Meidob as well as to the Province administration, as thieves and as agents for the sale of stolen animals.

An important consequence of the earlier conflict was that the Meidob were able to claim as their territory the whole of the area between the Jebel and the latitude of the important wells at Madu. However, later events were also to have a bearing on their claim to this territory.
In some ways the most spectacular of the past conflicts was between the Meidob and the Gura'an of north-eastern Tchad. The Meidob were the victims in this context, with Gura'an raiding parties attacking unpredictably out of the uninhabited country west of Dar Meidob. Meidob traditions of these raids are largely compressed into an account of one occasion when Gura'an attacked a number of settlements and made off to the west with a group of captured Meidob and many animals. A large party of Meidob, travelling more rapidly, overtook them and lay in ambush at a wadi named Telho, said to be north-west of Jebel Taiga. In the pitched battle which ensued, the captives and livestock were recovered, but many Meidob and Gura'an lost their lives. On other occasions the Gura'an were more successful and one elderly informant was captured as a child and lived in Tchad for thirty years. By the nature of the raids, they had to be resisted by Meidob alone, and it is unlikely the Sultans took any interest in them. The raids on settled areas in Darfur ceased at about the same time as the British entered Darfur, because the French, who had advanced from the west, carried out a ruthless 'pacification' of the Gura'an. As late as the 1930s, however, the Gura'an continued to mount attacks on caravans making their way to salt pans in the desert.

During the nineteenth century, the Meidob also came into occasional contact with tribes to their east, notably the Hamar and the Bani Jarrar. These tribes appear to have been two of the main groups of the Fazara "federation" of Arab jammala pastoralists. The Hamar were described by the engineer Ensor, who travelled along the Wadi al-Milk in 1876, as "the richest nomads in this part of Africa" (1881: 86). They met the Meidob and
and other pastoralists from the area that is now north eastern Darfur in the wet season in the area between Jebel Meidob and the Wadi al-Milk. Conflict therefore took the form of affrays between herders and thefts of animals. It is said that in the mid-nineteenth century, the Hamar and the Meidob agreed that a place named Umm Gulhi would be a grazing boundary between them. Apart from this, little is remembered of the conflict. However, their results are indicated indirectly. The ancestresses of several sections (T. un-al) of Meidob matriclans were Arab women captured from the Hamar and the Bani Jarrar. The same thing also occurred the other way around, the ancestor of some of my informants having been born to a Meidob woman who was captured by Arabs. She was taken far to the east, but managed to escape with her child when the camp she was with returned to the western pastures close to Jebel Meidob. In the more distant past, the mother of Ferahna and Hababin, two ancestors of major sections of the Dar Hamid Arabs of Kordofan, was a Meidob woman (MacMichael, 1912: 119).

The most important conflicts at the time of the Fur Sultanate were with neighbouring pastoralists in northern Darfur notably the Zayadiya, the Umm Jalul section of the Mahamid (northern Rizayqat) and, to a lesser extent, the Irayqat. These Arab tribes used the pastures to the south and west of the Jebel, mainly in the wet season when there were ephemeral pools in some of the wadis, but also in the dry season, which meant visiting Meidob wells. Malha crater was the main well-centre used by them, and a small hill near the crater is still known as 'Jebel Agalia', because the Arabs used to camp there with their herds (Agalia, from Ar. 'ugal, a camel hobble). In payment for the use of the
wells the Zayadiya annually brought to the *malik* of the Kargeddi a camel loaded with tobacco (*tambac*, for chewing).

The herds of these Arabs were a relatively easy prey for the Meidob, because the stolen animals could be hidden in the valleys of the Jebel. Ahmad Anjiri, who was *malik* of the Kargeddi during most of the third quarter of the nineteenth century, is said to have inherited seventy slaves from his predecessor, and it is claimed that he used them to carry out regular raids on the Arab herds. It appears that other notables also possessed slaves and used them in this way, though informants who suggested that slaves brought in stolen herds every day were doubtless exaggerating the ease and frequency with which the thefts were carried out. It seems likely, nevertheless, that some of the larger herds of the present day owe some of their status to raids carried out a century ago.

The thefts from Arabs using pasture immediately around Jebel Meidob did not bring only gain to the Meidob. There was a constant danger of retaliation, and this was one of the reasons why Meidob settlements at that time were substantial villages. Many of the Kargeddi settlements were actually located within an outer range of hills, just to the south of the main Jebel. Such was the fear of the Arabs that "Meidob did not dare to search for animals of theirs, which strayed beyond the outer hills". Nor was the large size of the settlements a guarantee of safety, for one of the Kargeddi villages of that time was completely destroyed and many of its members killed in a raid by the Zayadiya. Nevertheless, the threat of attack by Arabs was not the only reason for the absence of Meidob settlement on the
plains; the lack of permanent water supplies there and the adequacy of pasture around the Jebel gave the Meidob little reason to move outwards.

These Arab groups came under pressure from 'Ali Dinar, and as a result the Umm Jalul and the 'Irâyqat have lived further west since the beginning of the century, and many of the Zayadiya migrated across the boundary into Kordofan (MacMichael, 1922 (1): 262). The land they had occupied was thus relatively empty at the time the British entered Darfur in 1916. Although there was no 'freezing' of tribal boundaries which would have kept them out of the land they had occupied formerly, only the Zayadiya returned in appreciable numbers, and even they made little use of pastures in what is now Dar Meidob, at least for a number of years. In the 1930s, when the question of whether the pasture in north eastern Darfur was sufficient for the needs of the Meidob, Berti and Zayadiya began to arise, the importance of the pasture in Dar Meidob for all three groups was recognized. But there were two important differences between the situation then and thirty years or so previously. Firstly, the grazing land was referred to as 'Dar Meidob', not as 'the pasture south of Jebel Meidob used by the Meidob and the Zayadiya', and, secondly, the Meidob had gained the right to use the pasture in the Zayadiya area and further south in Eastern Darfur District.

Since 1916 there has been a sporadic series of conflicts between the Meidob and the Zayadiya. Most recently, in the late 1960s the murder of a Meidobi was followed by the murder of seven or eight Zayadis, and at the time of my fieldwork the Zayadiya were apparently still keeping well outside Dar Meidob.
In terms of the numbers killed and in its political and economic significance, conflict with the Kababish over-shadows that with any other tribe. Long before the Meidob came into contact with them, however, the precedent had been established that Arab herds using pasture near Jebel Meidob were easy targets for camel theft, and, equally important, that Arabs were actual or potential enemies. The last remark can be illustrated by the story of an elderly informant, who was sentenced to life imprisonment when in his teens:

"My brother was killed by an Arab (Kawahla), so I took a sword and set off. I killed the first Arab I saw. He had a red skin; it didn't matter to me which tribe he belonged to."

To the Kababish and the Kahawa, also, the Meidob were fit only to be conquered. The Arabs had their own precedent, for in their westward drive across Kordofan they had come up against and had overwhelmed a series of mainly sedentary groups inhabiting isolated jebels in about the same latitude as Jebel Meidob. The Meidob were therefore akin to the Kaja and Zaghawa groups further east, in the eyes of the Kababish. There was another similarity between the Meidob and the so-called 'Northern Nuba', namely the fact that their jebels were endowed with permanent water sources. If the Kababish had succeeded in gaining control of the wells of Jebel Meidob, their pastoral system would probably be very different from that described by Asad (1964; 1970: 11-35). In his account of the Kababish, Asad is concerned mainly with the early part of the conflict, which had important implications for the political organization of the tribe. I shall summarize this era of the conflict, and then devote more attention to the later
phases.

In outline, the Kababish side of the conflict is as follows:
in the nineteenth century the Kababish lived in the eastern part
of what is now northern Kordofan. They had no contact with the
Meidob, but they were regularly in conflict with the Hamar and the
Bani Jarrar. All three of these Arab groups suffered in the late
nineteenth century. The Hamar and the Kababish both lost much of
their wealth in the Mahdiya, and the Bani Jarrar began to move
eastwards to the White Nile. The chief of the Kababish was
executed for his opposition to the Mahdi. After the 're-conquest'
in 1898, the Kababish began to move westwards and re-grouped under
their former chief's nephew, 'Ali al-Tom. He played a masterful
political game, consolidating his power by a policy which res-
trained the Kababish in their conflicts with others in Kordofan
(after they had looted animals from the Hamar (MacMichael, 1922:
321), and encouraged them in conflicts with tribes in 'Ali Dinar's
Sultanate of Darfur. Both of these aspects of his policy enhanced
his reputation with the British, the latter indirectly. Rifles
were issued via 'Ali al-Tom to the Kababish to help them 'defend'
themselves against raids by the Meidob and the Gura'an. 'Ali
al-Tom came to be regarded as 'the loyal guardian of the dangerous
north-west frontier'.

In the Darfur Campaign in 1916, the Kababish were entrusted
with patrolling the area between Bir 'Atrun and Jebel Meidob, to
prevent contact between Darfur and the Sanusi in Libya36. They
were ordered to occupy Jebel Meidob, and 'Ali al-Tom with his
Kababish 'irregulars' set up camp half a mile from the village
of malik Jami' Khair. They exacted tribute from the Meidob and
the Berti in the form of livestock and slaves, and also
expropriated 'Ali Dinar's own 40 herds (ca. 4,000 head) of sheep and goats, which were being herded south of Jebel Meidob. The Kababish were later ordered to return some of the property they had acquired. Malik Mansour Suleiman had been received by 'Ali al-Tom when he fled to Kordofan in 1915, and it seems that the Urrti suffered less than the Kargeddi and the Berti. The Kababish maintained a post at Jebel Meidob for several years and brought with them herds of camels and flocks of sheep. Until 1929 there were considerable numbers of Kababish in Dar Meidob, using wells in Jebel Meidob in the dry season.

At the time of the Darfur Campaign there had been no agreed boundary between Darfur and Kordofan. 'Ali Dinar apparently regarded the Wadi al-Milk as the north-eastern boundary of the Sultanate. The Anglo-Egyptian administration regarded the boundary as undefined, and maps of the period show a line in a broad arc running from about the area of Umm Badir round to a point between Jebel Meidob and Jebel Tagaru. This line, some way west of the Wadi al-Milk, was about the limit of movement of Kababish herds, the western arc at the northern end representing the fact that the Kababish occasionally ventured to Bir 'Atrun to collect salt, rather than a specific claim to the area. It seems very probable that Kababish camps, as opposed to their herds, salt caravans and raiders, did not venture west of the Wadi al-Milk (cf. Seligman, 1918).

In 1917, about a year after the entry of the British into El Fasher, a visit was made to the area east of Jebel Meidob by MacMichael, then Sub-Governor of Darfur. He sent a report (copy in D.P./S.C.R./66.B.51 folio 94) to the Governor of Kordofan pro-
posing a boundary along the sandstone plateau of Jebel Heitan ('the walls'), which is about ten kilometres from Jebel Meidob and, in this latitude, about one hundred and fifty kilometres west of the Wadi al-Milk. In the report it is remarked that "the Kababish camels and sheep spend the rains in and along this range", as if they had long been accustomed to do so, when in fact they had been able to do so for no more than a year.

The boundary was supposed to be 'theoretical', merely a line the Government could enforce 'in the event of trouble', and in normal circumstances it was intended that there should be free movement across it. I believe the reason it was chosen as the boundary was because it mostly follows a major watershed, which in little mapped country was a considerable advantage if circumstances arose in which it had to be enforced. MacMichael had opposed, at first, the idea of using the Kababish to occupy Jebel Meidob in 1916, and it seems likely he was keenly aware of the potential for conflict between the two tribes. He may have hoped that by placing the boundary so far west he could actually fore- stall conflict, because neither tribe was wealthy at that time. Neither tribe had at that time an imperative need to use the pasture in the border area, so it might have been expected to remain uncontested.

The Meidob and the Kababish did not understand the boundary in the same terms as MacMichael. To 'Ali al-Tom it was a political victory of the first order, because under his leadership the Kababish had acquired a vast new territory. This was surely a major factor in his ability to consolidate power in his own hands. In 1922 he moved his camp to Hamrat al-Sheikh, at that time the nearest point to the boundary at which there was per-
manent water. Now his camp is based at Umm Sunta, a borewell just inside Kordofan. The Kababish quickly established themselves in the pastures in their new territory in the wet season—a political move, because they were still far from having filled up the pasture further east—and began to treat Meidob herdsmen using the Kordofan side of the boundary as intruders. Meidob travelling to Omdurman or Dongola markets were refused water at wells in Dar Kababish or had to pay cash for it. The Kababish also established very early on the practice of denying allegations of theft and homicide against themselves. When they were forbidden to remain in Dar Meidob in the dry season from 1929 onwards, the immediate reason for the ban was to impress on them that they must treat the Meidob with decency (Brewster, 1964: 225).

The pattern of conflict which was established in the first confrontation has not changed greatly over the last seventy years, although there have been times when it was believed that relations between the tribes were improving. The incidents between Kababish and Meidob, (and also with Berti and Zayadiya) took two forms when they occurred in Darfur. Most personal injuries occurred in the pastures, when herdsmen came to blows because their herds had mixed or because one alleged that his animals had been stolen. There were also fights at wells and pools, some arising out of past disputes, and others over priority of use of the water. The incidents which occurred outside Darfur involved Meidob travelling through Dar Kababish on their way to markets. In the early years they simply suffered harassment, but later a different pattern emerged, in which Meidob returning from market with the cash and goods they had obtained for their animals were attacked and, at the very least, deprived of their
property. In perhaps the worst case in the history of the conflict, eight Meidob were killed in 1960 when returning from Dongola, the enormity of the crime compounded by the fact that the possessions stolen amounted to only four camels, thirteen donkeys and five swords (Brewster 1964: 247-251). The records are considerably less detailed where the incidents concerned simple animal theft, in which no homicide occurred. The usual procedure was that the loss should be reported to the nearest tribal chief, who would then attempt to recover the animals, either by ordering the section chief of the presumed thief to secure their return, or by making representations to the chief of the other tribe concerned. This has probably worked smoothly in many cases, but both the Meidob and the Kababish have among them thieves who are accorded a somewhat ambivalent respect, and where they are involved it would appear that the usual procedure does not operate so effectively. The distinguishing feature of these major thieves, known in Arabic as hambata, is that they steal only substantial herds, and do so by direct attack rather than by collecting stray animals. The leader of a group of hambata may acquire a formidable reputation. He provides his followers with camels, rifles and money. Some accounts suggest that they are 'Robin Hood' characters, stealing from the wealthy and distributing the proceeds among their poorer relatives. They are outlaws, spending most of their time away from settlements, but there is no doubt that there is considerable popular sympathy for their activities. 

In 1974, within a month of the conference between the Meidob and the Kababish, at which the latter were hosts, a
Kabbashi hambata group stole a herd of fifty camels belonging to a Kargeodzi notable. It was a classic hambata raid, occurring in daylight close to the market village where the owner lives. While he treated the wounds of his son, who was shot in the attack, forty of his relatives and neighbours set off in pursuit of the thieves. Having lost the tracks, they made their way to the Nazir's camp to lodge their complaint. The Nazir was upset at this dramatic breach of the muhanna (amity) so recently proclaimed and promised to recover the camels. He asked that no official report be made to blot the copybook. Some weeks later the herd was returned intact to its owner, who held a feast and mass circumcision in celebration. Apparently the thieves had been traced in northern Dar Kababish, probably intending to sell the herd in Egypt.

Among the Meidob there is said to be one hambata who is so widely feared by the Kababish that on one occasion, when he heard that a Kabbashi owned an automatic rifle (he had apparently deserted from the Army, taking his weapon with him), he walked into the camp of the owner and was given it on demand. He is believed to possess an hijab (koranic script, worn in a leather pouch), which protects him from bullets, and perhaps, knowing this, the Kabbashi decided that it would be useless to argue. The Meidob hambata, and other minor thieves, are said to dispose of their stolen camels by means of a network of agents, often women, who arrange for the camels to be sold in Dar Zaghawa or in Tchad.

It was impossible for me to learn much about the activities of hambata and other thieves, but it seems likely that the Meidob
hambata have played an important role in limiting to some degree the extent of Kababish incursion into Dar Meidob; publicly they are deplored, but there is also, as I have said, an ambivalent respect for them.

The conflict between the Meidob and the Kababish has had several important effects. First, it gave to the Meidob and their malik an importance which far exceeded their position as a small and rather remote minor tribe in Darfur. One of the main tasks of a District Commissioner was the administration of justice in serious cases, above all where there had been homicide or serious injury. Incidents in Dar Meidob which involved the Kababish or the Kawahla meant that the administrators of Kordofan also took part in the cases. There was frequent communication between the D.C.s of Northern Darfur and malik Muhammad al-Sayyah, and it so happened that the malik developed particularly good relations with many of the administrators. Later it became common for Province officials to take shooting holidays in Jebel Meidob, and a 'warden' was appointed to ensure that the wild sheep were not molested by local hunters or herds. More important, perhaps, is that at the inter-tribal meetings held from time to time to settle outstanding cases of theft and homicide, the Meidob (sometimes with the Berti and the Zayadiya) met the Kababish 'across the table' on equal terms. Sir 'Ali al-Tom is remembered throughout Sudan as a great tribal leader; but today, largely as a result of his role in representing the Meidob, Muhammad al-Sayyah is spoken of by some as 'one of the three great tribal leaders' in Sudan during the Condominium. In 1936 he was presented with a set of nahas (copper drums) by the
Governor of Darfur, and in the latter's letter to the Civil Secretary requesting the drums he wrote:

"I think that the Meidob tribe fully deserve to have a nahas on the grounds of their local importance from every point of view, and in particular recognition of the improvement they have made under malik Muhammad al-Sayyah. Since he took over the headship of the Jebel on his father's death in 1929, there has been a very great improvement in tribal organization and control. Relations with the powerful Kababish neighbours have improved out of all knowledge, and the tribal propensity to animal theft is gradually being overcome. (...) Above all the gift of the nahas would enormously strengthen the malik's position in dealing with certain recalcitrant elements in the tribe and the Urrti in particular." (D.P./S.C.R./66.E.51.folio 95)

In 1950 it was noted that the Meidob confederation "has been the most homogeneous and stable unit in Northern Darfur" (Ibid; folio 111).

Secondly, the conflict highlighted the fact that "... the rich pastures of the Meidob country (are) one of the supreme pastures for camel and sheep in this District (Northern Darfur), and probably of the Sudan" (Monthly Diary, NDD Feb 1940). Another record states that "The Kababish are said to be of the opinion that Dar Meidob is the best country they know for grazing camels" (N.D.D./S.C.R.66.A.3). Thus the conflict gradually focussed attention on the condition of the grazing and the need to regulate competition for it. As early as 1928 it was recognized that the herds of the Meidob and the Zayadiya were increasing, and that their needs might eventually necessitate restriction of Kababish entry into Darfur.

In the subsequent events, which led to the creation of a
grazing boundary in 1942, a major role was played by Guy Moore, who was District Commissioner in Northern Darfur from about 1934 to 1946. He developed a particularly close relationship with the Meidob as well as with other tribes in his District, and surviving records show that he spent about half of each month touring the area on camel-back. The immediate aim of the boundary was to establish the principle that the Kababish and the Kawahla must recognize the prior rights to grazing in north eastern Darfur of the Meidob, Berti and Zayadiya. Moore was disturbed by the deterioration in tribal relations in the late 1930s, which was exacerbated by the death of Sir 'Ali al-Tom in 1938. The situation had developed that the Meidob were producing culprits on their side, but the Kababish were failing to produce evidence and were regularly evading conviction by taking oaths of innocence. Moore believed that a grazing boundary was necessary to give the Kababish time to develop a proper respect for the Darfur peoples whose pasture they used. An important element of the boundary was that there should be a 'no-man's land' to prevent petty infringements making it unworkable. This is one reason why the boundary was located even farther west than the inter-Province boundary. In the event, Kababish pressure was so great that the no-man's land became theirs.

In the first year Moore supervised the boundary and his presence led to an incident between him and the new Nazir of the Kababish. Moore found the Nazir's camp almost on the boundary, and he ordered it to be removed eastwards before, inevitably, other Kababish arrived in the area and broke through the boundary with their herds. In the course of ordering the camp to be moved,
Moore used insulting language and behaviour to a number of important members of the camp. This was reported to the B.C. of Northern Kordofan, who protested that Moore had been too long in Northern Darfur and was too involved in local affairs. Moore, on the other hand regarded the incident as "extremely unpleasant, for the first time I saw the Kababish on a background that makes one understand what the Northern Darfur tribes have to swallow occasionally" (D.P./S.C.R./66.B.51, folio 29). Shortly before, Moore had accompanied malik Muhammad al-Sayyah to a meeting with the Kababish at which the Meidob dropped, in the interests of muhanna (anity), a case of a Meidobi who had been 'half-flayed' by the Nazir's own herdsmen, on suspicion of being a thief (ibid, folio 107).

The boundary related to the wet season, because the ban on Kordofan Arabs staying in Darfur in the dry season was still in operation. At first the boundary was strictly enforced, and Moore reported with some satisfaction that in its first year the Meidob and the Zayadiya enjoyed their new freedom to use grazing on their side. The only case of camel theft involved a Kabbashi as the accused. In 1943 a slightly modified line was adopted, although the Meidob felt that their exclusion from pools they had traditionally used was unfair to them. The Kababish were still not satisfied, and Moore's 'Iron Curtain'was gradually lifted. The principle was established that the Kababish might make use of grazing west of the boundary 'in situations of need'. In 1946, when it was found that the Kababish had gained entry the previous year by exaggerating their need, a series of three control posts was established at which Kababish and Kawahla could
request permission to enter the area west of the line. In principle, these posts gave the Meidob and the Zayadiya the ability to control movements into their territory. The Kababish and Kawahla were required to ask the representatives of their tribes to seek permission for entry from the Meidob and Zayadiya representatives at the posts, who were entitled to specify the area available for grazing. In addition regulations were agreed to control the search for lost or stolen animals. An important feature of the system was that no requests, and hence no movements, could be made until the rains were well established and the grazing situation on both sides of the boundary known. The establishment of the boundary, and the recognition of the right of the Darfur tribes to control movement west of it, may have been some consolation for Moore, after his scheme for the creation of a special 'Nomad Administration', to control the whole of Dar Kababish and northern Darfur, had been rejected in 1945. But even as late as 1946 the B.C. on northern Kordofan was still writing:

"I have been most anxious that the Kababish should not get on the wrong feet before the final adjudication of their claims to grazing in Darfur is made" (N.D.D./66.B.3 1/A folio 346-347).

This remark could hardly be further from Moore's intentions, and is symptomatic of the administrative misunderstandings which have been a feature of the conflict. Moore saw the boundary both as a statement of the lack of any 'claim', and, far from being a matter of a 'final adjudication', as a temporary measure to allow time for peaceful co-existence to develop. The boundary was formally abolished in the early 1970s, as contrary to the
principle of freedom of movement of all Sudanese within Sudanese territory. In Dar Meidob, though, there remain some individuals who provide liaison with Kababish using Meidob pasture.

The circumstances in which the grazing boundary was established served to draw attention to the condition of the grazing, and in particular to the question of water supplies. Also, at this time the subject of 'overgrazing' and 'soil erosion' became an important issue, recognized in Sudan by the creation of a 'Soil Conservation Committee' in 1940, and advertised by the report of the Committee, published in 1944. In the late 1930s Moore had encouraged the Meidob to improve their wells, and he arranged for prison labour to be available for digging new ones.

As far as I was able to judge, the only successful result of the search for new water sources was the excavation of a deep well at Umm Beyyada (see Map 3). By 1947, however, there was renewed interest in water resources, following the completion of a dam at Mellit in Dar Berti. Eventually, after some reluctance in Khartoum to make further investments in the area, two borewells were constructed in 1949, one at Umm Hejlij, primarily for the Zayadiya, and the other at Wadi Marreig, directly south of the Jebel. These opened up a considerable area of new dry season grazing.

If the Meidob and the Zayadiya benefitted from the borewells, so also did the Kababish, who made private arrangements with the chiefs of both tribes for access to the borewells. A comment in the Monthly Report for March 1952 reads as follows:

"There was a further entry of about 1500 Kababish camels into the eastern grazing area, making a total of about 15,000 now grazing in the District. (...) The large
grazing potential of the area ... is now being fully exploited, probably for the first time. The large Kababish camel herds ... and the Meidob and Zayadiya camels, cattle and sheep around and west of the water yards are making large inroads into grazing that only three years ago was only semi-utilized" (N.D.D./57.B.2. Vol 2).

In the general glow of satisfaction it appears not to have been noticed that some Kababish were again spending almost the whole year in Dar Meidob, as they had done up to 1929. The Monthly Report for December 1952 seems to sum up the great change which had occurred since Moore's era:

"Assistant District Commissioner's visit (by camel) to the headquarters of one of the Urrti sections of the Meidob at Ein Basaro on the north side of the Jebel, was the first to be made by a District Commissioner (or by the malik himself) for six years. While he was there a thief whom the authorities have been trying to catch for years was brought in under arrest" (ibid).

Moore's plan for a 'Nomad Administration' was unearthed again when the division of the Provinces of Darfur and Kordofan was being considered. It was rejected for the second time, but the fact that it was considered as a possibility reflects the fact that again relations between the Meidob and the Kababish are at a low point. In 1974 seven Nabhashi herders were killed in Dar Meidob.
CHAPTER TWO
NATURAL RESOURCES

INTRODUCTION

In this century there has been a dramatic increase in the human population of the Northern Sudan. Where the traditional economy has not been directly affected by developments in irrigated and mechanised cultivation, the effect of this has been to increase the area under cultivation and reduce the period of fallow in the system of land rotation. At the same time the animal population has grown more rapidly than the human population. The twin processes of increase in area cultivated and increase in numbers of livestock have, it is believed, led to environmental deterioration. The argument for this deterioration rests on the fact that there has not been a corresponding increase in the natural resources; therefore the available resources are being used more intensively, hence excessively. The only amelioration of this situation so far has been to attempt to extend the area of usable natural resources, very largely by provision of water supplies in areas which were seasonally under-utilized. In areas with clay soils, artificial pools (Ar. hafir) have been excavated, and elsewhere the aquifers of the Nubian sandstone and the Umm Ruwaba Series have been tapped with borewells. In central and northern Kordofan the rocks underlying the nub are of the Basement Complex and water resources development has been extremely problematical. The same is true of a large area of Western Darfur, excluding the high aquifer areas of Jebel Marra.

Dar Meidob has been one of the fortunate areas, with the aquifer between 50 and 100 metres in depth in Nubian Sandstone and a very favourable groundwater recharge. There has been
extensive construction of borewells, of which there are now 26 in the Dar. As elsewhere in Western Sudan the development of water resources has so far been carried out with a conspicuous lack of attention to its ecological consequences or to its implications for the local economic systems. There is thus a lack of information on local climatology, soils and vegetation, almost no information on herd structures and management and on social organisation; while geological information is more complete. Notwithstanding this lack of information it is considered by responsible officials that Dar Meidob is overgrazed and is undergoing a process of 'desertification'. Highly abstract schemes of land rotation by enclosure of pasture and successional closure of water sources are under consideration.

THE LANDFORMS OF DAR MEIDOB

The landforms of Dar Meidob are intimately related to geology as there is little formation of soil. Underlying the whole area is the Basement Complex, composed predominantly of gneiss. The outcrops of Basement are very isolated and will be ignored here, but the surface of the Basement underlying the sandstone and volcanic rocks of the region is of considerable significance because it provides an impermeable stratum. Apparently there exists a ridge of the Basement between Jebel Tagabo and Jebel Meidob, which is part of the African Continental Divide (M.M.P. and H.G.G. 1970: 26). This ridge is associated with areas of volcanic activity but also acts as a 'watershed' between the groundwater basins to the north-west and the south-east (the Umm Keddada basin). Close to the ridge the groundwater table has a considerable gradient but this decreases towards
the central parts of the basins. In effect there is lateral flow of the groundwater; in the Umm Kedda basin this is derived from surface flow in the wadis of eastern Tagabo and the southern part of Jebel Meidob percolating through the Nubian Sandstone (Ibid: 33).

Nubian Sandstone was deposited over the whole area during the Cretaceous geological era. At its deepest in the Wadi el-Ku trough south of El Fasher the sandstone exceeds 3000 feet in depth; over Dar Meidob it is apparently more shallow. The qoz (sand plains) covering most of the surface is believed to be directly derived from the sandstone and not part of the wind-deposited Central Sand Zone of more southerly areas. To the north of the Jebel the absence of surface drainage systems, apart from the Wadi Magrur and the Wadi Umm Afrit which carry outflow from the Jebel and other areas to the south, has led to the persistence over a very large area of aligned sand dunes. These are clearly the result of aeolian processes, but they are well vegetated and appear to be static. From the latitude of the northern edge of the Jebel towards the south there are no such dunes and the landscape is much more open and rolling. This is most especially true of the great area of qoz south of Jebel Meidob, where there are thousands of square kilometres of gently-undulating sand. The ridges (Ar. debba) are in places associated with low outcrops of sandstone. The depressions (Ar. shaqq) between the ridges contain drainage channels, in places distinguishable only because of the relative abundance and height of trees and shrubs. Elsewhere in the wadis there are flat sedimentation areas where clays hold pools during the rainy season. Here it has to be assumed
that the main geomorphological processes are fluvial, perhaps supplemented by the wind. It is possible that Jebel Meidob forms a windbreak to the north-easterlies which are the agent of aeolian erosion and that it is because of this that fluvial processes are able to be dominant in the southern goz. The topography of the goz is extremely relevant because it determines the depth of the groundwater aquifer. The great majority of the waternyards have been constructed adjacent to the wadis in the goz because these are the lowest points and thus reduce the pumping head necessary to lift the water.

There are three localities around the Jebel where the Nubian sandstone has remained as plateaux. The largest of these, Jebel Teiga, lies to the north-west and provides a sharply defined western horizon seen from the centre of Jebel Meidob (when dust does not obscure the atmosphere). From the same place in the centre of the Jebel looking eastwards the smaller plateau of Jebel Heitan can be seen running north and south. Beyond it one can see sand plains in northern Kordofan. On all sides these plateaux end in steep escarpments. Both have a few rock pools after the rains, but neither area is much used for grazing. The third sandstone plateau has been so substantially altered by volcanic activity and so deeply incised by watercourses that it is no longer recognisable as such. This is Jebel Tagabo, also visible from the centre of Jebel Meidob across the southern goz. On the southern edge of Jebel Meidob there are a number of out-lying mountains which are the remnants of similar sandstone formations, though as in Tagabo they are overlaid with a massive thickness of volcanic material.
Volcanic activity began in the area in the Tertiary era. The tall spires which are the principal feature of northern Tagabo are of the earliest part of this period. Very different in character, but of the same material, are the southeastern and northern parts of Jebel Meidob. In both the latter areas the edge of the Jebel is a well-defined escarpment against which more recently alluvium, outwash gravels and boulders and sand have accumulated. Both areas are deeply dissected by more or less parallel wadis flowing radially from the highest parts of the Jebel. In the southern area the lavas appear to form a sheet overlying sandstone, so that once the lava has been eroded through, deep valleys with a V-shaped cross section have developed relatively quickly.

The next phase of volcanic activity is dated as late Tertiary to recent. During this period the cones and craters of the low western half of the Jebel were formed, associated with relatively fluid lava flows. There are similar formations in the eastern part of the Jebel. Next viscous lavas created the puy topography characteristic of the central and highest part of the Jebel. Here there is a series of circular peaks, some dome-shaped and others, more eroded, showing a ring of volcanic material. Some of the latter have crater-like depressions within the circular basalt structure. Between some of these puy's alluvium has collected, giving broad and roughly flat areas of deep clay soil. Also in this area there are a number of steep-sided craters.

Malha crater is clearly an explosion crater. After it was formed a lava flow from Jebel Sowidor nearby reached the crater.
and remains as a tongue down the side of the crater. At this same period there were a number of other extremely fluid lava flows in other parts of the Jebel, which suggest by their freshness that they occurred relatively recently. There is a weak fumarole still active just to the south of Malha Crater.

Nearly all the wadis in the Jebel are deeply incised and in places where they cross basalt dykes their rapid downcutting has led to the existence of spectacular waterfalls. The material eroded by the wadis has been deposited on the plains, the coarse material as outwash fans and the fine material carried further away from the Jebel to be deposited in the seasonal pools (Ar. ruhud, sing. rahad). Some of the volcanic material washed down in the floods has been deposited in extensive sheets of semi rounded stones which are exceptionally resistant to erosion where they now lie. In the Jebel itself, notably in the oldest southern area, similar small boulders are being eroded in situ, resulting in a very heavy red clay. It is said by informants that this clay soil produces some of the best animal fodder, both pasture and browse on the densely packed shrubs.

The largest alluvial area on the plains has been formed by the erosion of clays and coarser material from this southern part of the Jebel. The wadis from here feed into the great depression of Umm Bayyada. There is no outflow from Umm Bayyada because it runs up against the sandstone outcrops and goz of the Darfur-Kordofan border area. Hence an extensive alluvial plain has formed to which blown sand is added in places, giving a light-textured soil. The predominant soil is deep cracking clay (Ar. fuda). It is similar to the soil of the Gezira irrigated cultivation area in central Sudan, and this similarity is one
reason why Umm Bayyada has been selected as a possible location for a development scheme which would use irrigation and mechanised techniques for production of sorghum for human consumption and alfalfa for animal fattening. The water for irrigation would be pumped groundwater. Among the innumerable problems such a scheme would face is the high salinity of the soil in the eastern part of Umm Bayyada, where the water stands in pools until it has evaporated. This salt is at present a valuable asset for pastoralists. The other main areas of alluvium are along the western and northern sides of the Jebel and they hold very substantial pools after the rains. There are also a number of smaller ruhud to the northeast, east and south of the Jebel among the sand plains.

WATERSOURCES

In the course of describing the landforms I have mentioned the location of some types of water sources, and in this section I give a summary account of each type. The locations of the permanent water sources are indicated on Map 3, and the ephemeral water sources in the areas I know best on Maps 4 and 5.

The borewells are all located on the qar in areas of Nubian Sandstone, though most have been sited beside larger or smaller areas of alluvium. A borewell is basically a single metal tube sunk into a prepared hole of the required depth. The lower part of the tube is perforated, and particles larger than the mesh are introduced into the hole around the tube to prevent fine particles reducing the intake of the tube. All those in Dar Meidob are operated by a diaphragm pump attached to a counterbalanced
arm. The supposed similarity of the rocking motion of this arm to that of a donkey's head has led to their being known as 'donkeys'. The arm is driven via a belt by a small diesel engine. Some of the longer-established water-yards have two or three bore-wells, mainly to cope with the volume of water required (output per pump is very low and poor maintenance makes it even lower) but also to maintain a supply even if there is a breakdown. The one or several pumps lead water by pipe to an elevated storage tank from which water is piped to a number of troughs. The layout of the troughs, all of which quickly acquire fouled quagmires of mud around them, and the absence of separate provision (in working order) of a water supply for human consumption show the lack of experience of how they are used by those responsible for designing them. The specifications should have avoided the effects of the inevitably poor maintenance. Water is purchased at water-yards, though it is said that the income does not cover the running costs, and certainly does not cover the construction costs.

Before the water-yards were built the only dry season water sources were wells (T. ol, Ar. bir). The largest well centre is Malha Crater (T. Ugodi-n-ol; Ugodi = Ar. Jendaga = salty clay) where there are twelve wells with water at a depth of about 4 metres or less. Livestock using Malha drink salty water from the saline lake before being given fresh water, so apart from the high water table less water has to be hauled. This makes it especially useful for watering large herds. The other wells are indicated on the map, and water at these is at a depth of 4 metres or more. At Aicho the water is at about 20 metres, while at other wells it is up to 10 metres from the surface.
Rights to use wells are held by those who built them and their descendants. Those who have rights are said to be 'holding ropes' (T. tegadi socoran), and a single well may have up to about 24 'ropes', depending on the speed at which water can be extracted, and hence on the time taken to water the herds of one 'rope-holder'. Ropes are utilised every three days, so the number of ropes at a particular well is often a multiple of three. New wells are still being excavated at certain well centres. After being opened each year by its rope holders, and after they have finished watering their herds each day they visit the wells (Ar. dima), the wells are available for all comers.

(The deepest wells, some over 50 metres in depth, are an alternative to borewells as a means of reaching the groundwater table on the plains. Some people without camels have to haul water manually, often forming groups of three or four adults to haul the rope for a single bucket. In this way they are able to use large buckets and do not tangle the ropes as they would if each person was hauling a small bucket. Most people use camels to do the bulk of the work, attaching a cowhide rope or a thick strap of oryx hide to the saddle. The bucket is then simply lifted over the top of the well and carried to a trough. In most places the top of the well has been built up above the level of the surrounding land as new timbers are added on top of old ones nearly cut through by the friction of the ropes. This provides a useful slope for the camels to run down. Normally a young child sits in the saddle but the camels are often so accustomed to the work that they do it virtually without instructions. Rights to use sania are also expressed in terms of tegadi.)
Impermanent water sources are of three types. The most ephemeral is the tamad (T, poosi) dug in the sand or gravel bed of a watercourse to reach a residual flow below the surface or to tap a 'pool' in a hollow of the rocks under the surface. The deepest tamads are at 'Ain Basaro where a dense growth of tree roots enables sand to be excavated to a depth of up to ten metres without collapsing. Most settlements are located within easy reach of a tamad for use during the rainy season. Next there are two types of pools. Guilt (sing, gelti) are cisterns excavated in solid rock by the action of boulders washed down in floods. Most are extremely difficult of access as they are located in deep ravines. One I have visited is at the top of a waterfall 100 metres high. They are used only when tamads have dried up. The water quantity is then finite and its speed of exhaustion depends mainly on how many people and animals are supplied from it. Some of the largest hold sufficient water for large communities and herds to manage on them for as much as six weeks. Ruhud (sing. rahad) are shallow pools. A few exist in the alluvial plains in the centre of the Jebel and in places where a dyke crosses a valley creating a waterfall. Most are on the plains and a few of these are exceptionally large. Their rate of exhaustion depends mainly on evaporation. Troughs are dug in the clay and water fed into them along channels from the pool, being filtered through a grass screen so that salt placed in the trough does not escape along the channel. No formal rights exist over the water at a gelti, rahad or tamad, but the digging of a tamad or trough gives the person who digs it prior rights to use it.
VEGETATION

The different landforms of Dar Meidob have a direct bearing on the vegetation found in each part of the Dar. On the broadest level the main ecological distinction in the area is between the mountains and the plains, between soil derived from volcanic material and the goz. These very generalized zones are differentiated most obviously by the proportion of the land surface carrying trees and shrubs, the Jebel having a much higher density of these than the plains. From this broad level it would be possible to construct an extensive classification of ecological complexes, perhaps to the point where some adjacent valleys in the Jebel would be classed separately. The level of classification chosen becomes a matter of the extent to which the exact composition of vegetation associations is to be used as a criterion.

Lebon and Ramsay have both proposed classifications of the vegetation associations for the area including Jebel Meidob. In his study of the whole Sudan, Lebon (1965) places the boundary between his "Semi Desert" and "Low Woodland Savanna" categories at about the 200 mm isohyet, so Dar Meidob includes areas of both. Each category is sub-divided:

Semi Desert
- Short Grassland
- Acacia Thorn Scrub with Short Grass

Low Woodland Savanna
- Thorn Savanna
- Acacia xornegai (gum arabic) Savanna

The last of these associations is not present in Dar Meidob, though it occurs in Dar Berti. The other three, in supposed progression from drier to wetter areas, are continuous rather
than discrete. The Short Grassland, distinguished by the presence of only isolated trees and shrubs, would be appropriate for much of the Qoz. Acacia Thorn Scrub and Thorn Savanna are hardly distinguishable in Dar Meidob, and are found most obviously on and around the Jebel. Ramsay's (1958) classification refers only to Darfur and is accordingly better adapted to the particularities of local conditions and hence more complex.

Both Lebon and Ramsay seem to be preoccupied with relating the vegetation associations to the average annual rainfall. Quezel (1969) has noted that the use by these authors of arborescent species to characterize the associations is not entirely appropriate. He argues that the arborescent species chosen have a great deal of ecological 'plasticité', for they appear throughout the area and in very similar proportions in most localities. In addition, the arborescent species are not the most important from the point of view of the pastoral economies of the area. In his own study of phytosociology in north western Darfur, Quezel has shown that the general classes proposed by Lebon and Ramsay are very far from accounting for all aspects of the vegetation within them.

Quezel distinguished 15 associations in the area with which he was concerned. There is, however, an important difference between this area and Dar Meidob, namely the preponderance of the Basement Complex in the former and its absence in Dar Meidob. Similarly, Baumer's (1964, 1968) study of vegetation in Kordofan is not directly applicable to Dar Meidob, because he is concerned mainly with the vegetation of the central sand zone in more southerly areas. However, these two studies provide the best available information. The classification of ecological systems
in Dar Meidob in Table 2.1 is based mainly on my observation in the field and interpretation of aerial photographs, and partly on my understanding of the information provided by Quezel and Baumer.

I do not have the information and the expertise to describe in detail the vegetation associations characteristic of each of the 'systems' I have listed. Without more information than is available on the sensitivity of the species to rainfall variations and intensity of grazing, and on the quantity and nutritional value of the fodder they provide, a list of species would be redundant. It is important to note that the differences between the sub-systems are not so much the result of the absence of certain species, but of the presence of additional species in areas of different soils and soil moisture levels.

The importance of both the uniformities over the whole Dar and the differences between the systems is reflected in the fact that virtually all the territorial sections include portions of each of the three main ecological systems. In short, the three systems all have a function in the pastoral system.
**TABLE 2.1 Ecological Systems in Dar Meidob**

I. Qoz systems

1. Aligned dunes and northern qoz
   a. dunes
   b. sand with clay, between aligned dunes and along watercourses in extreme north.

2. Open qoz
   a. trees and shrubs absent
   b. trees and shrubs present

3. Disturbed qoz in areas of settlement and cultivation.

II. Alluvial systems

1. Outwash
2. Sedimentation areas (flooded)
   a. pure clays
   b. sand clays
   c. deep cracking clays (black cotton soil)

3. Banks of watercourses
   a. major
   b. minor

4. Craters and Alluvial plains in Jebel Meidob

III. Mountain systems

1. Old basalts of north and south of Jebel
2. Lava cones and flows of western and eastern Jebel
3. Central Puys
4. Recent Lava
5. Nubian Sandstone plateaux
6. Mountain ravines
RAINFALL AND THE SAHEL DROUGHT

Rainfall determines the distribution and abundance of fodder for livestock, and is thus the critical factor influencing the condition of natural resources. But although the rainfall pattern influences the vegetation over the whole year, in the Meidob system it influences the distribution of settlement and livestock for less than six months. For the rest of the year underground water tapped by various means determines the distribution of the human and animal population. It might be said that the lack of variation in the availability of water in the dry season in view of the variation in rainfall is what creates the supposed problems of the pastoral system.

The available records of precipitation at Malha since 1963 are presented in Figure 2.1. The average rainfall over the 11 years is 153 mm, a figure which can be considered rather lower than the long term average because of the recent successive years of low rainfall. Maps of isohyets in Sudan (e.g. Lebon, 1965: 8) normally show the 200 mm isohyet slightly to the south of Malha. On these maps a prominent feature is the southwards displacement of the isohyets over eastern Darfur and western Kordofan. This results both from the presumed higher rainfall along the line of mountains from Jebel Marra to Jebel Meidob and from the rain-shadow effect of Jebel Marra. If this is true, it shows that Dar Meidob receives the same average rainfall as areas considerably further south in eastern Darfur.

This receives some confirmation in my observation that the Jebel seems to concentrate cumulus-type cloud formations and so receives greater rainfall than the adjacent plains. It is also supported by comparison of the figures for 1962 and 1963.
at Malha and at Sodiri in Dar Kababish (Asad, 1970: 13), the latter lower in total in both years, even though it is located almost one degree of latitude nearer the equator.

The difference between Malha and Sodiri in two years may however be the result of purely local differences. These differences are both in quantity and in the number and intensity of individual showers in any year. The data are too scanty to give any basis for assessment of the detailed pattern of the variation, or of its precise implications; but it is clearly apparent from Figure 2.1. that the variation at one place is very great. The span of days over which rain falls, the amount in each fall and their distribution over the season are in many ways more significant for pasture production than the annual total. It is a characteristic of rainfall in Dar Meidob that over 50 per cent in any year normally falls in a very few heavy showers and that between 50 per cent and 60 per cent falls in short storms of under 10 mm. This means that a considerable proportion of the total may be lost by runoff during heavy showers or by rapid evaporation of a light shower. Only a proportion of the total rainfall reaches the seeds to start the process of germination. Once they have germinated the grasses and herbs mature and flower remarkably rapidly, but if the start of the rains is delayed there may simply be too little time for this process to be completed before the southward retreat of the Intertropical Convergence Zone leads to a fall in humidity and the drying up of the plants. The effects of the variation in rainfall are mitigated to some extent by the rapid percolation of water through the sandy soils (gor).

Note: The actual rainfall in millimetres is indicated by bars, except for 5 days when more than 40 mm fell. Each half millimetre across page represents one day.
which cover most of the Dar and by the fact that adjacent to the watercourses there are certain areas which are regularly flooded each year and provide a mass of fodder, even if it is not of the most palatable or nutritious species.

The trees and shrubs of Dar Meidob provide a considerable quantity of fodder and also are not as sensitive as the *goz* pasture to variations in rainfall. Certain species come into leaf up to a month before the first rains, perhaps responding to an increase in humidity. Others are less sensitive to variations in rainfall because being concentrated along the banks of watercourses, they depend on flowing water rather than on direct precipitation.

The *jizu* also does not depend directly on rainfall, since it grows after the rainy season when the temperature begins to decrease to its lowest in December and January. It depends on rainfall indirectly because it grows only if there has been sufficient rainfall in the previous July, August and September. The growth of *jizu* is still not fully understood. One theory is that the plants have long roots which reach to a depth where soil moisture is not affected by evaporation. The other theory is that they rely on moisture deposited as dew on the cold land surface during the intense cold of winter nights. The latter theory presupposes some humidity in the northeasterly trade winds, and it may be that the extreme cold at night during the winter in the desert is sufficient to cause condensation even if the relative humidity is below 10 per cent. The first theory seems to fit better with the observed variation in the appearance of *jizu*, since it seems to be associated with years of rainfall in the semi-desert. This theory would be supported if it grew...
mainly in the low-lying places between dunes, as do certain
pasture species in the area just north of the Jebel. It seems,
however, that it grows over the whole area of the undulating
surface (Newbold, 1924:83). The growth is so sparse that from
a distance it appears that the surface is bare sand.

The figures in Figure 2.1. show clearly the sequence of
dry years of the recent Sahel drought. It is of utmost impor-
tance to note that the rainfall totals were not in themselves
outside the normal range of variation, with the important excep-
tion of 1973. Years with 70 mm seem to have been part of the
normal pattern of variation. What was exceptional about the
drought was the way five successive years were below the long-
term average, and the previous four years were also relatively
dry.

A single year of exceptional dryness does not necessarily
have a serious effect on herd structures. The reduction in
animal fertility and increase in mortality are probably not of
very great magnitude, and it is quite possible that after elimi-
nation of some weaker animals and a low rate of conceptions,
the growth rate in a wet year following a dry one may be higher
than the average and compensate for the losses. In the drought
there was no relief to the succession of dry years and both fer-
tility and mortality rates were affected. The low level of
fertility in goats was clearly shown by the very small number of
births in the kidding season during the good rains of 1974; the
nutritional condition of the dams was so poor in the previous
dry season that very few conceptions had occurred. By contrast
in the rains of 1975 the kidding rate was very much higher. The
effects of the low kidding rate in 1974 were compounded by a high kid mortality rate. The main reason for the high mortality, considering the excellent fodder available during the rains in 1974, was probably excessive milking of many herds to meet the domestic requirements in milk. Milking had evidently been reduced to a minimum in 1974, and this was clearly shown by the high incidence of minor infections among children. But with fewer goats in milk it was almost inevitable that a higher proportion of their milk would be taken for human consumption. In 1975 the number of lactations was higher and was reflected in a higher survival rate and should also have resulted in more rapid maturation of the kids. Informants also complained in 1974 that foxes and hyena were carrying off kids, and it may be that more than usual were lost this way because the wild animal population on which these predators normally live had been reduced in the drought.

The very poor nutrition of mature animals during the drought was reflected also in a high mortality rate. For all types of animals those which survived were those able to tolerate a substantial reduction in body-weight. The ability to survive a degree of such debility has probably been bred into all Meidob animals because they generally lose condition during the dry season, even after good rainy seasons. However, the rains of 1973 gave little opportunity of recovery after the previous dry season. The lack of fodder was compounded by the fact that the herds had to use wells for longer than usual, and when they visit wells the animals get little opportunity to graze adequately even if fodder is available. I am unable to assess the pattern
or rate of mortality, though it is very obvious that some herds fared more badly than others. Some in fact survived virtually intact. Nor can all the deaths be attributed directly to the drought; one man lost over 50 sheep when a hyena attacked his herd, killing for the sake of destruction rather than for food. It seems moreover that starvation per se accounted for relatively few deaths. Most seem to have been the result of diseases which the animals normally survive, but which during the drought only the strongest were able to resist. This was a topic which it was extremely difficult to discuss with informants, notwithstanding their stoicism in the face of losses of on average perhaps 60 per cent of their livestock.

Herd structures were affected in other ways by the drought. Most importantly, many animals were sold to buy grain. No grain had been grown in Dar Meldob for several years, so everyone was dependent on markets for their supply. The drought had also affected the main cultivation zone, so the production there was virtually nil. Many cultivators, however, still had considerable amounts in storage and so were able to meet their own consumption needs and sold as much as they needed for cash. In spite of these sales and lorry loads brought direct to the markets from Omdurman, the market price of dukhn (millet) had trebled by 1973. Animal prices also rose, but not to the same extent. It is certain that increased animal sales contributed to the reduction in herd sizes. The Meldob in fact said that virtually every animal to be seen in Dar Berti had been acquired from Meldob during the drought. The high prices offered for sheep and camels in the Libyan trade were another incentive for sales.
CARRYING CAPACITY AND STOCKING RATE: THE QUESTION OF OVER-GRAZING

The combined effect of the rainfall, drainage, soils and vegetation patterns of Dar Meidob is the ability of the area to produce fodder for livestock. The maximum number of livestock per unit area which can be kept on this fodder without causing production to deteriorate is the carrying capacity. A given mass of fodder provides the minimum, and hence limiting, quantity of nutrients in the dry season, so a realistic estimate of carrying capacity is made for dry season conditions. The stocking rate is the actual number of livestock kept per unit area, and this obviously is also most critical in the dry season when it is dependent to a large extent on the distribution of water sources.

Carrying capacity and stocking rate are conventionally expressed in terms of livestock units. It is assumed that different types of livestock require the same quantity of nutrients per unit of weight, so livestock units are defined in terms of liveweight. This depends on age, so a calculation of the number of livestock units per head of any type of animal should be based on the age structure of herds. Recently the term domestic herbivore biomass (d.h.b.) has been used in place of stocking rate. It expresses directly the total liveweight of animals using a given unit of area.

Very little of the information required to specify carrying capacity or stocking rate is available for Dar Meidob. The only figures on carrying capacity are those of Harrison (1955) and these are regarded as obsolete, both because of the subjective manner in which they were assessed and because of presumed
deterioration in the rangelands since 1951 when he made his survey. The results of a detailed quantitative investigation in Southern Darfur (H.T.S., 1974, Wilson and Clarke, 1975) provide the best available figures for converting animal numbers to livestock units (l.s.u.). In addition, the figures for carrying capacity and stocking rate obtained in Southern Darfur provide a reference point for interpreting the very tentative figures I have calculated for Dar Nahdah with the available information.

The calculations on which I have based the following figures are set out in the Appendix to this chapter. They refer to 1972 livestock numbers, which I take to be a reasonable approximation of the pre-drought animal population.

The most important figure is the overall stocking rate of 5.93 l.s.u./km². The protein required to maintain the liveweight of animals for the nine months of the dry season is 72.9 kg/l.s.u., which, assuming a digestable protein content of dry fodder at an average of 5 per cent, means 1485 kg/l.s.u. dry matter (5.4 kg/l.s.u. day). At the stocking rate this means the volume of dry matter required is 8646 kg/km², or 8.646 grams/m². The digestable protein content assumed may be considered a minimum value, as the protein content of many grass species, but especially of herbs and browse, exceeds 5 per cent. If half the crude protein, then the crude protein digestable protein production needed is 8.64 kg/hectare, which is higher than that in the most heavily grazed part of Southern Darfur, but is substantially less than the average for Southern Darfur of 30 kg/hectare. My own plan to collect samples of hay could not be carried out systematically or on a proper random basis, but before abandoning the attempt I collected five samples
and of those the smallest in weight was 9 grams/m².

These figures show that it is theoretically possible for the overall carrying capacity of Dar Meidob to be adequate for the present overall stocking rate. In Southern Darfur a stocking rate of 10 l.s.u./km² was recommended as an overall level which the range would sustain in the long term. A figure of about 6 l.s.u./km² may therefore be appropriate for Dar Meidob.

I see the value of this discussion as pointing to the fact that in theory there should be no overgrazing in Dar Meidob. Overgrazing is in fact widespread. If the overall carrying capacity had already been exceeded, there would be nothing remarkable in a policy of keeping animals in an area where the pasture was exhausted, because there would be little advantage in moving elsewhere. The present situation, for which my observation supports the conclusion of the calculations, is that some herd owners deliberately keep animals in an area with very little pasture while excellent grazing is available elsewhere. One of the key issues in understanding the Meidob pastoral system is to explain at least some aspects of this apparent perversity.

The figures show that even if the overall carrying capacity had not been exceeded, there was at best before the drought a small margin for expansion of animal numbers. This has important implications, but before I mention these I need to indicate the way the calculations I have made above depend on assumptions which do not represent the actual pastoral system. I find it most fruitful to do this by specifying some of the aspects I have ignored in my theoretical calculations which would have to be accounted for in a survey of the actual carrying capacities and stocking rates of Dar Meidob. The most important assump-
tion made was that carrying capacity and stocking rates were uniform over the whole Dar. A more satisfactory survey would specify the carrying capacity of each of the ecological systems identified above, and the stocking rates would be determined by a census of livestock using each water source. It would be preferable to use not 'livestock units', but separate units for each type of animal, so that the different grazing habits of each could be taken into account. In an area such as Dar Meidob, a survey intended to be realistic would also have to be repeated in years of average, above average and below average rainfall, and would have to assess the extent to which conditions in one year affect those in subsequent years. A survey conducted now would also have to take account of the effects of the drought, especially its effects on herd structures. Another assumption made was that Dar Meidob is a 'closed system'. It would be necessary to quantify the extent to which Meidob herds graze outside the Dar and the extent to which the influx of non-Meidob herds changes as a result of conditions outside it.

If such a survey were undertaken it would show the considerable diversity in the way herds are managed and the effects of this on the grazing pattern. The grazing pattern results in very clear overgrazing of certain areas (notably around settlements and water sources), full use of grazing in other areas and under-use of grazing elsewhere. There is no reason to believe that the magnitude of the differences in intensity of grazing was any different before the drought, though there was probably a difference in the areas used at lower intensities, so that a larger area was fully grazed and proportionately less under-
used. The reduction in animal numbers seems to have had no effect on the intensity of grazing in the most heavily stocked areas, because they were completely stripped of vegetation even after pasture growth had been good in 1974.

Where there is an unused margin between stocking rate and carrying capacity the growth rates of herds will be optimal. Good nutrition enables the fertility and maturation rates to be maximized and minimizes the mortality rate. Conversely, over-grazing reduces herd growth rates. In the Meidob context this means (as I have already outlined at page 16-18 above) that the owner of a herd kept in the little-used areas at critical times will, other things being equal, increase in wealth at a faster rate than one who keeps all his animals all year in an over-grazed area. I am unable to demonstrate the pattern quantitatively for Dar Meidob but figures in Table 2.2. for cattle herds in Southern Darfur clearly show the difference between similar herd management practices.

<table>
<thead>
<tr>
<th></th>
<th>Calving rate</th>
<th>Heifers calving before 4 years</th>
<th>Calf mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Migratory</td>
<td>65</td>
<td>65</td>
<td>11</td>
</tr>
<tr>
<td>Sedentary</td>
<td>40</td>
<td>29</td>
<td>40</td>
</tr>
</tbody>
</table>

Source: Adapted from H.T.S. 1974

In Dar Meidob the difference may not be of the same magnitude as this. It is certainly possible that growth rates of herds
of the same type of animal may differ, but in practice the impor-
tant difference is between settlement-based herds and split herds, that
is between goats and cattle on one hand and sheep and camels on
the other.

The proportions of these animals in Dar Meidob at present
differ in different areas. Broadly, in the mountains goats are
predominant in settlement-based herds, while on the plains cattle are
relatively more significant. Likewise sheep are marginally more
frequent on the plains than in the Jebel. What is more impor-
tant is that the proportions have changed over time. Unfor-
tunately tax lists from the 1920s when the listing was done by
direct count, which would therefore have indicated the numbers
of animals of different types, are not available. But early
reports on the Meidob clearly indicate a greater proportion of
cattle and horses (the latter almost absent today), which implies
fewer camels. It also very clearly implies that stocking rate in
the settled areas had not reached carrying capacity. In 1928
it was noted that in the previous year Meidob had purchased
over 400 female camels in Omdurman after taking sheep to the
market. The pattern which emerges from these fragments of evi-
dence is a diversification of herds to suit the new conditions
in which greater access to the plains increased the area of
pasture available to the Meidob. It seems reasonable to argue
that the proportion of the total herd kept as split herds has
increased over the last fifty years, though not primarily
as a result of their having higher growth rates (which cannot
be assumed for the early period) but because of a systematic
policy in the early part of this period of concentrating wealth
in sheep and camels.

At present there is no evidence that such a policy is being followed. The only camels purchased outside the Dar of which I know were either to be re-sold in Libya or were mature male animals to improve breeding in certain large herds. After the drought there has been a general absence of female animals for sale, and men returning with cash earned in Libya were having little success in their attempts to augment herds this way. It seems that at some point it became undesirable or impossible for a man owning only goats and cows to transfer these by market exchange into sheep or camels. There are almost certainly a number of factors which have caused this. Two minor factors are the need at present for a greater cash income than in the past, particularly with the increase in sugar consumption, and the fact that children are absent at school now but in the past would have been available for herding work. Most importantly, it seems that the end of these transfers will have occurred at the time the stocking rates in the areas used by settled-based herds exceeded the carrying capacity. This certainly occurred before the drought, but it is impossible to be more precise without more information. It might have occurred as much as twenty five years ago.
APPENDIX TO CHAPTER TWO

CALCULATIONS OF STOCKING RATE AND CARRYING CAPACITY IN DAR MEIDOB

1. Area of Dar Meidob 22, 200 km².
2. 1972 livestock numbers.

From my knowledge of a limited number of herds and comparison of their numbers with the numbers listed with their owners' names, I estimate that the tax lists for 1972 state about 20 percent of the true pre-drought numbers. The proportions of types of animals are not exact, but are reasonably representative. Meidob pay the full rate of tax, so a figure of 20 percent is in line with the finding in Southern Darfur where approximately half the maximum rate is imposed that 40 percent of mature animals are taxed. The total tax paid by the Meidob has not been adjusted to correspond to the fall in animal numbers, and the tax per animal has been increased.

TABLE 2.3. Livestock Numbers and Conversion to Livestock Units (1 s.u.), 1972.

<table>
<thead>
<tr>
<th>Animal</th>
<th>1 s.u./head</th>
<th>1 s.u./adult animal</th>
<th>1972 tax lists x 5</th>
<th>1 s.u.</th>
</tr>
</thead>
<tbody>
<tr>
<td>camels</td>
<td>1.0</td>
<td>1.0</td>
<td>60,070</td>
<td>60,070</td>
</tr>
<tr>
<td>sheep</td>
<td>0.01</td>
<td>0.14</td>
<td>244,400</td>
<td>24,400</td>
</tr>
<tr>
<td>goats</td>
<td>0.06</td>
<td>0.10</td>
<td>325,420</td>
<td>19,405</td>
</tr>
<tr>
<td>cattle</td>
<td>0.72</td>
<td>1.0</td>
<td>38,555</td>
<td>27,759</td>
</tr>
</tbody>
</table>

Note: 1 l s.u. is 300 kg. liveweight.

3. Stocking rate.

\[
\frac{131,674}{22,200} = 5.93 \text{ l.s.u.}/\text{km}^2
\]
4. Protein requirement

In Southern Darfur (H.T.S. 1974) the ratio of protein to carbohydrate was found to be 1:40. The nutritional requirement is a proportion of 1:11, so protein is the limiting factor. Protein required to maintain 300 kg liveweight is 0.27 kg/day. Production (meat or milk) requirement is 0.33 kg/day, but livestock generally lose weight in dry season so a maintenance diet is assumed at the critical period when protein is at a minimum. Maintenance requirement for 9 months (October to June) (270 days) is 72.9 kg/l.s.u. The seasonal pattern of protein production and decline is assumed to be the same in Dar Meidob as in Southern Darfur. Southern Darfur crude protein mass averaged 30 kg/hectare at the end of May in ungrazed pasture (extrapolated result). Digestible protein varies between 0.01 and 0.49 of crude protein. Percentage protein content of dry fodder was derived from tables of the chemical composition of grasses, herbs and browse in Southern Darfur.
CHAPTER THREE
HERD MANAGEMENT

INTRODUCTION
In the first two chapters I have introduced in outline the
distinction between the management of cattle and goats, which are
based on settlements, and the management of sheep and camels in
what I refer to as split herds. Here I shall describe in more
detail the way each type of animal is herded and contributes to
the pastoral economy. At a later stage (in Chapter 6), I shall
show that in the areas I studied there is a clear trend in the
types of animals owned and that this is related to the wealth of
what I call 'production groups'. These are the co-resident groups
of people who co-operate in herd management. In the poorest
groups only goats are owned; in the middle range either sheep
or camels are owned in addition to goats; and only in the
wealthiest groups are sheep and camels and goats owned in appreci-
cable numbers. I am using the word wealth in a general sense in
this context, and I am not asserting that the same progression
holds with respect to individuals, for there is no reason in
principle why an individual owning only goats should be poorer
than an individual who owns several types of livestock. Indeed
wealth as such is a secondary issue, for the object of the later
analysis is to demonstrate a relationship between the composition
of the production group and the numbers and types of animals
owned. One of the main reasons for the difference in composition
is the need to match the number and type of animals with a com-
mensurate number of herders of different age and sex. The dis-
cussion of herding in this chapter will show the characteristic
division of labour as this relates to each of the types of animal.

The basic tasks of herding are the day to day activities of procuring fodder and water for the stock, protecting them from external threats (e.g. thieves, diseased stock, etc.) and making them available as a source of livelihood for their owners. The other aspect of herd management is husbandry (Paine, 1972:79), denoting the way a pastoralist manipulates the animals under his control by selective breeding and culling to produce a flock or herd possessing the desired qualities. In general among pastoralists this involves maximizing the number of fertile female stock, with an appropriate number of fertile male animals, and ensuring that their number is maintained or increased through reproduction. This may involve, for example, separating un-castrated male animals from the rest of the herd at certain times of the year to prevent conceptions which would lead to birth of young at an unfavourable season. It is reasonable to assume that all Meldob have similar husbandry practices, since these are directed to the goal of herd increase. My observation suggests, however, that there are important differences in the ability of people to carry out successful husbandry. The means of measuring relative success is by recording the age and sex structure and demographic performance (fertility, mortality (consumption), offtake by gift, loss or exchange) of flocks and herds, and I regret that I was unable to collect this information in a systematic manner. This is unfortunate in view of the value of such data for understanding the pastoral system, its economic potential and its comparative position in relation to other pastoral societies. However, herd structures were fundamentally upset by the drought,
and the information I might have collected would have been of
little value for this general perspective. If I had been able
to collect it, the data would have been of value in giving some
indication of the effect of a prolonged drought and of the
success with which different people maintained their livestock
through the crisis. I shall note some of my observations in
discussing herding practices, which themselves have a direct
relevance for the reproductive performance of flocks and herds.
I shall also comment on the ways the different types of livestock
are marketed. Marketing (and offtake in general) is an important
aspect of husbandry, but again I have little systematic informa-
tion on the numbers and ages of animals sold. The object of the
discussion is rather to present the opportunities for marketing
of different types of livestock and the method of marketing as a
further requirement for labour.

I shall outline the principles of ownership and the pattern
of acquisition of livestock, and then discuss each of the types
of animal in turn.

OWNERSHIP AND ACQUISITION OF LIVESTOCK

Livestock ownership among the Meidob is in some respects
extremely simple, because the basic principle is that each
animal has a single owner. There are a number of contexts in
which the owner may grant the use of certain animals to a borrower.
The most common type of loan is the allocation of a lactating
cow or a number of goats to a woman who does not have sufficient
milk from the animals in which she has milking rights. This is
generally an act of generosity on the part of the lender, for
the simple reason that it occurs most commonly between close kin.
It may also be a more or less overt exchange for help in herding, though I encountered only one obvious case of this in my survey. Male camels are also loaned, either for carrying grain or salt, or as a stud bull for a small herd of camels in which there is no bull or none of good pedigree. In any of these cases there may be a payment to the owner, in cash or as a share of the grain or salt, but it may equally be an act of generosity.

All more permanent transfers of livestock between owners are sales, with payment in other animals or in cash, or they are classified as gifts. Gifts of animals may occur between bond-friends (T. porr, literally 'debt', also glossed as 'my owner'), but these transfers do not appear to differ in principle from other gifts and do not appear to be a major feature of the porr relationship. In other societies (e.g. Rendille; see Spencer, 1973: 37-40) it has been recorded that where an animal is loaned the owner grants to the borrower rights to certain offspring, and this may be part of an elaborate conversion of animal wealth into a network of social relationships. Among the Fur, it has been reported that two persons may purchase a cow jointly, each of them owning half the animal and having determined rights to its calves, until over time sufficient have been born for an equitable allocation of absolute rights to whole animals to be made (Beaton, 1948: 53-34). However, I found no evidence of any joint ownership or of a formalized system of loans among the Meidob.

The great majority of animals owned by any individual have been acquired as gifts from parents and other relatives, and through the reproduction of these animals. The main ceremonial occasions for these gifts are at birth (naming), circum-
cision and marriage, and these are the minimum occasions at which all males receive gifts. A male child is invariably given one or more female goats at each occasion and may be given ewes or a female camel if his father possesses any. Infant girls also receive goats or a heifer (and possibly a few ewes or a camel) at naming, although the value of the gift is generally less than a son receives; at circumcision she may receive further animals or a small cash gift. On marriage the bride should be given a cow or camel by her husband. This gift is called **sidagi** (from Ar. *sidag*, dowry, in this case 'indirect' cf, Goody, 1973: 20), and it is normally a mature animal and may be male. A male camel would be used by the bride for moving her possessions from one house site to another, but there is no necessity for her to have her own animal to do this. In every other case of a gift the animals are normally female and are often immature. It is clearly the intention that those animals given to a son should produce a herd sufficient to support him and his wife and offspring when he marries and separates (as regards consumption) from his natal family. It has been shown by Dahl and Hjort (1976: 71-75) that among cattle owning pastoralists a sequence of gifts to a son would produce a herd sufficient to support a couple and any children at about the time of marriage. Starting with the fact that a son is given one breeding cow or heifer at birth, between the ages of seven and twelve, and again at about age twenty, and making realistic assumptions about fertility and mortality, they showed that the son when aged twenty-four would own at least 35 head of cattle, of which ten would be potential milk-producers. The Meidob mostly give goats and sheep,
and in normal circumstances these should breed more rapidly than cattle, so it may be anticipated that a man should have acquired enough stock to support a wife and child by the time he marries. Often he receives additional animals from his parents and relatives on the occasion of his first marriage. His wife may possess animals in her own right, which she may transfer to her marital home or leave in the care of her own kin.

Some informants reported that they had received animals from their parents before and after marriage without any ceremonial connotations. A particularly vivid instance of this related to an event at least fifty years ago, when a wealthy and powerful man allegedly decided his sheep-pen was overcrowded and called together his sons and ex-slaves and gave a number of animals to each. In other cases, additional gifts may be made to children for successful herding. Animals are also acquired by inheritance, but the numbers involved are relatively small; I shall discuss this in Chapter 5, since it has more bearing on the nature of social groups than on practical acquisition of rights to animals.

Another context in which animals are acquired as gifts is when a person who has lost a considerable number of animals by an 'act of God' is helped to restore his herd. To quote a striking instance again, a number of men lost a total of 150 camels in a flash flood at Kundol during the 1950s, and it is said that people from all parts of Dar Meidob sent animals or cash to help them, and even some Kababish spending the dry season in the area contributed a number of sheep. I also heard that in 1977 a close friend lost 140 goats during a sudden downpour of rain, and that his loss (the greater part of his flock) was made
up by gifts. In theory, gifts are arranged in a manner similar to blood money payments, so that about half is provided by members of the matriclan (T. tertî), dispersed throughout the Dar, and half by the patriclan (T. ugni-n-ir), most of whom live in the same region, and members of both clans contribute an amount proportional to the closeness of their relationship to the victim of the disaster.

The absence of a formalized loan system and the prevalence of acquisition by gift, with individuals possessing personal rights to livestock, can probably be explained by the monetization of Meidob pastoralism. It is reasonable to suppose that for several centuries a substantial part of the offtake from Meidob herds has been used to pay taxes or tribute, or has been sold in urban markets or among cultivators to purchase grain and other commodities, so monetization as such is not new. Undoubtedly the scale of transactions and the role of cash payment have increased in the last few decades. The sale of unproductive animals is the basis of the Meidob livelihood, given that cultivation is a marginal activity and the Dar is too remote for sales of milk to be a possible source of income. Even clarified butter seems not to be produced for sale, though this is partly a reflection of the role of cattle (cows' milk is the main source of butter) in Meidob pastoralism.

THE MANAGEMENT OF CATTLE

Cattle are not normally accompanied to pasture by a herder, and they also make their way unattended to the wells during the dry season. In this sense they are the least intensively herded of Meidob livestock. They are not unique in this respect, and
Cunnison (1968:69) has noted that Baqqara cattle (which are herded by day) sometimes leave the camp to graze at night and return to the camp as a herd before dawn. As with Baqqara, the dependability of Meidob cattle is based on the fact that calves are always kept in the settlement or forage immediately around it. In the few settlements which are near an area of farms, cattle are herded during the cultivation season to prevent damage to the crops. Cattle and women are similarly associated with settlements, and it accords with this that many cattle are in fact owned by women.

In the mountains, almost all the cattle belong to women, though here the number of cattle is very small. On the plains there are still some moderately large herds, and ownership by men is more common. Losses of cattle in the drought were greater than for any other type of animal, which can be related to their lack of resistance to drought conditions, especially the shortage of pasture, and also, just as important, to the inflexibility of the way they are managed. It is notable that two Kargeendi settlements I know in which a reasonable number of cattle had survived the drought adopted the unusual, if not unique among the Meidob, practice of migrating as whole communities to find forage for their cattle. Even in these two settlements losses of cattle were considerable, though because they were moved around these herds at least remained in good enough condition for their owners to undertake a desperate attempt to trek some two hundred head direct to Omdurman. Not surprisingly, very few reached Omdurman market. Among the rest of the population losses of cattle were very serious. It was a poignant
reminder of these losses to find in the empty houses of abandoned settlements in the alluvial plains of the mountains the large gourd containers used exclusively for the preparation of butter from cow's milk.

That no gourd container was observed in use in any settlement during the survey is one indication of how seriously cattle had been affected by the drought. In addition to a high mortality rate among calves and older cows, there was a very low rate of fertility and the majority of calves born during the drought died very young. Thus very few cows were actually lactating. Virtually all those seen at the settlements and at the wells were mature animals. In the mountains most of the cattle spent the rains roaming unattended in the alluvial plains to obtain pasture and also because in this way there was some chance of all cows being served by the very few available bulls. As they were not lactating there was little point in their remaining at their owners' settlements. During the dry season the cattle are watered every three days, making their own way to the wells and waiting their owners' arrival to be given water. Because few had calves there were numerous instances of cattle straying, and some were lost in this way, even though cattle theft is not normally practiced.

Before the drought cattle evidently provided a considerable supply of milk in some settlements, and though they provided meat only on exceptional occasions the veal of a young ox is very highly valued. Marketing of oxen and cows no longer fertile is normally at Nellit or El Fasher, where there is a considerable demand for butchers' meat, and the better animals might be consigned from these markets to Omdurman. There is also some demand
for beef in the market villages of Dar Meidob, though as these have no special weekly market day there is no particular day when market attendances are higher than on other days, and this means that the number of purchasers is often too small to consume a whole animal and prices are accordingly low. Only animals too weak to be trekked to Mellit were slaughtered in Meidob markets and villages during the period of fieldwork.

In these circumstances, and given that cattle are almost exclusively dependent on grasses and herbs, obtaining only a marginal part of their diet by browsing, it is somewhat remarkable that Meidob keep any cattle at present. Clearly it was normal before the drought for cattle to survive on sub-maintenance nutrition during the dry season, because in the areas where they are kept the area of pasture is limited and they are in competition with other livestock also kept at the settlements. Crop residues may have been quite important as an element of their diet in years of reasonable rainfall. The settled areas are invariably where pasture is exhausted earliest, but it seems obvious that they depended on a very high level of nutrition during the rains and early winter to enable the majority to survive until the following rains and keep a reasonable level of fertility. One advantage of Dar Meidob for cattle may have been the low incidence of endemic and pandemic diseases compared with the classic cattle country in the savanna.

Evidently, cattle did survive and reproduce, but what makes them anomalous is that other types of livestock would appear to have offered much greater opportunities for multiplication and marketing. It is reasonable to postulate that one
reason why they were kept was precisely because they are above all women's livestock. Also on the plains (gor), where browse for goats is less plentiful than in the mountains, there was perhaps some advantage in keeping cattle rather than goats for domestic milk supplies. Another reason may be simply that cattle fitted well into the pastoral system prior to the great expansion of the grazing area and animal numbers which occurred in this century. It has already been shown (Chapter 1) that prior to the establishment of wateryards all Meidob livestock were necessarily concentrated close to the water sources around the mountains, and it appears that grazing in the settled areas was more abundant at that time. Some indication of how different conditions were in those days is given in Arkel's (1947) account of the last 'Baiza' 'festival' in 1936, where he notes that of those attending 20-30 arrived on horseback and 150 rode camels. Horses have become virtually extinct at present, their place having been taken entirely by camels and donkeys. It should be remembered that ecological conditions are not the only factor. Clearly the central role of the horse in the military tactics of the Fur Sultanate made them much more important at that time. The camel has come into its own as a means of communication, but it has not yet fully taken over the role of cattle as a means of converting natural resources to support its owners.

THE MANAGEMENT OF GOATS

Goats are by far the most numerous animal throughout the mountains. On the plains they are less overwhelmingly important, but there are many settlements with quite considerable flocks. In the mountains where there is an abundance of low or medium
height shrubs and the terrain is very broken, there is no equal
to the goat for getting value from the available vegetation. Many
goats from the plains spend at least part of the year in the hills,
especially in the wet season when the clay soils of the mountains
produce a mass of tender herbs and grasses as well as browse, and
when there is a danger the goats will damage crops. Although many
of the wealthiest Meidob own goats in large numbers, they are
above all the animal of the poorer people. The 'minimum herd'
(this term is not entirely appropriate for the Meidob, as I shall
discuss in Chapter 6) for the Meidob consists of goats. They have
this role mainly because they survive around settlements, provi-
ding a regular supply of milk, and they probably achieve their full
reproductive potential more regularly than other types of livestock.
Goats are more prolific than other livestock, because many kid
twice a year (more conceive in the rains than in the dry season)
and they have a comparatively large number of twin births. It must
be added that a higher level of wastage is tolerated than with
other animals, particularly in the sense than milking in the dry
season, when the goats are under stress and there is nothing for
the kids to scavenge, results in high kid mortality and endangers
the dam if the rains begin later than usual. Goats are also the
major source of meat, and for many families they are the main
source of cash. Goatskins are in constant use as grain bags, water-
skins and ropes.

Caring for goats involves the labour of more people than do
other animals. They are invariably herded, most often by two
children, one aged about ten and the other about six or seven.
If there are no other children available an elder sibling or
parent takes over the flock once every week or so to give the
regular herders a rest. Elder people supervise the herding by selecting grazing areas. A flock of goats does not need close supervision, and often indeed children go in twos or threes as herders to keep each other company and to play as much as because the flock needs their attention. As with cattle, the kids are kept in the settlement during the day, so the flock makes its own way there at sunset. Goats are milked by women and by the herders, while younger children help to release the kids a few at a time from their pen so that the milkers can control the amount of milk consumed by each. When the flock is watered, the herders are fully occupied keeping the majority of the flock at some distance, while ten or so at a time are allowed forward to drink. The water is normally drawn from the pools or wells by adults or older children, and it is often women who draw the water, because they collect water for the household at the same time as watering the goats. In the wet season goats drink every two days and in the dry season every three days (they drink much larger quantities during the dry season). During the dry season the women bring large quantities of water from the wells to the settlements and give most of it to the kids (and any calves). Thus the kids drink an adequate amount of water only every third day at this time of year. Goats are normally given salt every other watering day.

It was striking at the time of fieldwork that considerable effort was expended in fetching water from the wells for the kids and it often occurred that too little remained after the kids had drunk to last the families until the next watering day. Speculation about how people managed when many had flocks twice or more
as large as after the drought led to some insights into the
management of goats at the time of fieldwork. It became clear
that with a very large flock less milk is taken from each dam,
so the kids were able to obtain nearly all their fluid needs in
milk. Therefore a very large flock did not need a very much
greater quantity of water than the reduced flocks observed. It
is reasonable to assume that the less milk that is taken from each
dam, and the more it is possible to select which dams will be
milked, the higher the rate of kid survival, other things being
equal.

The considerations of finding fodder for goats are a large
factor in the location of settlements, because in most cases
goats are the predominant animal kept at the settlement. The
density of population has to be adjusted seasonally so that each
settlement has adequate fodder within a reasonable daily radius,
and more generally, so that the number of goats kept in a well-
area corresponds with the available water and fodder. During
the rains the relative abundance of fodder makes possible concen-
trations of population, thereby leaving vacant areas of grazing
for use in the rest of the year. The availability of fodder
close to settlements and the fact that watering takes little
time means that grazing is both more successful and is less
arduous for the flock and herders during the rains than at other
times of the year. Those goats which are lactating give large
yields of milk, so milking can be relatively selective. During
the winter part of the population which has been concentrated in
the rains moves into areas which were not being grazed in the wet
season. Their flocks are able to continue to find good fodder
close to the settlement, and such settlements move fairly frequently to remain in ungrazed areas. A consideration in the siting of settlements is the need to provide shelter from the strong cold night winds, so many settlements are located in gullies or in the lee of hills. Settlements with very young herders are particularly likely to adopt this pattern of movement, because the goats of people who have remained in the same place since the rains now have to make longer daily treks between settle-
ment and grazing. To some extent this may be offset by the greater familiarity of the terrain to herders in sedentary settle-
ments.

In the dry season a balance has to be struck between selecting a settlement site close to the wells, thus reducing the time needed to reach the wells on watering days, and staying further away where grazing may be more plentiful. Flocks based on settlements at a distance from the wells may spend the greater part of every third day simply walking to and from the wells, in which case they have little opportunity to graze. This may be compensated by the fact that on the other two days they have more fodder fairly close to the settlement. Flocks in settle-
ments nearer to the wells have some grazing taken by other flocks making their way to and from the wells, but they do not have such an exhausting walk to get water. It seems in general that the deciding factor is whether goats are the only animals owned, because if they are the members of the settlement can manage with a regular visit to the wells every third day. If sheep and camels also have to be watered it may involve visits to the wells on other days in addition to this, and these people tend to
settle closer to the wells. At the end of the dry season in 1975 no goats were gaining adequate nutrition. Another factor in the location of settlements at this time of year is the need for the kids to obtain some feed near to the settlement, so they are almost invariably located next to a wadi which has trees (such as Balanites aegyptiaca, Acacia spp.) which drop their fruit and leaves in the dry season. In a few settlements extra fodder is obtained for kids and mature goats by pollarding certain trees, but this is not common.

Male goats of all ages are slaughtered for meat and are sold to raise cash. Younger goats tend to be slaughtered for minor occasions such as the arrival of a small number of visitors and some sacrifices of the Islamic ritual calendar. Poorer families living hand to mouth tend to sell younger goats. As many male goats as possible are kept to maturity because they fetch a higher price at market (even though the meat is of lower quality on an older animal). Older goats are also better able to survive the lengthy treks involved in marketing. The highest price is obtained by selling in Omdurman, and quite large flocks are assembled in the winter by those owners able to do so in preparation for the trek across Kordofan. To be able to do so means being able to wait some time for the cash and having the manpower to spare to release a herder (normally a young man) for the duration of the trek. The herders generally return by truck, bringing both cash and goods with the proceeds of the sale. The risks and the time involved may be reduced somewhat by sending the animals and a herder by truck from one of the Meidob markets to Omdurman. The risks of the trek are not only the possible loss
of goats by illness or debility, as the herders have to be constant-ly on their guard against thieves or attacks on themselves. Brewster (1964) records some of the cases where attacks on Meidob in Dar Kababish involved homicide. This is one reason why a trek is normally undertaken only with a considerable number of animals to sell and with several adult herders in attendance. The majority of herds going to Omdurman belong to merchants, rather than to ordinary Meidob.

Merchants acquire a large number of goats each year because they offer credit to customers at their shops and receive payment in goats (or sheep, see below). The seller is paid for his animal(s) at local prices, so the merchant makes a profit on both the goods sold and on the eventual sale of the animal. Nevertheless, the system suits both seller and merchant. It means the seller can obtain small quantities of tea and sugar, perhaps some grain and salt and some cloth and new shoes, without having to take one or two goats to sell each time he goes to market. The merchant, on the other hand, does not have to steadily accumulate animals throughout the year and have to arrange their herding and watering. Nor does he take the risk of losses that this would involve. He calls for payment when he is ready to prepare a flock for trek to market, generally after the rains and up to the middle of the winter. This is the peak time for animal sales (partly because tax is normally due at this time, and also, of course, because the animals are in best condition).

The other main way goats are sold is by taking them south or south east to the grain producing areas, where they may be exchanged in a village for grain. This is also of advantage to
both seller and buyer. Firstly, both can evade the taxes levied on sales of grain and livestock at government controlled markets. Secondly, the cultivator can avoid having to transport grain to the market.

THE MANAGEMENT OF SHEEP AND CAMELS

Sheep and breeding camels are managed in fundamentally the same way. They are normally herded by adolescent and adult men, and characteristically the flock or herd and the herders are rarely present in the settlements. The fact that they have to be able to fend for themselves (e.g. cook) and to survive without shelter throughout the year is one reason why the herders are generally older than goat herds, but the work is also more demanding. Most flocks and herds have at least two and sometimes four or five herders in attendance. Sheep require constant vigilance because of their tendency to wander away from the flock at any time of the day or night. The herders do most of their work on foot, and walk great distances every day just keeping the flock together. Often a few mature male goats accompany the flock to lead the way in the pasture and on the paths to the wells. Camels are also herded on foot at times, but much of the work of rounding up stragglers and those which wander in search of grazing is done on camel-back. Camels disperse widely in search of fodder, but congregate at night around the herders' camp fire, where they are hobbled to prevent them straying far if they set off to graze at night. The hardest work in herding camels is searching for stray animals, which are always liable to be stolen. One informant described finding three female camels far north of Jebel Meidob on his return from Bir 'Atrun. They
or two adult men in attendance because of the difficulties and dangers of the migration into Dar Berti and Dar Zayadiya, or even into Dar Hamar in Kordofan. In contrast, on the northern migration relatively young herders are sufficient to cope. Some informants specifically stated that young herders are an advantage in the north because they need less water than men (who need it to brew tea and to wash for prayers) and so can manage longer intervals between visits to the wells. On the northern migration it is possible to obtain good pasture (not proper jizu) without going so far north that the proportion of Arabs in the area is greater than the proportion of Meidob.

The herders of sheep and camels are frequently armed with a shotgun or rifle. In theory this is to protect the herd from thieves and predators, but arms are not very relevant for such protection. The greatest loss to predators occurs with attacks on young lambs taken by hyena, foxes or eagles when they have strayed from the flock with their dam (i.e. the herders are not present). Most theft of individual animals or of several is done by stealth and probably more often by the thief chancing upon a stray animal, while against the hambata only a group of herders as daring and as well armed as the hambata themselves would be a deterrent. In practice the arms perform the useful function of enabling the herders to obtain meat by hunting gazelle rather than by slaughtering one of the flock. It is notorious that hungry herders will select a young ram for the cooking pot and subsequently explain that it was dying of an injury or disease.

Asad has noted (1970:16) that Kababish find the maximum practicable flock size to be about 200 head and for a herd of
camels about 150 head. Information on the Meidob is consistent with this, as will be seen in more detail when livestock ownership patterns are discussed. These are the upper limits for a herd kept together for all purposes, i.e. grazing, watering and breeding, and they depend as much on the characteristics of the animals (gregariousness, grazing habits, etc.) as on the number of herders. It will become clear, however, that very few individual Meidob men (and their families) own sufficient numbers of sheep or camels to be faced with the problem of the limits of herd size. Perhaps the extreme case is a man reputed to own five murah\(^8\) (i.e. 5 x 100) of camels. He solves the problem of herd size by dividing his total herd (which includes, of course, many animals belonging to his children) into five units, each of which grazes in a different direction from the camp. Needless to say, the camp has to be moved at frequent intervals. A much more common situation is where it suits a number of owners to amalgamate their sheep or camels to form a flock or herd of about the maximum size. The characteristics of the groups of owners will be examined in Chapter 6, but it is clear that the main object of such groups is to assemble a manageble herd with the required number of herders. Indeed it seems that there is actually a shortage of herders, and that a particular advantage of forming co-operative herds which make long migrations is to maximise the productivity of the available labour. More precisely, there is a shortage of herders in the families owning sheep and camels. The shortage is not necessarily in actual numbers of people, but in the numbers available for constant herding throughout the year. The wealthier pastoralists are
often involved in other activities, such as marketing and administrative duties and so are not available. Furthermore their sons and daughters are more likely to receive education than the children of poorer couples, and so are also unable to undertake the herding. In such cases it is possible to hire herdsmen to supplement the family labour force, and it is notable that herdsmen are hired only to manage split herds (i.e. sheep and breeding camels). The most mobile of all herds are those owned by merchants who rely entirely on hired labour, each herd having at least one adult man with overall responsibility and a number of younger assistants. Although there is a shortage of family labour, thus favouring the formation of co-operative herds; there is less work available for hired herdsmen than the number of men (of poorer families) seeking such work. A number of young men from Kondeidi work for Hamar sheep owners, herding their flocks in Eastern Darfur and Western Kordofan.

As in the cases of cattle and goats, most marketing of sheep and camels takes place outside Dar Meidob, and the best opportunities exist outside Darfur. Mutton is the preferred meat in urban areas in Sudan, and these provide an assured market for sheep. Added to this there is a growing volume of exports of live sheep or chilled mutton, most of it channelled through Omdurman and Khartoum. Specialized feedlots have been developed around Khartoum for 'finishing' sheep trekked from the savanna. Camels are also slaughtered for consumption in Sudan, but the main traditional market was Egypt, the high prices offered being sufficient incentive in spite of the quota system for exports, problems of currency exchange and the long desert crossing which this trade involved. It is possible also that the limitations of
the domestic market for camel meat favoured exports to Egypt.

This pattern of marketing was transformed recently by the opening up of the route between Mellit, the tribal centre of the Berti and Zayadiya, and Kufra oasis in southern Libya. Subsequent to fieldwork this route was closed following the abortive coup attempt in Sudan in July 1976, and it is not known whether it has been officially re-opened with the resumption of diplomatic relations between Sudan and Libya in late 1977. At the time of fieldwork, however, this route was at its zenith, having steadily increased in importance since it was opened up in the late 1960s. Large trucks equipped with special tyres and enormous fuel tanks were used to transport sheep from Darfur, especially from the livestock markets at Mellit and El Fasher, direct across the desert to Kufra. In addition to the substantial numbers of sheep trucked onwards from Kufra to other Libyan towns, a major purpose of the commerce in sheep was to facilitate expansion of a very ambitious fattening and breeding project developed at Kufra (see Allan, 1976).

Libya was also a very lucrative market for camels, partly on account of the high prices offered and the lack of officialdom encountered (at first the sellers did not even have to possess a passport) and partly because the cash could be used to buy Libyan subsidised prices goods such as cloth, radios, milk powder, etc. for re-sale in Sudan with substantial profits. The potential of Libya increased further when it was appreciated that good employment prospects existed, both at Kufra on the sheep scheme and in construction work elsewhere. Later it was possible to enter Libya from Darfur only by travelling by truck from Mellit
(which was expensive) or by accompanying a herd of camels for sale. For many men it was worth taking a few camels to sell, even if the animals were not of the ages normally sold, simply to be able to work in Libya for a few months and buy a quantity of goods for re-sale. It is possible, therefore, that the number of camels being sold exceeded the normal marketed offtake of Meidob herds. The drought may well have been another reason why many men were prepared to sell animals, though it is doubtful if the volume of sales would have been so great if the Libyan opportunities were not available.

SOME PRELIMINARY COMMENTS ON THE 'HERD' AND THE 'FAMILY HERD'

It will be apparent from the preceding discussion of the management of the different types of animals owned by Meidob that the animals belonging to a family are not necessarily the only animals in a flock or herd, and that often a family will be involved in the management of several flocks and herds of different types of animal. Only where a family owns only goats and manages these by its own labour in an independent flock is there a simple correspondence the family ownership of animals and the family herd. Thus, in contrast to the situation among many cattle-owning pastoralists, it is rarely possible to observe the family and its livestock as a mutually interdependent whole, a primary unit of pastoral management. Rather, among the Meidob rights of individuals to livestock are drawn together at a minimal level by the control over their disposal of the head of the family, and the families are interconnected by various bonds of co-operation in herding with other families. The connections between families are characteristically at different degrees of
social distance according to the types of animals jointly herded. Goats are commonly assembled into flocks by persons who can trace very close kinship links, such as between parent and married child(ren) or between siblings. Similar links play a great role in the formation of flocks of sheep or herds of camels, but much more remote kinship links are also important in these cases. Common herding of goats pre-supposes co-residence in a settlement, whereas joint herding of sheep or camels does not. This will be better understood when examples of the social composition of settlements and the patterns of livestock ownership and the disposition of herds are presented.

It would be possible to make a distinction between short-term and long-term co-operation in herding. Some groups which co-operate in managing a split-herd of camels, for instance, are siblings who acquired rights in the herd when they were young children. The fact that they co-operate may have much to do with the history of the herd. At the other extreme, I can quote the case of collaboration in herding sheep between two families, one Elkedí and the other Teukeddí, who happened to be spending the dry season in adjacent valleys. This was a case of temporary expediency, a reflection of the numbers of sheep owned by each family and the number of herders each had available. There is often a similar element of mutual expediency in long-term associations, but this is not necessarily the case. It may be difficult to break up a herd which has existed for a generation or more; there may be only one bull camel, or too few herders to manage herds. In addition, the herd in one sense expresses the ideal separate solidarity of siblings. It may be noted that a flock or herd has a kinship pattern, and this is particularly apparent with camels which may live for twenty-five years or more. I do
not propose to employ this distinction in later analysis, because in practice it is difficult to determine whether expediency or history or elements of both are the operative factors in particular herds. I merely indicate here that some differences exist.

It will be apparent from the discussion of herding that at different times during its existence a family may be better able to manage some types of animals than others. For example, a family with young children is in a good position to manage goats, while it will be in a good position to herd sheep or camels when the children are older. I should make it clear that it is virtually impossible for a family to alter the types of animals it owns to correspond with the labour at its disposal. It is doubtful if such adjustments could be made with the speed which would be necessary; in any case the problem is purely hypothetical because the matching is carried out by adjusting the composition of the co-operating 'herders' rather than the 'herded'. I have recorded a very few cases of people who in the past exchanged goats for camels, but the motivation for this was the perceived merits of the different types of animals rather than an adjustment to the availability of herders. A deliberate choice of this sort takes many years to become effective. Similarly, there may be some merits in a poor man selling a camel or two in exchange for goats, since he can hope that the goats will provide a more regular source of food and cash income. In general, however, it seems that Meidob have always been reluctant to part with female animals of any type, and perhaps also cautious about buying any female animals whose pedigree is not known.

Finally, a methodological note on the herd data to be presented below. I avoided direct questioning on animal numbers
animals owned by each member of a family. Some indications of absolute numbers were given by indiscreet informants referring to other people, and the assistants who carried out part of the survey in Kondeidi sometimes obtained accurate figures by direct questions. Almost all the data was gained indirectly, by observing flocks in settlements (noting the size of animal pens), in pasture and at the wells, by questioning about the seasonal movement of herds and about their herders, by asking about mortality and market sales in previous years, and at the very end by cross-checking this information with the tax lists. It was impossible to do this in a uniform manner, some informants talking more readily and providing more detailed information than others, some herds being rarely in the areas visited, some not actually seen at all, and in some cases I did not know for exactly whom a particular taxpayer named in the lists is responsible. In general my information about cattle and goats is more precise than that for sheep and camels, simply because more cross-checking of different types of information was possible with animals based on the settlements and visiting the wells at frequent intervals. My own visits to wells were normally at intervals of four or five days, giving an opportunity to observe as many as possible of the herds in the well areas. In many settlements not visited frequently it was impossible to differentiate the animals belonging to different families, which is a further limitation in the value of the information. I believe that in most of the settlements studied I am able to state the number of animals owned to an accuracy of plus or minus about ten
per cent, and in the majority of cases this is less than the variation in flock or herd size in the course of a single year. I have excluded from the sections where animal numbers are relevant those settlements for which my information is less accurate than this.

CONCLUSION

A consideration of some aspects of herd management provides some substance to the comment that diversification of the types of animals owned is a source of security of livelihood in the environment of Dar Meidob. Yet only in the case of sheep and camels in split herds is there a substantial flexibility in herding strategy which enables advantage to be taken of favourable conditions and avoiding action to be taken against unfavourable conditions. The discussion also helps to explain the contrast in the intensity of grazing in settled areas near the dry season water sources and in the remote pastures. Only the flocks and herds with a full complement of herders are able to use distant pastures, because to do so they have to be able to manage independently of other members of their settlement.

It will also be seen that the great majority of herders are young people between the ages of seven and twenty-five. Children play a central productive role in the Meidob economy. In the next chapter I shall present the information available on the role of different animals in different areas and on the growth in animal numbers. The main discussion will be on the human population and its demographic characteristics, with particular emphasis on the structure of the pastoral population and on the variations in the number of children of women.
CHAPTER FOUR
THE DEMOGRAPHIC BACKGROUND

INTRODUCTION

In the course of this chapter I shall change the focus of my account from description of the Meidob as a whole to a more detailed analysis of data I collected in two sample areas. In the first part the information available on the growth of the human and livestock populations of Dar Meidob is presented, followed by an examination of fertility. It has been shown in the last chapter that children have a central role in herding, which means that the numbers of children and variations between women in the number of their children are of considerable importance. This has a bearing on the pattern of domestic organization, as will be discussed in the two subsequent chapters. The data used in these chapters is derived from my surveys, and the discussion in the second part of this chapter, of the structure of the population of the two sample areas, serves also as an introduction to the later analysis. These two sample areas are the region around Aicho wells in the centre of the mountains, and part of the region served by Awinoi wells on the southern edge of the mountains. The former includes members of the Teukeddi and Usutti sections of the Urri, while the latter is part of the Kondeidi section of the Kargeddi. They were selected to represent the two main types of environment in Dar Meidob, but without precise information about how representative they are of the whole Dar. The general discussion in the first part of the chapter serves partly to place them in the overall context.

The information on which this chapter is based is far from complete. For the human population there is only the 1955-56 Sudan
Census, which simply provides a figure for the population of each omodiya. The more detailed analysis of the census is available only for the Census Area, in which the Meidob were about 18 per cent of the population in 1955. The demographic data would have been much more useful if the results of the Second Sudan Census of 1973 were available, but unfortunately this has not yet been published. I found the tax lists of considerable value for the distribution of people and livestock, but I realized their value at a late stage in the fieldwork. I have already given estimates of the total livestock population in 1972, derived by multiplying five times the number stated in the tax lists. The tax lists, however, are of no use for determining changes in the number of livestock, because the proportion of animals declared for tax depends primarily on the amount of tax (it is in effect 'tribute') which the Government specifies is to be collected. The ratio of owned animals to taxed animals therefore varies over time. At a single point in time, though, the proportion of animals declared by each taxpayer (or tax-paying group of persons) is fairly consistent, so that tax lists do have a certain value. The 1972 lists provide a fairly reliable reference point, and comments in administrative files provide some indications of livestock numbers in the past. The third source of information is my own survey. This was not designed for demographic analysis, but simply as a record of the present membership of settlements. It is therefore also of limited value for assessment of vital rates.
LIVESTOCK POPULATION

There has been a considerable increase in the number of livestock in Dar Meidob since the beginning of the century. Only in the case of horses has there possibly been a decline in numbers. Even the great losses of the drought have done no more than reduce the number to the level which existed ten or twenty years ago, rather than to the low level of the first quarter of the century. It is very difficult, however, to measure the rate of increase over the last seventy-five years. There has never been a census of Meidob livestock, although accurate figures were probably collected in the 1920s, when the tax assessment was carried out by Government Officers. A national livestock census was made in 1976-77, using low-level aerial counts along sample transects; this will have provided a density of each type of animal in strata defined by ecological characteristics, but without a means of relating these figures to tribes and tribal areas, as far as I know. A third type of information on changes in livestock numbers is the registers kept by the guarantors of Meidob livestock at major markets. Unfortunately, none of these sources of information was available, or in the last case, accessible, at the time of my fieldwork.

Nevertheless, I am able to estimate the increase in the number of camels and sheep, using figures available in administrative files and the estimates I have derived from the tax lists for 1972. These give only an approximate figure for the long-term increase, and do not, of course, show annual changes in vital rates or a satisfactory indication of changes in the rate of increase. It was noted in 1944 that:
"... Meidob listed camels have gone up from 1,772 to 4,500 and Zayadiya and Berti from 5,000 to 5,200 since 1928, and probably the 1928 figure, based on a Government listing, is less underestimated than the 1943 Native authority listing" (D.P./66.B.51. folio 174).

This gives an acceptable figure for 1928, but does not specify to what extent the 1943 figure is an underestimate. In 1948, however, it was estimated that "the Meidob have perhaps 10,000 camels and 70,000 sheep", and further in the same report it is mentioned that "... 16,000 sheep were sold by Meidob in Omdurman market in 1947" (D.P./66.B.52/2 folio 603).

Using these figures for camels with the estimate that there were 60,000 in 1972, the rate of increase would have been just under 9.5 per cent per annum between 1928 and 1948, and just under 8 per cent between 1948 and 1972. It has been shown by Dahl and Hjort (1970: 78-80) that a rate of about 8 per cent per annum is about the maximum long-term growth rate of a camel population, and that more conservative assumptions about fertility and mortality produce a rate of 1.5 per cent per annum. It can be concluded therefore, that part of the increase in number is the result of purchases of female camels in markets in the past. Since my figures do not represent simply the difference between fertility rates and offtake, it is possible that a small part of the increase in a number reflects a greater number of male camels kept for transport today, compared with, say, 1928. Most of the rate of increase, however, must be attributed to the success of Meidob as camel-owners, which is attributable to the favourable environment of Dar Meidob, and perhaps more important, to the flexibility of the camel herding pattern.
The figure of about 70,000 sheep in 1948 and 16,000 sold in 1947, implies a commercial offtake of about 23 per cent, (if all marketed sheep were sold in Omdurman, which seems likely). This figure compares with an offtake of 27 per cent of the flocks in Southern Darfur in 1973 (Wilson, 1976: 108), so the estimate of the number of sheep appears to be acceptable. The estimated number of sheep in 1972 is 244,000, therefore the average annual growth rate is just over 5 per cent between 1948 and 1972. This is, however, very much lower than the rate of 18 per cent per annum calculated by Dahl and Hjort (1976: 97-98). In the absence of more detailed information on numbers of sheep at different times I am unable to assess which of a number of possible reasons may be responsible for the apparently low growth rate of Meidob flocks of sheep. The absence of jiru in recent years is likely to have had a more severe effect on sheep than on other animals, reducing their fertility and increasing their mortality, and it is possible that the rate has been lower in the last decade than previously. Figures for southern Darfur suggest that the number of sheep there declined in 1973 (Wilson, 1976: 110).

There is unfortunately no information on numbers of goats and cattle in the administrative records I used, and therefore I am unable to calculate a rate of increase. My impression is that the cattle population has increased very slowly in the last fifty years, and it may have fallen below the number in the Dar fifty years ago as a result of the drought. Goats are very prolific (Dahl and Hjort calculate a rate of increase of goat flocks of 33 per cent per annum (1976: 102-107)), but a very high level of offtake and high mortality reduce the actual rate of increase.
In Southern Darfur in 1973 there was an increase of about 8 per cent per annum, and it is very unlikely that the long term increase in Dar Meidob exceeds this figure. (Wilson, 1976b: 221)

The information on herd growth rates is very inadequate, and I do not attach great importance to any of the figures I have given. There is, however, another subject on the tax lists which can be used with much more confidence. This is with regard to the relative importance of different types of animal in different parts of Dar Meidob. Since I am concerned with the relative importance and not absolute numbers, I have simply divided the figures recorded on the tax list by the number of taxpayers. The results are shown in Figure 4.1. for each omodiya. They give a considerable measure of support to the statements of informants on the importance of different types of livestock in different parts of the Dar, and they also agree well with the ecological patterns of the omodiyas.

The clearest example of this correspondence is the case of Usutti, in the central, highest part of Jebel Meidob. Here there are more goats and fewer camels, cattle and sheep per taxpayer than in any other omodiya. In general, the omodiyas with the smallest number of goats per taxpayer are those with the greatest proportion of their settlements on the plains. Sheep are more numerous on the plains than on the hills. Kinana, in which most settlements are in a low, but stony, part of the Jebel, has a similar number of sheep per taxpayer to the Urtti omodiyas. The exception among the latter is Temeleka, which has most of its settlements on the plains between Jebel Meidob and Jebel Heitan. The great number of cattle per taxpayer in Abu Garan is
<table>
<thead>
<tr>
<th>Village</th>
<th>Taxpayers</th>
<th>Camels</th>
<th>Donkeys</th>
<th>Cattle</th>
<th>Sheep</th>
<th>Goats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kindirra</td>
<td>1581</td>
<td>2.1</td>
<td>0.4</td>
<td>0.3</td>
<td>5.1</td>
<td>7.4</td>
</tr>
<tr>
<td>Usutti</td>
<td>615</td>
<td>0.9</td>
<td>0.4</td>
<td>0.3</td>
<td>4.9</td>
<td>13.2</td>
</tr>
<tr>
<td>Temeleka</td>
<td>255</td>
<td>1.5</td>
<td>0.6</td>
<td>0.8</td>
<td>7.9</td>
<td>11.5</td>
</tr>
<tr>
<td>Teukeddi</td>
<td>783</td>
<td>1.5</td>
<td>0.6</td>
<td>0.3</td>
<td>4.3</td>
<td>10.6</td>
</tr>
<tr>
<td>URRTI AVERAGE</td>
<td></td>
<td>1.7</td>
<td>0.5</td>
<td>0.4</td>
<td>5.5</td>
<td>10.7</td>
</tr>
<tr>
<td>Abu Garan</td>
<td>371</td>
<td>1.5</td>
<td>1.7</td>
<td>3.2</td>
<td>8.7</td>
<td>11.0</td>
</tr>
<tr>
<td>Anyuro</td>
<td>523</td>
<td>1.1</td>
<td>0.6</td>
<td>1.2</td>
<td>8.0</td>
<td>8.0</td>
</tr>
<tr>
<td>Malha</td>
<td>639</td>
<td>3.3</td>
<td>0.9</td>
<td>2.0</td>
<td>11.2</td>
<td>9.7</td>
</tr>
<tr>
<td>Kondeidi</td>
<td>673</td>
<td>1.7</td>
<td>1.1</td>
<td>2.3</td>
<td>8.4</td>
<td>5.3</td>
</tr>
<tr>
<td>Bedyat</td>
<td>230</td>
<td>3.3</td>
<td>1.2</td>
<td>2.4</td>
<td>11.7</td>
<td>10.6</td>
</tr>
<tr>
<td>Kinana</td>
<td>257</td>
<td>2.0</td>
<td>0.8</td>
<td>1.7</td>
<td>5.3</td>
<td>9.0</td>
</tr>
<tr>
<td>Kirra</td>
<td>625</td>
<td>2.2</td>
<td>0.8</td>
<td>1.3</td>
<td>12.8</td>
<td>11.8</td>
</tr>
<tr>
<td>KARGEBDI AVERAGE</td>
<td></td>
<td>2.2</td>
<td>1.0</td>
<td>2.0</td>
<td>9.4</td>
<td>9.4</td>
</tr>
</tbody>
</table>
connected with its location in the south of Dar Meidob, where there may be slightly more rainfall, but where, more significantly, the people do more cultivation than other Meidob. The situation with regard to camels is less clear, because the averages given in this Table do not show the ownership pattern. Many of the camels are in the hands of a relatively small number of owners of very large herds. Many of these owners are connected with the administration and, to a lesser extent, with marketing. Some of the families which have inherited administrative positions have owned sizeable herds for a considerable time. In any case, the way camels are managed means that their distribution is not directly related to the ecology of the omodiya to which the owner belongs.

A more general point is that the figures do not represent with any accuracy the distribution of camels and sheep 'on the ground'. Nor, indeed do I have sufficient information on the boundaries of omodiyas or on the settlement pattern within them to be able to use the figures for goats, cattle and donkeys to calculate a density, in order to assess the intensity of grazing in the settled areas. Since I have said little about them elsewhere, I would also draw attention to the numbers of donkeys indicated by Table 4.1. They are, of course, a considerable factor in the intensity of grazing around the settlements.
SIZE, STRUCTURE AND DISTRIBUTION OF THE MEIDOB POPULATION

The rate of increase in the Meidob population has been less than the growth rate of the herds. There has been, therefore, until the drought, a steady increase in the average level of prosperity. The livestock population was able to expand outwards into areas of pasture which were little-used in the first quarter of this century, but the human population remained within the areas accessible to the traditional water sources. The construction of bore-wells has relatively recently enabled some of the Meidob to settle in areas previously uninhabited, or which were occupied at certain seasons in a limited transhumance. Overall, however, there has been an increase in the density of population, The drought caused a major reversal of both trends, and as a result of widespread impoverishment a substantial part of the population left Dar Meidob. Although there was great hardship, there was little or no starvation, because people were able to make farms in more southerly areas of Darfur.

The population recorded in 1956 was 20,856, but this does not include Temeleka omodiya, which appears not to have been enumerated. In relation to the size of the Dar, the density was one person per square kilometre at that time. In practice, of course, the density in the settled areas is much greater than this, on average about three persons per square kilometre, but even this is an extremely low figure. The actual density varies locally, according to the terrain, the quantity of water available and the opportunities for re-settlement in other places.

The 1956 Census (Second Interim Report, 1956) showed for Kutum East Census Area a Crude Birth Rate (CBR) of 42.6 per 1,000, and a Crude Death Rate (CDR) of 11.2 per 1,000 giving a
rate of natural increase of 3.14 per cent per annum. No figure for infant mortality was reported, but a figure of 21.3 per 1,000 is given in the Final Report (1961). Subsequent analysis suggests that all of these figures are underestimates. Demeny (1968: 504) quotes a revised CBR for 'Westerners' (i.e. Darfur) and a CDR of about 46 per 1,000 which results in a similar rate of natural increase. Krotki (1961: 54-81) has argued that the infant mortality rates were inaccurate throughout Sudan, and he suggests a figure of 91 per 1,000 in the Kutum East area. He remarks that even this figure is suspiciously low, but as all of the Census Areas in northern Darfur and northern Kordofan have rates of under 100 per 1,000, he postulates that the semi-desert may be particularly free of diseases. It seems probable that omission of infant deaths accounts for much of the underestimation of both CBR and CDR in the Census (Demeny, 1968: 483-489).

To assess the present Meidob population it is necessary to obtain a figure for Temeleka omodiya. I have done this by multiplying the number of taxpayers in Temeleka in 1954 (i.e. 200), by the average number of persons per taxpayer in all other omodiyas (i.e. 6.38). This gives an estimated population in Temeleka in 1956 of 1266, and thus a total population of 22,132. At a rate of 3 per cent per annum, this would have increased to about 39,000 in 1975. I estimate that emigration from Dar Meidob of the people enumerated in 1956 and their offspring would not exceed 1,000, so I suggest, as a cautious estimate, that the Meidob population in 1975 was about 38,000.

The actual number in the lhr in 1975 was less than this,
because of 'emergency emigration' in the drought. The magnitude of the emigration from Northern Darfur District may be judged by the fact that a provisional figure for the District from the Second Census shows an apparent population growth rate of 0.5 per cent per annum between 1956 and 1973. If we accept this rate of increase for Dar Meidob, the estimated number of Meidob present in the Dar in 1975 would be about 24,000, which implies that about 58 per cent of the Meidob had emigrated to the south. This accords with estimates made by Meidob and by officials in El Fasher, of between 30 and 40 per cent emigration from Dar Meidob. However, it is not entirely acceptable to assume a uniform proportion of emigrants throughout the District, because there are differences in local economy which may have affected the response of people to the drought. The Meidob, with their large herds, may have been less severely impoverished than, for example, some of the cattle-owning Zaghaba living near the Chad frontier.

Apart from the recent exodus there does not seem to have been an appreciable rate of emigration from Dar Meidob to towns or other parts of Sudan. One reason for this is the simple fact that prosperity has increased, and it has generally been unnecessary for men to undertake work elsewhere to establish herds. Another reason is that the main type of temporary employment in the Sudan has been on irrigated agricultural schemes along the Nile, with peak demand for labour in the dry season for cotton-picking. This coincides with the peak demand for labour in Dar Meidob - for watering livestock - and has thus been little undertaken by Meidob. Another factor has been the limited scale of
educational opportunities in Darfur until about twenty years ago, so that only in the 1970s have there begun to be appreciable numbers of Meidob with the qualifications for work in Government offices and in schools, hospitals and other public services. The number of Meidob recruited by the Police and Army has been negligible. Nevertheless, many Meidob men make regular visits to towns, and some of them have settled there for periods of a few years. They find employment as tailors, taxi-drivers, and in other semi-skilled occupations.

The low incidence of emigration is reflected in the fact that the number of taxpayers has increased at a faster rate than the rate of natural increase. I calculate that the number of taxpayers has increased by about 3.5 per cent per annum between 1954 and 1972. The figure for Kindirra umodiya in 1954 has been corrected in the same way as the population of Temeleka was estimated. The number of taxpayers in each omodiya and the population in 1956 are shown in Table 4.2. The general agreement between the three sets of information on the size of omodiyas gives some grounds for confidence in their accuracy.

The lack of change in the relative size of omodiyas does not mean that there has been no movement between them, although in general the movements have not been substantial. In some cases, taxpayers who have moved pay tax in their original omodiya. Malha omodiya is a special case, because it is not one of the territorial sections. It was formed in about 1950, under al-Tom Muhammad al-Sayyah, and although some of the sheikhs and taxpayers are resident in and around Malha village, the main market and administrative centre in Dar Meidob, many of the taxpayers are still resident in other parts of Dar Kardeddi. The construc-
<table>
<thead>
<tr>
<th>Omodiya</th>
<th>Taxpayers 1954</th>
<th>Population 1956</th>
<th>Taxpayers 1972</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>Kindirra*</td>
<td>936</td>
<td>27.0</td>
<td>5970</td>
</tr>
<tr>
<td>Usutti</td>
<td>239</td>
<td>6.9</td>
<td>1213</td>
</tr>
<tr>
<td>Temeleka*</td>
<td>200</td>
<td>5.7</td>
<td>1276*</td>
</tr>
<tr>
<td>Teukeddí</td>
<td>408</td>
<td>11.8</td>
<td>2297</td>
</tr>
<tr>
<td>URRTI</td>
<td>1783</td>
<td>51.4</td>
<td>10756</td>
</tr>
<tr>
<td>Abu Garan</td>
<td>286</td>
<td>8.2</td>
<td>1876</td>
</tr>
<tr>
<td>Anyuro</td>
<td>189</td>
<td>5.4</td>
<td>1265</td>
</tr>
<tr>
<td>Malha</td>
<td>252</td>
<td>7.3</td>
<td>1795</td>
</tr>
<tr>
<td>Kondeidi</td>
<td>388</td>
<td>11.2</td>
<td>2525</td>
</tr>
<tr>
<td>Bedyst</td>
<td>167</td>
<td>4.8</td>
<td>1016</td>
</tr>
<tr>
<td>Kinana</td>
<td>107</td>
<td>3.1</td>
<td>528</td>
</tr>
<tr>
<td>Kirra</td>
<td>297</td>
<td>8.6</td>
<td>2371</td>
</tr>
<tr>
<td>KARGEDDI</td>
<td>1636</td>
<td>48.6</td>
<td>11376</td>
</tr>
<tr>
<td>MEIDOB TOTAL</td>
<td>3469</td>
<td>100.0</td>
<td>22132</td>
</tr>
</tbody>
</table>

*There is no population figure for Temeleka in 1956, and the number of taxpayers in Kindirra in 1954 is given as 356. The figures shown in the Table are both estimates, derived by multiplying the number of taxpayers in Temeleka, and dividing the number of people in Kindirra by the figure of 6.38, which is the average number of people (1956) per taxpayer (1954) in all other omodiyas.
tion of bore-wells and market villages in the last twenty-five years have led to much movement of people, but normally within their omodiya of origin. It is interesting to note on Table 4.2 that the politically important omodiyas are numerically large. For example, the political division between the Kindirra and Elkedi people (who constitute Kindirra omodiya) and the other Urrti is surely related to the fact that Kindirra is more populous than the other three Urrti omodiyas. Among the Kargeddi the two largest omodiyas are Kondeidi and Kirra, and this helps to explain some of their historical rivalry. There is also a remarkable balance in the numbers of Urrti and Kargeddi.

My own quantitative data is not suitable for sophisticated demographic analysis. On mortality, for example, there is little I can say, since I know of only three deaths in my sample areas in the period of study. I am able, however, to make some comments about fertility, by comparing my information with that given by Henin in a series of papers on fertility in certain parts of Sudan. These papers demonstrate and seek to explain the contrast in fertility between Baqqara in the south of Darfur and Kordofan, and pastoralists and settled populations in the Gezira (between the White Nile and the Blue Nile). The greatest contrast in Henin's data is between the Baqqara and the cultivators, and it will be sufficient for my purposes to discuss only these.

In Table 4.3 I have given Henin's figures for the number of children born alive to women of different age groups, and I have added my figures for the number of surviving children of
TABLE 4.3.
Women aged 15 to 49 of all marital conditions by present age group and percentage distribution of numbers of children born alive.*

<table>
<thead>
<tr>
<th>Age group and populations</th>
<th>Number of children born alive</th>
<th>Total women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>1-3</td>
</tr>
<tr>
<td>Under 20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gezira</td>
<td>60.3</td>
<td>36.7</td>
</tr>
<tr>
<td>Baqqara</td>
<td>89.8</td>
<td>10.2</td>
</tr>
<tr>
<td>Meidob</td>
<td>79.4</td>
<td>20.5</td>
</tr>
<tr>
<td>20-29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gezira</td>
<td>10.4</td>
<td>37.0</td>
</tr>
<tr>
<td>Baqqara</td>
<td>33.8</td>
<td>53.5</td>
</tr>
<tr>
<td>Meidob</td>
<td>37.2</td>
<td>52.5</td>
</tr>
<tr>
<td>30-39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gezira</td>
<td>4.3</td>
<td>13.6</td>
</tr>
<tr>
<td>Baqqara</td>
<td>18.1</td>
<td>35.5</td>
</tr>
<tr>
<td>Meidob</td>
<td>12.5</td>
<td>43.7</td>
</tr>
<tr>
<td>40-49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gezira</td>
<td>4.5</td>
<td>10.7</td>
</tr>
<tr>
<td>Baqqara</td>
<td>11.9</td>
<td>22.5</td>
</tr>
<tr>
<td>Meidob</td>
<td>8.0</td>
<td>32.0</td>
</tr>
<tr>
<td>15-49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gezira</td>
<td>17.7</td>
<td>27.3</td>
</tr>
<tr>
<td>Baqqara</td>
<td>35.1</td>
<td>34.8</td>
</tr>
<tr>
<td>Meidob</td>
<td>29.4</td>
<td>39.6</td>
</tr>
</tbody>
</table>

* The form of this Table and the figures for Gezira and Baqqara are taken from R.A. Henin 1969a page 198.

Figures for the Meidob refer to surviving children, rather than to children born alive.
Meidob women. The figures for the Meidob women are similar to those for the Baqqara throughout the Table. If, for the sake of brevity, we concentrate on the last set of figures, for all women between 15 and 49, the correspondence is particularly clear. Given that the figures for the Meidob refer to surviving children, and that infant mortality appears to be low in northern Darfur, it appears that the Meidob fertility pattern is similar to that of the Baqqara, but is less extreme.

Henin showed that the 'total fertility rate' (which eliminates the effect of the age-distribution of the samples) of the Gezira women is more than twice as high as that of the Baqqara women (1968: 151-152). He divided the reasons for this difference into 'marital factors' and 'medical and physiological factors'. The Baqqara were shown to have married at later ages, more had experienced divorce and more were married to polygynous husbands than the Gezira women. Similarly, the Baqqara women had experienced greater rates of pregnancy loss, suffered high incidence of malaria and venereal disease and breast-fed their children for long periods. Controlling for some of these factors, by considering only women who had borne at least one child, who had not been divorced and who had a monogamous husband, Henin showed that the difference in fertility was reduced. Among women in this category the level of fertility in "the Gezira is only 47 per cent higher than the Baqqara" (1969a: 187). He argued, therefore, that the medical and physiological factors explain slightly more than half the difference in fertility.

I am unable to calculate the total fertility rate of the Meidob sample, because of uneveness in reporting of infant deaths.
My impression is that Meidob fertility is closer to the Baqqara (low fertility) end of the range discussed by Henin than to the Gezira level (high fertility). It is, however, of some interest to consider whether the difference between the Meidob sample and and Henin's samples is explained to any extent by features of the Meidob marital pattern. If the Meidob pattern is similar to that of the Gezira sample, then the difference in fertility can be attributed to adverse medical and physiological factors. If, on the other hand, the Meidob marital pattern is like that of the Baqqara, it can be postulated that medical and physiological factors are less adverse among the Meidob than among the Baqqara.

The age specific polygyny rates in Table 4.4. imply that in this respect the Meidob marital pattern is more extreme than in either of Henin's sample groups. Polygyny in fact accounted for relatively little of the difference in Henin's samples, but in as much as it had any effect, it must be presumed that the high rate of polygyny among the Meidob does reduce fertility to some extent. At the same time, however, it appears that Meidob marriages are more stable than those of the Baqqara. In Table 4.5, which shows male marital experience in terms of the percentage of men who have married once, twice, etc., the similarity between the Meidob and the Baqqara is related to the higher polygyny of the Meidob, and implies that there have been fewer divorces. These figures for the Meidob are probably an underestimate. I recorded a number of previously un-reported divorces among a small part of my sample at a late stage of fieldwork. The extent of under-reporting of divorce is particularly serious in the case of women. This is unfortunate, since the number of marriages
### TABLE 4.4. Marital Status: Age-Specific Polygyny Rates

<table>
<thead>
<tr>
<th>Age-group</th>
<th>Gezira*</th>
<th>Baqqara*</th>
<th>Meidob</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-34</td>
<td>1.03</td>
<td>1.05</td>
<td>1.22</td>
</tr>
<tr>
<td>35-44</td>
<td>1.18</td>
<td>1.11</td>
<td>1.36</td>
</tr>
<tr>
<td>over 45</td>
<td>1.22</td>
<td>1.25</td>
<td>1.56</td>
</tr>
</tbody>
</table>

* Source: Henin(1969b: 259 Appendix III)

### TABLE 4.5. Male Marital Experience (Men over 25 years)

<table>
<thead>
<tr>
<th>Number of wives</th>
<th>Gezira*</th>
<th>Baqqara*</th>
<th>Meidob</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>70.1</td>
<td>49.9</td>
<td>59.8</td>
</tr>
<tr>
<td>2</td>
<td>22.2</td>
<td>26.7</td>
<td>44.0</td>
</tr>
<tr>
<td>3</td>
<td>5.3</td>
<td>10.5</td>
<td>9.7</td>
</tr>
<tr>
<td>4</td>
<td>1.7</td>
<td>6.5</td>
<td>5.4</td>
</tr>
<tr>
<td>5</td>
<td>0.2</td>
<td>2.9</td>
<td>1.1</td>
</tr>
<tr>
<td>6</td>
<td>0.4</td>
<td>3.7</td>
<td>-</td>
</tr>
</tbody>
</table>

N=814 N=786 N=178

* Source: Henin (1969b: 258 Appendix II)

### TABLE 4.6. The Stability of Marriage. Marriages per 100 Women.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Gezira*</th>
<th>Baqqara*</th>
<th>Meidob</th>
<th>Aicho</th>
<th>Kondeidi</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-24</td>
<td>103</td>
<td>106</td>
<td>101</td>
<td>103</td>
<td>100</td>
</tr>
<tr>
<td>25-34</td>
<td>110</td>
<td>124</td>
<td>110</td>
<td>119</td>
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<tr>
<td>35-44</td>
<td>124</td>
<td>139</td>
<td>112</td>
<td>114</td>
<td>110</td>
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<tr>
<td>over 45</td>
<td>132</td>
<td>142</td>
<td>120</td>
<td>131</td>
<td>111</td>
</tr>
<tr>
<td>15-49</td>
<td>115</td>
<td>128</td>
<td>116</td>
<td>117</td>
<td>105</td>
</tr>
</tbody>
</table>

* Source: Henin (1969b: 259 Appendix II)
per 100 women is a measure of marriage stability which is not affected by the rate of polygyny. I give the figures I have recorded in Table 4.6., where it can be seen that the figures in the Kondeidi sub-sample are an underestimate, as also are those for Aicho. Nevertheless, it seems that there is less divorce among the Meidob than among the Baqqara, which by analogy with Henin's analysis, explains part of the higher fertility of the Meidob.

One reason for this may be the incidence of childlessness, which seems to be an important factor in the frequency of divorce (Henin 1969a: 176). Controlling for childlessness in fact explained more of the difference between Henin's sample groups than any other single factor. The incidence of childlessness is indicated by the percentage of women in this category of the age group 40 to 49 in Table 4.3. Given that the Meidob figures relate to the number of surviving children, the proportion of women in this age group who had no child born alive is probably between 6 and 6.5 per cent. This is larger than the proportion of childless women in Henin's Gezira sample, but it is only about half the percentage among the Baqqara. This is one indication that Dar Meidob is a healthier region than Dar Baqqara. It may be concluded that the difference in fertility between the Meidob and the Baqqara is to be explained by a combination of marital and medical and physiological factors, perhaps in roughly equal proportion.

Another aspect of Table 4.3. to which I wish to draw attention is the pattern it reveals of the distribution of women with certain numbers of children. If we take the age-group 40
to 49 as an indication of the range of completed family size, it can be seen that only 30 per cent of women have more than seven children, while 40 per cent have three children or less. In the population as a whole (15 to 49), however, nearly 70 per cent of women have three children or less. (Note that some of the women aged under 20 are unmarried). Even in the age-group 20 to 29, 37 per cent of women have no child. Thus in the whole population, a very large number of women have very few children, and a substantial proportion of women do not have children old enough to have started herding animals. In view of the fact that most women are married between the ages of fifteen and eighteen, but that men do not normally marry until they are between the ages of twenty-five and thirty, this means that a very large proportion of men aged over thirty-five have no children able to carry out herding work. The implications of this will be considered at greater length in the next two chapters.

**THE POPULATION OF AICHO AND KUNDEIDI**

Most of the watercourses which carry water out of Jebel Meidob in the wet season have their sources in Aicho, the central and highest part of the mountains. Many of the valleys are deeply incised, and Aicho wells are located in one such valley, where a basalt dyke creates a waterfall. Beneath the basalt there is sandstone, in which it is possible to excavate to the level of groundwater. The population using the wells is concentrated mainly along the axis of the two main watercourses, on a plateau above the valleys. There are also a few settlements on the watershed north of this plateau, among the peaks and craters of the Upper Jebel, and there are other settlements on
the southern watershed, a lower group of hills created in the earliest phase of volcanic activity (see Map 4). On the southern side of this watershed there is a series of deeply-incised parallel valleys. Awinol (Ar. Shakhakha) is near the mouth of one of these valleys, and it is the main well centre of Kondeidi. Where the watercourses flow onto the plain there is a broad area of outwash gravels and boulders, and a number of remnants of volcanic and sandstone hills. Eventually the watercourses merge into a major wadi flowing eastwards into the clay plain of Umm Bayyada. Most of the settlements in Kondeidi are located along this wadi (see Map 5). Further south there is a slight rise in the land, with sand on the higher, western part and clay-sand in the east. South of this the wadi Umm Seneit flows parallel to the main wadi of Kondeidi, before joining it at Idero (Jebel Kahoija). This depression contains a major seasonal pool, known as Argosol. Beyond this to the south there is the vast goz plain (see Map 5).

In the past the people of Kondeidi occupied much of the southern edge of the hills up to the watershed. Now they use this area only in the wet season, when some people send their flocks of goats there. Since 1949, when the bore-well was constructed at Wadi Marreig, twenty-five kilometres south of Awinol, the people of Kondeidi have expanded outwards on to the plains. Many people have actually moved to the vicinity of Wadi Marreig, and some people move seasonally, spending the dry season at the borewell and the rains and winter nearer the hills. This movement of people has reduced the pressure on Awinol, and some of the people of Aicho move into the valleys of the
southern hills for the dry season. At Awinol the water is abundant and most of the wells are only four metres deep. At Aicho, on the other hand, the wells are about twenty metres deep and the quantity of water is limited. Only eight of the fifteen wells have water in them. It takes more time and effort to water animals at Aicho.

My Aicho sample was defined spatially as the area served by the wells in the dry season, but it includes almost all of the people who spend the wet season in this area. These people are of the Usutti and Teukeddi sections of the Urrti. The Usutti are mostly located east of Aicho, in the valleys of the upper tributaries of Tasseirut (T. tasi = long, ut = wadi) and in the valley of the Wadi Büt. This area is known as Ussuti-n-kot (kot = land) and is the traditional centre of the Usutti. The other members of Usutti omadiya are located further east along the wadi Büt and on the hills to the south. Many of these latter people move to Anyuro wells in the dry season (about twelve kilometres east of Awinol). The Teukeddi living in the central mountains are an offshoot of the main Teukeddi population based on the hills and plains of the north eastern quadrant of the Jebel. They moved into Aicho in the late nineteenth century, displacing some Elkedi and Kindirra people. Much of the Jebel was de-populated during and after the Mahdiya, and most of the Usutti and Teukeddi were concentrated at their qot farms near 'Ain Basaro in the early years of this century. The move back to Aicho, as to other parts of the Jebel, was a gradual process carried out as the herds increased.

Kondeidi has been occupied continuously. When the inhabitants of the area were impoverished in the past they did not
have to move out in order to farm. Their 

qoz farms are in the same locality as their settlements. This seems to be an important difference between the areas. Kondeidi has been a favourable locality for people with few animals, whereas Aicho is too far from the plains to be attractive to people who have to depend substantially on farming for their livelihood.

Awinol serves a larger area than Aicho, partly because of the abundance of water and partly because it is relatively easy to move herds and carry water greater distances on the plains. I was only able to record part of the population of Kondeidi in the time available. In order to include settlements at a distance from the wells I concentrated on the area west of an imaginary line drawn north-south through the wells. This sample covers the majority of settlements in this area and probably includes more than half the population using Awinol. I was also able to enumerate a few settlements near Wadi Marreig of people who spend the wet season in Kondeidi. The survey in Kondeidi was carried out in the dry season with the help of two assistants.

There has been movement of people from both sample areas. In addition to the movement of people from Kondeidi to Wadi Marreig there has been movement from Aicho and Kondeidi to Malha and to other market villages. I have the impression that a higher proportion of Government employees and merchants have originated in Aicho and Kondeidi than in other Meidob sections. The connection between Kondeidi and the administration stems from the fact that it was the section of the Kargeddi kings. The Tewekedi in Aicho are related by kinship and marriage with the Urrti kings, but their importance today is in marketing. At
least half the shopkeeper-merchants in Malha lived in Alcho in the past. The movement to market villages has been selective, in the sense that it involved some of the most prosperous members of both areas. Some poorer people have also moved to the market villages, where they are employed to carry out menial tasks in the houses of the merchants and officials, as well as in the administrative office, police post and the schools.

Another form of more or less permanent emigration from both areas has been of young men who have become teachers and clerks in Dar Meidob and elsewhere in Darfur. A number of other young men have worked in towns for several years. Such movements have had an effect on the structure of the population, but not substantial in view of the limited numbers of people involved. There has also been movement of people between Alcho and Kondeidi and other parts of Dar Meidob, but this has been mostly of individuals when they married and does not seem to have affected the population structure as it has been balanced by others who have moved in on marriage.

Much more important at present are the effects of temporary absence connected with education of children, labour migration to Libya and 'emergency emigration' to the south during the drought. These have all reached considerable proportions only in the last decade, and in this sense they mean that the population I recorded is not entirely typical of the period up to the end of the 1960s. I shall refer to the full population of the sample areas at the time of my survey as the 'domiciled' population. After subtracting from this the schoolchildren and labour migrants, the people present for the whole of the duration of
my survey are the 'resident' population. I was not able to enumerate the people who had left during the drought, and they are not included in the domiciled population.

The age and sex structure of the domiciled population I recorded is compared in Table 4.7. with the results given for Kutum East Census in the Sudan Census. I have given two sets of figures for the Weidob, first the full sample of people enumerated, and second a 'demographic sample', including only those people in family groups for which I have complete information on persons present and absent and their ages. There is no difference in the sex ratio but the figures suggest that children under five were under-enumerated. It is possible that the low number of infants recorded was the result of a reduced rate of conceptions and higher than normal infant mortality as a result of malnutrition during the drought, but I am not able to evaluate this. The figures recorded for the under five age group may well be a result of both under-enumeration and low birth and survival rates. This discrepancy accounts for most of the difference between my figures and the Census results elsewhere in the Table. I have adopted age fifteen as the division between those under and over puberty, in the absence of information on whether, in the Census, age at puberty was based on respondents' or enumerators' ideas of the correct age, or on the basis of an age applied over the whole population. If puberty was assessed at over fifteen years in the Census this would reduce the difference between the Weidob and Kutum East percentages in these age groups. The overall similarity in the percentage indicates, however, that there is nothing seriously
<table>
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<th>Population</th>
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<th>Under 5</th>
<th>5 to 15*</th>
<th>Over 15*</th>
<th>Females over 15</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Males</td>
<td>Females</td>
<td>Males</td>
<td>Females</td>
<td>Males</td>
</tr>
<tr>
<td>Kutum East</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1956) N = 110210</td>
<td>100</td>
<td>50.8</td>
<td>49.2</td>
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<td>8.6</td>
</tr>
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<td></td>
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<tr>
<td>(Full* Sample) N = 1045</td>
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<td>49.6</td>
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<td>4.9</td>
</tr>
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<td>Aicho and Kondeidi</td>
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</tr>
<tr>
<td>(<em>'Demographic</em> Sample) N = 757</td>
<td>100</td>
<td>50.2</td>
<td>49.8</td>
<td>7.0</td>
<td>7.0</td>
</tr>
</tbody>
</table>

* In the Census the division is at puberty, with no specification of the average age at puberty.
* The 'Full sample' includes all persons enumerated: the 'demographic sample' includes only family groups on which complete information is available.

Kutum East Census Area includes Zaghawa, Zayadiya, Berti and other tribes as well as Meidob.
abnormal about the population structure of the communities I studied.

The age and sex structure of the two 'demographic' samples is shown in Figure 4.1. in the form of pyramids. The hatched area of each pyramid indicates the people temporarily absent. Some of the irregularities in the pyramids can be attributed to age reporting preferences, for example for men at ages 25 to 29 and over 60. At the same time, the small size of the samples means that each individual has a considerable impact on the shape of the pyramids.

There is a difference in the sex ratios of the two samples which is visually apparent from the pyramids. In Aicho in the domiciled population there are 108 females per 100 males, while in the resident population the imbalance is even more marked, with 137 females per 100 males. In Kondeidi, the situation is reversed, with apparently more males than females in the domiciled population. The actual figure is 89 females per 100 males. The absence of males gives an equal sex ratio in the resident population. It can be seen from the pyramids that much of the difference between the areas occurs in the age groups under fifteen, but it also reflects a contrast in the adult populations. In particular, a greater proportion of adult men were absent from Aicho than from the Kondeidi sample. This is in part a reflection of the difference between the areas in their response to the drought. In Kondeidi there was a considerable emigration to the south of whole families, while in Aicho many of the men went to Libya and were able to support their families with the cash they earned. I shall discuss the actual numbers of men and
FIGURE 4.1. Age and Sex Structure of the 'Demographic' Sample.

a. Aicho


MALE (200) FEMALE (216)

Labour Migrants
School Pupils

b. Kondeidi


MALE (180) FEMALE (161)
children absent in relation to the full, rather than to the 'demographic' sample. I would mention also at this point that the sex ratio in many settlements had a more marked preponderance of females than the figures indicate. This is because at any one time men and herdboys were absent taking herds to remote pastures and to wells other than Aicho and Awinol, and many men made lengthy visits to markets. In many settlements there were no adult men present for several days at a time.

Another way in which the structure of the labour force is commonly expressed is in terms of the 'dependency ratio'. In both areas about 50 per cent of the domiciled population is aged less than twenty years. In a Third World cultivating society, where most production is carried out by adults, it is thought unfavourable to have such a high proportion of young people. Among the Meidob, however, this situation is in fact the ideal, because it is precisely the children who do much of the day to day herding. The character of the labour economy of a pastoral society is accentuated by the relatively minor participation in such work of men aged over about thirty and women over about twenty. There is, of course, seasonal variation in the participation of adults, because in the dry season they do much of the work of watering the animals. In the wet season, however, the children are able to do almost all the work. An important implication of this pattern is that pastoral and cultivating activities do not compete significantly for labour in Dar Meidob. This is one reason why the majority of adults have farms, regardless of the number of animals they own.

Given the importance of children in herding, however,
education would appear to be in direct conflict with their economic role. The incompatibility of school attendance and herding is increased by the unwillingness of pupils at higher secondary schools to take part in herding, except perhaps to accompany animals to market. The reluctance of schoolboys of this age to herd is significant, because unmarried men in their late teens traditionally do the exacting work of herding camels and sheep.

Schoolboys and girls at elementary and intermediate schools may do some herding, but their long vacation coincides with the wet season, when the arduous work of accompanying herds and flocks to inaccessible pastures and wells is over. However, their contribution may be important because some skill is necessary in herding goats and sheep in the wet season to prevent them from eating certain harmful plants which appear at this time. Attendance at schools from Aicho and Kondeidi is often irregular because of the difficulty some parents have in managing without their work.

In both areas about half the number of boys aged between fifteen and twenty-four are currently attending schools. In the age group five to fourteen the proportion is only about 20 per cent. Not all the children in this age group are able to attend because schooling does not begin until the age of seven. The lower percentage in this age group also reflects the delaying of the start of school attendance because of the need for young children to do herding. No girls in the Kondeidi sample were attending schools, but in Aicho about 10 per cent of girls aged five to fourteen and 8 per cent between fifteen and twenty-four
were absent at schools for most of the year.

It is clear that education has reduced the number of children able to do herding work. One conclusion suggested by the figures is that girls must be taking on work formerly done by boys, and indeed this appears to have happened to some extent. It must be borne in mind, however, that the 'pool' of boys able to do herding is larger than that of girls. Boys normally herd for their fathers until they are aged about twenty-five, and often much longer. Girls may marry at about age fifteen and give up regular herding as soon as their first child is born. However, if a girl has no children and continues to live in her parents' settlement after marriage she may continue to herd.

The result of education is at present that the number of boys and girls aged between five and twenty-five who are resident is about equal. In Alcho, for example, there are 57 boys in this age group resident, compared with 47 girls aged between five and fourteen. If one adds to the number of girls half of the number in the fifteen to nineteen group (i.e. ten girls), which is a reasonable approximation of the number still involved in herding, numbers of herders of each sex are exactly equal. In Kondeidi, in spite of the fact that no girls are at schools, the number of girls resident is not greater than the number of boys, because of the difference in the age range of herders. Thus, although education has reduced the number of potential herders, and although more boys than girls attend schools, the situation has not yet arisen where girls do more herding than boys. Nor is the involvement of girls in herding a recent development. Prior to the drought, when herds were substantially larger, girls
probably did at least as much herding as they were doing at the time of my survey. Nevertheless, a trend has been established, and it may be predicted that in the future a larger proportion of herding work will be done by girls than by boys. One reason for this is that some parents see the possibility that if their sons obtain salaried employment they will be able to move to a market village and live comfortably in their old age.

Labour migration has reduced the number of adult men in the labour force, but it too has not reached a scale where it would conflict with the traditional role of men in herding. In Aicho 26 of the 69 men (38 per cent) between twenty-five and fifty-four were in Libya for all or part of the time I was in Dar Meidob. In Kondeidi, 17 out of 38 (19 per cent) in the same age group were in Libya. In Aicho they were relatively evenly distributed over the age range, with slightly more in the twenty-five to thirty quinquennium (6 out of 26) than in other age groups. In Kondeidi, 16 of the migrants were in the twenty-five to thirty age group. It is probable that other Kondeidi men who had settled in the south had gone from there to Libya. In my samples, however, the higher proportion of men who went from Aicho is probably related to the fact that they were relatives of the Malha merchants who arranged for the export of camels 'on the hoof'. The majority of migrants from both areas were married, but the younger men among them had not taken up residence with their wives. In every case the migrants' economic role was carried out by a male relative (father or brother) in their absence. The main herding work carried out by married men is watering animals and searching for stray animals, and it is
probable that the reduction in the size of herds in the drought alleviated both of these types of work.

The incidence of 'emergency emigration' differed, as I have already indicated, between Aicho and Kondeidi. There is no single obvious reason for this difference. It is possible that the people of Aicho survived the drought better than those in Kondeidi. The shortage of water in Aicho may have led to a greater dispersal of herds, with the result that the animals obtained better fodder than the animals in Kondeidi. Another factor is that there were some people in Kondeidi who possessed very few animals before the drought, who derived most of their livelihood from their farms. A more important factor, probably, is the fact that the people of Aicho started to work in Libya earlier than most of the Kondere. People in Aicho were able to buy grain and to keep sufficient animals to provide some milk, while in Kondeidi there were some people who had lost almost all their livestock. Many of those left had no option but to do so, because having lost their animals they were forced to turn to cultivation, and the only way to do this was to move to the south. Emigration from Kondeidi was not done solely by people in this category. Some poor people, such as the aged or infirm, remained in Dar Neidah and depended on savings and on supplies of grain sent by their relatives who had left the Dar. Other people took with them their animals, trying to avoid further losses. There were also some people who are relatively wealthy but who nevertheless chose to emigrate. In this category there were a number of married sons of wealthy men who took their families to the south but left their animals (in particular their
sheep and camels) with their father and younger brothers in Dar Meidob. These people, especially if their children were young, were able to make a greater contribution to the prosperity of their family group by making farms in the south than by remaining at home.

I made two attempts to estimate the number of emigrants from Kondeidi, first by recording absent relatives on genealogical charts and second by asking two Kondeidi sheikhs the location of each named taxpayer on their tax-lists. The first was not comprehensive and the second was unsatisfactory because in many cases the named taxpayer was still in Kondeidi, but other taxpayers in his tax-group had left. I estimate, however, that at least 30 per cent of people had left. The majority of settlements in Kondeidi had several empty houses because of this emigration.

In this chapter it has been shown that there has been a considerable increase in the Meidob population and, until the drought, an even faster rate of increase in the animal population. Most of this increase must be attributed to peace and order rather than to improvements in medical and veterinary services. The growth rate of the two populations is substantially interdependent. Without an increase in the human population, there hardly could have been such a rapid increase in the number of animals. At the same time, the number of animals has assured a reasonable diet for most of the people, resulting in a moderately high rate of fertility and a low death rate, especially of infants. Nevertheless, it has been seen that there are considerable varia-
tions between women in the number of children born (and surviving). Most importantly, at a single point in time, there is a high proportion of women whose children are not old enough to herd. Overall, however, children comprise a substantial part of the population, which is a favourable aspect of population structure in a pastoral society. Recently this structure has been affected by education, labour migration and movement to the south. However, the overall population structure does not influence the organization of productive activity in a direct manner. The implications of demographic patterns for the economy are mediated by the organization of social groups, especially at the domestic level.
INTRODUCTION

In this chapter I shall discuss, in descending order of magnitude, the social groups identified terminologically by the Meidob. These are the matriclan (T. terti, seed), the patriclan (T. uggí-n-ir, (the) people of the animal pen), the descending kindred (T. dirrisef{1}), the hamlet (T. kar) and the house (T. ut).

The discussion of the clans and the descending kindred is used to explain changes in the descent idiom. I have already indicated that succession and inheritance were uterine in the past. Since the Meidob adopted Islam in the latter part of the nineteenth century the agnatic mode of succession has predominated and most inheritance is agnatic. The payment of blood-money was formerly an exclusive concern of matriclans, but responsibility is now divided equally between the matriclan and the patriclan. In the descending kindred both agnatic and uterine links of kinship are relevant for membership. The dirris is the group most frequently referred to by Meidob, and this is an indication, perhaps, of the fact that the descent system has not become entirely patrilineal. This point is important, because the agnatic mode is strongly stressed by Meidob. One reason for this stress is the conscious effort made to conform to the perceived model of the correct Islamic society. The former ritual practices and some aspects of the former pattern of social organisation are regarded as contrary to the Islamic model. Although the organisation of the wider social groups is of some ethnographic interest, I do not have space for a detailed account of these groups.

The outline of changes in the descent idiom is pertinent,
however, to the pattern of domestic organisation, which is my main concern in this chapter and the next. I have divided the discussion into two parts, first the residential and consumption aspects and then the production aspects of domestic organisation. The house, which I shall refer to as the 'dwelling unit', is the basic residential and consumption group. The group involved in herding livestock is normally a co-operating group of two or more dwelling units, and I shall refer to it as the 'production group'. There are some dwelling units which herd independently, and I recognize that this makes my terminology slightly awkward. It is necessary, however, to make this distinction for empirical reasons. The social groups involved in herding are not invariably discrete. For example, the wives of a polygynous man may live in different settlements, and each wife may therefore be part of a separate production group. The polygynist may be involved in more than one production group. Moreover, a man and his wife may be involved in different production groups. This is the pattern at the beginning of all marriages. Although in the majority of cases this phase ends and a 'conjugal fund' is established, there are marriages not in the initial phase which have no conjugal fund. I refer to this situation as 'established non-residential marriage'. A particular feature of these marriages is that the property devolved to children derives mainly from the mother, her father and her brothers. In short, for these children the uterine link is more important than the agnostic link. For the woman, her position as daughter and sibling is more significant in residential and economic matters than her conjugal relationship. This pattern of domestic arrangement exists only a small proportion of marriages at any one time, but its significance is not restricted
to these cases. It reflects more general features of Meidob social organisation. One of these features is the transmission of property in both agnatic and uterine modes, although the agnatic mode is quantitatively preponderant. Another feature is the importance of the sibling bond, not necessarily 'stronger' than the conjugal bond, but certainly a significant aspect of social organisation. Thirdly, and this will be shown in specific examples, it reflects the role of pastoral viability in the pattern of social arrangements.

Heuristically, also, the distinction between the two levels of domestic organisation has considerable weight. Dwelling units are morphologically similar, because each contains one ever-married woman, and therefore they can be meaningfully classified and compared. The composition of a dwelling unit depends substantially on the state of a woman's reproductive career, and the classification can be based on the nature of the filial group. This has implications for the distribution of rights to livestock among the members of the dwelling unit as well as for the ability of members to carry out herding within the framework of the division of labour. The classification also contributes to an understanding of post-marital residence patterns, which affect the composition in that they reflect the domicile (and thus the economic position) of the husband/father within the dwelling unit. Equally, these patterns are a major factor in the combination of dwelling units in production groups.

The quantitative data introduced in this chapter is based on a sub-sample of dwelling units for which I possess sufficient information for the purposes of the analysis. In this sample, the majority of dwelling units are based on a nuclear family and
possess a conjugal fund of property. Roughly two thirds are based on the marriage of a monogamous husband/father. It will be seen that virilocal post-marital residence is numerically preponderant. This pattern of residential arrangement and composition of the dwelling unit is readily understood and I shall therefore devote little space to it. I shall discuss at greater length the situation regarding dwelling units based on non-residential marriage and the location of the wives of polygynists as these more complicated arrangements require more detailed discussion.

A further point to be noted is that the discussion of settlements, which I refer to as hamlets, is brief on generalities because I shall examine the composition of production groups, many of which are hamlets, in the next chapter. In the section on the hamlet most space is devoted to a presentation of examples, in which I shall illustrate some of the themes to be discussed in the sections on dwelling units and production groups.

DESCENT GROUPS AND THE DIRRIA

The Meidob have a dual system of clans, with about sixteen named matriclans, present throughout the Dar, and an unknown number of patriclans, which tend to be localized.

The matriclans (torti) are exogamous and each has a totemic 'emblem'. The totemic system was a subject on which informants were evasive, and the only generic term for the 'emblems' I was able to obtain is the Arabic word sīrī (secret). Nor was I able to obtain a clear account of the etymology of matriclan names, although it is probably of some significance that at least six of the names end in -iddi, this being the word for woman (women) and wife. These six names are, incidentally, those of the
crow) and Kojobádi (Zaghawa) which originated in the marriage in Dar Meidob of a non-Meidob woman. The ancestress of the Kurka was a Fur woman, and the Fur are said to be 'as black as crows'.

Some of the largest matriclans (e.g. Arangiddi, Irdiddi, Tesotti) are further divided into un-al (the door of the house, cf. Arabic: Khashb Bait, patriclan, maximal lineage) and in some cases the ancestresses of certain un-al are also believed to have been non-Meidob (e.g. Arangiddi-suli-n-un-al; sulli=Arab). The mechanism by which a non-Meidob woman could confer membership of a matriclan is unclear, and may have something to do with slavery and the status of the children of kidnapped women.

The patriclans (ugginir) are usually associated by name with a particular ancestral settlement site, although in some cases the ancestor is named. In the term uggiri there seems to be an overt linking of the group of people and the way a flock of goats is penned at night in a thorn enclosure, implying co-residence of the ancestor and his descendants at the ancestral settlement. Segments of patriclans are also known as uggini and with segments it is more common for the ancestor's name to be known, although settlement names are also used. There is normally an association of a patriclan with a particular territorial section, but properly speaking it is the segments which are localized. It was said by an Usutti informant, who identified a site near Aicho wells as the ancestral site which the patriclan name describes, that members of the same patriclan have dispersed, and that
although many (his segment) live in Ussutti-n-lot, there are others in Kindiri and in several of the Kargeedi sections. One of the patriclans in Kondeidi, known simply as Urrti-n-ugginir, is also an instance of movement in the past, though in this case the members claim to trace their origin to an ancestor who migrated from Kindiri and who settled at various places around the eastern side of the mountains before settling in Kondeidi.

There is little doubt that matrilineal descent was more important in the past than it is at present. Up to about a century ago succession to office and inheritance were in theory uterine, and the matriclans provided the framework for payment of blood-money. Patrilineal descent has become relatively more important since then, especially in succession and inheritance, which have been predominantly agnatic for at least the last thirty years, and in responsibility for blood-money, which is said to be divided equally between the matriclan and the patriclan. Blood responsibility was rigorously matrilineal in the past and previously the father of a murderer had no fear of vengeance. The present system seems rather a compromise, with the stated rule that half the payment should derive from the matriclan and half from the patriclan of the murderer, and should be divided in the same proportions among the matriclan and the patriclan of the victim. The only example of a blood-money payment which came to my notice during fieldwork was where some informants in my Aicho sample paid and others received blood money in their status as matriclan members following an accidental homicide in Kirra omolyn (Kargeedi) in 1975. It may be noted that the principle of equal payments from the matriclan and the patriclan is a parallel to the stated pattern of compen-
sation for a loss of property arising from an 'Act of God'.

My information on the change in the mode of succession and inheritance is far from complete, mainly because many informants were reluctant to talk about the time when the Meidob were not Muslims. The current emphasis on the agnatic mode is without doubt linked to the adoption of Islam, and it must be remembered that by adopting Islam and the agnatic mode, the Meidob have followed the course taken earlier by other Darfur peoples and conform to the predominant pattern of northern Sudan. The adoption of Islam was not an instantaneous process, and it is generally accepted that the Urrti adopted Islam, and with it the agnatic mode of succession and inheritance, somewhat earlier and more decisively than the Kargeddi. The context in which both groups were most dramatically confronted with Islam was the Mahdiyya (late nineteenth century) and their reactions were different. The Urrti, whose king 'Ali 'Eisa (Teukeddi section) became Mahdist 'amir of north-eastern Darfur, were apparently enthusiastic Mahdists, while the Kargeddi were the subject of several military expeditions of Mahdist forces. It is not without significance that I obtained most of my information on pre-Islamic rituals from Kargeddi informants. It is also relevant to note that the Bazza 'festival' (MacMichael, 1919, Arkell, 1948) was held annually by Kargeddi until 1936, when it was banned by Muhammad al-Sayyah on the grounds that it had an irreverent similarity to some aspects of the ritual of the Hajj. The equivalent Urrti Baraqa 'festival' was apparently abandoned much earlier than this. Furthermore, in the course of the appointment of Muhammad al-Sayyah as Kargeddi king and chief
of the Meidob confederation in 1920 it was apparently believed by some Kargeddì that agnostic succession was a dangerous innovation, though in this case it is difficult to distinguish the popular feeling from the discontent stirred up by the sister's son of Jami' Kheir. At this time Urtti succession was exclusively agnostic, though it is more difficult to place a date on the change. During the Mahdiya, with 'Ali 'Eisa absent, a man named Bahr became Urtti king (for two years; he was supplanted because of drought and poor harvests) and the fact that he was a sister's son of Uqir, a previous king, cannot be without significance. I was informed that Bahr inherited camels and slaves from Uqir, but this is likely to have taken place some time before the Mahdiya.

In the case of the mode of inheritance, it would seem possible that, in the process of a gradual change from the uterine to the agnostic mode, considerable difficulties might have arisen with the possibility of some individuals receiving a double inheritance and some none at all. According to some Kargeddì informants there were cases of both these possibilities, but this is a point on which I lack a clear account of a specific example. Nor indeed was it a subject ever raised by informants and I suggest the following reason. This is simply that at the time in question the Meidob economy was devastated by drought, animal diseases, and wholesale emigration to the Nile in the latter part of the Mahdiya, proceeded, in the case of the Kargeddì at least, by repeated military expeditions. In the words of one elderly informant: "lions ate us, hyena ate us", referring to the general poverty and widespread starvation of those times. Urtti infor-
mants, describing why the Toukeddi and Butti populations were massed in two villages near 'Ain Bassar. He recalled that rodents were trapped for meat, and that the few donkeys owned were repeatedly used by different people to carry grain from Dar Berti. Clearly, inheritance was little problem if there was so little property. Moreover, if as at present, the major part of an estate was devolved 'inter vivos' it is possible that for some time inheri-
tance was equally agnatic and uterine (Cumming, Ms. in Arkell papers, 1, file 26, folio 9). Such indeed was implied by some Kargeddi informants, referring to the early years of this century.

Clanship receives very little stress in everyday life. Apart from the exceptional incidents of blood-money payments and compensation, in which clans or clan-segments are mobilized by the local clan representatives, the clans are referred to mainly in two contexts: Matriclan exogamy is one of these and the use of animal ownership marks and brands by patriclans is the other. In general, however, the diirra is referred to as a means of personal identification. Local groups, often of several hamlets, have a core of members of the same diirra. The group often has a preponderance of persons with agnatic links to the named ances-
tor, but the presence of persons with uterine links to the ancestor makes them unlike a minor patrilineage. A characteristic of descending kindreds is that individuals are able to claim membership of the groups descended from various ancestors. Among the Meidob stress is usually laid on one particular ancestor's diirra, and the choice of which ancestor is stressed is generally on the basis of residence at birth and in early life. In this sense, the system of filiation could be described by Freeman's
term utrolateral (Freeman, 1958; 1961).

Each local genealogical network is dominated by certain ancestral 'big-men'. This is particularly the case in Aicho, where these men led the process of re-settlement of the territory in the early years of this century. They were wealthy in livestock and slaves, were polygynous and prolific, and were blessed with relative longevity. The majority of members of the present population of Aicho have some connection of kinship or affinity with one or both of two ancestral big-men. One lived east and one west of Aicho wells. Each controlled one or more large settlements, in which they held a pivotal position, distributing their wealth among their followers and descendants. Almost all the grand-children of these men are now adults, though two sons and two daughters are still alive. My information on Konweidi is less complete, but it appears that the presence of the malik's settlement inhibited the rise of other big-men. There are a number of ancestors who are of continuing importance in the genealogical and residence patterns. It is arguable, I believe, that the structuring effect of big-men on the local genealogical network of each area is at least as significant as the stress on both matrifiliation and patrifiliation in facilitating the tracing of cognatic or affinal links between any two members of each area.

The dirria is generally of limited generational depth. It consists essentially of the children and grand-children of the founder's own children, and it can be best understood as a group of sibling groups. The fact that female siblings and their children are of potentially equal importance to agnatic descendants, and
their stress given to their membership of a dirria by daughter's children, becomes clearer if inheritance and marriage practices are examined.
In *tiddi-n-nal* the verb 'to inherit' is *tijanan*, and (the) inheritance is *tijaa*, both of which are explicitly linked with the word *tija* meaning mother's brother. Recognising that this usage is an anachronism, many informants preferred to use a modified form of the Arabic *waritha* (he inherited) and so used *warthanam* for 'to inherit'.

In principle the division of a residual estate follows the precepts of *Shari'a* law, so that each son of the deceased receives twice the value of property received by each daughter. In fact, women only receive livestock from the estate if they take the matter to court, which is uncommon. Normally the whole estate is divided among sons. They, nevertheless, in a sense hold property in trust for their sisters, since they have a duty to support a sister, if she divorces, for example. Certain wealth objects are sex-specific, such as swords, firearms and jewellery. Rights to wells are nominally inherited only by men, but women may be the means by which their husbands gain formal access to a well. Many of these items and rights are transmitted in the lifetime of the holder, as are the majority of livestock, so inheritance per se is not a major factor in the devolution of property.

Most property is devolved to lineal descendants. Livestock are given to children at their rites of passage. The female offspring of the animals donated are in principle the property of the recipient. Disposal of fertile female animals is always avoided, and in circumstances where it is necessary the animal to be sold is taken from those belonging to the parents rather than from children. This is dependent, of course, on the condition of
different animals. Male and infertile female animals, which are the offspring of donated animals, are sold and the proceeds accrue to the parental cash supply. When the recipient sets up his or her own dwelling unit the proceeds of sale accrue to himself or herself. This occurs earlier, in terms of both age and the interval after marriage, for women than for men. This is one reason why wives normally own fewer animals than their husbands.

Gifts are not made exclusively to lineal descendants. A man may feel disposed to give some sheep or a camel to a nephew on his marriage, particularly if the nephew has herded sheep or camels for his uncle as well as for his father. A similar situation arises with gifts to the children of a son or daughter, where the holder’s goats or sheep are herded by these children. Such gifts are especially likely to be made if the holder’s daughter’s marriage is non-residential, in which case her children may receive little property from their father.

This pattern of the devolution of property has several implications. One is the fact that there is a considerable variation in the number of animals over which the recipients have rights (in milk, offspring and marketing) when these rights become effective. It depends on the number and types of animals donated and on the rate at which they have reproduced. The son or daughter of a wealthy man receives more animals at each rite of passage and may be given animals at other times, and secondly, receives sheep and/or camels in addition to goats and/or cattle. The child of a poor man, who receives only a modest number of goats, is generally also poor at the time he or she marries. The significance of the types of animals given is that
managed as split herds. The actual number donated may be somewhat compared with the number owned by the recipient when his or her rights become effective. Thus it is possible for a wealthy polygynist to provide a sizeable number for each child, since the number depends to a large extent on the success of herding. It may be noted that the differences between the wealthy and the poor are not reduced by bridewealth transactions, because these are low in value and are fairly uniform. Even the expenses of the marriage celebrations are not great and do not vary to an extent which would affect the differences in wealth.

Another important implication is that women may possess considerable numbers of animals, even though they are virtually excluded from inheritance. They may possess sheep or camels managed in a split herd in which their brothers are majority owners. This is one reason why they may prefer to remain in the same settlement as their siblings rather than move virilocally. In turn, this is one reason why transmission of property is not solely to lineal descendants, since the children of these women are especially likely to receive gifts from their mother's brothers. A further implication is that the descendants of a wealthy man tend to remain together in order to manage their sheep and camels. It is such groups which form the prominent dirria. Because a polygynist may have wives in different settlements it can occur that one set of full-siblings becomes wealthier than another; their animals may be managed separately from and more successfully than those of another group of full-siblings. These differences may also arise through gifts from matrilateral relatives of one of the full-sibling groups.
The marriage patterns tend to reinforce the property considerations which favour localization of members of a wealthy dirria. There is a preference among the Meidob for close kin marriage, excluding same-matriclan members in general and the matrilateral parallel cousin in particular. Father's brother's daughter marriage is most often stressed as the ideal, followed by the mother's brother's daughter and the father's sister's daughter (with reference to a male ego and first cousins only). It has often been observed (e.g. Barth, 1976, Bourdieu, 1976) that the effect of this marriage pattern is to compound consanguineal with affinal links, and to consolidate the lineage. Among the Meidob it is the dirria which is reinforced, rather, than, as in most of the Middle East, the minor patrilineage.

The extent of marriage within the dirria is in part a function of its size. There is a particularly high frequency of marriage between the children of the sons and daughters of dirria founders, and the children of such marriages have both links of filiation with the same grandfather. Even with the largest dirria there is, of course, some out-marriage. The frequency of this is amplified by more distant kin-marriage following early divorce. It can be said, I think, that all marriages outside the dirria have as one of their aspects a more or less overt role of creating and maintaining alliances. The dirria, therefore, are the primary units of in-marriage.

The term kar refers to a spatially discrete group of houses, or a single isolated house. Elaborations of this term, in sagan-kar, itchi-n-kar and pari-n-kar, are used to describe, respectively,
wet season, winter and dry season hamlets.

In this section I am concerned with the dry season hamlets in my sample area in Aicho and Kondeidi, and with the implications of their size for their composition. The analysis is of dry season hamlets because at this time of year pastoralism makes its greatest demands on the labour resources, and hence on the organization, of social groups. There is a seasonal alternation of congregation and dispersal. In Aicho 33 rains hamlets become 39 hamlets in the dry season, while in Kondeidi 23 rains hamlets divide into 45 hamlets during the dry season. Dispersal takes place at the beginning of the winter, and therefore the dry season hamlets are discrete for about eight months of the year. During this time, the members of a hamlet visit the wells to water the goats and to collect water for domestic use together every third day, and there is thus a greater degree of co-ordination of activities than during the wet season.

Figure 5.1. shows the numbers of hamlets of different sizes in terms of the number of houses. Although the majority of hamlets are small, with an overall average of 3.8 houses per hamlet, the cumulative percentages show that in Kondeidi almost fifty per cent of houses are in hamlets of five houses or more, and in Aicho fifty per cent are in hamlets of six houses or more. (This difference is partly a result of the nature of the samples, as I shall explain below.) Meidob hamlets are therefore comparable in size to the nomadic Somali hamlets discussed by Lewis (1961: 66) which have a average of 3.1 huts per hamlet. They are considerably smaller on average than the three examples
FIGURE 5.1. Number of Houses per Hamlet.

a. Aicho

Number of Hamlets

<table>
<thead>
<tr>
<th>Number of Houses</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean Houses per Hamlet = 4.15</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

| Percentage of Houses | 3.0 | 18.1 | 9.0 | 8.4 | 5.4 | 9.6 | 7.2 | 18.1 | 4.8 | 6.0 | 10.2 |
| Cumulative Percentage | 3.0 | 30.7 | 53.9 | 65.0 | 73.4 | 83.6 | 89.6 | 99.8 |

b. Kendeli

Number of Hamlets

<table>
<thead>
<tr>
<th>Number of Houses</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 45 Hamlets</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>45</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean Houses per Hamlet = 3.47</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Percentage of Houses | 5.8 | 11.5 | 12.8 | 10.3 | 8.9 |
| Cumulative Percentage | 5.8 | 22.5 | 34.0 | 46.3 | 54.5 | 67.3 | 75.0 | 85.3 | 91.1 | 100.0 |
of dry season camps among the neighbouring Kababish presented by Asad (1970: 128-30), although there are a few hamlets of comparable size to these examples.

The small average size can be related to their spatial proximity to one another, such that several hamlets form a 'neighbourhood'. There is frequent visiting between the hamlets in a neighbourhood, and in some cases a particular dirria may predominate in such a community. The spatial distribution of hamlets in both areas is shown in Maps 4 and 5, where the pattern of grouping into neighbourhoods can be seen. I have distinguished between wet season and dry season hamlets on this map, and I have also indicated hamlets which have been excluded from the sample because I have incomplete information or was unable to enumerate them.

It may be expected that a larger hamlet tends to have a greater genealogical depth and complexity than a small one. This is confirmed by Table 5.1., which shows the number of generations in hamlets grouped by size. In the three Aicho cases where there are four generations present one or both extremes of the age range is not involved in productive activities, so the important difference is between hamlets with two generations and those with three generations or more.

This difference represents the presence or absence of a member of the grandparental generation. Where a grandparent is present he or she may act as a continuing focus for an adult sibling group, and it is not therefore coincidental that larger hamlets tend to have three generations.
<table>
<thead>
<tr>
<th>Number of houses</th>
<th>Number of Generations 1</th>
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<th>3</th>
<th>4</th>
<th>Number of Hamlets</th>
</tr>
</thead>
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<td>1</td>
<td>-</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>2 - 3</td>
<td>-</td>
<td>7</td>
<td>11</td>
<td>-</td>
<td>18</td>
</tr>
<tr>
<td>4 - 6</td>
<td>-</td>
<td>1</td>
<td>9</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>over 7</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Totals</td>
<td>0</td>
<td>13</td>
<td>24</td>
<td>3</td>
<td>40</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of houses</th>
<th>Number of Generations 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Number of Hamlets</th>
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<tbody>
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<td>2</td>
<td>5</td>
<td>1</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>2 - 3</td>
<td>-</td>
<td>14</td>
<td>5</td>
<td>-</td>
<td>19</td>
</tr>
<tr>
<td>4 - 6</td>
<td>-</td>
<td>6</td>
<td>8</td>
<td>-</td>
<td>14</td>
</tr>
<tr>
<td>over 7</td>
<td>-</td>
<td>1</td>
<td>3</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Totals</td>
<td>2</td>
<td>26</td>
<td>17</td>
<td>0</td>
<td>45</td>
</tr>
</tbody>
</table>

* Note: The number of generations is the overall number present, though not necessarily in direct line of descent. Thus a child fostered by a couple with no children is counted as a generation.
EXAMPLES OF THE COMPOSITION OF HAMLETS

Example 1

The simplest form of the hamlet is that comprising one conjugal couple and their unmarried children. The members of Aicho hamlet 40 are shown in Figure 5.2. The husband claimed this was his first marriage, but his wife had two children by a previous marriage, neither of whom lives with her at present.

The two elder children of her present marriage herded the sixty goats. Their father managed six camels and was given occasional assistance with them by a younger brother (who lived outside the Aicho area and who was in Libya for most of the period of my study). This was a hardworking family, and it remained self-sufficient even while the wife was seriously ill for several months. The house and goat-pen were always immaculately constructed at each of the several sites occupied during the year, and the husband was less often at the market and more often herding goats or camels than many of the men in other hamlets. The family enjoyed some independence, but only at the cost of sustained hard work. They remained isolated in the wet season, when most of the other single-house hamlets had joined larger hamlets. They were, however, reasonably close to the hamlet of the wife's brother for the whole year and up to about five years previously they had been members of his hamlet. They left it at the time their eldest son became able to take charge of their goats.

Example 2

The hamlet of the wife's half-brothers and their mother was similarly self-contained, but it too had been part of a larger
hamlet some years previously. This is Aicho hamlet 35, and its members are shown on Figure 5.3.

The members of this hamlet had lost relatively few animals in the drought, and they were among the wealthiest people in Aicho. There was a substantial labour force in the hamlet, augmented by the presence of two fostered sister's sons. Their mother had died after divorcing, and the two sons refused to remain with their father. They herded about 120 sheep, as part of a very large split-flock with sheep from three other hamlets. The other two teenage sons in the hamlet herded about twenty camels, and spent most of the year in the same region as the sheep. The flock of about two hundred goats was herded by daughters. The elder man's married son was in Libya for most of the time and had no defined role in herding. The men did little actual herding, but they regularly went to help with watering the animals, which for the sheep and camels meant regular journeys from the dry season hamlet at the mouth of a valley in Kondeidi, across the Aicho area to Kundol wells where the animals were watered. During the winter the sheep were pastured north of the Jebel, and the men took turns to visit the flock. As far as I could assess the situation the livestock were owned in the ratio three parts to the elder brother's dwelling unit (including some livestock from the original grandparental herds the two nephews inherited through their mother), two parts to the polygynous brother and one share for the mother and her blind unmarried son.

This hamlet can be characterized as a mature sibling group. They were able to manage the livestock with great efficiency, and were one of the most mobile hamlets during the early rains and
Figure 5.2. The Composition of Aicho Hamlet 40

Figure 5.3. The Composition of Aicho Hamlet 35

- Male
- Female
- Deceased
- Marriage
- Divorce
- Broken line encloses residents of house
Figure 5.4. The Composition of Kondeidi Hamlet 21
winter. Their ability to continue as a group will depend, however, on the married son's wife moving virilocally and bearing children to manage the goats before the youngest daughters marry. In fact it is probable that the eldest of the daughters will soon have a non-residential or uxorilocal marriage arranged so that when she has children they will be available as herders.

Many hamlets are based on a group of full siblings, though few such groups are, compared with the example discussed, so well endowed with herders and fewer still are so wealthy. In many cases the presence of a widow seems to stabilize the sibling group, though the common origin of the livestock seems also to be a factor in their unity. In addition, however, it can be noted that ideally a sibling group contains members whose age span is appropriate for the various demands of herding different types of livestock.

Example 3

Where two or more sibling groups occupy a hamlet it is often much larger than the examples considered so far. The comparative rarity of hamlets of this type is offset by the number of houses involved. Hamlet 21 in Kondeidi, whose members and their relationships are shown in Figure 5.4., will be used as an example of this type. It will be seen that the two sibling groups are linked in various ways, but not by marriage. They were formerly part of a much larger settlement, of which Sulayman was the leader, and they remained together when this settlement broke up after his death. As well as there being no intermarriage, there is no co-operation between them in herding. The separateness of the two groups in the hamlet is reflected in the location of their
houses on opposite sides of a small stream-bed.

The descendants of Sulayman possess only goats, and these are herded by Bakheit's only unmarried daughter. The members of the other half of the hamlet own goats, cattle and some camels. The latter are herded with those of Muhammad's uncles and cousins in a jointly-owned split herd. Muhammad's mother owns seven cows, which are not herded, while his eldest son herds the goats belonging to the members of all four houses. These goats are kept at night in a pen separate from the goats of the other half of the hamlet.

There are several interesting points about the composition of this hamlet. Firstly, it will be seen that two of the houses have most of their members in the south (Eastern Darfur District). Abdalla's house is in fact empty, since his wife moved to Wadi Narweig, where his other wife normally lives. Muhammad's sister had remained in the hamlet, while her husband and children, and the children of his other wife (who lives in a hamlet a few kilometres away) have all gone to the south. In both cases these men and their children are living in the south with their own siblings and a number of affines from other hamlets. Muhammad's house was the only one in the whole hamlet which, at the time of my survey, was occupied by a complete two-generation nuclear family. Ahmed had two other wives in other hamlets and divided his time between them. Bakheit's younger daughter's marriage was effectively non-residential, as her husband was frequently away.

Secondly, Bakheit's sister had no surviving children and had always depended on her brother's children to herd her animals. Likewise, Bakheit's eldest daughter had no children, and she and her husband were in the south. In their absence their house was
being used by her unmarried brother who practised as a faah. In spite of the absence of so many members and the childlessness of three of the married women, the sex ratio in the hamlet is not greatly imbalanced. This would appear to be consonant with the effective division into two production groups, which might not have been the case if either group had too few herders. It may be noted that this hamlet is completely sedentary (none of its members have other houses elsewhere which might be occupied seasonally) and that such division into two herding groups is not uncommon in wet season hamlets. In many cases such hamlets split up for the dry season. Nevertheless, it is apparent that compared with the other two examples considered, this hamlet has a large proportion of houses which do not contain a nuclear family.

Example 4

A final example illustrates further the way in which the members of individual houses may be unable to herd independently, but in combination function as an efficient production group. This is Aicho hamlet 2, whose members are shown on Figure 5.5. In this case only two daughters of the head of the hamlet, Ali, have left the group, and these are the two youngest, both married to father's sister's sons who are merchants. The other marriages are also all to first cousins, which appears to have a special significance in this example, as it seems to be the way in which the sibling group was kept together by parents. The eldest son, Idries, left the hamlet after the rains in 1974 and spent the wet season the following year with another hamlet, after briefly joining several other hamlets in the interim. Kaltouma had no
children and fostered a daughter of her sister. Hamid married her after the death of his elder brother (her first husband); this was the second of his five marriages, none of which had produced offspring. The marriages of both Idries and Kaltouma were duolocal, as all the individuals were born and grew up in the same settlement. Hawa and Zeinab married full brothers (both father's half-brother's sons), but in both cases their husbands had married previously. The husbands lived in a market village on the plains and made infrequent visits to their wives in this hamlet. Abakar married his mother's brother's daughter, and her parents joined the hamlet during the dry season in 1975. Her father has another wife in a hamlet adjacent to hamlet 2, but her mother used to live in a hamlet east of Aicho wells, in her grandfather's area. One of Abakar's young children was fostered by his parents-in-law. Musa also married a mother's brother's daughter, but he divorced her and lived in his parent's house when he was in the settlement.

These six houses had a single flock of goats, the few animals of Abakar's parents-in-law joining this flock when they moved into the hamlet. They were herded by Hawa's youngest son and Zeinab's eldest daughter, assisted by their siblings during school vacations. The combined flock of goats numbered about two hundred. Musa herded the 120 sheep in the split-flock referred to in the discussion of the second example and he was helped during the vacations by one or both of Zeinab's eldest sons. Ali, although elderly, managed the twenty camels most of the time, with occasional assistance from Musa or one of his grandsons when they were able to leave the sheep. For much of the time Ali was the only man resident in the hamlet, as Hamid and Abakar were in
Libya for many months. Therefore the goats were watered by Ali's daughters and his son's wife.

Hamid was the eldest surviving male of his sibling group and he managed the forty or so camels belonging to it. His three surviving sisters live in Aicho, but his three brothers are all merchants and live in a market village. Two of them have wives in Aicho, but they visit them rarely. The day to day herding of the camels is in the charge of Hamid's brother-in-law, Idries, with the help of two hired herdboys. Hamid's few goats were herded by his sister's children together with those of Idries, separately from the main flock in the hamlet. Idries also separated his camels from Ali's herd and kept them with Hamid's.

Ali's hamlet spent the whole of the rains and winter at one site, where they were joined by hamlet 1 for the wet season in 1974 and 1975, and also by one other house in the rains in 1974. They made one short move during the dry season to be better placed for pasture for the goats and the camels (which were never far from the hamlet). This pattern of hamlet composition is not common, but it is by no means unique. There are three other hamlets in Aicho similarly based on a predominantly female sibling group and one hamlet in Kondeidi which is an almost exact equivalent of Aicho hamlet 2. In all these hamlets the main herdsmen are the children of the daughters of the head of the hamlet.

THE HOUSE (Dwelling Unit)

The term ut refers primarily to the house as a physical entity, but in the absence of any term for 'family' or 'household', it is also used to refer to the residents of the house.
The phrase Adam-in-ut-ir-raydi can be glossed as 'the people with (i.e. of) Adam's house'. To refer to Adam's family (Adam-in-ir) does not involve reference to the house, although one informant gave as a translation for the Arabic of 'your family' the phrase unare on ijeterni, meaning 'the people in your house' (unare = ut-in-arc). In this section I am concerned with the composition of the groups of residents of houses, that is of dwelling units.

The traditional Meidob house\(^7\) is a hemispherical timber construction (see Plates 12, 13, 14), which is apparently unique in Sudan\(^8\). All the houses in Aicho and Kondeidi are of this form. Its design precludes the construction of multiple-cell units. Internally there are woven grass screens, attached to the central posts supporting the structure, which divide the house into three rooms. From the doorway, which usually faces west, one enters a passage on one side of which there is a kitchen and on the other a space where children sleep and baggage is stored. Through the latter room one enters the back half of the house (ikee kore, large room) which contains the conjugal bed and a small fireplace where tea is brewed and where in the winter a fire may be made to keep the occupants warm. Normally the furnishings of a house are extremely sparse and rudimentary in nature. In most instances the furnishings of a house, including goat-skins of grain and the grindstones, can be carried on the back of a single camel, and in the case of poorer families a donkey suffices to allow mobility. None of the structural components of a house are moved, nor are the bed frame or fire-stones.

The distinctness of each house is emphasised by spatial separation from other houses, often by a distance of twenty metres.
or more. Sometimes a simple fence is built around a house, providing a space where tasks can be performed outside. Even when there is no fence, a visitor respects the 'domestic space', always approaching from the west to face the doorway and calling greetings while several yards away.

Houses are built by and are the property of women. This does not necessarily mean that the women at present occupying a house has actually built it, and indeed this is seldom the case in long-established wet season hamlets. Such houses are built with care and may last for well over twenty years, so any one house may have had a series of occupiers. Also, timber is scarce near these hamlets. When they move from one place to another Meidob rarely build new houses, mainly because the whole region is dotted with abandoned hamlets (especially in the mountains) and also because it takes only a few hours to restore a derelict house to provide a reasonable shelter, whereas it may take several days of intermittent work to gather the timber needed for a new house. New building is only done if there is no habitable spare house in a hamlet.

In the majority of cases the residents ('houseful') of a house comprise an elementary family consisting of a husband, wife and their offspring. In addition there may also be as residents an unmarried brother of either spouse, or fostered children, though neither of these situations is common. Unmarried men always reside with their parents while they are still alive, and only in the absence of their mother do they reside with a sibling; because many wives survive their husbands the numerically preponderant situation is that unmarried men reside with their
widowed mother. The most common type of fostering is where a
childless or elderly woman fosters the young child of a daughter,
sister or mother's sister's daughter for companionship and help
in the house. Fostering normally involves a child too young to
have started herding and the majority are young girls.9

Where a woman has been widowed while she still has young
children she is either married by a brother of her late husband
or, where she marries another man, the children are fostered by
an agamic relative of the dead husband. The former is the more
common course. The latter occurs infrequently as a result of
divorce, but this itself is rare during a woman's childbearing
years. A divorced man has the right to keep his children, and
these may join the house of a co-wife or subsequent wife. This
situation is also uncommon, but there are a few cases in my
sample of a man who has divorced a wife (or wives) after the
cessation of her childbearing, and it is possible in practice
for these children to reside in a separate house from their half-
siblings if there is an adolescent girl among them. In two cases
in my sample the children of a widower live with their eldest,
mother, sister. There is also one case of a widower whose
adolescent unmarried daughter continues to occupy her maternal
house in her father's hamlet.

This last case is an example of a resident group where
only one member of the original conjugal couple is present, in
this instance only the widowed husband/father. Much more common
is the situation where the wife/mother is present all the time
and the husband/father is not normally present. Apart from
widows, who are more numerous than widowers, there are two
other contexts in which this occurs, in the initial period of every marriage, which I shall distinguish by referring to the actors as bride and groom (cf. Barnes 1960: 851), and in some non-residential marriages of polygynous men. These differ in their implications according to whether there are children or not, and where children are born early in a marriage the former situation may resemble the latter.

The bride builds her house immediately after the marriage has been formally agreed. For this the groom pays the rub-al-dinar (lit. quarter of the dinar, an obsolete unit of currency; now it is 25 piastres, i.e. a quarter of a Sudanese pound) to the bride's parents and pays a faqih to write the marriage contract. Co-habitation normally begins at this time, but the groom is bound to settle any debts or disputes with the matrikin of the bride before this can occur. A gift of a length of cloth, referred to as tabantukay may be given to the mother of the bride to gain her assent for co-habitation, and this is referred to in Arabic as adal al-bayt 'opening (lit. straightening the house).

Celebration of the wedding and completion of the prestations of cash and commodities (mostly cloth, traditionally the bride-wealth was in sheep and goats) to the bride's parents and certain of their kin may be delayed for several months or more. The bride-removal (tichirran, tichi=migrate) may be delayed further, and a Kargeddi informant stated that Kargeddi carry out the tichirran within a year, whereas Urri often have a delay of up to four years. It often occurs that the bride has given birth to one or more children before her tichirran, in which case it is the groom's duty to provide a goat to be slaughtered for the naming ceremony of each child. The goats cannot be provided by
the bride or her kin, and in one case observed, where the husband was in Libya and his father's hamlet was distant, the goat was provided by another man in the bride's hamlet.

Meanwhile, however, from the date of the marriage the bride has possessed distinct milking rights in her own animals, and when the groom is present she milks only her own animals and stores this milk in her own house. The groom gradually provides for her the equipment she needs to furnish her house. In practice, many men marrying for the first time are involved in herding and visit neither their domicile nor their bride's house for any length of time or at frequent intervals. When the groom is not present the bride may eat with her mother and younger siblings, and indeed some brides did not build separate houses at every hamlet occupied in the course of the year if the groom was on labour migration. Therefore, the bride may not maintain constantly a separate supply of milk and water. At this stage the bride's house may constitute a separate consumption unit only when the groom is present, but when she has a child her house is increasingly likely to be a separate consumption unit.

In a small number of cases the non-residential arrangement persists, and becomes what I refer to as 'established non-residential marriage'. Apart from the length of time since the marriage, which may be so long that the children have reached adult-hood, what distinguishes these dwelling units is that the husband/father has no significant property associated with the house. This is why the men involved are always polygynous. They are domiciled elsewhere and are infrequent visitors. In some of the cases, and the two non-residentially married sisters in Aicho hamlet 2 are a
good example, the role of the husband/father is that of genitor only. He may have little part in the socialization of his children while they are young, this role being carried out by their mother's brothers or maternal grand-father. The residents of these dwelling units are in effect a matrifocal family.

A CLASSIFICATION OF DWELLING UNITS

The dwelling unit is the basic consumption and residential group. It contains only one married woman, except in a few cases. These exceptions are two cases where an unmarried daughter acts as her widowed father's housekeeper. The few instances of recently married women who lived in their mother's houses for part of the year are perhaps another exception, but they were temporary. In general, therefore, the composition of dwelling units depends on the state of the woman's reproductive career, and a classification of dwelling units can be based on this fact. This classification provides greater detail on the composition of the dwelling unit than the terms elementary family and matrifocal family, and it is also useful for an understanding of the patterns of post-marital residence. The classification is set out in Table 5.2.

The criteria identify the formal properties of the dwelling units in a developmental manner, in the sense that in the course of a normal female reproductive career the dwelling unit progresses from one category to another. They can be described appropriately as stages, with the no-children ever category for women without a surviving child. These stages also correspond to the points at which there occur important changes in the
TABLE 5.2. Classification of Dwelling Units

<table>
<thead>
<tr>
<th>Stage of Development</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Children (Initial)</td>
<td>From the formal betrothal of the bride (when she builds a house and co-habitation may begin) to the birth of her first child.</td>
</tr>
<tr>
<td>Infants</td>
<td>No child is aged over seven years, which is the normal age at which a child may begin to do regular herding.</td>
</tr>
<tr>
<td>Expanding</td>
<td>At least one child is aged over seven years and new infants are being added to the family.</td>
</tr>
<tr>
<td>Constant</td>
<td>No infants are being added, daughters are or may be married, but no sons are married.</td>
</tr>
<tr>
<td>Decline</td>
<td>All daughters are married and the majority of sons are also married.</td>
</tr>
<tr>
<td>No Children (Ever)</td>
<td>Women aged over 35 who have no children.</td>
</tr>
</tbody>
</table>

The pattern of rights to livestock and in the ability of the members of a dwelling unit to deploy their livestock. At the no-children initial stage a bride is able to exercise rights over the milk production of her livestock, and if during this stage she moves virilocally she also acquires rights in the milk of the groom's livestock. At the infants stage the donation of female animals to the child(ren) is a more concrete expression of independent rights of disposal of productive livestock, as well as being the foundation of eventual devolution of these rights. In the expanding stage, the dwelling unit has the theoretical ability to manage its livestock independently of other dwelling units. In the constant stage the process of devolution
become effective. The no children ever category differs from the others in the fact that the process of devolution of rights to livestock cannot follow the predominant pattern, nor can the dwelling unit properly manage its livestock independently.

The extent to which the stages correspond to age groups of men and women is shown in Table 5.3. It can be seen that the majority of women experience what may be described as the 'ideal' correspondence of age and stage of development of the dwelling unit, but a substantial number appear to be older than the ideal for each stage. The majority of women in each of the age groups 'older' than the 'ideal' are closer in age to the 'ideal' limit of the age group than to the other extreme. By comparison, there is a much greater spread of age groups of 'husbands' at each stage, which reflects the effect of the greater age difference associated with polygyny. For both men and women part of the delaying of reproduction is attributable to the disturbance of marriage histories by divorce. It should be noted that this sample is based on the part of my total sample of dwelling units for which I have reliable age data. It may also be noted that dwelling units classified in the no children stages are 26 per cent of the sample, which may be compared with Table 3.1 where it was shown that 29 per cent of women between 15 and 49 have not produced a surviving child.

The classification of dwelling units according to their formal characteristics is useful for an understanding of post-
### a. Aicho

<table>
<thead>
<tr>
<th>Age of Wife</th>
<th>No children</th>
<th>Infants</th>
<th>Expanding</th>
<th>Constant</th>
<th>Decline</th>
<th>No children</th>
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<td>15 - 24</td>
<td>16</td>
<td>14</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>24 - 34</td>
<td>6</td>
<td>9</td>
<td>18</td>
<td>12</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>35 - 44</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>45 - 54</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>13</td>
<td>3</td>
</tr>
<tr>
<td>over 55</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
<td>23</td>
<td>34</td>
<td>20</td>
<td>21</td>
<td>12</td>
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<table>
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<th>Infants</th>
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<th>Constant</th>
<th>Decline</th>
<th>No children</th>
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<td>25 - 34</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>35 - 44</td>
<td>5</td>
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<td>13</td>
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<td>-</td>
</tr>
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<td>45 - 54</td>
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<td>4</td>
<td>12</td>
<td>5</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>55 - 64</td>
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<td>5</td>
<td>8</td>
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<td>4</td>
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<td>1</td>
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<td>6</td>
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</tr>
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<td>2</td>
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<td>34</td>
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### b. Kondeidi

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<th>Decline</th>
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<td>10</td>
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</tr>
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<td>21</td>
<td>16</td>
<td>29</td>
<td>7</td>
</tr>
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<table>
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<th>Expanding</th>
<th>Constant</th>
<th>Decline</th>
<th>No children</th>
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<td>25 - 34</td>
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</tr>
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<td>35 - 44</td>
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<td>4</td>
<td>8</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>45 - 54</td>
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<td>3</td>
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<td>6</td>
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<td>4</td>
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<td>55 - 64</td>
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<td>4</td>
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<td>5</td>
<td>8</td>
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<td>dead</td>
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<tr>
<td>Total</td>
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<td>21</td>
<td>16</td>
<td>29</td>
<td>7 (121)</td>
</tr>
<tr>
<td>Percentages</td>
<td>21.5</td>
<td>18.2</td>
<td>17.4</td>
<td>13.2</td>
<td>24.0</td>
<td>5.8 (100)</td>
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</table>
marital residence patterns. In particular it helps to illuminate the distribution of the wives of polygynists, some of which are cases of non-residential marriage.

Before presenting Tables cross-classifying dwelling units by residence and stage of development it is important for me to define the categories of residence I have used. The criterion used is whether the husband or the wife, or both or neither, has moved away from their parents and/or siblings. The terms uxorilocal, virilocal and neolocal are used for the first three situations respectively. Marriage of two persons living in the same hamlet at the time of marriage and subsequently I refer to as duolocal, meaning 'the place of the two partners', and not, in the sense mentioned and criticized by Barnes (1960: 853) to refer to the situation where no common residence is established. This I describe as non-residential, in preference to the term natolocal suggested by Barnes (ibid). Natolocal seems inappropriate because place of birth is of little immediate relevance among the Meidob to this or to any other category. I have distinguished two sub-categories of non-residential marriage, that which occurs at the start of every marriage, which I describe as 'initial' and that which has become an established feature of the marriage, which I describe as 'established'.

Among the Meidob, with a considerable proportion of all marriages occurring between close kin, with frequent divorce and with small settlements and much mobility, it is by no means always clear in which category of residence a certain dwelling unit should be classified. I have much more information on marital and residence histories for Aicho than for Kondeidi, but
there are shortcomings on my information on both areas. It should be noted that where I am dealing with dwelling units in small hamlets I have in some cases classified on the basis of the relative magnitude of the move, in a social rather than simply a spatial sense, in order to avoid making the neolocal category a miscellany of properly discrete categories of residence. For example, the marriage of an Elkedi man who moved to Alcho when he married a Teukedi woman is classed as uxorilocal, even though neither spouse has close kin in the two-house hamlet where they spent the dry season. In other cases, especially in Kondeidi, the wet season hamlet to which a dwelling unit moves provides a clear means of classification. Before the drought there were in both areas a few very large and relatively sedentary hamlets, which have now split up. These were composed of intermarrying sibling groups, and the latter have stayed relatively intact in the current settlement pattern. Many of the marriages which I have classified as virilocal would formerly have been appropriately described as duolocal, and the same is true of some marriages classified as uxorilocal. In his study of the Berti, Holy (1974: 111) classified residence on the basis of the relative disposition of households at the time of rahula, which corresponds to tichirran, as a means of overcoming the fact that classifying the basis of movement relative to the households of the parents of the bride and groom may be biased by subsequent movement of the parental households. However, I am concerned with the synchronic pattern, and my criterion is therefore the movement of spouses as reflected in their location at the time of my survey.

Table 5.4. shows the classification of dwelling units (the
<table>
<thead>
<tr>
<th>Residence of Dwelling Units by Stage of Development - Aiko</th>
<th>No children</th>
<th>Infants</th>
<th>Expanding Constant</th>
<th>Decline</th>
<th>No children Net Class Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
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<td>Vislocal</td>
<td>3</td>
<td>8</td>
<td>23</td>
<td>12</td>
<td>15</td>
<td>9</td>
</tr>
<tr>
<td>Exorlocal</td>
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<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Dolecial</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
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<td><strong>Total Percentage</strong></td>
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<td><strong>19.0</strong></td>
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<td><strong>15.3</strong></td>
<td><strong>23</strong></td>
<td><strong>16.8</strong></td>
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</table>
The cases of uxorilocal residence at all stages reflect a similar tendency, but the other way around. In seven of the seventeen cases, the bride and her kin are notably wealthier than the groom. In the three cases where the dwelling units that of a widow (where I know that the residence pattern preceded the death of the husband) and in three other cases I do not have definite evidence on relative wealth. In one case the bride has no brothers and it is possible that the husband was brought in to augment the adult male labour force, though here there is also a clear disparity of wealth. In another case the groom has no siblings (of whom I know), but this also appears to be an instance of difference in wealth. In the other two cases my information suggests that there is little or no difference in wealth.

All the men uxorilocally resident are monogamous, with one exception of a man whose second wife is his brother's widow. Although uxorilocal and established non-residential marriage have a fundamental difference as regards the husband's domicile, there is a similarity between them in their implications for the bride and her kin. Any property the bride may possess is not dispersed, and the bride and her children contribute to the labour force of her hamlet. This particularly important, and it is a point I shall develop in the next chapter.

Basically it follows from the fact that daughters marry up to ten years earlier than their brothers of similar age, that their children are capable of herding livestock long before the children of sons are able to fill this role. Thus uxorilocal and non-residential established marriages have in common the
the feature that they may provide children to fill a gap which might otherwise occur between the youngest son no longer herding goats and the child of the eldest son being able to take on this work.

Established non-residential marriage is most frequent in both areas in the infants and expanding stages, reflecting the importance or potential importance of these children. There is no space to explain the circumstances of each of the cases recorded, but it is possible to make some generalizations about established non-residential marriage. Firstly, they are commonly arranged between close kin. This is perhaps surprising, given that kin are often spatially close, but there is really no paradox. It is clear that some marriages are arranged with an explicit agreement that the bride will not be expected to leave her parents' hamlet, and such agreement is most easily reached between close kin. Because of this, non-residential marriages are usually stable, even though they might seem particularly likely to result in divorce. They have the support of both the parents of the bride and of the parents of the groom. The advantage to the former is self-evident, but the groom's parents also gain (and so does the groom) from the fact that the number of descendants is increased without making a significant impact on the pattern of the eventual devolution of property.

Another characteristic is that non-residential marriages tend to be arranged for elder, rather than younger daughters, for the obvious reason that sons' children may be old enough to begin herding by the time the youngest daughters are of marriage age. It may well be, although my information on
Marriage histories is mostly inadequate for us to be able to test this, that the drop in the number of established non-residential marriages between the expanding and constant stages reflects the point where sons' children are able to carry out herding work. Thirdly, it is characteristic that established non-residential dwelling units are clustered in a limited number of hamlets (this is more apparent in Aicho than in Kondeidi). These are the hamlets in which sons are few, or young, and in each case, the women's father's resources and social standing enable him to resist processes which, in an extreme situation, might result in the dispersal of his property and the termination of his descent line.

Polygynous Marriage

The discussion above shows that non-residential dwelling units are an aspect of polygynous marriage, and since these marriages have a bearing on the composition of other dwelling units as well they will be considered separately. Table 5.6 shows the cross-classification of polygynists' dwelling units by stage of development and residence in the two sample areas. It can be seen that there is a clear difference between the areas in the extent to which dwelling units in the no children initial and infants stages are virilocal, with fifteen per cent of all Kondeidi polygynists' dwelling units at those stages and none in Aicho. In Kondeidi these are half of all the virilocally resident dwelling units at those stages. This difference appears to be evidence that Kondeidi polygynists have been able to arrange *tichirran* at a much earlier time than their Aicho counterparts, in which case this would appear to provide some substance
to the remark quoted above (page 173) that Kargeddi tichirran
is normally earlier than in Aicho. The generalization previously
made that virilocal residence in the no-children initial stage
can be attributed to a difference in wealth is not of course
altered by this finding.

Furthermore, the difference in the overall frequency of
virilocal residence found in Table 5.4. with reference to all
dwelling units, is shown to be even greater with reference to
polygynists. In Aicho 48 per cent of all dwelling units are viri-
locally resident, while among Aicho polygynists the proportion
is 53.8 per cent. In Kondeidi 64.7 per cent of all dwelling
units are virilocal, while 79.6 per cent of polygynists' dwelling
units are virilocal. One possible reason for these differences
could be in the relative proportions of dwelling units of
polygynists' and monogamous men's dwelling units at different
stages of development. It has been shown that virilocal residence
is predominant in the expanding and constant stages, and therefore
if there was a difference between the areas in the proportion of
these which had polygynous men this would account for some of
this difference. Table 5.6. shows that this is not the case, by
expressing the number of polygynists' dwelling units in each
stage as a percentage of all dwelling units at each stage in each
area. At all stages there is a very considerable similarity in
percentages. By the same reasoning, the Table shows that the
difference between the areas with respect to the number of
non-residential dwelling units, cannot be explained in terms of
the relative numbers of polygynists' and monogamists' dwelling
units in the infants and expanding stages.
<table>
<thead>
<tr>
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<th>Expanding</th>
<th>Constant</th>
<th>Decline</th>
<th>No children (ever)</th>
<th>No class</th>
<th>Total and Percentage</th>
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<td>-</td>
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<td>Constant</td>
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<td>No children (ever)</td>
<td>Not Class</td>
<td>Total and Percentage</td>
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<td>7</td>
<td>8</td>
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<td>24.1</td>
<td>9</td>
<td>16.7</td>
</tr>
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*This is the case of the man with a second wife by widow inheritance, see text.
<table>
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<th></th>
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<th>Infants</th>
<th>Expanding</th>
<th>Constant</th>
<th>Decline</th>
<th>No children (ever)</th>
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<td>10</td>
<td>5</td>
<td>7</td>
<td>4</td>
<td>65</td>
</tr>
<tr>
<td>All d.u.</td>
<td>26</td>
<td>24</td>
<td>33</td>
<td>21</td>
<td>22</td>
<td>13</td>
<td>13</td>
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<th>Constant</th>
<th>Decline</th>
<th>No children (ever)</th>
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<td>9</td>
<td>8</td>
<td>4</td>
<td>7</td>
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<td>23</td>
<td>20</td>
<td>22</td>
<td>11</td>
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**Dwelling Units of Polygynists as a Percentage of all Dwelling Units**

<table>
<thead>
<tr>
<th></th>
<th>Aicho</th>
<th>Polygynists as a % of all</th>
<th>Kondeidi as a % of all</th>
</tr>
</thead>
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<tr>
<td></td>
<td>38.5</td>
<td>29.2</td>
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<td>56.7</td>
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<td>47.6</td>
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<td></td>
<td>53.8</td>
<td>36.4</td>
<td>50.0</td>
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</table>
Those differences between the areas are clarified, if not explained, by considering the patterns of polygynous marriage and the distribution of the wives of polygynists. Table 5.7 shows the number and distribution of polygynists in Aicho and Kondeidi. It can be seen that not only is the number of polygynists relatively larger in Aicho, but the proportion with their main residence outside the area is greater. Table 5.8. a and b shows the spatial distribution of the wives of the polygynists, grouped according to the number of wives of each polygynist.

These Tables show the proportion of polygynists' wives present is 77 per cent in Aicho and 83 per cent in Kondeidi, a difference which does not seem to be of any significance. However, there is an important difference with regard to the proportion of wives living in the same hamlet, which is 31 per cent in Aicho and 43 per cent in Kondeidi. This clearly does not explain the difference in the frequency of the different categories of residence between the areas, but it shows that in general the Aicho polygynists' wives are considerably more dispersed than those in Kondeidi, irrespective of the mode of residence. In Aicho, in fact, many of the polygynists' wives whose residence is classified as virilocal are in separate settlements.
Table 5.7  Number and Distribution of Polygynists in Aicho and Kondeidi

<table>
<thead>
<tr>
<th>Main residence in Area</th>
<th>Resident Men</th>
<th>Main residence elsewhere</th>
<th>Total Men</th>
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<td>1 or 2 wives only in area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aicho</td>
<td>24</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>Kondeidi</td>
<td>20</td>
<td>8</td>
<td>28</td>
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</tbody>
</table>

Table 5.8  Distribution of Wives of Polygynists by Number of Wives

a. Aicho

<table>
<thead>
<tr>
<th>Wives in Aicho</th>
<th>Wives outside Aicho</th>
<th>Number of women</th>
</tr>
</thead>
<tbody>
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<td>Same hamlet</td>
<td>2 in 1 hamlet</td>
<td>Separate hamlets</td>
</tr>
<tr>
<td></td>
<td>1 hamlet</td>
<td>Other rural(1)</td>
</tr>
<tr>
<td>2 wives</td>
<td>XXX</td>
<td>35</td>
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<td>3 wives</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td>4 wives</td>
<td>- XXX</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>0</td>
</tr>
</tbody>
</table>

| (31.3)         |                     | 64 (77.1)       | 19 (22.9)   |

(1) Arees using other well centre
(2) Malha, 'Ain Bassaro
<table>
<thead>
<tr>
<th>Wives in Kondeidi</th>
<th>Number of Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same hamlet</td>
<td>Wives outside Kondeidi</td>
</tr>
<tr>
<td>2 wives 22</td>
<td>XXX 18 5   5 50</td>
</tr>
<tr>
<td>3 wives 6</td>
<td>6 2 1 - 15</td>
</tr>
<tr>
<td>4 wives -</td>
<td>XXX - - -</td>
</tr>
<tr>
<td>Total 28 (51.9)</td>
<td>6 20 6 5 65</td>
</tr>
<tr>
<td></td>
<td>(11.1)</td>
</tr>
<tr>
<td></td>
<td>34 (63.0)</td>
</tr>
<tr>
<td></td>
<td>54 (83.1)</td>
</tr>
<tr>
<td></td>
<td>11 (16.9)</td>
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</tbody>
</table>

(1) Areas using other well centre
(2) Malha, Wadi Marreig.
CONCLUSION

The dwelling unit is generally the minimal social group among the Meidob. It is not invariably so because in some cases, such as one in Aicho hamlet 2, the husband and wife may be part of separate production groups even though the husband is domiciled. That particular case is related to the fact that the marriage is childless, so the devolution of property to children, which is normally the focus of the conjugal fund, had not occurred.

It seems reasonable to regard the characteristically small size of the dwelling unit as related to the fact that in the majority of cases they co-operate with other dwelling units in herding. There is thus considerable flexibility of re-alignment of dwelling units in production groups. It is significant in this regard that in many cases polygynous marriage does not result in the creation of a co-resident, compound family. Among the Meidob polygyny is not generally a means of enlarging the co-resident group to increase the number of herders. This adjustment is more often made by arranging other combinations of dwelling units. The patterns of combination are the subject of the next chapter.
CHAPTER SIX
VIABILITY AND THE DEVELOPMENTAL CYCLE
OF DOMESTIC GROUPS

INTRODUCTION
In this chapter I am concerned with the productive activities associated with pastoralism, and particularly with the relationship between the composition of the productive group and the number and type of animals owned. It will be clear from the last chapter that co-operative action in production occurs at various levels of social grouping. The smallest group which can comprise a production group is the dwelling unit, though it has also been seen that members of one dwelling unit are not necessarily involved in the same production group. At the other extreme there may be co-operation between members of different hamlets, even if they are distant from each other, in the management of a split-herd of camels or a flock of sheep. Between these extremes, the majority of production groups are composed of several dwelling units and are part of a hamlet or are a whole hamlet.

The criterion by which I distinguish production groups is involvement of the members in the management of a single flock of goats. In almost all cases where a group with a separate flock of goats owns other animals (sheep or camels) the latter are either managed separately or, if they are herded with the sheep or camels belonging to another production group, each group provides labour for the co-operative herd in approximate proportion to the number of animals they own in it. In contrast to this, within the production group there is no expectation that each individual will contribute to the labour force an effort proportional to the number of animals owned; rather there is a pooling of resources and allocations of workers according to the interests of the group as
a whole. In the next section of this chapter I shall consider the pastoral viability of production groups as a relationship between the members of a group and the animals owned by the members.

I have stated that the majority of production groups are composed of several dwelling units and are a whole hamlet or part of a hamlet. Co-operation in herding a flock of goats normally implies co-residence in the same hamlet. (There are two exceptions to this which will be discussed below.) In all cases, where there are two or more dwelling units in a production group, these dwelling units are linked by some relationship of kinship or affinity. In this chapter I shall stress the integration of dwelling units into production groups, whereas in the last chapter I stressed their distinctness as consumption and reproduction units.

PASTORAL VIABILITY

The concept of pastoral viability refers to the two-way relationship between a specified group of persons and a specified group of livestock. The whole comprising these people and these livestock is said to be in a state of viability when the people are capable of carrying out the deployment of the livestock and when the produce gained from the livestock is adequate to sustain the people. When either of these conditions is not fulfilled the whole is said to be non-viable (cf. Stenning 1958: 92, 100; 1959: 103). The people and the livestock are two populations breeding independently but concurrently, and ideally viability is not simply a balance at a single point in time but a dynamic equilibrium. This equilibrium is under the control of the people, and it is by their interventions, through social institutions, that
viability is maintained in the long term.

Thus defined, viability can be understood as a quantitative relationship between humans and livestock. This chapter is concerned with quantitative data on Meidob social groups and herds. Following the analysis, viability and the uses made of this concept by various authors will be considered in more detail in the conclusion. The nature of the data on the Meidob means that the analysis is mainly concerned with balance at one point in time, specifically in the dry season 1975. I emphasise again at this point that the data refer to the period after the drought, and that they therefore reflect a very special set of circumstances.

However, in spite of the effect of the drought on many herds and one some social groups, the essential nature of viability among the Meidob was not fundamentally affected. It has been seen that there are two principal aspects to viability, the ability of people to deploy their livestock and the ability of people to subsist on the products of their livestock. Among the Meidob the first aspect is very much more important than the second. This follows from certain empirical features of the Meidob situation which have already been alluded to, but which should be made explicit again before the quantitative data are presented.

Herding is the critical aspect of viability because Meidob social groups may be involved in the deployment of three main types of livestock, as outlined in Chapter 3. Cattle are numerically insignificant and make minimal demands on labour in the conventional management system, and they will therefore be given little attention, while donkeys and horses will not be considered at all. Secondly, although the great majority of Meidob derive the most
important part of their livelihood from livestock, the ownership of livestock is not a pre-condition of living in Dar Meidob and is not a criterion of self-ascription or ascription by others as a Meidob. Non-pastoral sources of income are of considerable importance, and not only to those people who possess too few livestock to subsist on pastoral products. Virtually all Meidob engage in cultivation as well as pastoralism, and in normal climatic conditions it is possible for a considerable proportion of the grain (millet) which is the staple diet to be grown in Dar Meidob by those who will consume it. It is also possible to grow okra, tomatoes and onions, and these are used fresh or dried as the main ingredients of the sauce eaten with millet porridge. There is no apparent correlation between the area cultivated by an individual (each adult has a separate farm) and the numbers and types of animals owned, and this, I suggest, is because of the lack of competition for labour of pastoralism and cultivation at the time of the year when cultivation is carried out. It is unlikely, nevertheless, that in normal conditions a Meidob cultivator would be able to produce a consistent surplus from cultivation to exchange for other commodities, as some Bara are able to do, for example. (The people of Abu Garar may be able to do this, and might be an exception to this statement.) There are also opportunities for wage labour, however, which could potentially be used in conjunction with cultivation to support a domestic unit in Dar Meidob without livestock. One or two informants referred to having hired labourers to haul water for their herds at the wells (before the drought). Other men find casual employment taking a merchant's flock of sheep or goats to market, and for others a few types of craft work provide a modest income. It has
also been seen that during and after the drought considerable opportunities for employment existed in Libya, and there have been for many years similar, if less lucrative, opportunities for employment in Sudan, though these do not appear to have been used to any great extent by Meidob. Because there are these non-pastoral sources of income, used to supplement an income from livestock rather than as a sole means of support, there is no 'minimum herd' size definable for the Meidob. Thus the aspect of viability which depends on the herd producing the whole livelihood of the people does not apply rigorously.

There are two implications of these facts which should also be noted. Firstly, the availability of non-pastoral sources of income, and the use made of these irrespective of numbers of livestock owned, seems to be one of the reasons why Meidob livestock numbers were able to increase very rapidly in the second and third quarters of this century. Secondly, because the main element of the diet is porridge, the output of meat and milk from the livestock is of secondary importance, and the main concern of a Meidob pastoralist is therefore the number of animals and the rate of increase per so. The seasonal distribution of lactations is not of major importance to Meidob as it is to some other pastoralists. This is an advantage in a climate with a very long dry season. This also seems to be one of the factors behind the split-herding system, in which a substantial proportion of the 'Meidob herd' is specifically not available to provide direct sustenance, except to the small number of herders.

These considerations suggest that it would be better to approach the question of viability among the Meidob simply as
a quantitative relationship between groups of people and their herds, rather than in terms of an a priori definition of viability and non-viability. This is the subject of the next section, in which the construction of quantitative measures of the human and livestock groups will be considered.

ANIMAL UNITS AND LABOUR UNITS

In order to assess the viability of production groups it is necessary to construct standardized measures of animals and labour resources. The four main types of animals are owned in markedly different proportions by different groups of people, and it is the aggregate of animals owned which is of interest. Similarly, some standardization of work capacity by age and sex is necessary to estimate the labour resources of production groups.

In Chapter 2 I discussed stocking rate, which is estimated in terms of livestock units. In that context, since the focus of attention is the fodder requirements, a satisfactory standardization is provided by liveweight. A measure of value-for-humans and herding requirements is more complicated than this. Ideally to assess viability one would weight the scale to take into account the present production and future potential of different flocks and herds, according to the age and sex structure of particular herds and the specific reproductive rate of each. Such a measure would emphasize output rather than numbers, and thus give an accurate indication of wealth. A measure designed solely to reflect herding requirements is somewhat less complicated, because in this case the number of animals is more directly important, though here too a satisfactory measure would have to take into account a number of complicating factors. The actual
herding requirements of a particular herd vary according to factors external to the livestock, for example, the nature of the terrain, the accessibility of pasture and water, the presence of thieves and predators, and so forth. I do not have the information necessary for such a sophisticated level of standardization. The following scale of 'animal units' is based, therefore, on my subjective assessment of the relative value and herding requirements of different types and animals. Goats and sheep are one animal unit per head, cattle six units and camels nine units.

Similar considerations apply to the construction of a scale of 'labour units'. The standardization by age and sex set out in Table 6.1. is again based on my subjective impressions.

TABLE 6.1. Labour Units by Age and Sex (Pastoral Activities)

<table>
<thead>
<tr>
<th>Male Age/Status</th>
<th>Labour Units</th>
<th>Female Age/Status</th>
<th>Labour Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-6</td>
<td>0</td>
<td>0-6</td>
<td>0</td>
</tr>
<tr>
<td>7-12</td>
<td>1</td>
<td>7-12</td>
<td>1</td>
</tr>
<tr>
<td>13-17</td>
<td>5</td>
<td>13-17</td>
<td>3</td>
</tr>
<tr>
<td>18-marriage</td>
<td>10</td>
<td>18-tichirran*</td>
<td>4</td>
</tr>
<tr>
<td>Married man</td>
<td>8</td>
<td>Married woman</td>
<td>1</td>
</tr>
<tr>
<td>Over 65</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*tichirran = bride-removal

The scale relates solely to pastoral work (herding, watering, searching for strays, etc.). It is concerned with the standard pattern of the division of labour, and does not attempt to consider all possible variations in labour intensity. The division of labour is not, of course, a rigid code of behaviour, especially
where herding is concerned, but the values shown in Table 6.1. seem a reasonable summary of the normal pattern.

In applying the labour units I have used the following conventions. Children attending schools are not counted, because they are normally absent, particularly in the dry season, when viability is most critical. On the other hand men involved in labour migration are counted, because their absence is intermittent. Polygynous men are counted as four labour units in each dwelling unit (thus in a very few cases they may score twelve labour units), but in all cases of non-residential marriage the man's labour units are attributed to the dwelling unit(s) in which he is domiciled. Women who are non-residential initial after marriage are counted as four labour units, because many of them are still herding. On the other hand, in established non-residential marriage the woman is counted as one labour unit, as are other married women. Fostered children are counted in the production group where they were living at the time of the survey.

The standardization of animal units and labour units makes it possible to plot production groups on a scattergram. The results of this are shown in Figure 6.1. (a) and (b). Visual inspection and the correlation coefficients indicate a considerable correlation between animals and labour, but a difference between the areas in the degree of correlation. There is a greater correlation in Aicho, but there is also a more satisfactory range of sizes of production groups than in the Kondeidi sample. The main reason for this is that my information is better for Aicho. In Kondeidi I have had to exclude a number of large production groups because of incomplete information. It was
generally more difficult to collect comprehensive data on larger groups. The information on Kondeidi was collected in a short time, and it was impossible to carry out complete cross-checks of information of animal numbers. In some cases the figures for animal numbers may be underestimates. I consider the information on Aicho more reliable. It is possible that as a result of my greater familiarity with conditions in Aicho the measures I have adopted are more appropriate there than in Kondeidi.

There are various possible reasons for the lower correlation in Kondeidi. Because the sample is biased to smaller production groups about a third of those in the sample are single dwelling units. The lack of precise correlation between animals and labour in these groups is interesting because it reflects the fact that in most cases the adjustment of labour to animal numbers is achieved by means of appropriate combinations of dwelling units. Another possibility is that the losses of animals in Kondeidi were less uniform between production groups than in Aicho. It is certainly the case that the disruption of communities in the drought was more pronounced in Kondeidi than in Aicho. Finally, it is possible that herding conditions are less demanding in Kondeidi. The scatter of production groups seems to indicate that fewer labour units are required for a given number of animal units in Kondeidi compared with Aicho. The case of watering at the shallow wells in Awinol may be a relevant factor in this respect.

Because the Aicho sample is more representative of the actual variation in the composition of herds and production groups I
shall concentrate on the data for Aicho in the remainder of this chapter. The corresponding data for Kondeidi is presented in the Appendix. It will be seen from these tables as the analysis proceeds that the pattern I shall describe is less marked in the case of the Kondeidi sample, but is nevertheless of the same general form as in Aicho. A further point about the data is that in neither area is it the result of random sampling. I have included statistical measures simply as a convenient summary of the degree of association in the data. In particular the statistics illustrate the difference in the strength of the associations in the two areas. They are not intended for refined analytical purposes.

On the basis of the scattergrams it can be said that in all production groups there is a similar ratio of animal units to labour units. This implies that in respect of the ability to herd livestock virtually all production groups can be considered viable. In itself this is not particularly surprising. My main concern is the extent to which differences in the position of production groups along the 'axis of viability' are associated with, firstly, the types of livestock owned and the way they are managed, and secondly, the social composition of the production groups.

HERDING PATTERNS AND NUMBERS OF ANIMAL UNITS AND LABOUR UNITS

The patterns of livestock ownership and management can be simplified into four main types. Firstly, there are production groups with no split herds, where the major component of the total number of animal units is goats managed in the vicinity of the hamlet, plus possibly a few sheep herded with the goats and
perhaps a few camels for baggage and riding. Secondly, there are production groups with only camels in a split herd, thirdly with only sheep in a split-herd, and fourthly with both camels and sheep in split-herds. These four categories of herding pattern are compared with the numbers of animal units in Table 6.2., where the production groups are arranged by quartiles of numbers of animal units.

The detailed pattern underlying this table is shown in Table 6.3., where for each cell in the table above the mean and range of the numbers of animal units are shown.

These two tables show the extent to which the four types of herding pattern are correlated with the numbers of animal units. In the first and second quartiles 16 out of 20 production groups (80 per cent) are not involved in split-herding, while in the third and fourth quartiles only 2 production groups (10 per cent) are not involved in split-herding. Taking the overall mean values in the last row of Table 6.3. it can be seen that those production groups with a split flock of sheep have twice as many animal units as those with no split herd, while those with a split herd of camels have 2.4 times the number and those with both split herds of camels and sheep have four times the number of animal units.

The pattern indicated is that those production groups with the smallest number of animal units have only goats (some in appreciable numbers), those in the middle range have either split herds of camels or of sheep, while only those production groups with the greatest number of animal units have split herds of both camels and sheep.
### TABLE 6.2. Herding Pattern by Quartiles of Animal Units

<table>
<thead>
<tr>
<th></th>
<th>Not Split</th>
<th>Split Camel</th>
<th>Split Sheep</th>
<th>Split Sheep &amp; Camel</th>
<th>Number of Production Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Quartile (under 99)</td>
<td>9</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>2nd Quartile (100-149)</td>
<td>7</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>3rd Quartile (150-249)</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>4th Quartile (over 250)</td>
<td>-</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Totals</td>
<td>18</td>
<td>9</td>
<td>6</td>
<td>7</td>
<td>40</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 7044.2 \quad p = 0.001 \]
\[ df = 9 \]

### TABLE 6.3. Herding Pattern by Quartiles of Animal Units with Mean and Range of Animal Units per Cell

<table>
<thead>
<tr>
<th></th>
<th>Not Split</th>
<th>Split Camel</th>
<th>Split Sheep</th>
<th>Split Sheep &amp; Camel</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Quartile Mean</td>
<td>57.0</td>
<td>-</td>
<td>97.0</td>
<td>one case</td>
</tr>
<tr>
<td>Range</td>
<td>36-92</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd Quartile Mean</td>
<td>115.4</td>
<td>124.3</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>107-139</td>
<td>138-145</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd Quartile Mean</td>
<td>156.5</td>
<td>166.0</td>
<td>173.2</td>
<td>174.5</td>
</tr>
<tr>
<td>Range</td>
<td>156-157</td>
<td>156-157</td>
<td>150-224</td>
<td>169-180</td>
</tr>
<tr>
<td>4th Quartile Mean</td>
<td>-</td>
<td>298.7</td>
<td>285.0</td>
<td>423.6</td>
</tr>
<tr>
<td>Range</td>
<td>259-342</td>
<td>259-342</td>
<td>one case</td>
<td>253-636</td>
</tr>
<tr>
<td>Overall Mean</td>
<td>90.8</td>
<td>217.1</td>
<td>179.2</td>
<td>352.4</td>
</tr>
</tbody>
</table>
Almost exactly the same pattern emerges with respect to the relationship between herding pattern and the number of labour units. This is not surprising given the high degree of correlation between numbers of animal units and labour units, as shown by Figure 6.1. a. In the case of the quartiles of labour units the clustering around certain values means that the quartiles are not exactly of ten production groups each. The results are shown in Tables 6.4. and 6.5. and do not require further discussion, except to note that the degree of variation in the numbers of labour units in each cell and in the overall mean values for each type of herding pattern is not as marked as in the case of animal units.

<table>
<thead>
<tr>
<th></th>
<th>Not Split</th>
<th>Split Camels</th>
<th>Split Sheep</th>
<th>Split Sheep &amp; Camels</th>
<th>Number of Production Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Quartile (under 16)</td>
<td>8</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>9</td>
</tr>
<tr>
<td>2nd Quartile (16-23)</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>3rd Quartile (24-35)</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>4th Quartile (over 35)</td>
<td>-</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Totals</td>
<td>18</td>
<td>9</td>
<td>6</td>
<td>7</td>
<td>40</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 22.59 \quad p = 0.02 \]
\[ df = 9 \]
TABLE 6.5. Herding Pattern by Quartiles of Labour Units with Mean and Range of Labour Units per cell

<table>
<thead>
<tr>
<th>Quartile</th>
<th>Not Split Mean</th>
<th>Split Camels Mean</th>
<th>Split Sheep Mean</th>
<th>Split Sheep &amp; Camels Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Range</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st Quartile</td>
<td>12.5</td>
<td>11.0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>9-15</td>
<td>one case</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd Quartile</td>
<td>19.8</td>
<td>19.0</td>
<td>21.0</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>16-21</td>
<td>16-22</td>
<td>19.23</td>
<td></td>
</tr>
<tr>
<td>3rd Quartile</td>
<td>28.2</td>
<td>28.0</td>
<td>33.3</td>
<td>24.5</td>
</tr>
<tr>
<td></td>
<td>24-35</td>
<td>24-32</td>
<td>31-35</td>
<td>24-25</td>
</tr>
<tr>
<td>4th Quartile</td>
<td>-</td>
<td>51.7</td>
<td>44.0</td>
<td>46.4</td>
</tr>
<tr>
<td></td>
<td>42-59</td>
<td>one case</td>
<td>36-63</td>
<td></td>
</tr>
<tr>
<td>Overall Mean</td>
<td>18.8</td>
<td>31.0</td>
<td>31.0</td>
<td>40.1</td>
</tr>
</tbody>
</table>

THE COMPOSITION OF PRODUCTION GROUPS

The Aicho sample of 40 production groups for which I have adequate information are distributed among 31 hamlets. In one case an elderly widow whom I have counted as a separate hamlet since her house is half a kilometre or more distant from her daughter's hamlet is included with the latter as a production group since her few goats are kept there. This is the only case in Aicho of a production group encompassing two hamlets, though there is a similar case in Kondeidi. In 21 cases the whole hamlet is a production group. One hamlet has three production groups and seven hamlets have two production groups. In one final hamlet I have information on only one of the two production groups. The variation in the size of these production groups is
shown in Table 6.6. in terms of the number of dwelling units.

<table>
<thead>
<tr>
<th>Number of dwelling units</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Production groups</td>
<td>5</td>
<td>12</td>
<td>6</td>
<td>11</td>
<td>2</td>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td>Cumulative % of dwelling units</td>
<td>4.0</td>
<td>23.2</td>
<td>37.6</td>
<td>72.8</td>
<td>80.8</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

The distribution of sizes of production groups is bimodal, with particularly large numbers of production groups with two and four dwelling units, and almost forty per cent of all dwelling units in production groups of four. According to the information I have, there is no production group in Aicho with more than six dwelling units, in any of the hamlets I have omitted in this section.

The composition of the dwelling units by stage of development in production groups of different size is shown in Table 6.4. Here the same data is shown using the grouping of stages of development previously used in the last chapter. This is shown in Table 6.7.

This Table shows a preponderance of dwelling units in the expanding and constant stages in smaller production groups and a generally greater proportion of dwelling units in the infants and no children (initial or ever) stages in larger production groups. It will be seen that five dwelling units in my sample are not classified by stage of development, and in these cases there is
TABLE 6.7. Number of Dwelling Units by Frequency of Stages of Development in Production Groups of Certain Sizes

<table>
<thead>
<tr>
<th>Dwelling Units per Production Group</th>
<th>Stages of Development</th>
<th></th>
<th></th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E + C</td>
<td>D</td>
<td>I+Ni+Ne</td>
<td>NC</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>2</td>
<td>12</td>
<td>-</td>
<td>24</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
<td>2</td>
<td>6</td>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
<td>10</td>
<td>18</td>
<td>-</td>
<td>44</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>8</td>
<td>4</td>
<td>10</td>
<td>2</td>
<td>24</td>
</tr>
<tr>
<td>Totals</td>
<td>50</td>
<td>19</td>
<td>51</td>
<td>5</td>
<td>125</td>
</tr>
</tbody>
</table>

$x^2 = 18.79$  \hspace{1cm}  p = 0.30  \hspace{1cm}  df = 15

Abbreviations:  \hspace{1cm}  E = Expanding  \hspace{1cm}  C = Constant  \hspace{1cm}  D = Decline  \hspace{1cm}  I = Infants  \hspace{1cm}  Ni = No Children Initial  \hspace{1cm}  Ne = No Children Ever  \hspace{1cm}  NC = Not Classified

some uncertainty about the exact number of labour units. In no case, however, would the error be great, and it has seemed preferable not to exclude whole production groups because of the relatively slight inaccuracy which my lack of data on these cases might entail.

Another way in which this information can be presented is in terms of the number of production groups in my sample in which there are no dwelling units of a particular stage or one, two or three dwelling units of the same stage. This is shown in Table 6.8.

Once again, the implications of this information are more
clearly seen when the dwelling units are grouped by stage, as in Table 6.9.

This Table shows that in four production groups there is neither an expanding or constant dwelling unit present. These cases are interesting because this indicates that they have no young children of herding age. In most of these cases herding is done by married daughters who have not yet had children. It is highly significant, however, that only twelve production groups have more than one dwelling unit at these stages. This reflects a tendency for such dwelling units to separate themselves from other dwelling units, when the production group will not thereby become unable to manage its herds. The majority of production groups have neither a decline nor infants stage dwelling unit, and of those which do have them the great majority have only one. The no children initial and ever stages, however, are fairly frequently found in twos and threes, but again a substantial number of production groups have no dwelling units at these stages and in most cases where they do there is only one. I have not included in this Table the 'not classified' dwelling units, but each of the five is in a separate production group.

These Tables suggest that there are certain regular patterns in the composition of production groups, and to analyse these patterns I have constructed a classification of production groups. The basic distinction is between production groups where the 'core' is a single 'parental' dwelling unit and those where the dwelling units of two or more siblings are the core. In some cases a production group may comprise only the 'parental' dwelling unit or only a sibling group, and these are two-genera-
### TABLE 6.8. Dwelling Units by Stage of Development by Frequency per Production Group

<table>
<thead>
<tr>
<th>Number of D.U. of Each Stage per Production Group</th>
<th>Stage of Development</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E</td>
</tr>
<tr>
<td>0</td>
<td>14</td>
</tr>
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<td>20</td>
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<td>2</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total per Column</strong></td>
<td><strong>40</strong></td>
</tr>
</tbody>
</table>

### TABLE 6.9. Dwelling Units Grouped by Stage of Development by Frequency per Production Group

<table>
<thead>
<tr>
<th>Number of D.U. of Grouped Stages per Production Group</th>
<th>Stage of Development</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E + C</td>
</tr>
<tr>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>24</td>
</tr>
<tr>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total per Column</strong></td>
<td><strong>40</strong></td>
</tr>
</tbody>
</table>

Production groups. Where there are three or four generations present it is in some cases difficult to decide whether the 'parental' dwelling unit or the sibling group should be described as the core. On a diagram of the members of a production group there are as many of the following general form.
In these cases the question of which is the core depends fundamentally on the stage of development of the various dwelling units. If the parental dwelling unit is at the constant stage, the filial dwelling units are in most cases in the early stages of development. On the other hand, where the parental unit is in the decline stage, the filial dwelling units are more likely to be in the infants and expanding stages. Ambiguity only arises in a small number of cases, because in many it is found either that the parental unit contains only a widow, and it is clear that the great majority of livestock are at present held by the filial sibling group or in others that the filial group is not all married and those which are married are in the no children initial or infants stages, in which case much of the wealth of the group is still under the managerial control of the parental dwelling unit. One of the ambiguous cases is Aicho Hamlet 2 which I described in Chapter 5, where the parental dwelling unit is in decline, but the father is still alive and active in herd management. I have classified this production group as having a core based on a sibling group, and one of the factors which
Figure 6.1a. Animal Units and Labour Units of 36 Production Groups in Aicho

Animal Units

Labour Units

$r = 0.75$

$r^2 = 0.56$
Figure 6.1.b. Animal Units and Labour Units of 36 Kandeidi Production Groups

Animal Units

Labour Units

$r = 0.49$

$r^2 = 0.24$
justifies this is that the second son has taken over responsibility for the tax of the group from his father. The existence of some possible ambiguity indicates that the classification is not perfect, but it does seem to me to help to elucidate some aspects of the production groups.

Each of these two major classes is further subdivided according to whether the core group is alone, or has the grandparental or filial (married) generation present, or both of these. I have added a category of multiple-parental production groups for the two cases where there are several dwelling units which do not belong to actual siblings but to cousins. In some respects these production groups are similar to those based on siblings. There are also four production groups which I have not classified. In two of these cases the parental dwelling units is based on a re-marriage of the man whose daughter possesses the other dwelling unit. In another case the production unit comprised only a widow and her married daughter at the time of my survey. This production group was part of a hamlet in which it was normally a member of a single larger production group, since the husband of the daughter is the brother of the head of the other production group. During the absence of the husband on prolonged labour migration the widow and daughter temporarily separated their own animals, and, with the daughter herding, operated as a separate production group. This is one of the cases where there is no dwelling unit in the expanding or constant stages. The fourth production group which I have not classified comprises the dwelling units of an elderly woman who was widowed and married a widower of similar age, the married
daughter of this woman, a half-brother of the woman and the
dwelling unit which separated from Hamlet 2, in which both hus-
band and wife are second cousins of the woman and her half-
brother.

The classification has too many categories for useful
application, but it is capable of simplification by re-grouping
in two ways. The two main classes can be used, or alternatively
the combination of corresponding sub-divisions in each of these
two main classes. The latter could, for example, group together
production groups with a 'parental' core plus the filial genera-
tion and a sibling group plus the filial generation, this is a
shorthand for the 'filial married generation'.

The distribution of production groups in the full classifi-
cation and in each of these re-aggregations is shown in Table 6.
10.

It can be seen that production groups in Aicho are
divided almost equally between the two main classes and that
there are similar numbers lineally extended in each of the three
ways.

The distribution of dwelling units by stage of development
among the classes is shown in simplified form with groups of
the same lineal extension combined in Table 6.11.

Clearly in this table the two modes of classification are
highly interlinked, and therefore no Chi square is used. It is
notable that the dwelling units in the expanding stage are
clustered in the 'alone' and 'plus grandparental' types of
production group, while the constant stage dwelling units are
virtually confined to the 'plus filial' and 'both grandparental
and filial' types of production groups. The one case of a
TABLE 6.10 Classification of Production Groups

<table>
<thead>
<tr>
<th>Main Classes</th>
<th>Alone</th>
<th>Plus Grandparents</th>
<th>Sub-classes</th>
<th>Multiple</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>'Parental'</td>
<td>6</td>
<td>2</td>
<td>7</td>
<td>2</td>
<td>19</td>
</tr>
<tr>
<td>'Siblings'</td>
<td>4</td>
<td>7</td>
<td>4</td>
<td>2</td>
<td>17</td>
</tr>
<tr>
<td>Totals</td>
<td>10</td>
<td>9</td>
<td>11</td>
<td>4</td>
<td>36</td>
</tr>
</tbody>
</table>

Unclassified: 4
Overall Total: 40

The constant stage dwelling unit in the 'plus grandparental' type of production group is that of the senior brother in Aicho hamlet 35 discussed in Chapter 5. More apparently anomalous are the two decline stage dwelling units in the 'plus filial' category; these two are in the same production group and belong to two of the three siblings who are the core of the group. One of these is a borderline case between the constant and decline stages and I have classified it in the latter because of six of the nine offspring are married, including a son, while the other is that of a widow all three of whose children are married. This was in fact an unusual sibling group having remained a production group even with the siblings all elderly. Turning to the infants and the no children initial stages, these are predictably clustered in the 'plus filial' category. The full data used for this Table are shown in Table 6.A.3 in the Appendix.
Having discussed these various modes of classification I can now conclude this section by cross-classifying production groups by the category of its composition and the herding pattern. This is shown in Tables 6.12 and 6.13.

In both of these Tables the differences between the categories of production group in their herding pattern are most apparent at the two extremes. In the 'not split' herding system based on goats, a high proportion of production groups are, firstly, composed of two generations only, and secondly, are based around a core of a single 'parental' dwelling unit.

At the other extreme, the production groups which have both camels and sheep in split herds are firstly, overwhelmingly based on a sibling group, and secondly are predominantly based on a sibling group in which the grandparental generation is still

| TABLE 6.11 Distribution of Dwelling Units by Stage of Development in Categories of Production Groups |
|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|
| Production Groups (Parental and Siblings) | Stage of Development |
| | E | C | D | I | Ni | Ne | NC | Total |
| Alone | 11 | - | - | 2 | 2 | 1 | 2 | 18 |
| +Grandparental | 12 | 1 | 10 | 2 | 5 | 5 | - | 33 |
| +Filial | 2 | 14 | 2 | 6 | 13 | 2 | 2 | 41 |
| +Both | 3 | 3 | 4 | 1 | 3 | 3 | - | 17 |
| Multiple and not classified | 5 | - | 3 | 4 | 1 | 2 | 1 | 16 |
| Total | 33 | 18 | 19 | 15 | 24 | 11 | 5 | 125 |
### TABLE 6.12. Herding Pattern by Composition of the Production Group (1. Parental and Siblings categories combined)

<table>
<thead>
<tr>
<th>Production Groups (Parental and Siblings)</th>
<th>Not Split</th>
<th>Split Sheep &amp; Camels</th>
<th>Split Sheep</th>
<th>Split Camels</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alone</td>
<td>8</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>10</td>
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<tr>
<td>+Grandparental</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>+Pilial</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>+Both</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Multiple and Not classified</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>Totals</td>
<td>18</td>
<td>9</td>
<td>6</td>
<td>7</td>
<td>40</td>
</tr>
</tbody>
</table>

$\chi^2 = 16.89 \quad p = 0.20$

$df = 12$

### TABLE 6.13 Herding Pattern by Composition of the Production Group (2. All Parental, All Siblings)

<table>
<thead>
<tr>
<th>Production Groups</th>
<th>Not Split</th>
<th>Split Sheep &amp; Camels</th>
<th>Split Sheep</th>
<th>Split Camels</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
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<td>10</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>All Siblings</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>17</td>
</tr>
<tr>
<td>Multiple and Not Classified</td>
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<td>1</td>
<td>2</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>Totals</td>
<td>18</td>
<td>9</td>
<td>6</td>
<td>7</td>
<td>40</td>
</tr>
</tbody>
</table>

$\chi^2 = 8.728 \quad p = 0.20$

$df = 6$
represented. Between these extremes, where there is in effect a choice between goats plus camels or goats plus sheep, it is notable that the majority of production groups with these two types of split herd in the 'plus filial' type, that is where the constant and no children initial stages of dwelling units are predominant. Equally significant, however, is the fact that there are production groups of all types of composition which possess only goats. Also the discovery of these trends should not lead one to overlook the fact that there are production groups of all types of composition involved in virtually all herding patterns. I emphasise that the trends I have indicated by means of these Tables do not reflect a deterministic relationship between types of social group and different sizes of herd and herd management system. Nevertheless, the trends are strong enough to justify some general observations on the effect of patterns of livestock ownership and management on the developmental cycle of production groups, which could equally be called 'domestic groups'.

THE DEVELOPMENTAL CYCLE

My basic point in this conclusion of the chapter is that fission of a sibling group is characteristically at an earlier time in the life cycle of its members when the property of the siblings is predominantly in the form of goats. It has been shown in Chapter 3 that goats are normally herded by young children, and it is this fact which makes it possible for members of a sibling group to be in a position to detach their own property from the 'original' (i.e. grand-parental) herd
are in the expanding stage (the other is not classified) and none is involved in a split herd. This is not to suggest that all such dwelling units do assert independence in this way, and clearly there are some which are unable to do so because there are other dwelling units, which are non-viable as units, dependent on them for herders. And clearly also the assertion of independence does not necessarily imply forming a single dwelling unit production group. The separation from Hamlet 2 of the eldest son's dwelling unit, and its subsequent attachment to another hamlet before it joined the hamlet of the husband's and wife's second cousins, was such an assertion of independence, following some years of antagonism between father and son, though the fact that the son's dwelling unit was in the expanding stage is clearly a relevant factor in the timing of his separation.

The Aicho hamlets 2 and 35, which I discussed in the last chapter, are at the other end of the spectrum, compared with the production groups with only goats. I have remarked that the presence of the grandparental dwelling unit may be a focus of the unity of these production groups, but clearly the extent to which the members of such production units depend on cooperation of all the other members can be related to their joint interests in a very substantial productive resource and the prestige which derives from it.

I have remarked that before the drought there were a number of exceptionally large and relatively sedentary hamlets which had split up at the time of my survey. The largest of
these in Aicho area demonstrates the extent to which co-ordination of pastoral activities can delay the fission of domestic groups. The constituent dwelling units of this hamlet are now separated into no fewer than nine different hamlets, some having joined other existing hamlets, but the majority having formed independent hamlets. It is clear from the present levels of wealth of the members of the separate production groups that this was in aggregate an exceptionally wealthy hamlet. It comprised three main inter-related and intensely inter-married sibling groups, and had originally been the home of the fathers of these groups of siblings. Unfortunately my information on the exact nature of the organization of herds in the hamlet is not complete, but it seems there were several production groups defined on the basis of the management of goats, although some of the male goats from each of these production groups were combined with some of the sheep in a split herd. All the sheep and camels were formed into split herds which were kept at a distance from the hamlet. This arrangement left sufficient grazing in the vicinity of the hamlet for the very considerable numbers of breeding goats owned, and may also have been dictated by the fact that these goats consumed most of the water available in wells to which the members of the hamlet had rights at Aicho.

I estimate that prior to the drought the members of this hamlet in aggregate may have possessed livestock equivalent to four thousand animal units. I suggest that the reason why the hamlet was so large was that this was the only way to mobilise sufficient herdsmen of the appropriate ages to manage these animals. In other words, there was an acute need to maximise the
productivity of labour.

It was not only the fall in the number of animals during the drought which led to the fragmentation of this hamlet. It broke up just at the time when the elder children of several of the senior siblings married. The maturity of the children and the fall in the number of animals made it possible for smaller production groups to be viable. Some of these production groups continued to co-operate in herding sheep and camels, but in a number of other cases the flocks and herds are kept all year in the settled area. Paradoxically, therefore, it seems that in the process of fragmentation, the number of animals requiring fodder in the settled area increased, and this occurred just at the time when fodder was most scarce. This appears to be one of the factors in the extreme dispersal of the present separate production groups.

This very large hamlet was formed by a number of closely related men of moderate wealth and prospered because the children of these men were numerous and in turn have produced numerous children who are now adults. They were able to manage their livestock very successfully until the point was reached where management of such a great number of livestock was itself a problem. At the time of the drought those dwelling units which were more advanced in their own development were able to separate and maintain a reasonably efficient system of herd management, while a few of the more junior dwelling units suffered relatively great losses of livestock. Unless these losses are made up by compensatory gifts when the fear of losing all animals from continued drought has passed, these relatively
junior dwelling units left with only a few goats will remain relatively poor, and the chances are that their children will also be poor.

Thus the production groups which have no split herd are in the position that, except in favourable climatic conditions, the rate of herd growth is no greater than and may be less than the rate of human reproduction. The very meagreness of their resources is one reason why there is earlier fission of such domestic groups. Daughters and some sons leave the group on marriage to join a better-off group, while others seek to advance their own fortune by setting up an independent production group, often in a relatively isolated location, where they alone are responsible for their herd and they alone depend on it for sustenance.

The majority of the population possess reasonable numbers of animals. Their pattern of social and pastoral behaviour may be described as the normal Meidob pattern. Fission of the domestic group occurs as each dwelling unit reaches the point of having children able to herd, unless there are parents or siblings who have no children to manage their animals. In normal circumstances the growth in the number of goats is sufficient to meet consumption needs, so there is rarely a need to slaughter or sell a potentially productive sheep or camel, and the growth in the number of animals can be in pace with the growth of the number of people, with more and more of the herd growth in the flock of sheep or herd of camels as the domestic cycle progresses.

At the apex of the spectrum of wealth there are domestic groups in which fission is delayed to the point where the children of the members of the sibling group are themselves
beginning to marry. It may be that the occurrence of several marriages of children of the siblings in a short space of time marks an 'individuation' of effective rights to livestock as 'heirs' are able to exercise rights until then exercised by the holders. The very late fission of the wealthiest domestic groups serves to accentuate the socially pivotal position of the founding grandfather or grandfathers of these groups, and it is groups of this sort which constitute the largest and most solidary dirriia.

In a pastoral society the ideal situation is where the rate of herd growth corresponds to, or is greater than, the rate of human reproduction. This has been the situation among the Meidoh over the last fifty years. However, there have been considerable differences between people in the rate at which their herds have increased. These differences are reflected in the types of domestic groups, and in particular in the post-marital residence patterns which have a considerable effect in articulating the composition of domestic groups.

There is an underlying tendency towards fission of domestic groups. This is related in part to the limited spatial mobility of settlements, since dispersal is necessary to spread the settlement-based herds as widely and as evenly as possible over the area accessible to water sources. Local dispersal within neighbourhoods reflects the need for fodder for calves and kids. The dispersal is also conditioned by the fact that the general level of wealth enables small groups to gain subsistence from the animals they own. Within the population as a whole, however, less than half the dwelling units have an adequate labour force to manage their animals independently. Many of
those which might be able to do so have other dwelling units depending on them for labour. Therefore the herd management groups, which I have called production groups, are normally composed of several dwelling units. The patterns of combination reflect closely the number and types of animals owned, and in this way considerations of pastoral viability play a considerable role in social organization.
CHAPTER SIX
Appendices

1. Tabulations of Data on Production Groups

2. Tables for Kondeidi
<table>
<thead>
<tr>
<th>Production Dwelling Unit Group No.</th>
<th>Labour Units</th>
<th>Animal Units</th>
<th>Camels</th>
<th>Cattle</th>
<th>Sheep</th>
<th>Goats</th>
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<td>-</td>
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<td>30</td>
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<tr>
<td>D+I+Ne+E+E+E+D</td>
<td>47</td>
<td>636</td>
<td>34</td>
<td>-</td>
<td>85</td>
<td>245</td>
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<td>342</td>
<td>16</td>
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<td>70</td>
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<td>2</td>
<td>-</td>
<td>-</td>
<td>40</td>
</tr>
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<td>-</td>
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<td>Ni+NC+E</td>
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<td>1</td>
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<tr>
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<td>Sheep</td>
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</table>
TABLE 6.A.3 Distribution of Dwelling Units by Stage of Development in Categories of Production Groups.
(Ungrouped; cf Table 6.11) Aicho.

<table>
<thead>
<tr>
<th>Production Groups</th>
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<th>Stage of Development</th>
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<td>-</td>
</tr>
<tr>
<td>+ Grand-</td>
<td>2</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>parental</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>+Filial</td>
<td>1</td>
<td>8</td>
<td>-</td>
</tr>
<tr>
<td>+Both</td>
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<td>2</td>
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<td>-</td>
</tr>
<tr>
<td>+Grand-</td>
<td>10</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>parental</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+Filial</td>
<td>1</td>
<td>6</td>
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</tr>
<tr>
<td>+Both</td>
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</tr>
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<td>Parental</td>
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\[ X^2 = 93.35 \quad p = \]
\[ df = 54 \]
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<th>Total</th>
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</thead>
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<td></td>
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<td>I</td>
</tr>
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<td></td>
</tr>
<tr>
<td>Alone</td>
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<td>-</td>
</tr>
<tr>
<td>+Grand parental</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
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<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>+Both</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
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</tr>
<tr>
<td>Alone</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>+Grand parental</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
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<td>2</td>
</tr>
<tr>
<td>+Both</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
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<td>-</td>
<td>1</td>
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<tr>
<td>Not Classified</td>
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<td>2</td>
<td>-</td>
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<td>10</td>
<td>10</td>
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\[ x^2 = 56.09 \quad p = \]
\[ df = 40 \]
### TABLE 6.2. (b) Herding Pattern by Quartiles of Animal Units. (Kondeidi)

<table>
<thead>
<tr>
<th>Animal Units</th>
<th>Not Split</th>
<th>Split Camels</th>
<th>Split Sheep</th>
<th>Split Sheep &amp; Camels</th>
<th>Number of Production Groups</th>
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</thead>
<tbody>
<tr>
<td>1st Quartile (under 40)</td>
<td>9</td>
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<tr>
<td>2nd Quartile (40-89)</td>
<td>7</td>
<td>-</td>
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<td>-</td>
<td>9</td>
</tr>
<tr>
<td>3rd Quartile (90-160)</td>
<td>8</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>9</td>
</tr>
<tr>
<td>4th Quartile (over 160)</td>
<td>-</td>
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<td>2</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Totals</td>
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<td>4</td>
<td>4</td>
<td>4</td>
<td>36</td>
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</table>

\[ X^2 = 30.33 \quad p = 0.001 \]
\[ df = 9 \]

### TABLE 6.3. (b) Herding Pattern by Quartiles of Animal Units with Mean and Range of Animal Units per Cell. (Kondeidi)

<table>
<thead>
<tr>
<th>Animal Units</th>
<th>Not Split</th>
<th>Split Camels</th>
<th>Split Sheep</th>
<th>Split Sheep &amp; Camels</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Quartile</td>
<td>29.7</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Mean</td>
<td>19-39</td>
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</tr>
<tr>
<td>2nd Quartile</td>
<td>67.1</td>
<td>53-56</td>
<td>64.5</td>
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</tr>
<tr>
<td>Mean</td>
<td>45-88</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Range</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>3rd Quartile</td>
<td>125.6</td>
<td>106</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mean</td>
<td>90-158</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4th Quartile</td>
<td>1</td>
<td>215</td>
<td>230</td>
<td>518.8</td>
</tr>
<tr>
<td>Mean</td>
<td>194-447</td>
<td></td>
<td>200-230</td>
<td>371-709</td>
</tr>
<tr>
<td>Range</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Overall mean</td>
<td>72.6</td>
<td>238.8</td>
<td>112.5</td>
<td>518.8</td>
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</tbody>
</table>

N.B. Quartile divisions differ in values from the Aicho Quartiles
### TABLE 6.5. (b). Herding Pattern by Quartiles of Labour Units with Mean and Range of Labour Units per cell (Kondeidi)

<table>
<thead>
<tr>
<th>Labour Units</th>
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<th>Split Camels</th>
<th>Split Sheep</th>
<th>Split Sheep &amp; Camels</th>
</tr>
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<tbody>
<tr>
<td>1st Quartile Mean Range</td>
<td>9 7-10</td>
<td>7 one case</td>
<td>8 4-10</td>
<td>-</td>
</tr>
<tr>
<td>2nd Quartile Mean Range</td>
<td>12 11-14</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3rd Quartile Mean Range</td>
<td>18.3 15-21</td>
<td>19 one case</td>
<td>15 one case</td>
<td>-</td>
</tr>
<tr>
<td>4th Quartile Mean Range</td>
<td>26.3 22-32</td>
<td>26 two cases</td>
<td>-</td>
<td>25.8 22-35</td>
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<tr>
<td>Overall Mean</td>
<td>14.75</td>
<td>19.5</td>
<td>9.8</td>
<td>25.8</td>
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</table>

N.B. Quartile divisions differ in values from the Alcho quartiles.
TABLE 6.6. (b). Number of Dwelling Units per Production Group. (Kondeidi)

<table>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Production Groups</td>
<td>14</td>
<td>11</td>
<td>7</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>36</td>
</tr>
<tr>
<td>Cumulative % of Dwelling Units</td>
<td>18.9</td>
<td>48.6</td>
<td>77.0</td>
<td>93.2</td>
<td>100.0</td>
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</table>

TABLE 6.7. (b) Number of Dwelling Units by Frequency of Stages of Development in Production Groups of Certain Sizes (Kondeidi)

<table>
<thead>
<tr>
<th>Dwelling Units per Production Group</th>
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<th>D</th>
<th>I+Ni+Ne</th>
<th>NC</th>
<th>Total</th>
</tr>
</thead>
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<tr>
<td>1</td>
<td>10</td>
<td>1</td>
<td>3</td>
<td>-</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
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<tr>
<td>Total</td>
<td>25</td>
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</tbody>
</table>

\[ x^2 = 17.02 \quad p = 0.05 \]
\[ df = 8 \]
### TABLE 6.8. (b). Dwelling Units by Stage of Development by Frequency per Production Group (Kondeidi)

<table>
<thead>
<tr>
<th>Number of D.U. of Each Stage per Production Group</th>
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<th></th>
</tr>
</thead>
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</tr>
<tr>
<td>1</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total per Column</td>
<td>36</td>
<td>36</td>
</tr>
</tbody>
</table>

### TABLE 6.9. (b). Dwelling Units Grouped by Stage of Development by Frequency per Production Group (Kondeidi)

<table>
<thead>
<tr>
<th>Number of D.U. of Grouped Stages per Production Group</th>
<th>Stage of Development</th>
<th>Ni+Ne</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E + C</td>
<td>D</td>
</tr>
<tr>
<td>0</td>
<td>13</td>
<td>26</td>
</tr>
<tr>
<td>1</td>
<td>22</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Total per Column</td>
<td>36</td>
<td>36</td>
</tr>
</tbody>
</table>
TABLE 6.10 (b) Classification of Production Groups \( (\text{Kondeidi}) \)

<table>
<thead>
<tr>
<th>Main Classes</th>
<th>Sub-Classes</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Alone</td>
<td>Plus</td>
<td>Plus</td>
<td>Plus</td>
<td>Multiple</td>
<td>Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'Parental'</td>
<td>14</td>
<td>-</td>
<td>11</td>
<td>1</td>
<td>1</td>
<td>27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'Siblings'</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td></td>
<td></td>
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<tr>
<td>Total</td>
<td>15</td>
<td>2</td>
<td>13</td>
<td>2</td>
<td>1</td>
<td>33</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Not classified: 3
Overall Total: 36

TABLE 6.11(b). Distribution of Dwelling Units by Stage of Development in Categories of Production Groups. \( (\text{Kondeidi}) \)

<table>
<thead>
<tr>
<th>Production Groups (Parental and Siblings)</th>
<th>Stage of Development</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E</td>
<td>C</td>
<td>D</td>
<td>F</td>
<td>N1</td>
<td>Ne</td>
<td>NC</td>
<td>Total</td>
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<td>7</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>4</td>
<td>-</td>
<td>17</td>
</tr>
<tr>
<td>+Grand-parental</td>
<td>3</td>
<td>1.1</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td>+Filial</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>15</td>
<td>1</td>
<td>-</td>
<td>33</td>
</tr>
<tr>
<td>+Both</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td>Multiple and not Classified</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
<td>14</td>
<td>10</td>
<td>10</td>
<td>22</td>
<td>7</td>
<td>-</td>
<td>74</td>
</tr>
</tbody>
</table>

N.B. Compare Full Tabulation in Table 6.A.4.
TABLE 6.12 (b). Herding Pattern by Composition of the Production Group 1. Parental and Siblings Categories Combined (Kondeidi)

<table>
<thead>
<tr>
<th>Production Group (Parental and Siblings)</th>
<th>Not Split</th>
<th>Split Camels</th>
<th>Split Sheep</th>
<th>Split Sheep &amp; Camels</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alone</td>
<td>11</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>+Grand-parental</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>+Pilial</td>
<td>9</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>+Both</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Multiple and not classified</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>36</td>
</tr>
</tbody>
</table>

$X^2 = 9.78$  $p = 0.70$
$df = 12$

TABLE 6.13 (b). Herding Pattern by Composition of the Production Group 2. All Parental, All Siblings (Kondeidi)

<table>
<thead>
<tr>
<th>Production Groups</th>
<th>Not Split</th>
<th>Split Camels</th>
<th>Split Sheep</th>
<th>Split Sheep &amp; Camels</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Parental</td>
<td>19</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>26</td>
</tr>
<tr>
<td>All Siblings</td>
<td>4</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Multiple and Not Classified</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>36</td>
</tr>
</tbody>
</table>

$X^2 = 4.84$  $p = 0.50$
$df = 6$
CHAPTER SEVEN
CONCLUSIONS AND COMPARISONS

INTRODUCTION

In a review of some of the literature on pastoral societies, Dyson-Hudson (1972) emphasised the existence of two styles of exposition. On the one hand there are studies in the Orientalist and geographical tradition made by authors with little or no direct experience of a pastoral society; studies in this tradition tend to be comparative, and a characteristic of them is the 'ideal type' category, notably the 'nomadic', 'semi-nomadic', etc. stereotypes. On the other hand there are studies which derive from fieldwork, which have the characteristic form of:

"... the analytical description of variables in a system, whereby general patterns are indicated through describing and inter-connecting particular instances."

(Dyson-Hudson, 1972: 6)

He implies, however, that the latter style of description has not been taken far enough, for he states:

"If we are to build on the analytical gains of the fifties (i.e. 1950s), we must pursue a behavioural and realist line of thought as systematically and rigorously as possible. We should try (for working purposes) to cultivate assumptions of variability rather than invariance, of contingency rather than regularity, of individuality rather than typicality... In short, by assuming variability, we are led to look for variables." (Ibid: 9)

It seems clear to me that the extent of variation in behaviour within particular pastoral societies has not yet been fully appreciated by many people who are concerned with understanding them. This is perhaps most especially true of people who are in one way or another concerned with contemporary pastoralism, for example in explaining apparent ecological degradation of rangelands, or in formulating plans for the development of
pastoral societies. However, if we are seriously concerned to
demonstrate the importance of variability, it is necessary to
do more than assert that this is so, and quote one or two 'apt
illustrations' as our proof. Ideally we should attempt to
measure the extent of variability, and this means quantification
of some sort.

Dyson-Hudson is plainly aware of the need for greater
sophistication in the data we use in studying pastoral societies.
Indeed, he relates the construction of abstract 'ideal types'
to the lack of suitable information, and the analytical gains of
the 1950s to the need to handle the higher quality of information
than available. He concludes his paper with an appeal for
anthropologists to take note of the characteristics of domesticated
livestock and their demography. In combination with informa-
tion on human demography, this provides a herding model, which
together with an understanding of spatial mobility encompasses
the phenomenon of 'nomadism'. I would contend, however, that the
type of research advocated by Dyson-Hudson leads away from the
style of fieldwork which led to progress in the 1950s in two
different directions. One of these is the type of multi-discipli-
ary case studies at present being undertaken by the International
Livestock Centre for Africa. The other is the construction of com-
plex simulations of 'possible' situations, with 'realistic'
values for the host of variables culled from disparate sources
in the existing literature. This avenue of research has already
been inaugurated by Dahl and Hjort (1976), who have made an attempt
to tackle, by means of computer-aided simulations, precisely
those aspects of livestock demography which Dyson-Hudson indicated
as needing to be incorporated in the herding model.

The extent to which I can contribute to the understanding of pastoralism as a general phenomenon, within the context of my account of Meidob pastoralism, is limited by the scope of my information. The absence of information on herd demography, on the transfer of livestock between people (in quantitative terms), on the condition of the rangelands, and so forth, is a serious limitation. In principle these topics are accessible to enquiry. My neglect of them has much to do with the fact that an initial step in one direction calls for further extensive research in other directions. Nor would perfect information on the present situation - the drought apart - have fully satisfied my requirements. In each of these areas of study the situation is dynamic, and it is very difficult to imagine how information on even the recent past could be collected by any means. The solution to this problem is probably to combine the best possible information on the present with simulation techniques. This seems to be the only way to operate the 'model of a pastoral system' I can envisage, and which no doubt others also are thinking of.

The livestock aspects of the herding model, although of great interest in themselves, would serve primarily as a means of gaining greater insights into the human aspects, and as a means of testing hypotheses. The relationship I have shown between livestock numbers and the composition of domestic groups, for example, is clearly likely to change over time. This raises the issue of the applicability of the developmental cycle. Fortes has stated that the model of the developmental cycle is a way of incorporating the 'time factor' (1958: 1); in particular it is a way of understanding processes for which only synchronic data is
available. Underlying this use of synchronic data is the assumption of some degree of stability over time. This is part of what Fortes means when he refers to 'homogeneous societies', though his use of the term homogeneous is related more specifically to the absence of economic differentiation. Fortes' own use of the model in Ashanti (1949, repr. 1970) and subsequent analyses, for example by Hill (1972) on the Hausa, show that change and economic differentiation do not preclude its application; but they surely complicate the use of synchronic data. Where change has been very rapid, succeeding generations may experience very different conditions. I do not wish to speculate how much temporal stability must exist for the developmental cycle to be analysed by means of synchronic data. I would emphasise, however, that substantial change has occurred among the Meidob. This may well have affected the timing of fission of domestic groups. On the one hand the lesser numbers of animals owned, for instance, thirty years ago, may have reduced the number of herders needed. On the other hand, fewer dwelling units may have possessed sufficient animals to gain adequate subsistence from them, in which case they will have tended to combine with other dwelling units. Other factors, such as the amount of cash required and the number of children at school enter into the balance of the domestic group and herd. It seems to me that the overall form of the developmental cycle has not changed, and that there may well in the past have been a similar degree of variation in the timing of fission. What this amounts to is that viability itself is not fixed, but rather is sensitive to a number of factors. Among these factors are the actual proportions of different types of animals owned, the location and type of pasture and water sources, the margin
between stocking rate and carrying capacity, the frequency of years of low rainfall, the risk of having animals stolen, and so forth.

I have emphasised that there are important variations in the composition of dwelling units and production groups. The dwelling unit is the basic consumption, reproduction and residential unit. Variations in its composition are determined to a great extent by the number and ages of children, and it can be said in this sense that it reflects the demographic pattern. It is also affected by the presence or absence of the husband/father. Variations in the composition of production groups are largely attributable to the number and type of animals in the 'family herd'. I suggest that these types of variability are closely linked. A small basic dwelling unit is adaptive because it allows flexibility of alignment with other dwelling units to achieve viability; and the reason why so many dwelling units need to combine with others is, at least in part, because of their vulnerability to demographic circumstances which make them non-viable.

I would emphasise that there are particular features of the Meidob situation which make the variation in domestic groups particularly important for an understanding of the pastoral system. The most obvious of these is the fact that there are three main types of livestock herded. The number of children is a particularly important element in the viability of Meidob domestic groups, and this is why the demographic pattern is of relevance. I do not doubt that in other pastoral societies there may be firstly, less actual variation in domestic groups and secondly, less reason to investigate whatever variations there are.
But I would also add, as a footnote to Dyson-Hudson's programme for the future of studies of pastoralism, that, apart from looking at the variables of the herded, we should satisfy ourselves that we have accounted for variability in the herders.

In this conclusion I shall summarize my description of the Meidob pastoral system by considering its development over time (diachronic variation) and the differentiation which exists at present (synchronic variation). These are treated separately solely for convenience. Next I shall attempt to clarify further certain aspects of the system by comparing it with that of the Kababish, and in less detail, that of the Zagha wa. Finally, I shall attempt to place my use of the concept of viability in a broader context by reviewing its use in other studies of pastoral societies.

ON DIACHRONIC VARIATION

If we consider just the period of the hundred years up to the drought, the dominant feature of Meidob pastoralism has been expansion. Especially since 1916 the human population, the livestock population and the area exploited by them have all grown. The political stability of the region seems to have been a major reason for this, but the spatial expansion of exploitable resources and the absence of a major drought (up to the 1960s) provided a favourable environment for growth. The opening up of new water sources, the availability of veterinary medicines and the market opportunities provided by urban growth have all had the effect of facilitating expansion in the livestock population. The rise in prosperity has contributed to the increase in the human population, in all probability more than the provision of health services,
which has been recent and is still extremely limited. An important factor in the growth of population has been the lack of any substantial tendency for emigration, which can be attributed in part to the expansion of the Meidob economy and in part to the limited opportunities provided by development elsewhere in Sudan.

Apart from the mass exodus during the recent drought, the net loss of population by emigration has been marginal, and may in fact have been balanced by a small immigration of Kababish who have settled in Bar Meidob.

One effect of the increase in the human population has been to increase the density of settlement in areas accessible to traditional wells. Most of the bore-wells have been sited in places not very far from these wells, and only a few have radically extended the area available for settlement in the dry season by opening up formerly deserted areas. Overall, the effect of the bore-wells has been to extend outwards the settled zone and to relieve some of the pressure on the traditional well-centres (above all by providing water for large herds and flocks), but the net result has still been an increase in density. Coupled with this there has been a marked dispersion of hamlets within the settled areas. This may be partly a result of the greater numbers of settlement-based livestock, but it is also a reflection of the lesser need to congregate in large hamlets compared with the era before 1916 when hamlets were liable to be raided. It seems probable that the large hamlets headed by 'big-men' were considerably more heterogeneous in terms of wealth than most hamlets at present. The communal mens' eating house (T. *ayni* Ar. *dsra*, it no longer exists) would have functioned in part as a means of distributing available food, especially meat, among the male
population. One of the reasons for dispersal, if not the major reason, may have been that more people had sufficient animals to derive a livelihood from them.

The maximum distance from the wells of a dry season settlement is determined by the need to water the settlement-based livestock and to collect water every third day. The area which can be grazed by these herds then depends upon the range possible in a daily round trip to and from the settlement, which would not exceed about five kilometres if they are to graze effectively. Thus the area available to settlement-based herds is limited to no more than about 20 km around a well centre. The intensity of grazing in this area depends on the number and types of livestock kept. It would appear that in the early years of this century almost all animals were kept in the settled areas for the greater part of the year. This was possible because of the very small numbers owned by Meidob at that time. It is probably correct to assume that at this time the only use of pasture outside these areas was in the cultivation season, when shallow pools on the plains enabled some animals to be kept away from the growing crops. Nevertheless, the cultivation season is normally the time of year when grain is most scarce and milk most abundant, so most of the available livestock will have been kept near settlements to provide milk. The evidence suggests that cattle, goats and sheep were the predominant livestock at that time.

Natural increase accounts for most of the growth in animal numbers, though in the case of camels theft, and after 1916, exchange of sheep for camels in Omdurman (and perhaps elsewhere) probably accounted for some of the growth. The greatest rate of increase in the number of livestock probably occurred in the
period between about 1925 and the 1950s, conditioned more by the availability of pasture for split herds in the south and in the occasional jizu than by sufficiency of grazing in the settled areas. Until 1960 there were bore-wells in only two locations, so a very large proportion of split herds still had to use traditional well centres. Even if they only stopped in the areas of grazing accessible to settlement-based animals en route and from the wells, they would have consumed a fair proportion of the grazing in these areas. This would have limited the fodder available to the settlement-based animals and must have had a progressively more serious effect on their rate of increase as their actual number increased. Circumstantial evidence for this interpretation of the course of events is available in several forms. Informants maintain that the condition of grazing in the settled areas has deteriorated markedly compared with the 1920s and, and they assert that much of the deterioration occurred many years ago.

The drop in the number of horses to almost nil is strong evidence for the deterioration in grazing, since to have been of any use in the dry season they must at one time had had reasonable fodder (in addition to which they were fed grain, but clearly a time arrived when the quantity of grain they needed to compensate for the lack of pasture in the dry season made them uneconomic).

The situation regarding the intensity of grazing beyond the areas accessible to settlement-based livestock in the dry season is more complicated because of its use by other tribes. Use of these areas by Meidob was probably very limited until about the 1930s, but they had been used by Kababish and Kawahla from about 1916 onwards. It appears that there were quite substantial numbers of Kordofan Arabs in Dar Meidob throughout the
year until they were forbidden to spend the dry season there in 1929/30. From that time until 1950 there were effectively no Kordofan Arabs in Dar Meidob in the dry season, though Zayadiya were allowed access to Malha and perhaps to other wells. After 1950 the situation changed dramatically, when private arrangements with the Kababish in particular gave an agreed number of herds access to not only the new bore-well at Wadi Marreig but also to the larger wells elsewhere.

It was stated firmly in official reports that by the late 1940s Meidob livestock alone were completely exhausting the grazing accessible to the traditional wells in the dry season, and that in years of low rainfall mortality was high. As soon as the bore-well at Wadi Marreig was completed it was having to be operated day and night to cope with the number of animals watering there, which is some indication of the extent to which it was perceived to be advantageous to make use of pasture in the area newly opened up, compared with the area formerly available.

My assessment of the pattern of increase in animal numbers is that the settled areas have been stocked at a density somewhat exceeding the carrying capacity for at least the past thirty years and possibly for as long as forty years. The construction of bore-wells, most of which were opened in the 1960s, may have reduced the actual stocking rate of these areas, but it seems unlikely that this resulted in an increase in the number of settlement-based livestock, since there was comparatively little rainfall throughout the 1960s, and this would have kept the level of mortality fairly high. The really great difference in the last fifty years has been in the proportion of camels and sheep in the 'Meidob herd'. Until the drought their number seems to have
increased very substantially, with correspondingly greater use made of more distant pastures in Dar Meidob. It seems arguable that any future development of bore-wells should be in areas north and north west of the Jebel, specifically for split-herds, rather than for settlement.

If we adopt a longer time perspective than the last hundred years, it is plausible that the ratio of livestock to humans was as favourable in the middle of the nineteenth century as it was in the 1850s. Under the Fur Sultanate the Meidob may have enjoyed peaceful conditions such as they have experienced since 1916. It is possible to speculate that the prosperity of the Meidob had achieved recently was a return to the status quo ante. This is merely a speculation, for there is no substantive evidence. However, I would re-emphasise that the last quarter of the nineteenth century was in some ways more traumatic than the recent drought. The starting point of my discussion of change was therefore a low point in Meidob history.

ON SYNCHRONIC VARIATION

At the time of my survey there were considerable differences in the numbers and types of animals owned by individuals in the areas I studied. I have attempted to show that these differences are related to different patterns of the composition of production groups and in the way herds are managed, i.e. differences in pastoral behaviour.

These differences are not indicated in the appearance of settlements, except to some extent in their size. One reason for this is that only goats and cattle are associated with the settlements. The herders of split flocks and herds do not make
any form of camp with shelters, and so they leave no permanent sign on the landscape of their distribution and transhumance movements. There is no clear trend in the pattern of seasonal movement of settlements according to the herd management systems.

Nevertheless, the difference between the people involved with split herds and those with all their livestock based on the settlements is fundamental. This difference centres on the long-term growth rates of herds, and while I have not been able to demonstrate this conclusively, either in terms of herd structure and reproduction at the time of my survey or by reference to recent historical information on the livestock population, the case for this argument seems convincing.

The increased security against losses by disease and the different fodder requirements of different animals is one reason why ownership of several types of animals is associated with relatively rapid increase in prosperity. In addition to the basic fact of diversification, there is the difference in the way sheep and camels, as opposed to goats and cattle, are managed by the Meidob. In favourable circumstances a split herd which migrates to the fullest possible extent may be able to obtain nutritious fodder for as much as nine months of the year. In contrast to this, the nutritional status of animals kept for the whole year in the same area declines continuously from the end of September to June or July, even in a year when fodder is most abundant, and allowing for the fact that crop residues may be available. I would consider it very probable that the differences between settlement-based and split-herds are of the same magnitude as the differences demonstrated for 'sedentary'
and 'migratory' cattle in Southern Darfur.

The fact that the differences in herd management reflect and accentuate differences in wealth is related to the principles of ownership and the patterns of acquisition of livestock. Each individual's livestock holding is obtained by gift, and to a lesser extent by inheritance, and increase of the holding depends almost entirely on the rate at which the animals reproduce. The nature of property rights is probably related to the long tradition of market-orientation in Mroid pastoralism. In the present grazing situation, the type of animals acquired may well be more important than the number received as gifts, so that only if a child receives sheep and camels which are managed in a split herd is there a reasonable probability that he or she will prosper.

The apparently perverse behaviour of Mroid in keeping animals in areas that are overstocked can be understood in the light of the pattern of ownership. One of the reasons why goats and cattle are restricted to the settled areas is simply that they provide milk for their owners. Because they return to the settlements every night they are limited to an area of about twenty kilometres radius around a well centre. To make the fullest use of the available fodder the settlements are small and dispersed. One important aspect of the dispersal is the need for the fruit and leaves of trees for calves and kids which spend all the time in the settlement.

The intensity of grazing in the settled area would be reduced if only the lactating goats and cows were kept at the settlements. It would seem rational to separate the immature female goats and calves, the mature animals which are not lactating and the male animals (apart from the mature males needed for
breeding) and to manage them in a manner similar to that of the split herds. With the present settlement pattern, few production groups have herders who could herd these animals, however. This would only be possible in larger co-operating groups. The fact that most production groups are too small to have the additional herders is only part of the reason for the absence of this response to the shortage of fodder. The other reason is the nature of pasture rights. There is no incentive for one production group to adopt this policy unilaterally, because they have no guarantee that other groups will not bring their animals to use the fodder which would be conserved by this practice. Therefore, instead of forming large production groups which would be capable of alleviating (at least in the short-term) the overstocking of settled areas, the population is divided into many small production groups.

If the dispersal into small production groups is conditioned by the way goats and cattle are managed, the extent of fragmentation of production groups the members of which own sheep and/or camels is limited by the need for a greater number of herders with a greater range of ages. The people whose animals are pastured together in a split herd do not necessarily live in the same settlement; but groups of closely-related owners settle together in order to have enough herders to manage their several types of animals. Unexpectedly, perhaps, the people who own the largest numbers of livestock do not cause as much overgrazing as the people who own only goats. Indeed, the wealthiest merchants, sheikhs, and omdas keep only a minimum number of goats and cattle for milk. Almost all of their livestock wealth consists of sheep
and camels, which are managed mainly by hired herders. These herds are the most mobile of all Meidob livestock.  

A CONTROLLED COMPARISON: THE PASTORAL SYSTEMS OF THE MEIDOB AND THE KABABISH

On the face of it the Meidob and the Kababish are very different sorts of pastoralists, even though they live at the same latitude and their Dars are broadly similar in respect of rainfall and vegetation. The Meidob live in houses which are permanent structures, and they move only limited distances, if at all, in a seasonal routine. The Kababish live in tents and make an annual oscillating movement between wet season pastures in the west and their permanent water sources in the east. There is a similar marked contrast in the role of cultivation, for Asad quotes a local estimate that only about 3 per cent of Kababish cultivate (1970:35), while my observation suggests that virtually all able-bodied Meidob have cultivations.  

There are, as I have pointed out, similarities between the tribes in the migratory routine of what I have referred to as split-herds, but in terms of actual distances the Kababish herds move greater distances. They (and the Kawahla) are famous for the fact that migration to the jiru pastures, when they appear, involves a journey of up to 800 kilometres, the longest pastoral migration in Sudan (Lebon, 1965: 118) and surely one of the longest regular migrations in the world. Clearly the Kababish are 'fully nomadic', while the Meidob fall under the awkward rubric 'semi-nomadic'.

Given these apparent differences in 'pastoral behaviour' between the Meidob and the Kababish, it might be expected that the Kababish are wealthier than the Meidob. This would be con-
sistent with the view of pastoralists which sees the extent to which they are nomadic as related to their ability to subsist on the products of their herds. I have argued that among the Meidob only the wealthier people are involved in the longest seasonal movements of herds, and Asad suggests that the same is true of the Kababish (1970: 19 et seq.). In fact, however, there is some basis for regarding the Meidob as wealthier than the Kababish. The relevant figures, showing the numbers of animals and animal units per person, are given in Table 7.1.5

**TABLE 7.1. Livestock per Person: Kababish 1964, Meidob 1972**

<table>
<thead>
<tr>
<th></th>
<th>Camels</th>
<th>Sheep</th>
<th>Goats</th>
<th>Cattle</th>
<th>Animal Units*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kababish 1964</td>
<td>1.96</td>
<td>6.45</td>
<td>1.24</td>
<td>0.68</td>
<td>4.9</td>
</tr>
<tr>
<td>Meidob 1972</td>
<td>1.69</td>
<td>6.88</td>
<td>9.11</td>
<td>1.08</td>
<td>6.3</td>
</tr>
</tbody>
</table>

*Animal Units based on Harrison's (1955) scale, as used by Asad.
Note: See footnote 5 for the figures on which this Table is based.

In terms of Harrison's (1955) scale of animal units, this gives an estimate of relative 'wealth' in a ratio of 1:1.3. Of course, in the space of eight years the herds of the Kababish may have increased to the same number of animal units per person as among the Meidob. This comparison shows, however, that the difference in behaviour between the tribes cannot be attributed to a difference in wealth.

The relative importance of the different types of animals in the two tribes is consistent with the differences in behaviour, even if it does not explain them. Among the Kababish, camels and sheep account for 60 per cent and 22 per cent of animal units,
respectively. Among the Meidob they are only 40 per cent and 18 per cent of animal units. On the other hand, goats are a mere 4 per cent of animal units among the Kababish, but are 24 per cent among the Meidob. There is little difference in the importance of cattle; they are 14 per cent of animal units among the Kababish and 17 per cent among the Meidob. Clearly, the fact that 82 per cent of Kababish animal units are sheep and camels, which may be in split flocks and herds, is consistent with the fact that the Kababish are nomadic pastoralists. The sedentary pattern of the Meidob is consistent with the fact that 41 per cent of their animal units are goats and cattle, which are settlement based.

An explanation of these differences must be looked for in other factors. A major factor appears to be the difference between the tribes in the nature of rights to fixed natural resources, particularly wells. The nature of rights to wells in each case can be explained in part by their spatial distribution and physical form, and in part by reference to the historical experience of the tribes and their political systems. The wells in Dar Meidob (apart from the bore-wells) are permanent constructions, excavated through rock. They are privately owned by 'rope-holders'. They are distributed in and around the hills, and so give access to pasture in a considerable proportion of the Dar. The Meidob themselves are divided into territorial sections, which are the political units of the tribe. The sections appear to have developed, at least in part, out of the communities based on different well-centres. The association of people and well-centres is of long standing, and may be properly described as 'traditional'. The recent construction of bore-wells does not seem to have changed
this situation to a great extent, except in the case of Malha, where the bore-well and market have attracted people from all parts of the Dar. Although there is no doubt overgrazing in the areas accessible to well-centres, this has not, so far at least, precipitated major changes in the distribution of settlement. The importance of cultivation is one reason, apparently, for the fact that Weidob have not become more transhumant in response to the overgrazing in settled areas.

Among the Kababish, on the other hand, one of the reasons for the transhumance to the west in the wet season is to preserve grazing around the main dry season water sources. These water sources are numerous, but they are rather localized in the centre of the Dar. Apart from a few sania and a few bore-wells in the extreme south-west of Dar Kababish, the water sources are mostly tamads dug in the sand of wadi beds. These tamads are completely obliterated by the first flow of water in the wadi in the wet season, so there is literally no permanent object over which to claim rights. This is ultimately a reflection of the geology and topography of the area.

The nature of the water sources is one reason why there is no necessary long-term attachment of individual Kababish to particular dry season areas. One result of this is that members of all sub-clans are present in all parts of Dar Kababish. The other reason for the lack of corporateness of clans or sub-clans, is of course, the pattern of political organization of the Kababish, with extreme concentration of power in the hands of the Awlad Fadlallah. I have argued that Kababish unity stems in part from the leadership of 'Ali al-Tom in the occupation (or in local terms, conquest) of new grazing areas. It is consistent
with the fact that this land was gained in the name of the tribe that claims to it by segments of the tribe should not have arisen. The transhumance pattern of the Kababish was in fact established as a means of laying claim to pastures in the west of the Dar, rather than as a purely pastoral adaptation to the ecological potential of the region (cf. Asad, 1970: 163). The fact that the Kababish still to a large extent follow this transhumance pattern can be attributed in the main to the lack of potential for permanent water sources in the west. It is notable that Kababish who spend the whole year in Dar Meidob do not practice an extensive transhumance, but adopt a more or less sedentary location for the household while the herds are mobile.

I have shown that there is a considerable degree of economic differentiation among the Meidob. In the case of the Kababish, the overwhelming preponderance of camels and sheep would appear to suggest that differences in wealth are not associated with variations in the extent of involvement in split herding as among the Meidob. Yet from the figures for animal numbers it seems that a great many Kababish are as poor as many Meidob. Asad remarks that the people in the east have fewer camels and more cattle than the people in the west (1970:24), and this suggests some localization according to wealth. It seems probable that at least some Kababish are concentrated towards the south of the Dar, where cultivation is possible. It certainly appears to be the case that the Kababish with whom the Meidob are in most frequent contact are among the wealthier members of the tribe.

One very important difference between the tribes is indicated by the relative numbers of different types of livestock. The
very small number of goats owned by the Kababish means that the role of young children in the herding system is less than among the Meidob. Conversely, older children and adult men are probably more important as herders. In general, it would seem that the Kababish need fewer herders, and because adult men play a greater role the differences between elementary families in their labour capacity are probably less marked than among the Meidob.

If we look briefly at the Zaghawa of north western Darfur, there is further confirmation of the importance of the distribution of water sources and the political system. The Zaghawa are divided into a number of territorial sections, each centred on one or more main well-centres. There appears to be little or no movement of individuals or livestock between the sections, and in general the livestock spend the whole year in the same area, except where some animals are taken to the jizu (Tubiana, 1971). The seasonal movements of Zaghawa households are on an extremely limited scale, and the majority of people appear to be sedentary.

ON VIABILITY

Dyson-Hudson has divided the subject of nomadic pastoralism into two aspects, herding and spatial mobility. He argues that the central feature of the herding model is 'the phenomenon of coincident populations of livestock and humans' (1972a: 19, 24).

In view of the importance he attaches to this 'phenomenon', it is surprising that so few authors have, up to now, seen this as a major concern in their descriptions of pastoral societics. Since the publication of Stenning's classic paper on pastoral viability in 1958, more authors have made an approving reference
to viability, and in particular to his paper, than have attempted
to employ the concept for analytical purposes. I should add that
in this book 'The Family Herds' Gulliver (1955) deals implicitly
with many of the issues outlined by Stenning. In this section
I shall review some of the literature on pastoral societies to
seek an answer to two questions: firstly, is viability simply
an abstract, and possibly idealized, tendency inherent in
pastoral societies or is it an operational tool which is of
analytical value? Secondly, if viability is an operational tool,
is it effective only in 'threshold' situations, either where live-
stock are too few or too many for the human group (i.e. domestic
group) to be viable, or does it influence the behaviour of all
members of a pastoral society? In other words, how narrowly
do considerations of viability influence behaviour? A corollary
of these questions is the further question of whether there are
differences between pastoral societies which make viability
a useful tool in some but not in others?

At one point in his paper on viability, Stenning himself
gave what may be construed as a hint that viability is an
abstract ideal to which real life in its complexity does not
necessarily conform. He wrote:

"This description has for the moment gone rough-shod
over many palpable demographic, ecological and economic
factors. But it permits the salient ideal feature of
family development among the Pastoral Fulani to be
presented." (1958: 99)

According to my understanding of his paper, the factors he has
omitted in making his outline of the 'ideal' pattern of family
development are considered in turn in the rest of the descrip-
tion. There is, however, a second point which raises some uncer-
tainty regarding Stenning's opinion of the scope of the concept of viability. He was concerned only with those Fulani "who are not farmers, fishers or traders as well as cattle owners" (Ibid: 99). Now, it is not clear whether he would consider the concept to be applicable to those pastoralists with a subsidiary source of income. The evidence by which one could judge whether there are substantial differences in the numbers of cattle owned is not available. I would remark simply that the 'Pastoral Fulani' households he refers to in 'Savanna Nomads' have an average of about ten head of cattle per person, and are thus among the wealthiest pastoralists in Africa. Among people of such great wealth it might be expected firstly, that non-viability because of lack of livestock would be uncommon and could be relatively easily resolved by gifts or loans, and secondly, more specifically among the Pastoral Fulani, that the requirements for herders are relatively easily met, given the typical pattern of herd management and spatial movement.

One point in Stenning's discussion which has raised an objection is his statement that "the simple or compound family is the optimum viable domestic unit in pastoral Fulani society." (1958: 93) Asad has argued that the notion of an 'optimum' family is not appropriate in a partially monetized economy, and he goes on to make the valid comment that among the Kabaish the can members of a household make greater efforts or reduce consumption, while others can mobilize temporary assistance from outside the household without incurring extra 'costs'. He also argues that some people are more skilful or hardworking than others. He concludes that:
"The Kababish household is a flexible unit. Its structure is determined not only by considerations of viability, but also by the desire of male members who are led by the household head to establish their own autonomous households as soon as possible." (1970:54)

This is in accord with his use of the distinction between autonomy and independence of households, for a household is fully fledged (possesses the crucial characteristics) even if it is not self-sufficient in livestock or labour or both. He states:

"Combinations of households based on necessity or convenience do not give rise to extra-household domination or sustained leadership." (1970: 157)

My understanding of Asad's argument is that he is saying that among the Kababish the structure of the household reflects more than just material circumstances, and, by inference, that households do not necessarily correspond to an 'ideal' (i.e. 'optimum') composition. However, Stenning's use of the word optimum is slightly ambiguous, because he also seems to suggest that it is ecologically adaptive to have a small, mobile domestic unit:

"... a discussion of regular seasonal changes and irregular natural hazards does much to justify in ecological and economic terms, the assertion that the simple or domestic (sic? compound) family is the optimum domestic unit." (1958: 101)

Asad has not discussed the Kababish household from this point of view. His emphasis is on the household as a prototype of the "patterns of power and authority available to the majority of the Kababish" (1970: 157), and viability of households is a secondary issue. It would appear that non-viability of Kababish households is common.² I conclude therefore that household viability is not to any extent a useful tool for understanding
Kababish social organization and pastoralism, though viability in a wider sense would probably be more relevant if combinations of households were made the focus of analysis. At this level, it is not the fact of viability itself which is of interest, because it is to be expected that production groups are viable, but the social implications of the combinations.

I have made an implicit comparison between the Kababish and the Fulani in the last paragraph, and I would suggest a preliminary conclusion: that viability of simple or compound family households is more likely to be important where the pastoral system involves only one main species of animal and where the household and the herd are not separated in the course of transhumance, than in a society where these conditions do not obtain. Where they do not, viability is likely to be achieved only by a small percentage of households, and combinations of households are likely to be important as production groups. In the latter case it may be possible for many, if not the majority, of households to be viable for some time in their period of existence.

The Basseri of southern Iran concentrate on sheep as their main animal and the households do migrate with the herds. In his study of the Basseri, Barth (1964) was the first author to take up Stenning's argument and to assess its implications for the society he was studying. Very briefly, he borrowed from Stenning the notion that there is a minimum composition of household and herd, and he emphasised the way these minimum levels function as thresholds. He showed that non-viability owing to insufficient numbers of livestock led to sedentarization of poorer households.
When livestock became very numerous, requiring shepherds to be hired to supplement household labour, it was possible to invest in land and eventually to settle as a landlord. Selective sedentarization of the rich and the poor served, among other things (see below), to maintain the homogeneity of pastoral Basser society (1964: 127).

This emphasis on the threshold has since been used effectively to account for 'nomadization' of sedentary cultivators in a situation where livestock (especially cattle) are the only way to 'invest' profits gained by successful cultivation.

Examples of this process in Darfur are given by Haaland (1969, 1972). Nomadization of Fur cultivators occurs in two stages, first when the members of a household possess 'seven to ten cows' they make a local migration; when the number has increased to 'twenty to twenty-five' they begin to migrate in the same manner as pastoral Baqqara (1972: 158). The first stage of this process occurs among the Berti (Holy, 1974: 35). In another study in Sudan, Abd al Ghaffar (1974) has shown that, as with the Basser, there is selective sedentarization of the Rua'a al-Hoi pastoralists of the area between the White Nile and the Blue Nile. The wealthy pastoralists invest in mechanized crop production schemes, and the poor tend to become landless labourers on these schemes.

Barth's use of the concept of viability in his study of the Basser is not limited to the threshold situations. He states that to be economically independent the household needs a minimum of three persons: the husband, the wife and a male shepherd. He notes that:

"Only in a restricted phase of its development, while it contains adolescent children, can an elementary
family be expected to contain the necessary personnel" (1964: 20).

"...most households enter into small co-operative herding units to secure additional labour by sharing the burden" (Ibid: 22).

"... Basseri households usually unite in groups of 2-5 tents" (Ibid: 21-22).

"Considerations of nearness of kinship ... seem to be irrelevant to the composition of herding units" (Ibid: 22).

"The composition of herding units thus seems to be determined by considerations of the availability of labour, the sizes of herds, and the distribution of friendship and mutual trust". (...) "(Their) composition reflects practical expediency for herding purposes, rather than kinship or other basic principles of organization" (Ibid: 23).

The lack of further discussion of the details of the composition of herding units seems to reflect, firstly, the paramountcy of the household as a social unit and, secondly, the fact that herding units all own the same types of animals and follow the same transhumance pattern. However, from the examples presented by Barth in Figures 2 and 10 (1964: 40 and end-paper), it would appear that the combinations of households might be patterned to a greater extent than he suggests, and they might therefore have warranted further examination.

Barth's account of the Basseri has been used by Irons (1972, 1975) in a comparison between them and the Yomut of northern Iran. In his work on the Yomut, Irons has applied the concept of viability in a manner very similar to Stenning's. The emphasis is on the interaction of social institutions, which maintain the viability of households. Among the Yomut, the institutions of ultimogeniture, adoption and late age of majority (i.e. formation of a separate domestic unit) for males "have the
effect of minimizing the number of households which fall below the lower limit in terms of their labor resources (1975: 169). He relates the absence of these institutions among the Basseri to the fact that they have "a lower average household size and a higher proportion of economically un-viable households" (1975: 170). In addition to the three institutions mentioned above, the Yomut also have high bridewealth (a sliding scale, so that wealthy persons pay more and poorer wife-givers receive more than the 'average') and almsgiving. These five institutions together regulate the distribution of wealth and maintain the viability of households; nevertheless, they do not completely balance other processes which lead to differences of wealth.

Irons tested the degree of association between rank in wealth and rank in labor resources of Yomut households. This showed a Spearman coefficient of +0.66. He argues that a coefficient of less than +1.0 is to be expected because of fluctuations in animal numbers (sheep and goats, a few cattle and camels, expressed in sheep-equivalents) and differences in the efficiency of individuals as producers, which do not cancel out because of the small number of producers per household. Ultimately, he relates these features of household economic organization to the population dynamics of the society as a whole. He contrasts the Basseri, who maintain an equilibrium of population and resources by 'sloughing off' in each generation a proportion of members of the society, with the Yomut who:

"... have social mechanisms that limit population growth to what the tribal resources can support and then organize the existing population into domestic units which are large enough to be viable" (1975: 170).
Irons' use of the concept of viability in his account of the Yomut is interesting because of the avenues it creates for constructive speculations of this sort. More importantly, he has used it for a detailed analysis of the composition and dynamics of domestic groups in a society with marked inequalities in the distribution of wealth.

Another discussion of a relationship between animal wealth and labour resources is made by Bates (1973), with reference to the Yoruk of south east Turkey. His general concern is the human ecology of the area in which Yoruk pastoralists co-exist with communities of settled cultivators. Bates is fortunate to possess extremely detailed information on numbers of livestock (sheep), the composition of households, and on such matters as the size of bridewealth payments, inheritance and the separation of families to form autonomous households. In using this information, he derives his conceptual apparatus from Sahlins' discussion on the 'domestic mode of production' (Sahlins, 1972). Although he is directly concerned with issues related to viability he makes no reference to this concept or to Stenning (nor, for that matter, does Sahlins). Thus he is concerned with 'consumption demand' as the basic variable, and he writes:

"In an economy where a major impetus to production is provided by domestic consumption requirements, one can measure the extent to which income-yielding wealth varies with the demands of the unit of consumption. The responsiveness of a family's productive capital to the internal dynamics of the domestic mode of production is central to the generally unstratified nature of Yoruk nomadic society." (1973: 177)

The Yoruk have appreciable differences in wealth between households, which Bates is able to show depend upon a number of
factors inherent in their formation and subsequent to their formation. Predominant among the former is the number of sheep inherited, while among the latter are:

"... such factors as the number of people co-resident, their ages and sexes, and their abilities to assist in the provisioning of the unit." (1973: 169)

He continues:

"The extent to which variations in wealth are attributable to the make-up of the households can be taken as a measure of the different potential for production offered by different compositions." (Ibid)

Bates demonstrates that there is:

"... a close fit between the size of a family and its wealth. According to the measure of curvilinear relationships, 57 per cent of the variation in wealth is explained by the size of the household. This measure provides some documentation for the flexibility built into the nomadic pastoral economy; despite overall inequality in wealth, as demand increases in the form of more population to be supported, the domestic unit is able to respond with increased animal production utilizing the additional labour. Thus wealth that is unequal in its distribution among families is continually under adjustment when measured by the number of individuals within the units." (Ibid: 180-181)

Consistent with Sahlin's formulation of the domestic mode of production, Bates continues by constructing an index of the ratio of consumers to workers and an index of the ratio of workers to sheep. The consumer/worker ratio is shown to decline as wealth increases, with a ratio of 1.44:1 in the lowest quartile of wealth and 1.26:1 in the highest.

"The ratio of sheep to workers, or the index of productivity displays a similar but more marked progression associating wealth with efficiency: 73.0 sheep are maintained per worker in the fourth quartile and only 27.8 sheep per worker in the first quartile." (Ibid: 184).

Employing the two indices together he shows that:
"There is a significant percentage of variation in the sheep/worker index determined in each quartile by the ratio of consumers to workers" (ibid: 185).

and that in the third quartile of wealth:

"Families in this category apparently alter their output per worker to an extraordinary extent: some 89 per cent of the variation in worker output, as measured by the index, is determined by the ratio of consumers to workers within the tent" (i.e. household). (ibid: 187)

I may possibly have failed in the short space available to give a fair account of Bates' analysis. It will be clear that when Bates writes:

"Although many of the problems taken up in the subsequent sections have been discussed in the growing literature on pastoralism, few attempts have been made to quantify many of the obvious variables. Likewise there is no published analysis which uses statistical tests to measure possible relationships between labor, patterns of domestic consumption and wealth in animals." (1973: 162)

I am very much in agreement with him, especially as regards the scope for quantification, though with reservations about statistical tests on my own material. However, I am not able to grasp the logic of his analysis. He makes a useful comparison between the situation in a cultivating society with land scarcity, where it may be difficult to adjust the size of land holding to match the labour resources and consumption demand, and the situation in a pastoral society where the means of livelihood (i.e. livestock) is inherently more dynamic. But I am unable to perceive how in a pastoral society, as opposed to a cultivating society (where land is not scarce) the presence of labour and consumption demand produces wealth, as his argument seems to pre-suppose. He states that:

"It will be shown that in the nomadic society herd size or wealth is adjusted to the amount of labor available and the consumption demands of the tent." (1973:169)
But he leaves unexplained (to me at least) the processes which bring about this 'adjustment'. He appears to equate greater productivity, i.e. more sheep per worker, with greater production (see from page 181), though he has earlier argued that Yoruk sheep require close supervision if they are to graze effectively (page 145) and it would appear therefore that the fewer sheep per worker the greater the rate of herd growth. Similarly, if consumption demand affects the intensity of productive activity in the Yoruk economy, one would expect the high ratio of consumers to workers in the first quartile of wealth to inspire greater efforts in this section of the population to meet the demand created by the consumers.

Fundamentally, I find confusing Bates' treatment of wealth as a dependent variable. The argument that household size explains variations in wealth is meaningless to me. I would consider it more appropriate to treat the former as dependent on the latter, if either is to be treated as a dependent variable. Because of his analytical orientation Bates appears to overlook the implications of the correlation he demonstrates between type of household composition and size of herd (Table 35, page 178) for the Yoruk developmental cycle: he seems to discard the possibility that household composition is affected by wealth, beyond pointing out that a wealthy man may be polygynous. Although as I have remarked, I find Bates' analysis confusing in a number of respects, I take his material as a further example of the importance of variations in wealth in pastoral societies, and in particular of the fact that they may be correlated with variations in domestic organization. I would consider, on the basis of Irons' account of the Yomut and of Bates' information on
the Yoruk, as well as from my understanding of the Meidob, that viability is an operational tool, and that it is effective within variable but generally narrow limits throughout the range of sizes of production groups and herds. Whether these production groups are 'households' or not depends on the nature of the pastoral system, but this is not of fundamental importance to the relevance of pastoral viability. 10

Are there, however, other pastoral societies where viability, if we regard it simply as a quantitative balance between humans and livestock at the domestic level, is not applicable? This would appear to be the case in East Africa where, in spite of there being a substantial literature on pastoralists, there has been very little written directly on the subject of pastoral viability. I would suggest, in a very tentative manner, that an important reason for this apparent neglect of viability is the lack of a long-term association of a family and a specific herd. This is conditioned, in particular, by the prevalence and scale of stock loans and the magnitude of bride-wealth payments. The result of stock loans is that the livestock over which an individual possesses rights may be widely dispersed, and are not concentrated in a herd associated with the family in the clear-cut manner of the Fulani, for example. Livestock capital is continuously being transformed into social capital. Where bride-wealth payments are high, the composition of the 'family herd' is subject to considerable fluctuations. Often indeed, the effect is again a diffusion of livestock wealth, because the livestock received when a daughter marries are distributed among a wide (if variable) range of kin (e.g. Dyson-Hudson, 1966:51). These transfers may have only an indirect bearing on viability,
for example in the need for a man who possesses few livestock to delay marriage so that the subsistence requirements of his family are not jeopardized.

The extent of dispersal of livestock appears to be related to the pattern of ownership rights. It is a feature of many pastoral societies that livestock are owned by individuals. In East Africa the number of people who may have a potential claim on a particular animal is often very great, whereas among the societies I have been discussing, including the Meidob, rights of ownership and disposal are highly individualized. A distinction has been made by Dowling (1975: 422) between 'private' ownership among the Basseri and 'personal' ownership among many other pastoralists (he cites the Turkana as an illustration).

The most obvious reason for these differences between the societies I have discussed and those in East Africa appears to be the degree of market orientation. This is emphasised by Dowling, who describes Basseri pastoralism as oriented to sale in the market, whereas the Turkana produce for consumption. Baxter (1975) has made exactly the same points about the contrast between the Basseri and East African pastoralists. His specific topic is the extent to which sedentarization occurs, and he shows the market-orientated pastoral system tends to be socially fragmented; 'pure' pastoralists, on the other hand, build up sets of social relationships with the result that an individual's fortunes are very closely bound up with those of his fellows. The situation among East African pastoralists appears to lead to considerable uniformity of wealth, while among market-orientated pastoralists there is a greater degree of economic differentiation.

This discussion seems to point to the possibility that
Certainly, there are grounds for believing that for the understanding of pastoral societies:

"... an approach based on isolating economic factors within a sociological framework may be even more illuminating than one of wider and more sociological scope" (Hill, 1972:5).
1. For a general description of these nomadic movements, see Lebon (1965: 117-126). Specific examples are given by Cunnison (1960) for baghara, and by Asad (1964; 1970) and Tubiana (1971) for jammala.

2. Hill has written of the Hababin of north-central Kordofan: "In the poor environment of Dar Hababin it is generally considered that only three years in ten can be considered as good. In a ten year cycle, then he (the cultivator) must put aside enough in the three good years to cover the seven poor years" (1968: 68).

3. This economic system has been described by Barth (1967).

4. See Adams (1975) on development in Western Sudan; and Adams and Hales (1977) for a discussion of 'desertification' in the region.

5. The Kufra scheme has been described by Allan (1976).

6. The standard work on the history of Darfur and Sinnar is O'Fahey and Spaulding (1974), which contains an extensive bibliography. I have based the account given in this section on their work and on other papers by them, especially by O'Fahey on Darfur. Other sources relating to the later period are Hill (1959), Holt (1958) and Theobald (1965), and on the earlier period Arkell (1951-2).

7. On the Musabba'at, see O'Fahey and Spaulding (1972).

8. On the Tunjur and Uri, see Arkell (1946; 1952b: 246-250), and the discussion of his account in O'Fahey and Spaulding (1974: 110-111).


10. Ibn Khaldun's account of the state has been widely discussed. I have found Geisler's (1969a: 132-133; 1969b: 3-12) presentation and discussion particularly useful.

11. See MacMichael (1912: 121, 158, 212; 1922: 256-8, 264, 319-320).

12. I have derived this interpretation from O'Fahey (1971,1973).

14. Holy's account of the social organization of the Berti has been criticized by O'Fahey (1974) for not giving sufficient attention to the incorporation of the Berti in the Sultanate. At the time of Holy's research, of course, little information on the Darfur land system and administration was available.

15. See O'Fahey and Spaulding (1974: Chapter 6).


17. See Howell (Ed.) (1974) in which there are papers on various aspects of the Local Government system in Sudan.

18. Some Meidob also grow sorghum, okra, tomatoes and onions in well-watered areas of alluvial soil.

19. I shall show later that because of the way animals are devolved to succeeding generations, the possibility that a wealthy, polygynous man may have more offspring is not of great significance.

20. Nachtigal (1971: 350-3) states that the people of Kaja were under the authority of the Abu Irringa, and this gives some indication of the position of the boundary between Darfur and Kordofan when the latter was under the control of the Turco Egyptian regime in the nineteenth century. The relevance of this will become apparent when I discuss below the creation of the present boundary.

21. Their ancestor came from the Kinana section of the Kargeddi. They and the other Meidob involved in the administration of the Sultanate were emigrants, and little is now known of them by Meidob.

22. Nachtigal (1971: 287) refers to the incorporation into the Sultanate of the Berti, Belgo and Birgid tribes by Sultan Muhammad Tayrab (reigned 1762/3 to 1785/6). I assume that the Berti referred to here are the section of the tribe living in eastern Darfur, and not the Berti who are the neighbours of the Meidob. The evidence for this assertion is that Tayrab's move was to the south-east, connected with the establishment of his palace at Ril, near the present town of Nyala, rather than to the north east.

23. These taxes are referred to by MacMichael (loc. cit.) as the Islamic zakat, fitr and ushur respectively.

24. The ceremonial of the audience of the candidate with the Sultan were probably as Tuhiana (1964: 109-10) has described for the Zaghäna and the Sultans of Wadai.

25. In the early 1960s there were only a handful of Berti who still knew siga.
26. The classification of languages of the Nubian Group is still the subject of discussion; cf. Bell (1973; 1974). The question of the direction in which the languages spread has been very extensively discussed, see Trigg (1965) for summary.

27. I refer to these groups as kingdoms because the Arabic title Malik (king) was used for the chief of each group at the time of the Sultanate. On the use of the title Malik in Darfur, see Hill (1967: xii). The chiefs of the Kingdoms, and the chiefs of the sub-divisions of the two larger kingdoms as well, were known as Sirgi in Tiddin-n-al.

28. The device of prefixing the name 'Ahmad al- ...' to a version of the tribal name is not uncommon in Darfur; see, for example, Hasan and O'Fahey (1970).

29. It is generally accepted (Arkel, 1951a: 62-70; Balfour-Paul: 1955:9-10), on the basis of archaeological sites attributed to the Daju, that they were confined to the south-central parts of Darfur. The identification by Meidob today of Daju as the original inhabitants of the Jebel may be simply a reflection of the idea that at the supposed time of Meidob immigration the Daju were predominant in Darfur.

30. This 'tradition' seems to be a fabrication, although the fact that the Elkeidi are not included as descendents of Ahmad may be a pointer to their being of separate origin from the other three sections.

31. It is said that goats were stolen from the Usutti. This is significant, as the Usutti still own more goats per person than any other Meidob section (cf. chapter 4).


33. I was unable to locate Umm Gulhi, but Sudan Survey maps (e.g. 1:1,000,000, ND-35, 1946) show a small mountain marked as Umm Gerfa close to 15 degrees north, 27 degrees east.

34. This may have been connected with the theft of one thousand camels from the Zayadiya by Tutarsi, a claimant to the Karguddi kingship; cf. Lampon (1928: 58).


36. I obtained this information from the Sudan Times Dec. 2, 1916, which I found in a file of news cuttings in MacMichael's papers at the Sudan Archive, Durham.

37. E.g. Sudan Intelligence Report No. 223, April 1913; see also map in MacMichael (1912).

38. Moore served as a Political Officer in Darfur from 1928 to 1946, and he was therefore the longest-serving Officer in the Province. (Bell and Dee, n.d.)
39. As indicated by surviving Monthly Reports for Northern Darfur District, Thesiger (1959: 16-17) describes Moore's style of travel, and contrasts it with the style of other D.C.s.

40. See Brewster (1964: 242-247) for details.

41. The proposal is re-printed in Brewster (1964: 237-242). I was unable to trace in El Fasher the file containing the documents containing the arguments advanced against Moore's plan.

42. Report of the Soil Conservation Committee, Khartoum, 1944 (various Authors).

43. By then motor transport was sufficiently common for this to have been specially noted in the report.
1. Of the 26 borewells excavated, 21 were successful and are in operation at 16 locations (see Map 3).

2. I would agree that some measures are necessary to ameliorate the grazing situation in Dar Meidob. The measures being discussed by officials in 1974-75 would be seen by Meidob as punitive rather than progressive.

3. Some features of the landscape are illustrated in Plates numbers 1 to 4 and some water sources in Plates numbers 5 to 11.

4. The chronology of volcanic activity has been discussed by various authors. I have derived my information from M.N.P. and H.G.G. (1970: 23-27). Reference to other literature can be found, for example, in Francis, Thorpe and Ahmed (1973).

5. A general survey of water sources in the region is Sandford (1935).

6. A rain-gauge was installed at the dispensary at Malha in 1958. Records for the first four years are not available there, and I did not obtain them in Wartoum as I should have done.

7. Lebon (1965: 10) may be consulted for details of the rainfall pattern.

8. This figure is quoted by D.C. Cumming in a letter to the Governor of Darfur, dated 1.2.1928, on the subject of Grazing and Watering rights in Melliit District, Northern Darfur District. The letter is contained in File D.P./S.C.R./66.B.51.
1. Some Maldob make one or more journeys each winter to Bir 'Atrum to collect fatun, which is regarded as highly beneficial for all livestock, but especially for camels. It is obtained by digging in the natural salt-pans and is transported by camel, each animal carrying between 150 and 250 kg, according to its age. Bir 'Atrum is visited by members of tribes from all parts of northern Darfur and northern Kordofan Provinces, and fatun is sold as far south as Dar Baqara.

2. Sheep are not usually penned at night, except where they are grazing in one area for a considerable time or where there is a danger of predators. In the context of the account I am quoting, I believe the reference to an animal pen (T. uggl) was an indirect way of asserting the donor's rightful ownership of the sheep.

3. In the course of my survey I met only one man (at Wadi Marreig) who keeps a horse for riding, and I saw a number of others which are now feral.

4. I shall not discuss donkeys separately because they are managed in exactly the same way as cattle, except that they do not invariably return to the settlement at night. They are either rounded up by the women before they set off or the wells or they make their own way to the wells. There are a few 'rifawi' (Nubian donkeys) which serve to some extent the role in local communication for which horses were previously used.

5. Usually this is coudi from Malha, which in 1974 cost about 5 piastres for a four-gallon tin measure, this being sufficient for about 100 goats. The salt clay of Umm Bayyada is said to be especially good for goats and sheep, but it was little used by people in the areas I visited. Regular provision of salt is said to improve the condition of the animals, with the consequent effect of increasing fertility and the number of twin kiddings.

6. The members of one settlement were greatly impoverished by the drought and thefts of camels. Both the adult men were working in Libya for most of the time I was in the field, and the remaining members were hard-pressed to manage the goats and sheep. The remaining three camels and two young (born during the wet season 1974) were kept around the settlement in the dry season to provide milk and partly because no-one was available to take them to pasture. The two young and one of the dams died because they had insufficient fodder.

7. This was one of the reasons given by informants who stated that the ideal number of camels in a herd is 50 to 60. A few herds are much larger than this.
8. The Arabic word *murah* refers technically to a herd, regardless of its size. It is often used, however, in the sense of 'about a hundred animals', of any type.
1. I avoided the subject of tax because it would, I believe, have hindered enquiries about livestock, and secondly because it seemed that tax assessment would be only partly related to actual livestock numbers. Both of these matters are related to the fact that animal tax features prominently in the relationship of pastoralists and Government, and the second to the apparent role of the relationship between the animal owner and the local tax collector (cf. Holy, 1974: 145-52). The tax imposed by the Government is on a certain sum for each mature animal of each type, and changes in the tax are supposedly made by varying these rates. In practice, since both the pastoralists and Government know that the assessment is not made on the basis of the full rate, the Government demands a certain sum as tribute (L.S. 16,000 in 1972) and this is divided successively between omomiyas, sheikhships and tax-paying groups or individuals. Discrepancies between the actual number of animals owned and the proportion declared for tax arise because, firstly, the tribute demanded is less than the full 'tax value' of the livestock (enforcement of the full rate would be politically inexpedient) and secondly because the tax payer may be able to persuade the collector to give a favourable assessment. In fact the scope for negotiation between tax-payer and tax collector is small, and the number of animals declared for tax is a consistent proportion of the number of animals owned. The kinship relationship between the tax-payer and collector is not of great importance because much of the tax is collected by the Executive Officer. Moreover, in normal circumstances the number of animals does not vary greatly. Most of the real negotiation occurs within tax-paying groups (cf. Asad, 1970: 133-142). The lists of tax-payers prominently revised every three years and the tribute is generally raised slightly every year. The proportion of animals owned on which tax is paid varies, so the lists cannot be used to show changes in animal numbers, but at a particular point in time the proportion of animals taxed does not differ appreciably between tax-payers.

2. The census was carried out by Resource Management and Research for the Ministry of Agriculture. I have used data from a separate survey by R.N.R. in Western District of Southern Darfur Province, and on the basis of this experience I consider that this census data will not provide an estimate of the number of livestock owned by Meidob. It will, of course, provide very valuable information on other topics. The census had not been published when I left Sudan in 1977.

3. In a survey among the Fur cultivators in Western District of Southern Darfur Province, I found that fertility is again at a level intermediate between Henin's Baggara and Gezira samples. I conclude that Henin's correlation of the fertility difference with the settled and nomadic ways of life is misleading: it is rather the difference between an area of Sudan in which there has been considerable economic development (with
relatively sophisticated health services) and an area where 'modernisation' has had little impact. A comparison between Meidob pastoralists and Fur settled cultivators would have shown little difference in fertility, and probably little difference between them and the Baqarah which could be attributed to the 'nomadic way of life'. At the same time, Henin's demonstration of the differences in the marital patterns is suggestive of research on the relationship between marriage and economic systems.

4. Because I am referring to surviving children my use of this term differs from conventional usage, in which completed family size is calculated by dividing the total number of children born by the number of women past menopause. It can be expected that a few women in the age group 40-49 will give birth to further children. Demeny (1968: 504) calculates the menopause at about age 43 in Darfur; he also shows that the average completed family size of 4.5 in Darfur is an underestimate.

5. This tradition of non-involvement in pastoralism (in spite of the fact that many of the schoolboys own animals) may perhaps have originated in the fact that until comparatively recently educational facilities in Darfur were so little developed that only the sons of Dadas were given the opportunity of education. After completing the school course, these pupils returned to market villages in Dar Meidob to act as clerks of local courts and were therefore no longer involved in herding. Apparently among the kababish, who had a mobile school from as early as the 1930s, educated boys are expected to contribute fully to herding when they are on vacation.

6. A century ago, when some people had slaves who herded their animals, girls may have done little herding.
Footnotes  Chapter Five

1. The derivation of dirria, which is treated grammatically as a tiddi-n-al word, is not certain. It seems to be a colloquial form of the Arabic thurriya, descendants. However, in Fur society a group called the qirri (lit. doorway) appears to have (or to have had) a very similar structure and significance. It has been described by Barth as:

'a descent group of a non-unilineal kind - large blocks of kinsmen with an endogamous tendency, often spoken of as patrilineal in form but in fact a much looser structure, allowing membership 'through our grandparents'" (1967: 132).

2. I do not have space to argue in detail the relationship between the descent idiom and domestic organization. Non-residential marriage is one way of solving the 'matrilineal puzzle' (Richards, 1950). I do not regard it as a 'survival' however, and I shall stress aspects of this arrangement which can be seen as solving or anticipating current mundane problems. The importance of sibling bond is equally a characteristic of societies with corporate matrilineal descent groups (Radcliffe-Brown, 1955).

3. The reason why I use this non-specific term will become apparent as the discussion proceeds. At the most abstract level the Meidob descent system can be seen as possessing elements of African and Middle Eastern systems in combination.

4. Accounts of this are possibly coloured by subsequent events. It was considered that Mahdist 'fanatics' were ringleaders of the 'Uranti troubles' of the 1920s. Since then groups of Uranti periodically saw the coming millennium in every apparent advance in the fortunes of the political party ('Umma) of the descendants of the Mahdi, and decamped to Omdurman or to the headquarters of the Ansar sect at Abu Island on the White Nile. They also sought to regain, via the influence of 'Umma leaders, their former independence as a kingdom.

5. Tija is urriti-n-al; in kargeddi-n-al the mother's brother is tisa with a corresponding change in the term for inheritance.

6. The general rule stated is that matriclans are exogamous, but I found a number of cases of marriage within the matriclan. I learned then of the existence of un-n-al. The same principle that a clan segment is the unit of exogamy in a segmented clan applies among some Nuba groups (cf. Nadel, 1950).
7. Sagen-kar seems to be derived from the Arabic sakana (to dwell, he dwelt). Wet season hamlets are generally occupied regularly whereas winter and dry season hamlets are not. Hence the connotation that the wet season hamlets are places of long term attachments.

8. In some market villages people have adopted a circular house with a conical thatched roof. Known as a tukl, this style of house is almost universal in rural northern Sudan.

9. There is a possibility that some Beja groups (eastern Sudan) do or did have a seasonal house of similar all-timber construction.

10. In Aicho there are all cases of short-term fostering. In 7 a girl is fostered by her mother's mother, in 1 a boy to his mother's mother, in 1 a girl to her mother's mother's sister, in 1 a girl by her mother's sister and 1 a girl by a person not in my sample area. In Kondeidi there are six known cases, 4 of a girl to her mother's mother, 1 a girl to her mother's mother's sister's daughter and 1 a boy to his father's sister. The overall age distribution was as follows:

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Boys</th>
<th>Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age unknown</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

11. Many weddings take place in the relatively easy and prosperous period after the wet season. In the traditional calendar the month of bari, which falls in October/November was the customary time of Kargeddi weddings, and the following month, urrti-n-bari, the time of Urrti weddings.
FOOTNOTES

CHAPTER SIX

1. This matter has been considered by Dahl and Hjort, who state that the various (liveweight-based) Standard Stock Units calculated by different authors:

"... can be most useful when the total wealth of a large aggregate of pastoralists is to be estimated. Whichever way they are calculated, they should however never be used in estimates of the wealth of individual families. (...) Without an analysis of the actual age distribution and production capacity of a particular herd, the viability of the household/herd enterprise cannot be estimated" (1976: 230).

They also remark that they doubt whether such data could be collected, "or whether it would be desirable from a nomad's point of view to do so" (Ibid).

Their argument rests on the implied assertion that there are considerable differences in herd structure. I consider that there are systematic differences in the age and sex structure of N'dob herds, for example between split-flocks of sheep and the sheep kept in the settled areas. I recognize that the standardization I have adopted is far from perfect, but I consider nevertheless that it has value as an exploratory device, even if it is not adequate for explanation.

2. This assessment is an amalgam of liveweight, market value and probable rate of herd growth (see Dahl and Hjort (1976: 231) for a Table of 'Typical Annual Growth Rates' for herds of cattle, camels, sheep and goats, these rates derived from simulations of herd structure over time). Coincidentally, the scale I have adopted is equivalent in proportions to Harrison's (1955) scale. Compared with the liveweight-based scale for Southern Darfur, the main feature is the low weighting given to cattle, relative to sheep, goats and camels. It could be argued that, in view of their high market value, sheep could be given a higher weighting than goats, but this is mostly offset by the greater reproductive potential of goats.

3. There are a number of precedents in standardization of productive capacity according to age and sex. Several authors have adopted rather over-simplified measures in an attempt to generalize about the labour patterns of peasant societies, e.g. Clark and Maxwell (1967: 46), Epstein (1962: 78) and Sahlin, (1972: 87-92 and Chapter 3 on the 'consumer/worker ratio'). The scale constructed by MacFarlane (1976: 114) is specific to the society he studied and is therefore more refined than the other measures referred to.
4. It will be seen from Table 6.10 (b) that the Kondeidi sample is very heavily biased towards the 'parental' category. This, of course, affects the degree of association in Tables 6.12 (b) and 6.13 (b) in a way which supports rather than detracts from the analysis of the Aicho pattern.
1. The standard of veterinary services is extremely poor, but Melidobob obtain and make good use of certain basic veterinary medicines.

2. This point has been argued in more detail by Adams (1975: 283-285).

3. The difference in the importance of cultivation may be related to the apparently greater rainfall in Dar Melidob, noted in Chapter 2.

4. One important aspect of synchronic variation I have been unable to treat in detail is the relative proportions of different types of livestock in different parts of Dar Melidob. I have referred to this topic in Table 4.1 and pages 118-120.

5. The source of information on the Kababish is Awad (1970:11 and 14). He gives a population of 68,000 in 1956, which with 3 per cent increase per annum would be 88,500 in 1964, the year to which his figures on animal numbers relate.

These are as follows:

<table>
<thead>
<tr>
<th>Kababish 1964</th>
<th>Camels</th>
<th>Sheep</th>
<th>Goats</th>
<th>Cattle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tax lists</td>
<td>34,690</td>
<td>114,094</td>
<td>21,896</td>
<td>12,077</td>
</tr>
<tr>
<td>Animal units</td>
<td>173,450</td>
<td>570,470</td>
<td>109,480</td>
<td>60,385</td>
</tr>
<tr>
<td></td>
<td>260,175</td>
<td>95,078</td>
<td>18,247</td>
<td>60,385</td>
</tr>
</tbody>
</table>

Total Animal Units: 433,885

For the Melidob, the number of animals is based on tax lists for 1972. The Melidob population in 1972 is estimated at 35,500.

<table>
<thead>
<tr>
<th>Melidob 1972</th>
<th>Camels</th>
<th>Sheep</th>
<th>Goats</th>
<th>Cattle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tax lists</td>
<td>12,014</td>
<td>48,880</td>
<td>64,684</td>
<td>7,711</td>
</tr>
<tr>
<td>Animal Units</td>
<td>60,070</td>
<td>244,400</td>
<td>523,420</td>
<td>38,555</td>
</tr>
<tr>
<td></td>
<td>90,105</td>
<td>40,738</td>
<td>53,903</td>
<td>38,555</td>
</tr>
</tbody>
</table>

Total Animal Units: 223,296

The Animal Units are based on Harrison's (1955) scale which is: Two camels = 3 animal units; One cattle beast = 1 animal unit; Six sheep or goats = 1 animal unit.
6. The impression given by Meidob informants is that Khabish clans are localized to a greater extent than Asad allows. For example, the Atawya are said to be found mostly in the north of the Dar, and the Wayda in the south west.

7. In a study of 24 Fulani households in Katsina Province, with a similar ratio of cattle to humans, it was found that 12 households were independent, and 12 had "established co-operative ties with other households" (Van Raay, 1975: 69). At the same time, of course, the 'social death' of Fulani men whose sons are all married is an extreme mechanism for reducing the incidence of non-viability (Stenning, 1958: 99).


9. Swidler has discussed the composition of camps among the Brahui in the following terms:

"... the animal holdings of most households are too small to create, by themselves, the most efficient and manageable flocks. Thus the number of sheep per household is critical in bringing the camp into being ... The camp unit is the group type which creates the most expedient and manageable grazing unit, an adaptive response to the technical requirements of sheep-raisin within this particular habitat" (1972: 14).

I have not discussed Swidler's argument at length for lack of space.

10. Cook (1972: 364) has expressed well the point I am making, in criticizing Sahlin's (1972) for:

"... His apparent assumption that in Tribal Society the production unit is everywhere coterminous with the consumption unit. It is plausible that the former determines the structure of the latter, but an exact correspondence between the two is the exception rather than the rule."

This is a point which has often been made, but it is just as frequently ignored.
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Plate 1: Mauha Crater

Plate 2. Volcanic Hills and an alluvial plain in the central mountains, with the northern sea in the background.
Plate 3: On the southern edge of the hills; goz in distance at right, Jebel Raboja (Tijara) at left.

Plate 4: Hamlets in the central mountains (Aicho area).
Plate 5: Tamad (T. goossi) dug in wadi bed for wet season water supply.

Plate 6: Bawad on the southern goz at Wadi Narreig. Note the channel leading from the pool to the trough and the screen used to retain salt placed in trough. (A Kababish herd)
Plate 7: A rock pool (Ar. "salt") used for water in early winter (Aicho area).

Plate 8: Aicho wells.
Plate 9: Awinol

Plate 10: Deep well (Ar. sania) at Nada, used by Bertil and Heideb.
Plate 11: Herd of typical size, in foreground are sun-dried lumps of salty clay dug from the pool in Malha Crater.

Plate 12: House.
Plate 13: Hamlet in Kondeidi, Jebel Meidob beyond.

Plate 14: Hamlet in Aicho, with goat-pens in lee of valley side.