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David J. Flower.

(April 1966)

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April 1966

David J. Flower.

## ERRATUM.

Owing to a binder's error  
the index numbers have  
had to be changed.

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## INTRODUCTION.

Essentially this study of agriculture and settlement is the link of the three studies carried out during an Expedition from the Geography Department of Durham University in 1963. The aim of the three members of the Expedition was to make a compact study of a relatively small region of the province of Khorassan in North East Iran. The three studies were to be, of the city of Meshad as the centre of the region, of the village of Cheneran as a social anthropology study and finally the linking work, studying in general the settlement and agriculture of the region as a whole.

The basic problems of carrying out research of this type in Iran were primarily those of language and lack of background material from which to work. The first of these problems could be overcome with the help of a co-operative interpreter but the second

proved a great deal more difficult as ideas for the study had to be gleaned from any studies of Iranian agriculture that had been made.

Because of the two important changes that were, and still are, taking place in the agriculture of the country, those of crops grown and land tenure, it was imperative that some attempt should be made to record the existing agricultural system. This latter was already in a state of transition at the time of our visit and, therefore, the agricultural pattern recorded is essentially a temporary one, half way between the old family plot pattern and the new ideas of land reform.

Each of the important crops is studied in detail showing the method of farming and the way the crop is marketed. Some emphasis must also be placed on the change that is taking place in the types of crops that are being grown, the result of modern farming techniques being introduced by young landlords with an especial emphasis



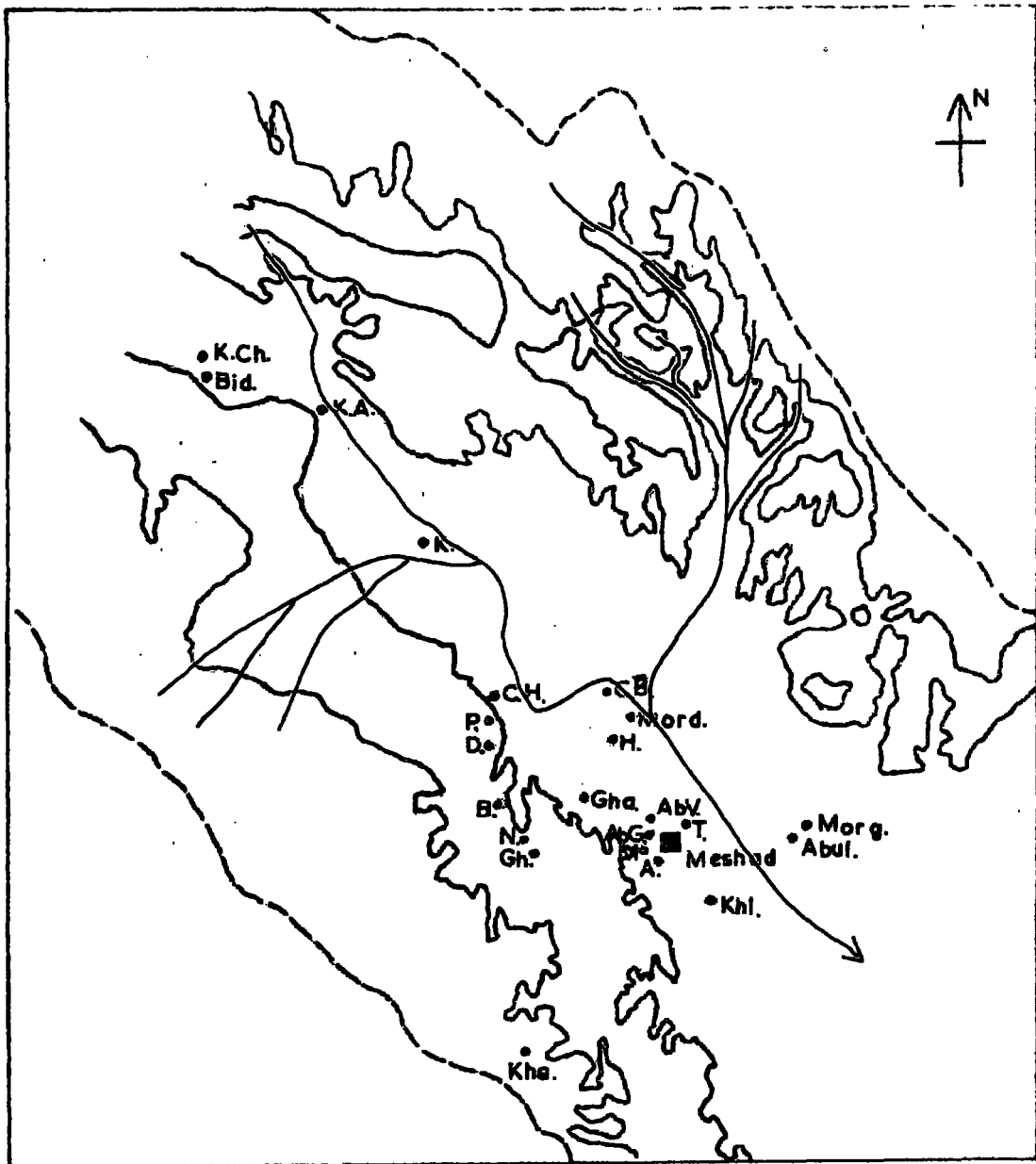
on economics. But the most significant change is in the land tenure systems and the general agricultural pattern in the villages. Already during the visit there were murmurings of land reform though actual examples of the changes were still a long way from the Meshad area.

Finally to make this a comprehensive study of the farming community round Meshad it was necessary to study settlement patterns and building styles and to attempt to find some correlation between them and the landscape.

Perhaps the twenty six or so villages, which were the result of random selection, do not give a complete and accurate picture of what is indeed happening in the agriculture of the area. At least, however, the basis for further study has now been set and, it is hoped, will be elaborated upon later.

Section I.

# MAP OF VILLAGES STUDIED



SCALE 1" = 11 km.

FIGURE 1.

Index to Figure 1 "Map of Villages Studied".

AbG.	-	AbCou Garden.	Kha.	-	Khanrud.
AbV.	-	AbCou Village.	Khi.	-	Khiaban.
Abul.	-	Abulkhair.	Mord.	-	Mordarkeshan.
A.	-	Ahmadabad.	Morg.	-	Morghanan.
Bid.	-	Bid-a-Bid.	M.	-	Moustafakhane.
B.	-	Bildar.	N.	-	Noucah.
C.B.	-	Cahar Borche.	P.	-	Piani.
C.H.	-	Cah Heshk.	T.	-	Telgerdt.
D.	-	Dehnou.			
Gha.	-	Ghasemabad.			
Gh.	-	Ghoulestan.			
H.	-	Hajiabad.			
K.A.	-	Kalate Ali.			
K.Ch.	-	Kalate Cheykha.			
K.	-	Kashef.			

## CHAPTER 1.

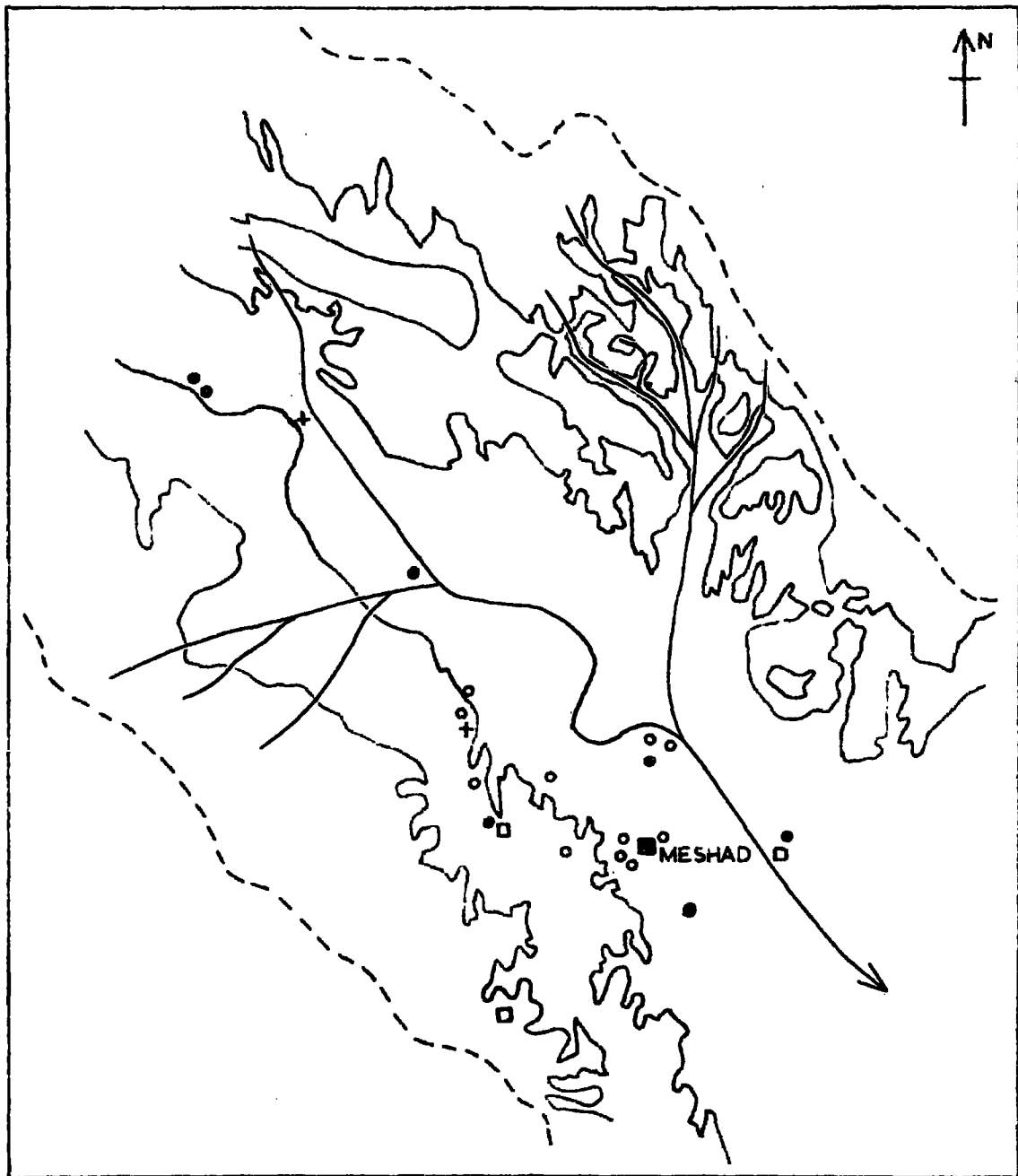
### LAND TENURE AND LAND REFORM.

It would seem unfair, as well as unnecessary, to separate these two very important aspects of the agricultural problem, not only of North East Khorassan, but indeed of much of Iran as a whole. The Shah's present scheme of land reform, which is being pushed through rather rapidly, involves, to a very great degree, the land tenure systems of the country.

In the area within the immediate vicinity of Meshad, outlined on the accompanying map, it is possible to find at least four major types of land tenure, each of which differs within its own category. Naturally it is not possible to say that these are the only types of land tenure to be found within the area but it seems possible to assume that the villages studied gave at least a reasonable cross-section of the types of tenure which exist.

After outlining the four major types of

# MAP OF LAND TENURE



SCALE 1" = 11 km

KEY

- Rented by Landlord.
- Landowner.
- + Divided Village.
- Peasant Proprietor.

FIGURE 2.

land tenure, an attempt will be made to show at least some of the divergencies existing within each type.

The first of the major types is that of the village owned directly by a landowner, an individual or more than one person or a religious body and which has a foreman in charge of the village but the landowner tends to be present for much of the year although not all the time.

Type two is where the village or villages is/are rented by a landlord from either a religious body, particularly in the area immediately around Meshad, or from an absentee landowner. A subdivision of this type of tenure is found where the whole village rents the land from the landowner, although whether it is fair to include this as a subdivision is extremely debatable.

The third type of tenure to be found is the peasant proprietor village. This represents the ideal of land reform, although as will be seen the economy of such villages varies considerably.

Finally, a fourth type of tenure can perhaps be found. Such a village could be classed as a

'divided' village, where the tenure of the 'farm' is divided between two or more individuals. Many of these sections of villages, however, could be classed under one of the three previous groups.

The following list shows into which group each of the villages studied could conveniently be placed. (see also Figure 2).

<u>Group.</u>	<u>Village Name.</u>
1. Landowner.	Ghasenabad, Bid-a-Bid, Kalate Cheykha, Bildar, AbCou village and garden, Piani, Cah Heshk, Telgerdt, Ahmadabad, Moustafakhane, Mordarkeshan and Cahar Borche.
2. Rented by landlord.	Kashef, Morghanan, Khiaban and its four associates, Hajiabad and Nasuhabad.
3. Peasant Proprietor.	Khanrud, Abulkhair and Ghoulestan.
4. 'Divided' Village.	Kalate Ali and Dehnou.

To try and attempt any considerable generalisations, as regards the divergencies in



tenure would be completely false. Within each village, apart perhaps from those classed as 'peasant proprietor', the tenure should be dealt with individually. To be more concise, however, examples will be taken from each of the four groups to try and show at least some of the diversity.

Under group 1, classed as 'landowner' villages, it is necessary to look at four individual types, commencing with Kalate Chéykha. This farm is made up of four farms in one and each farm/village is owned by a brother, four in all. The other villages within this group are called Kalate Gabri, Kalate Hassan and Makhnadabad, but now the population of these villages has all been moved to Kalate Cheykha, under one owner. The three other brothers take no active interest in farming at all and the group is run by Mr. Moarven. This division of ownership is designed to avoid the obligation of land reform, since a landowner owning only one farm will be allowed to keep it.

Bildar is different again since it is owned by the Holy Shrine in Meshad and is run by a foreman.

The Holy Shrine owns a considerable area of land in Khorassan and either runs it itself or rents it out to others to farm it. A similar important religious establishment which owns land is the Gohar Shah Mosque, again in Meshad itself. One of the villages belonging to this mosque is Piani which is looked after by Mr. Tahery, in an inherited position as foreman.

The final type of village in this group is Ghasemabad. This is a village divided into three parts, each of which is owned by one of three brothers. The landowners live in Meshad during the winter and in the village in the summer. Again most of the farm is worked by one of the brothers whilst the other two run separate businesses in the city.

The second group of villages which is classified as 'rented by a landlord', is a little more difficult to describe in general terms, as forms of renting vary from village to village. However, three basic types can perhaps be found which will show at least some of the complexities which exist in renting systems. Firstly, the landlord

rents land from the Shrine, as in the case of Kashef for a period of a five year lease at a time. Here the landlord paid 70,000 tomans (£3,500) for the lease and he is allowed to do with the land virtually as he wishes. As well as this basic rent he also has to pay a yearly rent of 16 tons of wheat and 8 tons of barley to the Holy Shrine and this is usually sold by the shrine for money for maintenance or is sold to the peasants when they are in need of extra supplies of wheat. The previous landlord, however, paid 25,000 tomans (£1,250) and the present landlord blames this increase in rent on a recent rapid increase in land values.

The Gohar Shah Mosque also rents out much of its land, as in the case of Morghanan. This village at one time belonged to a woman but it was given to the Mosque on the understanding that the income from the 'farm' should go towards paying for the repair of the Mosque, as well as the fact that 3,000 kilogrammes of wheat each year must be given to the Mosque. Again the landlord holds the village on a 5 year lease and pays 35,000 tomans

(£1,750) per year for the lease. Yet again there is a considerable discrepancy between the present landlord's rent and that of his predecessor, which was of the nature of 16,000 tomans (£800) per year. This discrepancy can be associated again with the rise in land values.

The final type of landlord village is that of Masuhabad where the landowner is a classic example of the absentee landowner who has spent the last 25 years as a doctor in Paris and has only just returned. In this case the peasants themselves pay a total rent per year of between 6,000 and 7,000 tomans (£300 - £350) to the landowner. This was certainly the most dilapidated village visited.

As stated earlier, group three, the peasant proprietor villages showed very few sub-types since their land tenure system is certainly the easiest to understand. Only one example of such a village will therefore be given, Khanrud. Here all the families own pieces of land, which are not necessarily juxtaposed and they tend to work these individually, although very often marketing is a collective task.

The final group to be looked at is that which has been called the 'divided' village, for want of a better term. Because this group is so difficult to designate accurately, it would appear best to look at both tenure systems in an attempt to explain the title given to the group. The first village is Kalate Ali, which has always been divided into two halves. It is said to have 15 parts in all, of which 8 parts (55%) belong to one man who farms it himself. The remaining 7 parts (45%) have been bought by a bazaar merchant, who, although he is not a farmer, had sufficient money to purchase the land and he in turn has rented it out on a 7 year lease to the present landlord. In this case, unfortunately, it was not possible to find out the actual rent paid for the half-village. The bazaar merchant seemed to consider his purchasing of this half-village as an investment, since, under the land reform, it would be impossible for this village to be affected, for as explained previously the landowner owns only this one half-village.

The second of these 'divided' villages is

Dehnou. In this case again the village had always, ( as far back as was known), been divided into two parts, one part belonging to Mr. Javaheri, the other to Mr. Moustofi. As both these gentlemen were now dead, the village had been inherited by their children, who were not old enough legally to inherit the land, so it was being looked after by the two foremen, until one at least of the children came of age. Considerable difficulties were involved here in organising the village work and it was very difficult to separate the two parts in much of the work that went on.

Here then can be followed in outline the four basic forms of land tenure although it is difficult to assess accurately the importance of the various types. Certainly the most numerous group is that under the term 'landowner' villages, but it might be that these have a rather disproportionate share in the study since work on the 'rented villages' was handicapped somewhat by difficulties of co-operation.

Land reform is at present causing

considerable confusion and argument amongst both the 'landed classes' and the peasants. Although none of the great landowner estates occurred within the area of study, the large area of land belonging to the Holy Shrine had been threatened by the land reform movement and it was feared that the Shrine would lose much of its present property if the land reform scheme was allowed to continue. The Holy Shrine depended for much of its monetary benefits on its agricultural lands, particularly in the form of rents. If these rents were withdrawn and the land given to the peasants, the monetary power of the Shrine would be considerably decreased and, therefore, great efforts were being made to hold up any possible land reform. The paradox of the religious position, particularly in this area of Iran, is shown up very clearly by the land reform movement. On the one hand it demands reforms for the betterment of the peasants and on the other it holds to its traditional pattern of existence for fear of losing prestige.

Progress in many of the villages has been

severely held up because of the difficulties of land reform. Notably after the floods which occurred at the beginning of May, 1963 (mid-Ordibehesht, 1342), many landowners were loath to repair qanat systems and replace seed that had been washed away.

Investment is not now secure when the land can be taken away from the landowner at any time and any compensation which he might receive will possibly be extremely small if it comes at all. Also many of the landlords who have rented land are out to make as much profit as they can since they too can lose their land at any time as well as any investment that they might have made..The attitudes of the landlords can be found later under several of the other aspects studied but to their credit several of them none the less attempted to improve the agriculture of their farms despite the threat hanging over their efforts.

Before giving one or two judgments on land reform from various foremen and landlords, it seems important to outline the main aspects of reform as laid down by the Government and this can be done



simply under eight points:-

- (1) an attempt to remove outsiders, the absentee landowners and the large estates.
- (2) to collect about 30 men and with this group attempt to form a co-operative. Each man has to bring money before he can be given land. When he has given money his name is put down on a register and he receives one of the 30 shares into which the village/farm is divided. Then they are told to choose the governing group of four and a leader who acts as president and it is this group of four which runs the village.
- (3) everything is run on a communal basis.
- (4) a co-operative is also formed and this deals particularly with the selling of the beet to the sugar beet factory and the crops to the merchants (allofs).
- (5) in theory each man gets one thirtieth of the farm but it is very difficult to lay down just what portion belongs to which man. Other portions can be bought from their owners

but at the Government price.

(6) on the death of one of the members of the co-operative, the land passes to the eldest son, if not directly to the Government. If the land passes to the latter, then it is resold.

(7) the co-operative can also borrow money from the Agricultural Banks in order to be able to buy machinery and seed.

(8) the co-operative is encouraged to arrange all their sales of crops, apart from sugar beet, with one particular merchant (alloy).

There are several obvious drawbacks to these eight basic points, some of which are more obvious than others on immediate reading. This system of 'socialism' proves difficult primarily because of the lack of trust which exists between the various members of the groups. The mentality of the people does not allow them to trust their neighbours and, therefore, any form of communal organisation comes up against an immediate hazard. This inborn lack of trust may be overcome in time but it will be

necessarily a very slow process. A second factor arising from this basis of land reform lies in the ability of any one peasant slightly richer than the rest to purchase more than one share in the village. This might in time permit the regrowth of a landowner system within the farm, especially if the peasants become indebted to this one man. Again the setting up of Agricultural Banks is an excellent idea but unfortunately so far the Government has not provided money for the establishment of these Banks and so no credit can be obtained and those villages which have been reformed are left with little or no capital whereas before this latter was provided particularly by the landowner or landlord.

Unfortunately both Iranians and foreigners agree that at present land reform is attempting to go too quickly and thereby not solving the pressing agricultural problems but rather causing more. One particular landowner, Mr. Khorram, who owned Bid-a-Bid, believed that on the whole, land reform was an excellent idea but he wanted the Government to make more capital available for the initial stages;

to quote his own words, "they (the peasants) need money and perhaps after some years they will improve themselves". It is, however, the intervening years which are important at the moment. Another of the major problems was pointed out by the foreman of Merdarkeshan who thought that he would rather work under the present system since he believed that it was much better if there was a leader who would tell the villagers what to grow and how to grow it. The Government seems to be asking the impossible by requiring the peasants to make decisions when they never had to do this sort of thing for centuries. Always they have been able to rely on a relatively educated man who knew, or appeared to know, much more about basic agriculture and what was best for his people. Some people, however, believed that land reform was the answer to all problems and could not wait for it to occur. The foreman of Bildar, who was very dissatisfied with his present position, believed that land reform was good because it provided an incentive for the individual farmers to work harder and try to produce more crops.

The whole problem of land reform, however, is very involved and cannot possibly be solved simply. Basically it will be a matter of trial and error on the part of the Government but unfortunately it is the peasant who is going to suffer. By taking the land off small landowners and landlords, the Government is robbing itself of some of the best agricultural experts in the country. In Iran, agricultural experience within the country is the only way of providing a solution and as will be seen in this book, attempts at limited modernization are taking place which will perhaps ultimately benefit the people a great deal more than the present land reform movement.

## CHAPTER 2.

### THE PRODUCTION AND MARKETING OF MELONS.

The growing of melons is an extremely important aspect of the economy of agriculture around Meshad, although it must be noted that with the ever increasing turn over of the agricultural land to the production of simply wheat and sugar beet, the area devoted to melon growing is decreasing considerably.

Amongst the number of villages studied only three were found to grow melons to any large extent. In many of the remaining villages a smaller amount of melon growing was carried on primarily for consumption within the village. Because of the limited amount of material on this matter, it would seem best to make a detailed study of melon growing in one of the villages, in this case, Kashef, since although there are naturally divergencies elsewhere, they appeared, for the most part, to be slight.

Obviously there is a limit immediately around Meshad, within which melons can be grown conveniently. The particular difficulty is that of

transport. For example, beyond Kalate Ali, to the North West of Meshad, large scale melon growing becomes significantly less because by the time the fruit has been transported into Meshad by cart or on the back of a donkey, it is so bruised that the price obtained from the merchants is not economic. The melons are classified in Meshad upon delivery and if they are damaged very much they immediately become 3rd class and, therefore, the price given does not cover the cost of growing. Another area which is relatively unimportant for melon growing because of physical difficulties is that to the North East of Meshad, typified here by Morghanan, where two very difficult river crossings and a very poor approach road cause much damage to the fruit.

The three principal types of melon grown in the area are:-

- (1) water melons (Hendeivan).
- (2) cantelopes (Till).
- (3) large melons (Kharbizare).

This latter title, 'Kharbizare', is also the general title given to melons within this region of Iran.

Within Kashef melon growing takes up 43 hectares of the total farm hectarage of 134 hectares and the total production is divided on a 6 to 4 basis, that is 60% belongs to the landlord and 40% to the peasants themselves. This is an example of share-cropping which likewise occurs on the Khiaban complex, growing some 200 hectares of melons.

The melon plots in the village of Kashef are not owned communally but usually about 2 hectares of land are given to each family in the village, apart that is from the 18 families who look after the wheat and the sugar beet. In other words, about 12 families in all within the village own land for growing melons. As this accounts for only 24 hectares of melons, the other 19 hectares are worked by people from outside the village. The system is that people either from Meshad or from other villages come to an arrangement with the foreman and are allowed to grow melons on 1 or 2 hectares within the village. This system allows the wealthier inhabitants of the city to have their own supply of melons, or for some of the larger villages, which have a scarcity of land, to make



sure that those villagers who have to work in order to support a family, can find workable land in another village. However, the land is divided up and the 'outsiders' pay no rent for it but rather contribute from their crop on the normal 60% to 40% basis, which the villagers of Kashef themselves pay. The system also ensures that all the land given over to melon growing is used for that purpose, as well as ensuring that the income of one section of the village community is not noticeably greater than that of another section. This method of division appears to be the work of a conscientious landlord, trying to keep dispute over money to a minimum. He has not only got to concern himself with the 12 families growing melons but also with the 18 families growing wheat and sugar beet. He must attempt to keep all 30 families monetarily about equal. The division of the land for melon growing is done by lottery.

The landlord outlined four basic reasons why melons are grown in Kashef:-

(1) the village is nearer Meshad and the

# GROWING REGIME ON FAMILY PLOTS (KASHEF)

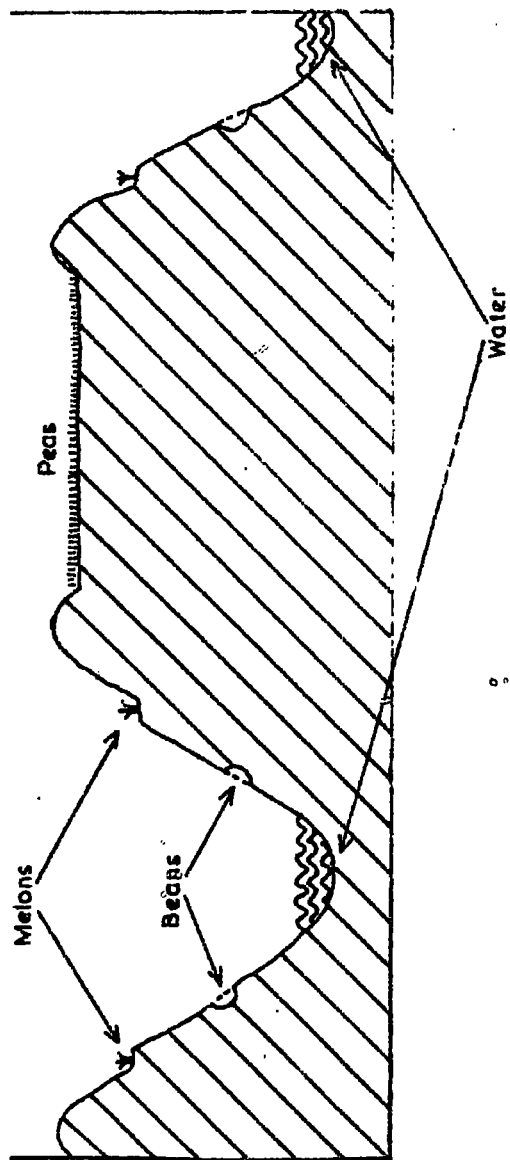


FIGURE 3.

melons can be quickly and easily transported to the city.

(2) economically melon growing is quite lucrative - 1 hectare of melons has an average value of 3000 tomans allowing 5 rials per plant (1 melon) and about 6000 plants to the hectare.

(3) the soil to water relationship is satisfactory - that is there is sufficient water to irrigate the soil well and the soil itself is exceptionally suitable in that it is heavy and clayey.

(4) melons have been grown here, in Kashef, for at least two generations and have become a standard crop.

#### GROWING.

The normal system of planting can be seen in Figure 3. This particular system was found throughout the 43 hectares of the farm, as well as elsewhere in the region where melons were grown. In order to make full use of the good land on which the melons are grown, beans are planted half way up the side of

the trench and peas on the flat area on the top between the trenches. The trenches themselves are between 1½ and 2 metres wide and are divided by a flat ridge between 2 and 2½ metres wide. The reason for the very wide expanse of land between the ridges is that the melons, as they grow, spread over this area. The melons also must not be watered directly but must be able to draw the water up through their roots - watering, therefore, is done along the trenches. The peas are usually harvested after about 2 months, so as to make way for the melon plant which takes about 90 days before it is ready for harvesting. The melons are usually planted in spring and are harvested between July and August.

#### FERTILIZER.

Although considerable amounts of fertilizer are necessary to grow melons on these clayey soils, unfortunately at the moment, despite experiments by the Americans, no chemical fertilizer has been found which is suitable and it is necessary to use mostly human or animal manure. The human nightsoil is brought from Meshad in carts and is left as compost

for about one year before it is used. The task of collecting the human manure is left to certain members of the community who go into the city with horses and carts very early in the morning and return by about mid-morning. For the compost, straw and waste from the sugar beet factory can also be used. The compost is used on the melon plots to the extent of 27 to 30 tons per hectare.

#### IRRIGATION.

The watering of the crops differs considerably in different villages. Kashef's irrigation is provided by qanats. The plots are watered once every 16 days roughly. Therefore, six days are spent in irrigating the 43 hectares of melons, each small unit receiving about 1 day of water. If there has been a little rain, however, just sufficient water is given by irrigation to complete the amount needed, more or less.

On the Khiaban complex where there are 200 hectares of melons, part of this area is irrigated in a slightly different manner. The land is well watered before the melons are planted and then it is

possible to grow the melons without water for the rest of the season. The landlord makes as much use of the rain water as possible by ploughing big jubes, or ditches, and storing the water there from whence it can soak into the ground. If 1 metre of water is stored thus then 1 metre of the ground remains wet and can then be ploughed, smoothed out (to avoid evaporation as much as possible) and then the melon seeds are sown.

#### MARKETING.

When the melons are ripe they will keep for about ten days but, naturally, the earlier they are sold the better. The families in charge of their melon plots usually grow a few of each of the three types of melon which they sell to the merchants (allofs) in Meshad. Normally the farmer will set off at 4 a.m. with his own cart to take his melons to town, arriving there about 5.30 a.m.. By this means the farmer can insure that the melons can be freshly sold the same day that they arrive in town. The yield of each plant is usually about 9 kilogrammes, thus producing about 54 tons per hectare of water melons, 36 tons per hectare of cantelopes and 18 tons

per hectare of the large melons. Each of the individual families makes a contract with a merchant in town for the sale of their melons and it is to this merchant that the shopkeepers go to buy their supplies. The reason why the farmers sell their melons to merchants rather than to the individual shopkeepers is that in order to buy manure and also have sufficient capital for the year, the farmers borrow money from the merchants to the extent of 10% of all their crops. The landlord pays the merchant 5% for selling his share of the crop and it is each merchant who makes the cash division on a 60/40 basis. The landlord is able to check the books of each of the merchants regularly and so check upon the fairness of the dealing. Each contract has to be reported to the landlord when it is made and often in one farm there are between 30 and 35 merchants with whom dealings are made. The price brought by the melons sold in the city fluctuates day by day depending upon the time of the year, that is whether early or late in the season, and the distance the melons

have to be brought. However, the price paid to the farmers remains about the same. The price for the melons is measured in terms of each fruit weighing roughly about three kilogrammes and it is therefore:

Water melons	3 kgs. = 5 rials.
Cantelopes	3 kgs. = 5 rials.
and Larger melons	3 kgs. = 10 rials. (1 toman).

In the village of Hajiabad, however, there is a slight difference since, although the actual sales procedure is the same, that is the melons are sold to merchants (allofs) in the city but here the villagers hire trucks to transport the crop. Each of these trucks costs the village 10 tomans for each ton transported. It was estimated that in Hajiabad approximately 3% of the melons were used by the villagers and the remaining 97% were sold to the allofs.

Occasionally the allof will come to the village in a lorry, either his own or subcontracted, to load the melons and take them some 600 miles to Teheran where he obtains a much better price. If this occurs, however, the melons are usually both sorted



and standardized. The price for the same melons sold in Teheran is about double that when they are sold in Meshad, for example, for the large melons 2 toman in Teheran compared to 1 toman in Meshad. However, the price received by the farmer does not differ at all whether his produce goes to Meshad or Teheran. The sole advantage gained by the farmer if his crop goes to Teheran is that he need not do any transporting of his goods. Similarly on the Khiaban combine each of the farmers makes his own contracts with the allofs. The landlord states a minimum price which the farmer should get and then the fruit is usually transported to Meshad by cart. Many of the landlord's share, however, are sent to Teheran and there sold by a Mr. Tayeb, who is the head of a marketing organisation. In this latter case Mr. ~~Tayeb~~ provides the labour to pick the melons and load them and they are usually very safely transported. The risk involved in transporting the melons seems to be solely that of the allof.

Although there has recently been a considerable decrease in the production of melons

within this area, still a very large number of the farmers immediately within the vicinity of Meshad city devote anything between 30% and 50% of their hectarage to the growing of these fruits. Usually it is on the more marginal farms, that is on the edge of the economically feasible limit for melon growing that the major change over has taken place. Many of the younger, more economically-conscious, landlords have changed to growing sugar beet and wheat, despite the fact that several of them admit that melons are better for the land than sugar beet because they are not so exhausting for the soil. Again, however, it is the fear of land reform and the possibility of losing their land that prompts them to concentrate on more lucrative crops.

## CHAPTER 3.

### THE PRODUCTION AND MARKETING OF WHEAT.

Wheat is a staple crop throughout much of Iran. Within the area being studied, it constitutes, in the form of bread, with 'mast', the major part of the diet of the peasant people. A general change is taking place in the agriculture, away from the idea of each family farming two hectares of land each and growing many small crops for themselves, towards the sole cultivation of wheat and sugar beet.

The principal type of wheat which is grown is a local variety known as 'estamboli', a winter wheat. It is planted either by machine on the more advanced farms, or by hand on the poorer ones, in October and November. Most of the wheat grown around Meshad could be classed as being irrigated since the tendency is for it to be watered about four times during its growth. Fertilizer, on the other hand, is used only by the more progressive landlords. The wheat is harvested in July, when it is cut by hand, using a small sickle. It is next threshed rather crudely

PLATE: 1.



Typical example of a poor quality wheat field,  
the crop lacking water and fertilizer - yields  
very low.

in the village before it is bagged and either stored away for family use or sold to the allofs. In areas of poor soil some dry farming occurs, (see Plate 1.). The crop is normally shared 50/50 with the yield being on average between 1500 kilogrammes per hectare and 900 kilogrammes per hectare. Most of the peasants grow the wheat for their own use and sell only the surplus. When supplies run out more is bought either from the bazaar in town or from the government owned Grain Silo.

Apart from some experimenting with fertilizer, however, very few attempts are being made to make improvements in production. One piece of experiment was being carried out at Morghanan, where a new variety of spring wheat, of Algerian origin, was being tried out, some six hectares being planted. This is a new early-ripening variety. Its success was not known when we left.

The yield produced in the various areas around Meshad depends particularly on water and the soil, especially where the latter is sandy. One interesting factor, however, was that to the East of

Meshad it is possible to harvest the crop some ten days earlier than Kashef to the North West of the city. Two reasons were given for this difference, although one at least is very debatable. Although Morghanan is about 50 kilometres further to the East than Kashef, it is dubious whether such a short distance can make ten days difference in the ripening of the crop. The second reason, however, has perhaps more ground for acceptance, that this land lies more or less in the lee of the Northern mountains where it might receive protection from the cooler air, blowing down from the North.

In some cases, "white leaf" crops, that is cereals, particularly wheat and barley, are grown together, or rather they are not differentiated by the peasants themselves. This type of agricultural economy can still be found at Kalate Cheykha but at Kalate Ali there has been an interesting change. During the previous year, that is in 1962, both wheat and barley were grown on the farm but since the yield was about the same, it was thought much more economical to grow wheat. The reason was because the price obtained for wheat was something like twice that for barley.

It was an obvious economic change although its worth is dubious. Again in Mordarkeshan another change seems imminent although several people wondered whether the landlord was hoping only for economic gain rather than the welfare of his peasants. This experiment is to grow lucerne instead of wheat. The reason behind this idea is that wheat needs water just when sugar beet does and, therefore, the need for water is excessive at one period. Often the water is not sufficient and the landlord would rather the water went to the sugar beet than the wheat, especially since sugar beet is more profitable than wheat. Also if the sugar beet could be given more water the yield could possibly be increased by some 3 tons per hectare. If the hectarage of wheat is permanently given over to lucerne, however, it will mean that the villagers will have to buy their wheat either from a neighbouring village or from the city. This factor could cause considerable hardship.

#### DIVISION AND SUPPLY OF WHEAT.

In almost every known case the wheat crop is divided between the farmers and the landlord or

landowner on a 50/50 basis, each taking 50% of the crop in grain form. It is most common for the villagers to keep their 50% and use it to feed themselves, whereas the landlord's 50% is usually sold in the city.

In Kashef, the landlord held back about a half of his own share, which the villagers found it necessary to buy from him later in the year. The seed for the next year's wheat crop is usually taken out of the harvest, this amount being decided upon by the landlord and the farmers before the division is made. Normally for harvesting hired labour from outside the village is brought in and paid by the farmers and the landlord but the previous year (1961), the landlord had introduced a combined harvester which had produced excellent results but the villagers had reacted against it, the reason being that they did not get their full share of the wheat and it was necessary to buy much more of the crop than usual. Under the normal system (called, in this case, the old fashioned), each group cultivates a certain part of the crop and receives its share from the amount of wheat



produced. This system does not necessarily imply that each peasant farms a separate hectare of wheat but rather that the whole is farmed by 18 peasants (families) in the village and the remainder of the families farm other crops. In almost every case the 50% share given to the peasants is sufficient to feed them for not much more than five to six months of the year after which they have to buy extra supplies either from the landlord or landowner or from Meshad. In the case of Khanrud, for example, the home grown supply lasts about six months and then for the remainder of the year supplies are bought from Meshad when necessary by the individual peasants and brought out to the village by lorry.

Similarly in the case of Cah Heshk, although in this case the wheat is carried by cart from Meshad. The cart is owned by one man in the village and he charges 5 tomans for every 100 kilogrammes that are carried (the cart can carry up to 400 kilogrammes at a time, each load thereby being worth 20 tomans). The villagers pay 8 rials per kilogramme for the wheat they buy in town

although the price varies according to the season. The villagers, however, deemed it more sensible to buy flour rather than wheat. The flour costs about 10 rials per kilogramme, which is not so much extra when the grinding of the wheat has to be paid for.

The most interesting variation on this form of division of wheat is that to be found in many of the villages belonging to the Holy Shrine. In Bildar, for example, a farm still owned directly by the Shrine, the seed is still supplied by the Holy Shrine but when harvested the exact quantity of seed is taken out to recompense that used in sowing, then a further portion is given to the person who looks after the crops during the growing season and the remainder is divided 50/50. The seed wheat and some of the share belonging to the Holy Shrine is stored in the village granary and if the villagers run short then it is possible for them to buy from the Holy Shrine and take it out of the stock left in the village. A similar division to this occurs in the Khiaban complex where the crop is divided into three parts:

- (1) for the Holy Shrine.
- (2) for the landlord (sold).
- (3) for the farmers.

### FERTILIZER.

Particularly with regard to wheat, fertilizer is used only in the more progressive villages, such as Kashef, Kalate Ali, Bid-a-Bid and the Khiaban complex. Here it seems that the more enlightened landlords see the value of fertilization for all crops whereas any type of artificial aid seems to be deplored in most villages, particularly by the absentee landlord who has no real concern for the village economy.

Javad Torbati considered fertilization of the wheat crop, as an individual unit, a comparatively new development in Khorassan. Previously animal manure was used in limited supplies for some fertilization but with the large scale adoption of sugar beet cultivation, the use of chemical fertilizers became more significant. Mr. Torbati claimed that his were the only villages in which fertilizer was used on the wheat crop, and in the survey, this was indeed proved to be the case. The

only fertilizer used was Ammonium Sulphate at the rate of 150 kilogrammes per hectare and the landlord claimed that the yield increase because of this addition was of the nature of 60% to 70% per hectare. The fertilizer itself is normally bought in Meshad from both American and Japanese firms but a much cheaper brand is now being imported from the U.S.S.R., costing 1 to 2 rials less per kilogramme. Naturally the landlords are encouraging their people to buy the cheaper Russian fertilizer than the dearer American or Japanese one.

The only other two villages claiming the use of fertilizer on the wheat crops were Bid-a-Bid and the Khiaban complex. Here, however, on further investigation it was found that no direct fertilization was given to the wheat crop. In Bid-a-Bid, for example, the landlord considered that fertilizer was not necessary for the wheat since the land had been fertilized only the year before when it grew a sugar beet crop. Similarly in the Khiaban complex, where the watered wheat was not fertilized because in rotation the land was fertilized the year before.

Also here where a type of extensive dry farming of wheat is carried on, it was impossible to fertilize the dry wheat.

There seems no doubt that once the true value of wheat fertilization becomes more and more apparent, the idea will be more widely adopted. It has proved itself a success and now the idea merely awaits widespread acceptance. The single problem is the expense incurred, for many of the poorer villages cannot afford this seeming extravagance and are much more inclined to leave this system of wheat cultivation as it is at Bid-a-Bid and on the Khiaban complex.

#### IRRIGATION.

Around Meshad the majority of the wheat receives some type of irrigation and many villages would not admit to growing any wheat at all under the dry farming system. It seemed that they considered such wheat cultivation as relatively insignificant when considering the total production and often they had no idea exactly how much wheat was dry farmed, the exact amount depending very much upon the

amount of rain falling in the year. If there was rain at the time of sowing and there was wheat to spare then it was scattered sparsely over an area of cleared ground and any resulting crop was considered extra to the main harvest. If there was no rain then the ground would be left bare and perhaps in time used for some type of grazing, if any grass grew. An example of this type of system was found at Noucah where the headman made no mention of any dry farmed wheat despite questioning although it was quite obvious on approaching the village that there was a considerable area of dry wheat, no doubt owing to the lack of water.

Under normal circumstances wheat is watered once every 15 days or about 3 or 4 times during its growing season. The reason for this rather small amount of water is that, as the Bid-a-Bid landowner blithely put it, "wheat does not require much water". The sole variation on this pattern occurred on the Khiaban complex where the wheat was watered once every 12 days. Here also the amount of

seed used per hectare depended upon whether the land itself was watered or not, for example, watered land is given 87 kilogrammes of seed per hectare whereas unwatered land is given between 58 and 72 kilogrammes of seed per hectare. However, all types of wheat irrigation depend very much upon the year. Unwatered wheat, in particular, depends upon rain and here also those lands that are used every three years are watered and planted quite sparsely.

Basically, however, the standard wheat irrigation system provides water for the crop three or four times each season and there appears to be very little deviation apart from the wheat coming under dry farming.

#### MARKETING.

The majority of the marketing of wheat is done by the landlords or landowners since the villagers tend to use their share themselves. The only two divergences from the generalisation occurred in Morghanan and Mordarkeshan where the villagers themselves were involved in some way or other in the selling of their portion of the wheat

crop.

In general the landlords sell their crop to allofs in Meshad although when they actually sell depends upon two basic factors,

(a) season

and (b) the amount of wheat on the market.

However, the most comprehensive account of the system of marketing was given by Mr. Khorran, the owner of Bid-a-Bid. He sold his crop to an allof in Meshad and whenever it was possible he transported the wheat himself by tractor and trailer. However, when this method of transport was impossible, he hired a lofry from Meshad to come and collect the crop but because of the distance from the city, the cost of this method of transport is relatively high, reaching as much as 150 rials per ton of wheat carried. The actual time when the wheat is sold depends basically upon the landowner. If he is short of money then the crop is sold to the allof at harvest time, for which the landowner receives 2,000 rials per ton but if there is no shortage of money and the crop can be held back until NoRus time (New Year), occurring in



mid-March according to our calendar, then the price received per ton can be as high as 3,000 rials. This differentiation of price claimed by Mr. Khorram depended principally upon whether much wheat was available and the amount of rainfall there had been the previous year.

This system was substantiated by Mr. Moarven in Kalate Cheykha although he tended to hold his crop back for only a month or two before it was sold.

Similarly the villagers themselves adopted the same methods in Mordarkeshan, where, because of the large amount of wheat grown, they were able, in a good year, to sell something like two thirds of their 50% of the crop. These villagers sell their wheat to the mill where it is ground into flour and in turn it is sold to the bakers in the town. These villagers hire a lorry from Meshad to transport the wheat for them at 120 rials per ton (this price is usually bargained for them by the landlord to avoid any overcharging). Again variations in price can be noted, depending upon when the crop is sold. If it is sold in June the price received is 2,500 rials

per ton whereas if it is not sold until the regular harvest time of August then the price is usually only 2,000 rials per ton. This latter point would explain why the landlord on this farm was attempting to grow a new variety of early ripening wheat, to benefit, not only his own pocket, but also those of his peasants.

One very interesting variation of marketing occurred in Morghanan where occasionally the villagers sold their crops "in futures", that is in anticipation of the amount they would receive from their share of the crop when it was harvested. The reason for this method of sale, of course, was the necessity for money on the part of the villagers. Very often such methods lead the villagers into a perpetual form of debt, usually because of over anticipation and the fact that any money they receive never lasts the whole year through.

One can gather from this very brief look at marketing that very often the landlords and landowners control the price of the crop and most of them have sufficient resources to hold the sale

of their crops until the price appears to be at its highest, so making large profits from the sale of the crop.

INCREASES IN PRICES AND SHORTAGES.

During the last four years in the Meshad area the price of wheat has risen substantially for two basic reasons:

- (1) a definite shortage of the crop.
- (2) a greater proportion of the crop being kept by the villagers for their own use.

(This latter point can perhaps be related to the general turnover to growing economic crops, such as sugar beet and wheat rather than the more usual general agriculture which provided the villagers with much more of their own food).

The price increases during the period are shown below:

- 1959 - 3 kilogrammes of wheat cost 13 rials.
- 1962 - 3 kilogrammes of wheat cost 24 rials.
- 1963 - 3 kilogrammes of wheat cost 27 rials.

The general reasons for the shortage of wheat are basically three fold. First there has been

a very noticeable outburst of the disease, 'yellow smuts', lately. There is no control over this disease at the moment, although 'black smuts' have at last been controlled. Secondly, there has been a very important and significant increase in the hectarage of sugar beet since the latter is a more profitable crop economically. This particular point can probably be aided by the fact that many landlords and landowners are attempting to make as quick and large a profit as possible for fear that land reform will destroy their lands. The third reason is that there has been a significant fall in the level of the water table in recent years owing to the excessive use of water for sugar beet, so affecting irrigation and thereby the quality of the wheat crop. An added reason can be given especially for the year 1963. During May unexpected and very heavy rains caused considerable damage to the crops. This loss was mentioned in the English edition of the Iranian newspaper 'Kayhan' for May 16th, 1963 (26th Ordibehesht 1342):-

"In Meshad ..... at least 500 head of

cattle were lost in the flooded villages. These villages are also threatened by a critical shortage of food and water as many chains of qanats have been ruined."

Because of this extensive flood damage many landowners and landlords were asked to sell their crops immediately rather than to hold them back until the prices increased. In general the crops planted on the slopes were washed out and some areas of wheat were suffering from 'rust' owing to excessive rains.

An example of the effects was met with at Cahar Borche where the yield of the crop was expected to be only about 1 ton per hectare whereas in the previous year production had been as high as 1½ tons per hectare.

#### PAYMENT IN KIND.

Very often in many of the villages a certain type of specialization occurred amongst the villagers, particularly, milling and animal herding. This specialization was most often paid either by money payments from each of the families concerned, or in

kind, usually a specific amount of wheat, either yearly or monthly.

The actual system of payment varied considerably and so any generalisations on this matter appear purely superficial. The obvious way is to outline each of the methods of payment as they exist in the villages where wheat may be involved.

The most complex system that was studied was in Khanrud where there were two millers and a cattle herder who received payment in kind. The cattle herder's chief occupation was looking after the bullocks and for this, during 9 months of the year, he received 12 kilogrammes of wheat for each bullock, whilst for the remaining 3 months he was unpaid. In addition he was paid 24 kilogrammes of wheat per year per calf for looking after the young calves. In the village there were also two mills, each of which had a single attendant. Both these men were paid in kind receiving 150 grammes of wheat for each 3 kilogrammes that they milled.

In the remaining four villages in which this type of payment occurred only single instances could

be found. In Mordarkeshan, for example, the bath-house attendant was given 5 kilogrammes of wheat by each person who visited the baths and for this he was expected to take complete control of the baths, keeping the water hot and the baths relatively clean. A similar system occurred in Cah Heshk, where the bath house keeper was paid 30 kilogrammes of wheat or barley per year by each man in the village for use of the baths.

In Kalate Ali the carpenter was paid in kind, in this way receiving 30 kilogrammes of wheat from each family per year. He received his pay at harvest time and was then expected to do any carpentry jobs that occurred in the village.

The final occurrence of payment in kind was in the village of Kalate Cheykha where the shepherd was given 70 to 80 tomans per month for looking after the sheep as well as about 1 ton of wheat each month.

On the whole, however, wheat cultivation is becoming one of the two principal economic occupations on many of the farms in the Meshad area. There appeared to be two major reasons for this increase.

The first was that wheat was a standard dietary need and if only for this reason, could not be ignored.

The second reason was that, with the help of fertilizer and thus the increasing yield per hectare, wheat was becoming an economically profitable crop for the landlords and landowners to grow.



## CHAPTER 4.

### THE PRODUCTION AND USE OF SUGAR BEET.

The growing of sugar beet is certainly becoming the main occupation of many of the farms in the Meshad region. From a type of subsistence agriculture many landlords and landowners are turning their farms over to the production of merely wheat and sugar beet, with the latter becoming increasingly dominant. The principal reason for the increase in hectarage devoted to sugar beet is that the factories, both government and private, are paying reasonable prices for the crop and also helping with some kind of standardization of the beet produced. For both these reasons the landlord, who is obviously out to make as much money as possible per year to cover his outlay in rent and also provide as large a profit as possible, turns more land over to sugar beet because of its relatively high economic return.

The actual development of the growth of sugar beet has progressed particularly since the coming of the present era under the Pahlavi dynasty.

Reza Shah's attempts to modernize the country led to this large scale production of sugar beet but more rapid advances in the Meshad area have occurred particularly in the last three years. Two years ago the production of sugar beet in the area was much less and the price received was only 80 tomans per ton. Because of this trend towards sugar beet production the income of many of the distant farms has gone up more than that of those nearer Meshad. The reason for this is that the prices for melons and vegetables have remained more or less constant, whereas the sugar beet prices have increased and this thus tends to remove the disadvantage of being further away from Meshad. A particular example of this rapid increase in the development of the crop can be seen in Mordarkeshan, where the increase has been from 500 tons per year to 3,000 tons per year in only 4 years:-

1959 - production 500 tons.  
1960 - production 1,800 tons.  
1961 - production 2,400 tons.  
1962 - production 3,000 tons.

The reason for this rather rapid increase

was not necessarily a more efficient water supply but rather the development of a good rotation system, good fertilization and good, or improved, irrigation. This, although a single example, is typical of the rapid development of the sugar beet industry in the Meshad area.

#### DIVISION AND GROWTH OF SUGAR BEET.

The most important increases in the growth of sugar beet have tended to occur on the more advanced farms. The more technically minded landlords attempt to increase their hectarage of sugar beet but it is very noticeable that the poorer landowners who neglect their farms seem to make no attempts to develop the cultivation of sugar beet. Most of the more advanced farms devote up to one third of their hectarage to the cultivation of this crop and, in some cases, the total hectarage is divided simply between the cultivation of the two most economic crops, sugar beet and wheat.

Again Kashef provides the best example of the typical farming methods employed for the

cultivation of this crop on the more advanced farms. Normally the land is ploughed and disced by tractor, details of which will be presented later, then the land is divided into much smaller units for irrigation purposes. These units are about 120 to 150 square feet in area and are surrounded by small mounds of earth, in order, when necessary, to retain the irrigation water. There is no particular pattern to these small fields. In February the seed is sown by haphazard hand methods and around mid-April when the plants have reached a height of about 2 inches, the farmer selects the sturdiest ones and removes the others in order to ensure the best growth. The foreman at Kashef lamented the fact that people would not plant their seed in rows, so avoiding waste seed. The sugar beet is usually weeded and hoed by hand, especially after the rainy spells, labour often having to be hired to help with these tasks. The beet is usually harvested in late July and August almost immediately after the harvesting of the wheat crop. In Kashef 18 farmers own the

21 hectares of sugar beet collectively and these 18 farmers are the same who own the hectareage of wheat on the farm.

Last year one hectare of sugar beet on this farm produced an income of 5,000 tomans ( c.£250 ). However, because sugar beet needs much more water and fertilizer than melons, and taking into consideration all other factors, such as labour costs and transportation, the overal price received for one hectare of sugar beet and one hectare of melons works out to be about the same.

The reason for prefering sugar beet production to that of melons, therefore, depends basically upon the distance of the farm from a large city which can market the melons, especially as they can be damaged so very easily unless carefully transported. For the handling of the beet once it has been harvested, contracts between the sugar beet factories and the farmers are normally made collectively.

This general type of farming method, as was stated previously, is typical of the more

progressive farms although the actual division of the crop varies elsewhere from the pattern outlined above. The principal variation is the division of the profits from the crop itself, or indeed of the crop, into 50/50 shares between the landlords or landowners and the farmers. This share cropping is particularly in evidence in the villages of Morghanan, Mordarkeshan, Hajiabad, Mehdiabad and the Khiaban complex.

Several of the poorer villages revealed a much less keen interest in the growing of sugar beet particularly on the part of the landowner. In these cases any contract had either lapsed or had never even been made. There were 3 very noticeable examples of this absence of interest. In Dehnou, for example, sugar beet had been grown three years prior to the survey, that is in 1959, and a contract had been held with the government controlled AbCou Sugar Beet Factory. For no apparent reason the growing of sugar beet had stopped and in the year of the survey, 1963, 5 hectares of the crop had been planted again, although the headman of the village had no idea where

the beet would be sold. The marketing factor was being left to the landowner, all other villagers expressing an ignorance of such matters. Another example occurred in Cah Heshk where only 2 hectares of sugar beet were now grown. Here the headman claimed that the village had had a contract with the AbCou Factory for some 20 years and now they had no desire to break the contract. The reason why so little is grown at the moment is lack of money, of which they said they had had ample previously. Still a little is grown, therefore, producing usually about 16 tons, or 2 lorry loads. The third example to be mentioned occurred at Piani. Here sugar beet was to be grown for the first time in 1963. The land to be used for the production of sugar beet in this village had previously been used as a garden but the water demand had been too great for the supplies available. Only about 2 hectares of beet were being grown, similar to the amount in Cah Heshk and as previously the headman expected the owner of the village, Mr. Tahery, to arrange the sale of the beet to the AbCou Factory.

## FERTILIZERS.

Again it is very difficult to make generalizations as to the use of fertilizers on sugar beet crops, except in so far as to say that fertilizers are generally used in all areas where large scale sugar beet production is taking place. In all cases the fertilizers are supplied by the sugar beet factories and the cost of these fertilizers is taken off the total amount to be received by the farmers when the beet is delivered to the factory. Such a method of supply is merely another way of attempting to attain a certain standardisation of the resulting crop. Some years, however, when supplies from the factory run short, certain landlords are willing to buy supplies from the Bazaar in the city, and the villagers pay back the cost when the money for the sugar beet has been received. A comparison of prices for fertilizers from the factory and from the Bazaar might prove useful at this point:

	<u>Factory.</u>	<u>Bazaar.</u>
Superphosphates	1 ton - 9000 rials	1 ton - 12000 rials.
Ammonium Nitrate	1 ton - 9000 rials	1 ton - 12000 rials.



Apart from this price differential, it might also be interesting to note that the chemical fertilizers for the factory are mainly brought from Europe and America via Khorranshah, whereas those sold in the Bazaar come mainly from the U.S.S.R..

The two basic fertilizers used in every case are Superphosphates and Ammonium Nitrate, although there are numerous variations within each village depending for the most part upon the whims of the various landlords and landowners. In Kashef, for example, lime is not needed since the p.H. value of the soil in the area is  $7\frac{1}{2}$ . There is also no need to use any potash. Here the normal amounts of fertilizer used are 300 kilogrammes per hectare of Superphosphates, a similar amount of Ammonium Nitrate and about 20 tons per hectare of animal manure. The top dressing is usually applied between the middle and the end of April. Under the same landlord, similar amounts of fertilizer are used both in Kalate Ali and Morghanan. In Bid-a-Bid, however, there is some slight difference in the amounts used. Here the landowner applies some 600

kilogrammes per hectare of Superphosphates and 200 kilogrammes per hectare of Ammonium Nitrate. Usually the landowner has to buy more fertilizer each year and whenever this is necessary he must pay some 50 rials per ton for the 50 kilometre haul from Meshad. In the other villages similar numerous variations occur and the easiest method of showing them adequately is to list the villages and the amount of fertilizer used:

Kalate Cheykha:

Superphosphates: 800 kilogrammes per hectare.  
Ammonium Nitrate: 400 kilogrammes per hectare.

Mordarkeshan:

Superphosphates: 700 kilogrammes per hectare.  
Ammonium Nitrate: 300 kilogrammes per hectare.  
Azurt(Nitrogen-Urea): 400 kilogrammes per hectare.

Hajiabad/Mehdiabad:

Superphosphates: 300 kilogrammes per hectare.  
Ammonium Nitrate: 300 kilogrammes per hectare.  
Azurt(Nitrogen-Urea): 150 kilogrammes per hectare.

Cahar Borche:

Ammonium Nitrate: 300 kilogrammes per hectare.  
plus some Superphosphates.

Khiaban complex:

Superphosphates: 300 kilogrammes per hectare.  
Ammonium Nitrate: 300 kilogrammes per hectare.  
Potassium: 50 kilogrammes per hectare.  
Azurt(Nitrogen-Urea): 100 kilogrammes per hectare.

There are noticeably certain variations in amounts of fertilizer given and the Azurt ( Nitrogen - Urea ) is usually supplied when animal manure is not used and the deficiency has to be made up by a supply of Azurt. In the Khiaban complex the superphosphate is supplied to the roots of the sugar beet in winter and the Urea is normally sprayed on the crop, and if the leaf of the sugar beet is not good then more Urea will be provided.

There is certainly no doubt about the importance of fertilizers used in the production of the beet and none of the landlords/landowners complained about having to use these chemical manures, especially since the factories supply the bulk of the fertilizers. There also appears to be no doubt that the addition of fertilizer to the soil does make for a considerable increase in the yields of beet, although it is necessary to be extremely wary of individual claims such as the one given by the landlord who claimed that under the previous owner the yield of beet in the village of Kashef was only 200 tons per year,

PLATE: 2.



Contrasting sugar beet crops, showing the obvious effects of more modern methods of agriculture.

PLATE: 3.



PLATE: 4.



Some of the best sugar beet seen on the Khiaban complex,  
the result of good seed, fertilizer and water.

principally because no fertilizer was used. However, the present owner with the aid of fertilizer has increased the yield to 1,400 tons per year. There is no doubt that these figures are impressive, although obviously they must be treated with a certain amount of scepticism, especially because no mention is made of the hectarage of the crop in either case.

(See Plates 2, 3, and 4 for obvious differences in the quality of the sugar beet).

#### IRRIGATION.

Very little variation occurs throughout the area with regard to the supply of water to the sugar beet crop. The irrigating of the beet varies between 1 day in 10 and 1 day in 16. It appears that most of the landlords would wish that it were possible to carry out irrigation at least 1 day in 10 but difficulties of water supply tend to make this almost impossible in most areas. Usually if the crop occupies a third of the total cultivated land, the whole process of irrigating the beet crop takes between 3 and 4 days. The only variation that was

found with regard to irrigation was in the twin villages of Hajiabad and Mehdiabad where the crop was not watered at all for the first two months but was then irrigated once every 12 days. During the spring of 1963 whilst this survey was being carried out very heavy rainfall occurred in the Meshad area producing considerable flooding, the results of which upon the wheat crop have been referred to previously. The results upon the sugar beet crop appeared to be rather fewer as far as could be confirmed and certainly not as widespread as the damage done to the wheat crops. However, in two cases at least, flood damage was mentioned. In one, Kalate Ali, the heavy rains had caused the sugar beet seeds not to germinate properly. The reason given was that because the top soil caked hard when dried by the hot sun the beet was unable to force its way through the soil. This meant that very careful irrigation was necessary to attempt to help the germination of the seed and the breaking down of the soil. In Cahar Borche there was much more serious trouble when during the flooding



some 15 hectares of sugar beet were completely washed away and only 30 hectares remained. This loss would obviously have serious repercussions upon the economy of the village.

One interesting factor was referred to on the Khiaban complex where the yield of sugar beet rose rather dramatically near to the sources of the deep wells, from an overall 45 tons per hectare to 75 tons per hectare. This increase was partly due to the ground being almost permanently moist but the local people believed that the goodness was taken out by the beet nearest the well and that was why the beet there produced better yields.

#### YIELDS.

The beet grown in the region contains a sugar content of between 17% and 18%, thereby giving a yield of 180 kilogrammes of sugar for every 1 ton of beet. The actual yields per hectare on the farms fall mainly into three groups which seem to correlate closely with the interest taken in them by their landowners and landlords. The three groups can be classified as:-

- (1) high yields per hectare - Kashef,  
Mordarkeshan and Bid-a-Bid.
- (2) moderate yields per hectare - Cahar  
Borche.
- (3) low yields per hectare - Cah Heshk,  
Piani and Dehnou.

These total yields vary from 50 to 60 tons per hectare on the more advanced farms to 30 tons per hectare in the second category and finally as low as 8 tons per hectare in the poorest farms. There appears to be no doubt as to the benefit in the case of sugar beet of careful, controlled management and the advanced use of fertilizers.

#### RELATIONS BETWEEN VILLAGES AND FACTORIES.

The principal method of collecting the sugar beet by the factories is by the issuing of contracts. The farmers collectively make a contract with the appropriate factory or else a contract is made on their behalf by the landlord or landowner. Where the crop is shared it is quite common for the landlord to make his contract dealing with his share of the crop and leave the farmers to

make their own contract. With the Government factories the beet is transported by lorries which are under contract to the factory whereas with the private factories the landlords or farmers hire their own lorries.

The standard organization and running of the factories is looked at in detail in the appendices, suffice it at the moment to outline the basic effects that the present system has upon the farming in the area. Since the sugar beet is only grown under contract, it is possible for the factories to control to quite a large degree the standard of the beet they receive. Naturally any form of standardization in this manner can only have a limited effect in improving the quality of the poorest beet but will have little or no effect upon a higher quality crop. The system, therefore, benefits particularly the small farms with only a limited income.

As will be seen later, the sugar beet factories, both private and government owned, have in the last two years been considerably overloaded, particularly because of the large increase both

in hectarage and yields. The principal reason for so many farms turning over to the production of sugar beet, as has been stressed already, is its distinct economic advantage to the farmers, but it also reduces the risk involved by the farmers. since, provided the crop is reasonably satisfactory and the weather does not damage it, either by drought or flood, then the income is assured.

The factories for their part have set up five basic schemes which they believe will help both themselves and the farmers as regards the quality of the sugar beet.

The first of these is that the factory supplies 25 kilogrammes of seed for each hectare of land which is to be devoted to sugar beet.

Secondly the factory supplies sufficient chemical fertilizer to treat the whole crop. As has already been seen the two basic fertilizers used are superphosphates and ammonium nitrate. Sometimes when the factories have not sufficient fertilizer to provide all the farms, the wealthy landlords will buy the necessary amount in Meshad.

But if there is a shortage such as this, the poorer farms have to make do with what they can get from the factory, thus necessitating lower yields per hectare.

Thirdly the factory will advance 6000 rials (approximately £30) credit for each hectare of beet to be grown to cover the cost of ploughing, discing, hoeing and other such tasks prior to harvesting.

Fourthly the factory in the case of pest or disease supplies all insecticides and sprays plus the use of the specialists to deal with the problems, free of charge. So far in three years this service has not been necessary so it seems obvious that this service is unlikely to involve the factory in a great deal of expense.

Fifthly and finally the factory supplies loans to farmers to help them with the digging of wells and the construction of qanats for irrigation. This source of money is, as far as can be seen, much cheaper for the farmers than a loan from the city. It is hoped, however, under the land reform movement that Agricultural Banks will take

over this role, thereby theoretically reducing even more any form of monetary control which factories or moneylenders might have over the farmers.

Apart from the free pest service, the price of the other services is deducted from the total when the beet is delivered to the factory. If this matter is looked at economically it can be seen that the farms where there are low yields per hectare, as low as 8 tons, the actual economic balance will show a deficit. With the Government-run factory it is possible to consider that the farmer earns approximately 90 tomans per ton after the deduction for transport. This would then give him an income of 720 tomans per hectare and when the various services are also deduced, such as the 600 tomans credit plus a minimum of 200 kilogrammes per hectare of both types of fertilizer, costing 300 tomans, the possible profit margin would be very low indeed and even non-existent. In these villages, therefore, sugar beet cultivation is anything but an economic proposition. On the farms at the other end of the scale, where the yields

are as high as 60 tons per hectare, there seems no doubt that the profits are very large indeed.

The proximity of a sugar beet factory shows a certain controlling tendency. The Government owned factories of AbCou and Cheneran pay as much as 10 tomans per ton less for the beet than the private factories at Shirwan and Ferriman. The basic factors controlling where the beet is sent are the cost of transport and the capacity of the factory. Many of the more prosperous landlords send their beet to the private factories as much as 100 kilometres away but the poor farmers very often must reconcile themselves to dealing with the factory nearest. An example of this system occurs in Kashef where the bulk of the beet is sent to Ferriman where it brings 124 tomans per ton and the cost of transport is 24 tomans, leaving a final price of 100 tomans, compared to the 90 tomans received at the AbCou factory. Kashef, however, relies upon the AbCou factory for its supply of pulp which can be used for both fertilizer and cattle feed. The use of pulp is a relatively recent innovation in that the American

A.I.D. advisers suggested that instead of burning the pulp it should be used on the farms for fertilizer or animal feed. The price paid for the pulp varies from:

1 ton of wet pulp = 2 tomans.

1 ton of dry pulp = 200 tomans.

The reason for this large variation in price is obvious. In obtaining this pulp the farmers come to a personal arrangement with the factory for collecting the pulp. The farmers can use their own carts for transporting the pulp or can hire contractors for the purpose. The Head of the Advisory Branch of the Ministry of Agriculture in Meshad suggested that another of the principal reasons for using the Ferriman factory rather than the AbCou factory is that at the private factory lorry need stay only 3 hours to unload whereas at the Government factory the lorry must stay 12 hours. This statement appeared to be rather dubious.

#### THE FACTORIES.

There are four factories in the Meshad



PLATE: 5.



The sugar beet factory of Cheneran - Government owned.

area which are involved in the processing of sugar beet. Two of these, Shirwan and Ferriman, are private factories, the other two, AbCou and Cheneran, (see Plate 5 ) are Government owned. The private factories are each situated about 80 kilometres from Meshad, Shirwan to the North West and Ferriman to the South South East, whereas the two Government owned factories are much nearer the city - AbCou within 10 kilometres to the North West and Cheneran about 60 kilometres to the North West. The private factories have been built by syndicates of local landlords/landowners but are both relatively small. Ferriman, for example, takes 195,000 tons of beet and produces 26,000 tons of sugar. The Government owned factories are even smaller, AbCou taking only 108,000 tons of beet in 1962 and producing 15,000 tons of sugar, but it is hoped that the Government will build more factories much closer together.

First, then, to look at the Government factories. These pay on average 103/104 tomans

per ton of raw beet delivered to the factory and for each ton various basic charges are made, over and above the extra services provided by the factory.

For example, the beet taken from Kashef by the farmers to AbCou costs 14 tomans per ton for transport and also 10 rials per ton is levied for education. Similarly from Mehdiabad to AbCou, the farmers receive 104 tomans per ton minus the cost of transport, which is 12 tomans per ton, as well as the educational levy. The Cheneran factory differs very slightly from the AbCou factory. The beet from Bid-a-Bid is taken to Cheneran and here the price brought is again 104 tomans per ton of raw beet. From this again 15 tomans per ton is deducted for transport, plus a further 10 rials per ton as an education levy. As well as these levies the landowner also has to pay 10 rials per ton for unloading the beet and a further 10 rials for loading.

One advantage given to the farmers for producing sugar beet is that for each ton of beet delivered the farmer receives 12 kilogrammes of

sugar at 13 rials per kilogramme, whereas the usual price paid for sugar in Meshad is 25 rials per kilogramme.

Of the villages studied, six take their sugar beet to AbCou and two to Cheneran:-

AbCou Factory: Kashef, Dehnou, Mehdiabad, Piani,  
Cahar Borche and Cah Meshk.

Cheneran Factory: Bid-a-Bid and Kalate Cheykha.

The two private factories are at Ferriman and Shirwan and the main difficulty is that both of them are too far from many of the villages and therefore the transport costs are too high, for example, as high as 20 to 22 tomans per ton from Morghanan. The Ferriman factory pays 124 tomans per ton of beet delivered to the factory from Kashef, which is just over 100 kilometres from the factory. From Kashef transport costs 24 tomans per ton and, therefore, the profit on one ton of beet is about 100 tomans. From Kashef, however, only the landlord sends his beet to Ferriman whilst the remainder of the farmers in the village send theirs to the AbCou factory. The landlord claims that the Ferriman factory offers a

bonus system for beet brought from the Meshad area in order to encourage this. The reason is simply that better beet is grown in the more well irrigated northern part of the province.

Shirwan operates on a similar system to Ferriman and beet taken from Hajiabad to Shirwan receives 124 tomans per ton, transport costing 28 tomans per ton. Strangely enough the cost of beet carried from Kalate Cheykha to Shirwan is 130 tomans per ton and the cost of transport is 30 tomans per ton. No doubt there was a certain discrepancy in the facts given here since Kalate Cheykha is some 20 kilometres nearer to the Shirwan factory than Hajiabad. However, the landowner at Kalate Cheykha claimed that he only took his beet to Shirwan when the slightly smaller factory at Cheneran was unable to handle it. To these two private factories the following villages send their beet either regularly or intermittently:-

Ferriman Factory: Kashef, Kalate Ali, Morghanan  
and Mordarkeshan.

Shirwan Factory: Kalate Cheykha and Hajiabad.

These sugar beet factories are obviously extremely important to the agricultural development of the area, although the complete success of growing sugar beet depends upon the water supply available and the only solution to providing more water, which is really acceptable, is the building of dams to store water in the mountains. With an adequate supply of water, all the landlords and landowners agreed that Khorassan itself would produce 600,000 tons of sugar, instead of the present 50,000 tons per year, which could all be grown by 25 farmers with the correct modern methods and there is no doubt that in Khorassan there are men who could achieve such rates of production, if they did not have to consider the local villagers, but this is really only speculation on the part of the landlords. At present the whole of Iran produces 100,000 tons of sugar whereas the needs of the country are somewhere nearer 300,000 tons annually. This amount could be produced in Khorassan and indeed even more, for export to Afghanistan, Pakistan and Iraq, if 25 to 30 new factories were provided in the province to cope

with the increase in the crop. Already the existing factories are overloaded, for example, Ferriman in the height of the season has had to double its intake per day from 1200 tons to 2200 tons to cope with the supplies of beet. The provision of new factories is very difficult since private individuals are not willing to invest their money in a project which might be taken over very soon by the Government under its land reform scheme. The only other source of factories would be the Government but it cannot afford the cost of new factories at the moment since the Agricultural Banks have first priority. There seems no doubt, however, that more factories will have to be built soon and that the price paid to the farmers for their beet will have to be increased. Mr. Khorram, the owner of Bid-a-Bid, suggested that a more realistic price for the beet would be 150 tomans per ton, especially as the price of sugar is about 25 rials per kilogramme. Here again the landlords appeared to be quibbling at the profit margins of the factories, who, it was claimed, only paid 1 rial per kilogramme of sugar beet. The

figures would tend to suggest that the factories at the moment are doing reasonably well. They pay 1000 rials for 1 ton of sugar beet and even though they only get about 180 kilogrammes of sugar per ton of beet, they would be able to sell this sugar for 4,500 rials. Naturally the running costs of the factory must also be taken into consideration but nonetheless the landlords and landowners all thought that the price they received for their beet was lower than what it should be.



## CHAPTER 5.

### GROWING AND MARKETING OF OTHER CROPS.

Basically the remainder of the crops can be divided into two parts:-

1. "Green leaf" crops - vegetables.
2. Fruit.

plus one or two other small crops, such as alfalfa, cotton and barley which occurred in one or two cases but which must be mentioned in order to make the work comprehensive.

Generally speaking, therefore, apart from the gardens of Ahmadabad, Moustafakhane and AbCou, vegetables, in particular, tend to be grown on small hectarages of land and the main interest appeared to be in producing sufficient to eat. If the supply proved to be particularly good, any surplus would be sold. The growing of fruit is affected on a slightly different basis, in that some farms or "gardens" devote themselves particularly to fruit growing. It is not possible to differentiate between the various types of farm as to exact location except in so far as to

say that in the upland areas and valleys away from the main river valley, wood in general is most prominent amongst the commodities, and so, in its turn, is fruit. Nonetheless, most villages endeavour to grow some kind of fruit trees, if only to satisfy the needs of the landlords. Perhaps it would be possible to generalise about fruit growing to the extent of saying that many of the farms in the centre of the valley have no gardens of any size and make no attempt to cultivate fruit at all. This factor is noticeable both to the North West of Meshad, with Kashef, Bid-a-Bid, Kalate Cheykha and Mordarkeshan, and to the South East of the town, including the villages of Morghanan, Abulkhair and Khiaban. Most of the villages to the South West of the city have some fruit gardens of varying importance, perhaps because they are nearer the hills and therefore have soil and a water supply more suitable to the growing of trees.

As regards the growing of vegetables it can be seen from the accompanying table that out of

the 24 villages in the list, only 6 do not grow any type of "green leaf" crop. There is also notable specialization, particularly in Noucah (13) where only peas are grown and marketed, and in Khanrud (4) where the climate is considerably cooler and wetter than on the plain, there is a concentration on potatoes and turnips.

	Peas.	Beans.	Onions.	Cucumbers.	Tomatoes.	Potatoes.	Turnips.	Radishes.	Carrots.	Lettuce.	Egg Plant.	Cabbages.	Marrows.
Kashef.	x	x	x	x	x								
Kalate Ali.	No vegetable crops grown.												
Ghasemabad.	x	x	x	x	x	x							x
Khanrud.						x	x						
Bid-a-Bid.	x	x				x							
Morghanan.	No vegetable crops grown.												
Abulkhair.	No vegetable crops grown.												
Nasuhabad.			x	x		x							
Telgerdt.			x	x	x			x	x				
Mordarkeshan.			x	x		x							
Kalate Cheykha.	x	x											
Cahar Borche.	No vegetable crops grown.												
Noucah.	x			x									
Bildar.			x	x	x	x							
Dehnou.			x	x	x	x							
Piani.			x			x							
Cah Heshk.			x	x		x							
Ghoulestan.				x		x							
Ahmadabad.				x	x	x				x	x		
Moustafakhane.	No vegetable crops grown.												
AbCou Garden.	No vegetable crops grown.												
AbCou Village.				x		x					x		
Khiaban.			x	x	x	x		x			x	x	x
Hajiabad.	No vegetable crops grown.												

Table 1.

	Pears.	Peaches.	Cherries.	Apples.	Grapes.	Apricots.	Plums.	Mulberries White.	Almonds.	Mulberries Red.	Quince.
Kashef.	No fruit.										
Kalate Ali.	x	x	x	x	x						
Ghasemabad.	x	x	x	x		x					
Khanrud.	x	x	x	x			x	x			
Bid-a-Bid.	No fruit.										
Morghanan.	No fruit.										
Abulkhair.	No fruit.										
Nasuhabad.		x	x	x		x		x	x		
Telgerdt.				x	x						
Mordarkeshan.	No fruit.										
Kalate Cheykha.	No fruit.										
Cahar Borche.		x		x		x	x				
Noucah.	x	x	x	x		x					
Bildar.		x	x	x		x		x		x	
Dehnou.		x	x	x		x	x				
Piani.		x	x	x		x					
Cah Heshk.	x	x	x	x		x					
Ghoulestan.				x		x					
Ahmadabad.	x		x	x		x	x				x
Moustafakhane.		x	x			x					
AbCou Garden.	x		x	x		x					
AbCou Village.	No fruit.										
Khiaban.	No fruit.										
Hajiabad.	No fruit.										

Table 2.

A similar table of statistics showing the villages and the fruit crops they grow shows that out of 24 villages; only 8 did not grow any fruit at all whilst all the others grew a wide variety of tree fruits, the most common being apples, cherries, apricots and peaches. The only two villages which grew neither "fruit crops" or "green leaf crops" were both to the East of the city and juxtaposed, being Morghanan and Abulkhair. Beyond the fact that the two were shorter of water than most of the villages, there appeared to be no other explanation for this complete lack of any of the old generalised form of agriculture.

The actual hectarage devoted to these various crops varied immensely between the various villages. The smallest area, one very small patch of onions, grown at Kalate Ali to as much as 30 hectares on the Khiaban complex near Meshad, devoted completely to the growing of vegetables. Similar divisions of land occurred within the farms or gardens themselves, for example, Ghasemabad had about 18 hectares of "green leaf crops" and 12 hectares of fruit trees, and similarly Noucah grew about 6 hectares of "green leaf crops" and

17 hectares of fruit trees. There seems no doubt at all, however, that where these extra gardens occurred they had a very noticeable effect upon the economy of the village.

In the majority of cases it seemed most common to divide the crop 50/50, as with the wheat and sugar beet, but in some cases, the most noteworthy being Kashef, the landlord still insisted that the crop be shared 60% for the landlord and 40% for the farmers. In Kashef, these "green leaf crops" were grown on a much smaller scale by the owners of the melon plots as well as by both town and village outsiders. The farmers used their 40% for their home consumption whilst the landlord marketed his 60% with the same allop as he sells his other crops. In some cases, however, he will sell some of his crop to the villagers if necessary. A more typical system occurred in Ghasemabad where the crop was shared 50/50, although a very embittered headman claimed that the villagers only received 20% of the fruit crop and the remaining 80% went to the landlord. This accusation could not really be verified and after much discussion appeared

to be merely the result of hatred by the headman for the landlord. However, in Ghasemabad, six of the families in the village shared the money from fruit growing and crop planting and the remainder of the villagers were paid workers. In some instances a landlord kept a small garden for his own personal use and such was the case in Kalate Ali where the full extent of the garden was only 2 hectares. The landlord looked after the land himself, only occasionally paying other people to work it for him. Usually only one man was employed simply to tend to the fruit and to change the irrigation water when necessary. A very similar arrangement was to be found in Nasuhabad. Here, a 12 hectare garden was divided into three distinct parts, each belonging to various members of the family. The parts were 3 hectares, 7 hectares and 2 hectares. Here one man was paid 600 tomans per year to look after the trees in the garden. A similar division of gardens occurred in Dehnou where the 16 hectares were divided into two parts, one of 10 hectares belonging to Mr. Moustafi and the second of only 6 hectares belonging



to Mr. Javaheri. Each of these men had a number of villagers working for them but although the two gardens were worked separately the various workmen were readily interchangeable.

The most important gardens from the point of view of production were the ten which ringed Meshad and which belonged to the Holy Shrine. Of these the three most important were visited, Ahmadabad (15 hectares), Moustafakhane (10 hectares) and the AbCou garden (100 hectares). The land belonging to these gardens was divided into two basic types:-

- (1) that which could be rented by a private individual or organisation from the Holy Shrine.
- (2) that which the Holy Shrine kept for its own use.

Each of these gardens is being dealt with as an individual entity throughout the study.

However, before looking in greater detail at the growing and marketing of the "green leaf crops" in the area, there are three crops which ought to be dealt with in some detail, although their economic

significance is not particularly great in this area. These are barley, cotton and alfalfa. First then a brief study of barley will be presented.

#### BARLEY.

Barley is grown, in some degree or other, in 14 out of the 24 villages studied, usually in association with wheat. It is used mainly as fodder for animals in winter although in some of the poorer villages it is used as a source of food to counter-balance the shortage of wheat. In three of the villages, Kalate Cheykha, Ghoulestan and Ghasemabad, the actual hectarage of wheat and barley are inseparable as both crops are mixed. It is only feasible to say then, that the farm, as in the case of Kalate Cheykha, grows 150 hectares of wheat and barley. Basically the relatively low price of wheat and barley makes it uneconomical to grow both, especially when it is possible to grow some other crop in their place. In 1962, the year prior to the survey, Mordarkeshan, had grown about 30 hectares of barley yielding about 4 tons per hectare but in 1963 the crop had dropped completely from the normal rotation system

of the farm. When it was grown, the barley was watered about 5 times in its 6 month period of growth and although it received no superphosphate fertilizer, it was given about 150 kilogrammes per hectare of Ammonium Nitrate. Normally, then, in Mordarkeshan, the crop was shared on a 50/50 basis, the landlord selling his share but the villagers keeping about 20% of their share and selling the remaining 80%. The 20% was kept for feeding the animals as well as a possible secondary supply of food if and when the wheat supply gave out. The barley which was sold was taken to Meshad and was sold in the city on the 'free market', where it was believed that the best price for the crop could be obtained. The actual price paid in the city for the yield from one hectare of land differed quite widely although all the prices proved to be extremely low. The price quoted by the foreman was only 5.000 rials per hectare and that of the landlord as 2.000 rials per hectare. It would appear that in either case the low price received was one of the principal reasons why barley as a crop had been ignored in 1963. The barley was transported

into Meshad by lorry, costing the same per ton as for the transporting of wheat, that is 120 rials. It is then sold to a merchant, usually the same one who deals with the wheat, and then he, in his turn, sells it in the city.

Another village where barley is not always grown is Kalate Cheykha, where, in some years, instead of barley the landowner may grow peas and beans. The whole system depends very much upon the needs and wishes of the people of the village at the time. As with wheat, the barley is watered once every 14 days approximately and as it needs fertilizing, it normally receives about 200 kilogrammes of superphosphate per hectare. Once gathered, the barley is divided equally between the landowner and the villagers, the latter usually eating their share. The landowner, Mr. Moarven, takes the barley on his own transport to Meshad and there he sells it to an allof. In the remainder of the villages, the hectarages under barley vary enormously, from 80 hectares in AbCou village to 2 hectares grown in Piani. Two of the villages, Khanrud and Dehnou grow the crop by simple dry farming

methods, especially if there has been a particularly heavy rainfall in the Spring, where the seed is scattered over all the normally unused land in the hope that at least some of the crop will grow. In several cases, particularly in the villages of Telgerdt, Abulkhair, Cah Heshk and Khiaban, the barley produced is used for cattle food, or at least, as animal fodder. Yields of the crop vary from 3 to 5 kharvars (90 - 150 kilogrammes) per hectare and wherever it is grown it is divided on the usual basis of 50% for the villagers and 50% for the landlord, except where the villagers are paid labourers.

In Ghasemabad, where about 11 hectares of barley are grown, the crop is sown as an under crop, beneath the trees, but as the soil is not really very good for barley the yields are very poor, only 20 kharvars (6000 kilogrammes) being produced in 1962 and whatever portion remains when the villagers have used what they require, is sold in Meshad at between 1 toman and 1.5 tomans for every 3 kilogrammes.

Of the remaining villages which grew a little barley, Noucah had only planted about 60 kilogrammes

of seed in 1963 because of the lack of water. Bildar, on the other hand, irrigated all her 3 hectares of barley but the foreman claimed that the yield of the crop depended very much upon the area where it was grown. The yield could be as high as 5 kharvars per hectare (150 kilogrammes) or as low as 2 kharvars per hectare (60 kilogrammes), with an average of about 3 kharvars (90 kilogrammes).

Ghoulestan was the only village which claimed the necessity of importing extra supplies of barley from the city and although possibly slightly exaggerated, all of the farmers claimed that they had to pay 60 rials for every 3 kilogrammes brought from the town plus 50 rials for the transport of the barley the 15 kilometres from the city.

AbCou village, which grew by far the largest hectarage of the crop, claimed yields of 4 to 5 kharvars (120 to 150 kilogrammes) per hectare. The crop was well watered and when harvested was divided equally, the farmers using their share within the village and the Holy Shrine selling its share in the city.

There seems no doubt that the more progressive farmers consider barley to be an uneconomic, and therefore, useless crop, except possibly for use as cattle fodder, especially noteworthy on the Khiaban complex. Nonetheless the hectarage devoted to barley is obviously going to become even less if present trends are carried through and there seems no reason why it should remain as one of the main crops in the area, except in so far as it might be used to repleish dwindling stocks of wheat when there has been a particularly bad harvest.

#### Cotton.

Although there is a little cotton grown round Meshad, in general the climate is too cool and the importance of the crop increases in the South, near Torbat-e-Jam, where it is considerably warmer. On the 3 farms where cotton was grown, only 32 hectares in all had been planted in 1963. Of the three, only AbCou village seemed really interested in growing the crop on an economic basis. In AbCou some 20 hectares of cotton were planted each year,

yielding, because of the lack of water, between 2 and 3 kharvars per hectare. During the growing season the crop was watered only 3 times, that is about once every 25 days, although there were variations depending upon the exact relation of the hectarage of cotton to the sources of water. When the cotton was collected it was taken to Meshad and sold to the merchant, although the actual time of sale depended very much upon the state of the market. Usually cotton commanded a high price, as much as 450 to 500 tomans per kharvar. The previous year, 1962, the return from the cotton crop had been 24,000 tomans. When the merchant buys the cotton he takes it to the ginning mill where the cotton and the seeds are actually separated. There are several such factories, usually German built, within the city. The seed is then resold for the following year's crop. The Khiaban complex grew a very limited area of cotton, only 10 hectares, because the landlord claimed that it was not possible to grow the crop economically around Meshad, the climate being much more suitable further South. The only reason why he



grew a little cotton was that when they were unable to grow wheat because of the late rains then they would sow some cotton. This they sold to the ginning mill when collected and depending upon the type of cotton it would bring around 15 rials per kilogramme, (that is 450 tomans per kharvar). The previous year's crop had, however, been damaged by disease.

The only other village to grow any crop at all was Ghasemabad and here 2 hectares had been planted this year. The villagers had been planting some cotton for the last few years as an experiment but this year, 1963, because of the cold, wet weather, only 2 hectares were planted.

The wastage from the plant, once the cotton had been picked, was used, in almost every case, for feeding the sheep and cows.

This area, around Meshad, was really on the periphery of the true cotton growing area further South and the crop was very insignificant economically.

Alfalfa.

The growing of alfalfa was a very new idea

in the area and, in fact, it was limited to two of the more progressive farms. The landlord at Morghanan was experimenting with the crop as were the owners of Telgerdt. The latter were dairy farmers, the only ones found around Meshad, and they had heard of the value of alfalfa as a feed crop for dairy cows. They had, therefore, imported some seed to experiment on its use and value. Only 3 hectares were grown at Telgerdt and it was all cut green and fed damp to the cattle. The farmers were hoping to extend the hectarage if the crop proved to be successful. At Morghanan, Javad Torbati had planted some four hectares of alfalfa. The crop was shared equally between the landlord and the farmers and much of it remained uncut. The villagers used their 50% for feeding their sheep and those of the other villages nearby. The latter paid a small sum per head for the right to graze their sheep on the rich grass. Mr. Torbati sold his 50% share to the neighbouring peasant proprietor village of Abulkhair for 1.000 tomans and again it was used for grazing the sheep. The growing of alfalfa seems likely to increase in

importance as its value as a feed crop is realised  
and, with luck, the resultant animals will be  
considerably better fed.

"Green Leaf Crops".

From the chart at the beginning of this chapter it was clearly discernable that 6 of the 24 villages under discussion grew no vegetable crops at all. The precise reason for this is that in many cases the land had been completely devoted to the cultivation of sugar beet and wheat which are, on the whole, much more economic crops. A significant instance of this change-over was given at the village/farm of Telgerdt. Here the landowners claimed that much of the land now devoted to sugar beet was previously devoted to the growing of vegetables but the latter were not an economic proposition. The village attached to the farm grew alfalfa and clover both of which were used for feeding the cattle, both being cut green and fed damp. Only 7 hectares of these two crops were grown as this was believed to be ample to feed the cattle adequately. Once the village grew some 30 hectares of vegetables but this hectarage has now been reduced to 15, the remaining 8 hectares being used for growing sugar beet. The reason given for the replacing of vegetables by

sugar beet was that for the cultivation of vegetables a considerable amount of hand labour was necessary; more men were, therefore, needed, and this was expensive. A further reason was that a plentiful supply of vegetables was on the market: carrots, it was claimed, were even brought from as far away as Teheran. Despite these apparently very plausible reasons, however, it seems much more likely that the greater turnover allowed by the growing of sugar beet had a much greater influence upon the decision of the landowners.

These "green leaf crops" are usually grown in two major areas, either, as in Kashef, Mordarkeshan or Bid-a-Bid, scattered in plots amongst the sugar beet wherever there is room, or, grown in similar small patches in the gardens, amongst the fruit trees, as in Ghasehabad, Dehnou, Ahmadabad and AbCou garden. Because of this splitting up of the crops into scattered patches it is often very difficult to estimate accurately the exact hectarage of the crops. The principal method of growing these vegetables was outlined most successfully by the landlord of

Kashef. The land was kept in small plots, approximately the same size as the sugar beet patches, that is 120 to 150 square feet. These patches were covered with gravel since this latter helps to produce a good germinating surface as well as helping to break up the clayey soils and preventing their formation of a hard, impenetrable barrier when dried by the sun. The gravel for this process was brought from the Kashef Rud to the village of Kashef on the backs of donkeys. The crops were then sown in Spring and should have been irrigated about once every seven days but because of the lack of water once every 16 days proved to be more common. The actual planting of the peas and beans at Kashef was done slightly differently as can be seen in Figure 3. This system of planting has been described more fully under the subtitle of "Growing" in Chapter 2 on 'the Growing and Marketing of Melons'. So there is no reason to dwell further on the method.

There seems to be some considerable variance as to whether fertilisers ought to be used. Mr. Khorram of Bid-a-Bid claimed that no fertiliser was needed as the soil was already rich through the fertiliser

previously applied to the sugar beet, whereas in both Dehnou and Ghoulستان a certain amount of fertiliser was found to be beneficial. In both villages animal manure was used when the seeds were first planted and some form of chemical fertiliser was used a little later when growth had started. No indication was given as to what sort of chemical fertiliser was used but in Ghoulستان the landowners claimed that they bought it separately in the city at 10 to 12 rials per kilogramme and that it cost them 15 rials to transport 1 bag to the village by taxi. Both Ghasemabad and Noucah claimed that with more water they could grow, for sale, considerably more peas. Finally, as was mentioned at the beginning of this chapter, "green leaf" crops were grown in the gardens of Ahmadabad and AbCou, whilst the young fruit trees were growing to full maturity after replanting.

In the growing and marketing of the "green leaf" crops, there are five distinct systems:-

- (1) where the crop is grown by the landlord and villagers and is then picked and sold to one or more allops in the city, who in their turn, dispose of the crop at will. Examples of this system are to be found at Kashef, Khanrud,

Ghasemabad, Bid-a-Bid, Piani, Cah Meshk and Dehnou.

- (2) where the village makes a contract between itself and one or more shops for the selling of the crop. This system is best exemplified by Telgerdt.
- (3) where the villages individually buy the crop from the landowner and sell it as and when they can. Bildar is an example of this system.
- (4) where an individual or group of individuals rent the land from the landowner and then, on this land, grow all the vegetables they desire. The land is rented annually. The examples are Ahmadabad and AbCou.
- (5) where the crop is grown and is then auctioned to the highest bidder who can then take the crop off the land as and when he needs the crop. This system is exemplified by Khiaban.

These last two systems are generally understood by saying that either the land or the crop is "put into mozayede". This term implies the renting or letting of the land or crop, usually only for a period of about



one year, and is more common with the sale of fruit as will be seen later in this chapter. Most of the villages which do grow vegetables find that they have a surplus to sell in the city, apart from Nasuhabad, but the amount available for sale naturally varies very greatly from year to year. In the first group where the crop is sold to an alloo after picking, the crop itself is usually divided on the 50%/50% scale, except in Khanrud where the landlord has kept the relatively old fashioned system of taking 60% of the vegetable crop and leaving the villagers with the other 40%. Most of this 40% is consumed within the village and the landlord usually markets his 60% with the same alloo as he markets his other crops, unless he sells some in the village first. The remaining villages in Group 1 follow the more common pattern of marketing, that is sharing the crop 50%/50% and selling so much in the city. Ghasemabad was hoping to do this for the first time in 1963 but the system was common in Bid-a-Bid where the crop was taken into the city by tractor and trailer and then sold to the same alloo who dealt with the wheat. The landowner, however, complained that he was unable

to hold his potato crop back until he could get a better price although he could use this system with his peas and beans. Although falling still within Group 1, Mordarkeshan operated a slightly different system as regards cultivation. There were ten hectares in all of "green leaf" crops, this including some melons, and everyone had a share in these ten hectares, the 50%/50% and smaller divisions being made when the crops were ready to eat. The ten hectares were divided into eight different parts and each part was worked by a group of five men. Again there was a slight variation in the system adopted by Dehnou, where the crops, when ripe, were taken into Meshad by the individual farmers from their own individual plots of land and were sold to an allof. For their goods the villagers were given a receipt which was considered as money ( a type of cheque), and this they could cash then or later when they needed the money. Finally of Group 1 there is Piani. Here the crop share of the farmers is usually eaten by them and the landlord, Mr. Tahery, usually makes some kind of arrangement with an allof to sell his share of the crop and the remainder of the crop then goes to the Gohar Shah Mosque which owns the land.

The other groups are self-explanatory and because they are virtually only individual examples the amount of detail dealing with the system is almost covered within the list. The only other section which perhaps needs some explanation is Group 4. The three examples quoted here are Ahmadabad, AbCou Carden and AbCou Village where the land is "put into Mozayede". The rents paid for the land vary quite noticeably depending particularly upon the quality of the land. The cheapest land was in Ahmadabad where the temporary landlord had to pay only 2000 tomans per year for the rent of the land. The largest price had to be paid in the AbCou garden where the land value was as high as 3000 tomans per hectare. Finally in the AbCou village the rent paid for the land this year (1963) was 2500 tomans per hectare which was 200 tomans per hectare higher than previously because the landowner claimed that there had been a considerable amount of contesting for the land. In all these cases the only requirement on the part of the landowner is to supply an adequate amount of water.

Before leaving this brief study of the "green leaf" crops which are grown in the Meshad area, one or

two individual examples might be taken to show the general system of marketing which occurs dealing with three random crops, potatoes, peas and cucumbers. Two rather more detailed examples of potato marketing can be studied in Ghoulestan and Khanrud, Ghoulestan grows approximately 100 kharvars of potatoes (30 tons), all of which are sold to an allof in Meshad. The potatoes are taken to the city either by hired lorry, if there is a sufficient quantity to warrant it, or by taxi, which, of course, is much more expensive. The cost of hiring a lorry is about 5 tomans per kharvar or 15 tomans per ton which seems too expensive for the distance of 15 kilometres which has to be covered. The price paid for the potatoes in town varies depending upon both the type of potatoes and the time of the year. The minimum price received for potatoes just after the harvest is 60 tomans per kharvar, or about 6 rials per 3 kilogrammes, whereas the maximum price much later in the year can be as high as 200 tomans per kharvar, or 20 rials per 3 kilogrammes. The second study is of potato growing in Khanrud. Here some 75 hectares of potatoes are grown, particularly because of the much

cooler climate, and they are alternated annually with the production of wheat. The potatoes are sold in Meshad through four different allofs and the arrangements for the sales are made by representatives in the village. The transportation of the potatoes is done either by donkey, or, if available, by lorry to the city. Again the price range varied as to whether the potatoes were sold in autumn or spring, from 6 rials per 3 kilogrammes to 20 rials per 3 kilogrammes. In Khanrud, however, in order to try and get the best possible price the potatoes are often stored in earth-covered piles in the houses until it is certain that the market price in Meshad will yield a much larger profit. The price of cucumbers in Meshad also depends very greatly on two factors, the type of cucumber and the time of year when they are sold, and it can vary between 70 and 150 tomans per kharvar (7 to 15 rials per 3 kilogrammes). In Ghoulestan, the villagers grow about 50 kharvars of cucumbers, most of which are sold in Meshad. Each peasant proprietor has his own allof with whom he deals and he will transport his cucumbers to town, either by hired lorry, again at a suggested 5 tomans per kharvar

or if the amount is not large enough, by the more expensive means, the taxi. Finally, peas are a most important crop in Noucah where, last year (1962) they sowed about 300 kilogrammes of seed and received in all 1100 tomans for the crop in Meshad, again the price depending particularly upon the time of sale. However, because of the very heavy rains of 1963, a great amount of the crop has been damaged, not simply by the direct action of the rain, or in some cases the hail, beating down the crop, but rather the very rapid drying of the ground after the rains causing the clayey soils to become baked hard on the surface. As a result the young shoots were not able to force their way through the ground.

In general the prices paid for the various "green leaf" crops in Meshad was very constant and wherever the prices were listed by the villagers they correlated quite notably the one with the other.

Below is a list of the prices showing possible variations:-

CROP	PRICE PER 3 KILOGRAMMES					
	Kashef	Ghasemabad	Bid-a-Bid	Ghoulestan	Khanrud	Cah Heshk
Beans	4 ts.		3 ts.			
Peas	3 ts.		3 ts.			
Onions	1 ts.	1 ts.				1 ts.
Cucumber	1/2 ts	1 ts.		7 rs/1.5ts.		
Tomatoes	1/2 ts	2 ts.				
Marrow		1.5/2 ts.				
Potatoes		2 ts.	1/2 ts.	8rs/2ts.	6rs/2ts	

KEY: ts. = tomans, rs. = rials.

Where any variations are apparent they normally represent either the time of the year sold or the quality of the crop sold.

As was mentioned earlier in this chapter, the growing of "green leaf" crops, particularly on the more progressive farms, is becoming less and less important. During a visit to the village of Morghanan and after a long talk with the landlord the following note was made which perhaps sums up a fear for the agricultural change which is taking place in the Meshad area:

"It is interesting to speculate as to why the landlord does not permit some of the land to be used for growing vegetables and what effect this sudden change of diet may have upon the people in the village. It is true that sugar beet and wheat are more economic from the landlord's point of view and this also gives the people more money. Prior to this reform, however, their diet was naturally varied as they also shared the vegetable crops. Now, however, the people must buy these vegetables elsewhere, usually in Meshad. Perhaps it is not all for the general good!".

Granted an increase in income would seem to be an excellent idea, especially since the people are so poor, but, from what was seen, the extra money gained by growing only commercial crops was spent not on food but rather on status goods such as samovars, oil lamps or carpets. The people seem quite content to live on bread and mast, the two products of the village. But surely this dietary deficiency cannot continue without some harmful effect on the villagers themselves and on their children?



"Fruit Crops":

Before dealing with a general study of fruit growing in the Meshad area, there is one distinctive fruit which was grown on only two of the farms visited although previously it had been a great deal more widespread; that is grapes. At the village of Kalate Ali, it was the owner of the smaller portion of the village who owned three small grape gardens, totalling two hectares in all. These gardens were set apart from the village and were surrounded by high walls, in an attempt to keep out possible thieves. The vines are usually planted as shown in the diagram (Figure 4(a)).

The actual plant is situated on the top of the ridge, thereby allowing it to draw water up through its roots and the vines as they grow to spread down the sides of the ridges. The gardens are not very productive and tend therefore to be particularly for private supplies. If there is a very good crop then any surplus is, of course, sold. The other major grape-growing garden was at Telgerdt (Plate 6) where there were in all 6 hectares of grapes, producing some 60 tons of

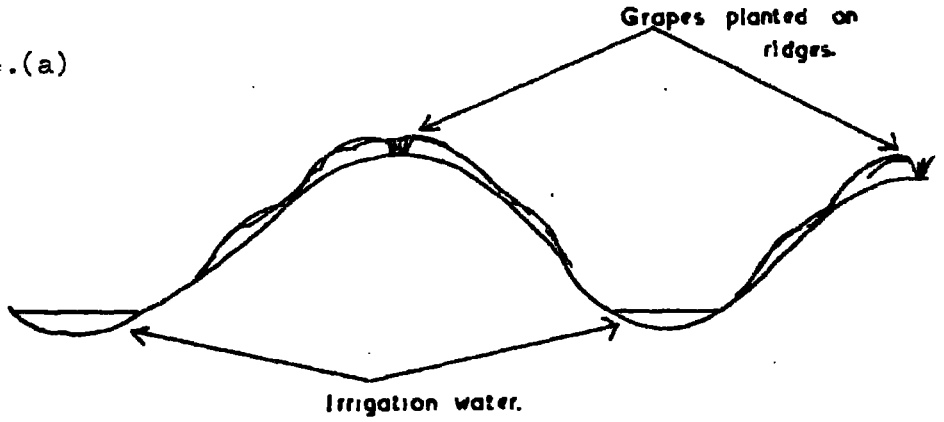
PLATE: 6.



Grape garden at Telgerdt.

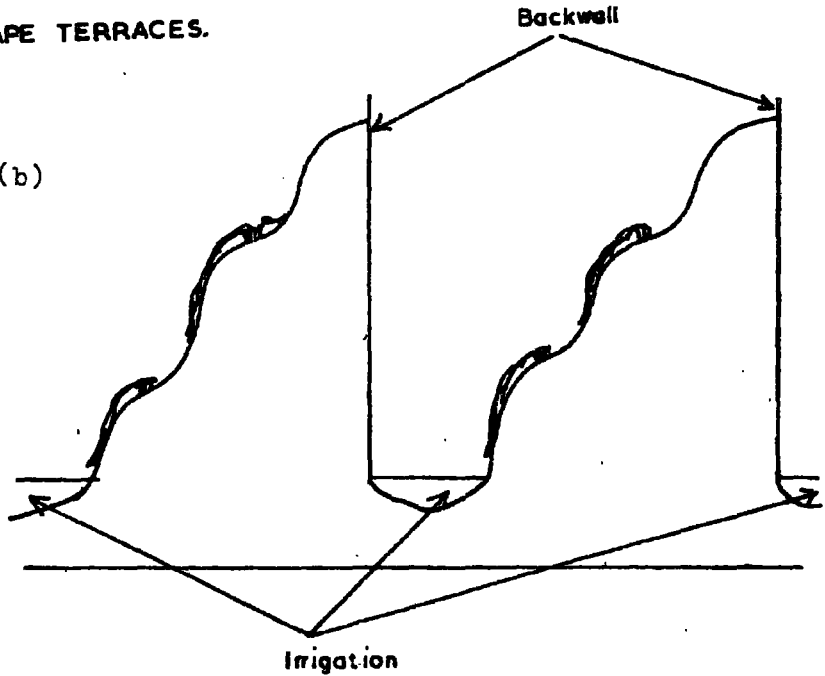
# GRAPE GARDENS

FIGURE 4.(a)



GRAPE TERRACES.

FIGURE 4.(b)



grapes all of which are sold in Meshad. The vines are planted in three-tier structures as seen in Figure 4(b).

The back walls and step structures are used because during the winter this type of structure is usually frost resistant and in summer it helps to combat the difficulties of drought. The grape vines are given animal manure once every five years and this year (1963) the landowners experimented with phosphates, the result obviously not being known. Also some nitrogen is given to the plants once the grapes have been picked. This year 200 kilogrammes per hectare of phosphates were given to the grapes and they were also sprayed regularly with phosphorus. Last year the gardens produced 60 tons per hectare, all of which were sold in Meshad, the price being about 12 rials per kilogramme, and the production is increasing considerably as the vines are still young, only 6 years old. The grapes sold in Meshad are bought by the shop-keepers who come to pick their own supplies. They also provide transport to the city.

Most of the villages which grow fruit do so in gardens varying in size from 2 hectares as in Kalate

Ali to as large as 100 hectares in the AbCou garden. The list of the various fruits grown is on the chart at the beginning of the chapter and although certain farms may appear to specialize, in general up to four different types of fruit are usually grown. The various farms will have to be looked at individually because of the numerous differences in production, but it is possible to make one basic generalisation and that is that during the 1963 season there was a definite shortage of apricots, because of the heavy rain and hailstorms and the intensely cold period during the spring months. At least four of the gardens, Cahar Borche, Noucah, Piani and Moustafakhane had their supplies of apricots very badly affected and as will be seen later, not only the apricots suffered from the poor conditions. The smallest of the gardens, that at Kalate Ali, was farmed principally by the landlord himself and the crop was either used by him or sold to the villagers. If there was sufficient some was sold to a factory in the city. Occasionally the landlord paid people to work in the two hectares of garden although it depended a great deal on the time of year and the size of the crop.

Usually only one man was paid to tend the crop and to change the irrigation water when necessary. During the visit to the farm the landlord found it necessary to spray the various trees to avoid disease.

Ghasemabad was a much larger garden of 12 hectares in all, divided into four units. The principal fruits grown were peaches (10,000 trees) and apples (2,000 trees) but the production was still relatively small basically because many of the trees were quite young and were not bearing their full quota of fruit. The landowner was hoping that he would be able to extend his production quite considerably in the near future. At present the garden produced about 8,000 kilogrammes of peaches and about 15,000 kilogrammes of apples. Such statistics on the amount of fruit produced were not always available at the villages that were visited and the landowner at Nasuhabad, for example, could only say that in "good" years he received about 20,000 tomans for the crop, whereas in "bad" years, and he believed that 1963 was going to be a bad year, he would only receive about 5,000 tomans. Similar statistics were given about Cahar Borche which had a total of 20 hectares of land

as the garden was divided into two parts, both belonging to the same landowner. A total income of 22,000 tomans was received from the two gardens in 1962, 12,000 tomans for the larger one and 10,000 tomans for the smaller.

Many of the small villages had only planted large hectarages of fruit trees in the last three years or so and therefore the production of fruit whether from last year or what was expected this year (1963) was usually quite small. Two such villages were Noucah and Bildar. Despite the fact that Noucah had 17 hectares of garden the landlord was expecting only about 8,000 kilogrammes of fruit in 1963, since as well as the trees being young, the apricots had been severely damaged during the spring. Similarly Bildar was expecting a very small production of only 900 kilogrammes of peaches in 1963 because the trees were only three years old. In two of the other villages studied the production in 1963 was expected to be less than one third of the production of 1962.

Of the remaining villages it is necessary to look at them each individually. First Piani which has two small gardens. Here the apricots have been badly

damaged this year and therefore there will be considerably less fruit this year. Last year's total production was in all about 60 kharvars, some 18,000 kilogrammes. Cah Heshk was one of the villages greatly affected. Last year the production was 80 kharvars, 24,000 kilogrammes but this year (1963) because of the cold, they expected only 25 kharvars, 7,500 kilogrammes. Also in this village there was a small garden which the landlord used as his own and for his visiting guests. The three gardens belonging to the Holy Shrine are all rented out to various people, either merchants or shopowners and the rent varies considerably depending upon the type of land and the hectarage. For example, the Ahmadabad garden had been rented out in 1963 for only 30,000 tomans instead of the 1962 price of 40,000 tomans because of the damage done to the apricots early in 1963. In all three gardens when the old trees were cut down and new ones planted, "green leaf" crops were grown in the spare land. The only major variation on this general system occurred at Khanrud in one of the valleys to the South West of Meshad. Here the fruit was usually divided roughly into four parts and used in



the following ways, 25% sold in Meshad, 25% dried, 25% made into jam and 25% eaten fresh in the village. The reason given as to why 50% of the fruit was processed in the village was that the journey to Meshad often considerably damaged the fruit.

Although not a great deal of information was forthcoming about the use of fertilizer on the fruit crops it seemed quite possible that in more cases than are quoted here fertilizer of some kind or other was used. Only in two cases was any definite mention made of using any kind of assistance in fruit growing. The farm/village of Telgerdt used a certain amount of animal manure especially on the grape gardens although some was also used for the apple trees. The grapes particularly were sprayed with a phosphorus mixture against any possible form of disease. At Cahar Borche, also, spraying was sometimes necessary especially if insects were found in the trees. The type of spray used obviously depended upon the type of insect, and the Ministry of Agriculture in Meshad usually advised as to the type of spray to be used.

As regards the marketing of the fruit crops,

the villages can be divided into two distinct parts, the first where the fruit is sold to an allof in the city, in the case of Ghasemabad, Khanrud, Nasuhabad, Telgerdt, Cahar Borsche, Noucah and Ghoulestan; the second part where the fruit is "put into mozayede", as in Bildar, Dehnou, Piani, Cah Heshk, Ahmadabad, Moustafakhane and AbCou garden. Of these two divisions the most straight-forward system is when the fruit is "put into mozayede", simply because where the fruit is sold to an allof there are considerable variations from village to village. One example of this latter system of marketing is Ghasemabad. Here all the fruit is taken to Meshad by cart unless the purchaser comes to collect the crop himself. If the allof arranges the sale of the crop then it is certainly more common for the buyer to come and collect it rather than expect it to be brought into the city. Last year (1962) all the fruit was sold to Haji Rafii Bahrer in Meshad for 60,000 tomans and he sells the crop from the village. In return for this service the allof takes 10% of the crop's monetary value for arranging the sale. The foreman forcefully stated that the price received for

the fruit crop depended upon three things, namely the quality of the fruit, the time of year when it was being sold and the amount of rainfall. For the season 1962/63, therefore, the crop was not as great as the previous year because of the cold weather in spring. Most of the fruit sold went to Meshad but from there it was quite common for it to be taken farther afield, to Teheran, Sabzevar or Neishabour but whatever happens to the fruit once it has left the village makes no difference to the price received by the villagers.

A similar system can be found in Nasuhabad where the total production for 1962 was valued at 20.000 tomans, although in the 1963 season the villagers only expected to receive some 5.000 tomans for their crop which had been very badly damaged. The normal system is for the allofs to come to the village, usually one to three of them, buy the crop as it stands and then transport it to Meshad at their own cost, although occasionally the villagers themselves will transport the fruit into town and there sell the crop to other allofs. Again both on

the Telgerdt farm and at Cahar Borche this system of selling the crop occurs. At Telgerdt all the apples are sold whilst they are still on the trees and the allof who has bought them sends his men to pick the crop as and when he needs them. In 1962, the owners of Telgerdt received 3.000 tomans for their apple crop. At Cahar Borche, similarly, the allof sends out an experienced man to check the various fruits and after this examination the allof offers the landlord a price for the whole crop and then is allowed to collect the fruit from the garden at his leisure.

To put the crop "into mozayede", however, is a much more straightforward system since here, instead of using the same allof or allofs year after year, each year the crop is put up for sale and in this case tenders are submitted from the various allofs and then the landlords/landowners choose the best tender and the successful allof very often tends the crop, as well as arranging for the harvesting and transporting. A good example of this system was noted at Cah Heshk. At this village, once the crop had been sold, the allof paid the labourers 6 tomans per day for tending it and, when

ready, for gathering the crop. To carry it to Meshad he hires a carter, usually from the village or nearby. Again the system is repeated in the gardens belonging to the Holy Shrine, those of Ahmadabad, Moustafakhane and AbCou. Two of these will be used as further examples. In Ahmadabad the crop is put "into mozayede" and the man who buys the crop either has a shop in the city where he can sell his fruit or a larger organization which will box the fruit and send it to Teheran. In 1963, the crop in Ahmadabad had been sold for 40,000 tomans. The Moustafakhane fruit had only brought 20,000 tomans in 1962 and the fruit had been sold to Haji Khasem-e-Ghorab who owned the Shadab Cannery but in 1963 the various sections of fruit had had to be sold separately as the cannery had no need of all the crop. The marketing of the fruit, therefore, varies from the relatively straightforward system of putting it "into mozayede" where the villagers have little or nothing to do with the crop, to the more complex problem of selling the crop when it is ready to the shopkeepers and allofs in the town by the villagers themselves.

To conclude this section on fruit growing,

it seems only right that some mention ought to be made of the type of prices received for the fruit. Naturally these varied considerably with the season, the quality and the quantity of the fruit which was ready for the market. When the crop is sold "in mozayede" the total crop is sold at an overall price but where the crop is sold separately some break-down of the prices is possible. This pricing was best revealed by the foreman of Ghasemabad and there appeared no reason to doubt the prices given.

CROP	AMOUNT	PRICE
Apples	50 kharvars (15.000 kgs.)	35/40 rials per 3 kgs.
Peaches (red)	5/6 kharvars (1.5/2.000 kgs.)	25/30 rials per 3 kgs.
Peaches (yellow)	20/30 kharvars (6/9.000 kgs.)	35/40 rials per 3 kgs.
Cherries	10 kharvars (3.000 kgs.)	70 rials per 3 kgs.
Pears	10 kharvars (3.000 kgs.)	40/50 rials per 3 kgs.

From an examination of these prices the profitability of growing fruit crops wherever available is obvious, and it would explain why so many of the villages are increasing their hectarage under fruit trees wherever it is favourable to do so.

## CHAPTER 6.

### THE GROWING AND MARKETING OF WOOD.

The use of wood in building will be seen later in this work but it is interesting to note the marketing system which operates for wood. There are two main types of village within the study area: -

1. in the valleys and on the edges of the upland where there is usually a more reliable water supply and where growing trees is easy, for example, Khanrud, Nasuhabad, Bildar, Dehnou and Ghoulestan
- and 2. the villages on the plains relying on qanat water from the upland areas and suffering very often from drought during the dry spell and where trees are not so common, for example, Kalate Ali and Kashef.

It will probably be claimed that this division is based on rather flimsy fact but there certainly appears to be a difference in the amount of wood to be found in the two areas.

The variation extends to house types, too,



and although a much fuller discussion of these will take place later suffice it to say at the moment that they can be divided as houses built predominantly of wood in the valleys and houses built predominantly of sun-dried brick on the plain. A considerable amount of timber is used in the construction of the houses in the valleys for all parts of the house. Much less is found in those houses on the edge of the plain where the roofing and the door jambs are of wood, the remainder of the house being built of sun-dried brick. In the plain, very little wood is used in construction, most of the house being built of sun-dried brick though occasionally wood may be used for roofing.

Similarly the amount of wood used for fires varies considerably. In the valleys and upland areas many of the small branches and the bark are used for fires whereas on the plain, wood is only used when it can be purchased from a vendor from one of the upland villages, and then principally it is used for the fires of the bath-house.

Very little then will be said about the second group, those on the plain. In both the villages quoted

earlier, Kalate Ali and Kashef, wood was occasionally bought at the rate of 2 rials for 3 kilogrammes and used chiefly as firewood. It must be stressed that when referring to wood in this case, what is meant is small branches and dried bark. Occasionally, too, for special constructions, such as the barn which was specially built for housing sheep at Kalate Ali, wood might be used. In this case it was brought out especially from Meshad.

The most comprehensive study of the cutting and marketing of wood was made at Khanrud with a further few notes added at Morghun farther up the valley. Both these villages are peasant proprietor owned.

The wood is usually cut when it is about ten years old, although some is left until it is even older. Planting, however, takes place each year and the villagers plant out small branches replacing the trees that are cut down. It ought to be mentioned here that almost all the trees grown commercially are poplars. The wood is cut both in spring and in autumn and is either sold immediately whilst still 'wet',

though having been stripped of its bark and its branches, or it is stored in the valley for anything between four and twelve months in order to 'dry' it. All the farmers store their own wood, cut from their own land. When the wood is to be sold it is transported up from the valley to the loading point on the backs of other villagers. The system is that the man who happens to be cutting that particular day hires other men who are willing to help and pays them at the standard rate of 5 tomans per day. Once the wood has been loaded on to the lorry it is transported straight to Meshad. The actual sale of the wood is arranged by the village allof, of whom there are six in all. At regular intervals the city allofs visit the village and the six allofs between them then organize the sale of the wood. The allofs in the village charge only 1% of the price for the services of finding a buyer for each seller. All six of these men grow wood themselves, as well as growing other crops, and four of them own the only four general shops in the village. The reason put forward for this state of affairs was that each of the allofs had the

availability of hired lorry space on the outward journey from Meshad. It appeared that although the lorries were hired by the city allofs, the village allofs made use of them for transporting their goods to the village, but for this service the village allofs had to pay 10 tomans for every kharvar (300 kilogrammes) that was transported.

By this method of selling the wood, however, no family deals directly with the city allofs; they all work through their six village allofs. After considerable questioning it was found that one of these allofs dealt with twenty families who sold about 120 kharvars (36,000 kilogrammes) of wood each year. The city merchants thus buy all the wood, wet or dry, that they need and order the lorry to come out and collect the wood the following day. The city allofs hire the lorries at the following rates, provided that they do not have lorries of their own:-

Wet wood     1 manni (3 kilogrammes) for 6 rials.

Dry wood     1 manni (3 kilogrammes) for 12 rials.

The reason for the discrepancy in price was that wet wood was heavier and therefore not so much of

it could be carried. The journey would be about 20 to 25 kilometres over an extremely bad road and this would explain the high cost of transport. The city merchants pay:-

7 rials for 1 manni of wet wood.

13 rials for 1 manni of dry wood.

to the villagers. This system of marketing from Khanrud was in reality extremely complex and there was considerable debate between the four village elders and the allofs as to the exact prices for these various transactions. Therefore, it is only fair to state that these figures might not be absolutely accurate, despite attempts to check them.

Elsewhere, the system of marketing the wood proved to be much simpler, the whole crop being placed "in mozayede", except at Nasuhabad. As has been mentioned several times before, this village was certainly the poorest visited, and there seemed to be no determined policy, the sale of wood being intermittent as and when there was wood available. Quite a great deal of this wood is obviously left unused. The villages which use the system of putting the wood "into mozayede" are

Bildar, Dehnou and Ghoulestan. The easiest way of dealing with this aspect is to look at each village in turn without trying to make generalisations.

In Bildar the exact area of land devoted to tree growing is difficult to ascertain since all the "jubes" or open ditches are lined by poplar trees. The trees are cut for sale when they are ready and the foreman claimed that usually the trees take about twenty years to reach full maturity. There appears to be considerable confusion as to the exact period of time that it takes to reach the required state. This varies from ten to twenty years but it appears that in most cases the more accurate estimate is between ten and twelve years. The bitterness of the foreman at Bildar towards his employer the Holy Shrine is probably the cause of his exaggeration. Much the same system was operative in Dehnou where the wood was again put "into mozayede" but in this case the money for the wood sold was paid in three installments. One of these installments was paid immediately after the price had been agreed upon. The second installment was paid after two months and finally the third was paid after about

three months. There was no organized plantation of wood in the village and the sale of wood did not occur every year, only when the trees were ready. The individual who buys the wood, normally arranges for its cutting and transportation and the villagers receive about 40 tomans for each tree, though naturally the price can vary a great deal. Finally in Ghoulستان, the wood is again put "into mozayede" and the trees are sold where they stand. The people who buy the trees also arrange for their cutting. Each family owns a few trees although the exact distribution of the 50 kharvars of trees between the various families was not ascertained.

From this brief study it can be seen that wood plays an important role in the economy and the building of the villages in the upland areas where water is more plentiful but extending into the plain itself, the value of the wood increases, and its usage proportionally gives way to mud in building and dung in fuel. This is one of the few crops whose distribution varies greatly depending upon the area in which it is grown.

## CHAPTER 7.

### FERTILIZERS.

There can be no doubt in the mind of any agricultural student of the value of fertilizers to the increased production of crops in this area of Khorassan although there does seem to be some difficulty in persuading the farmers of the area as to the usefulness of fertilizer in the growing of their crops. Prior to the coming of the sugar beet factories fertilizer was virtually unknown and was used only by the more progressive landlords who might have had their agricultural education outside Iran. However, when sugar beet was established in the area and the factories set a high standard which the crop had to meet then it was found that fertilizer was needed in an attempt to raise the crop's standard. Fertilizer was principally introduced by the sugar beet factories for the sugar beet crops. In some cases, however, the use of fertilizer has been spread by the more progressive farmers but in all cases agriculture on the whole has benefited since the rotation system means that all the



land is fertilized in the three year cycle which is common over much of the study-area.

This three year cycle is

First year	sugar beet
Second year	wheat
Third year	left fallow.

A typical comment levelled against the use of fertilizer is that superphosphates and nitrates of ammonia are used only on the sugar beet since the goodness in the soil does away with the necessity to use more fertilizer. Especially interesting in this brief study of fertilizers was the fact that many of the headmen in the villages had no idea whatsoever of the particular type of fertilizers they were using and were even more vague as to their usefulness. A typical case occurred in Morghanan where Javad Torbati had been the landlord for some six months. Here he used the same amounts of fertilizer on his crops as at Kashef and Kalate Ali but, as at those two villages he had great difficulty in persuading the villagers as to the usefulness of fertilizers in general.

In almost every case the types of chemical

fertilizers used can be limited to three of the principal ones, ammonium sulphate, ammonium nitrate and superphosphates. Basically, ammonium nitrate and superphosphates are supplied to growers of sugar beet and are used in this connection along with variations as can be followed in the chart over the page.

VILLAGE	WHEAT	SUGAR BEET	OTHER CROPS
Kalate Ali	150 kg amm sul	300 kg amm nit 300 kg superphos	
Kashef	150 kg amm sul	300 kg amm nit 300 kg superphos 20 tons animal manure	
Khanrud	No chemical fertilizer used.		
Bid-a-Bid		600 kg superphos 200 kg amm nit	
Morghanan	150 kg amm sul	300 kg amm nit 300 kg superphos	
Nasuhabad	No chemical fertilizer used.		
Kalate Cheykha	200 kg amm sul	400 kg superphos	
Telgerdt		500 kg superphos	Grapes 200 kg superphos
Mordar-keshan	150 kg amm sul	700 kg superphos 300 kg amm nit 400 kg azurt	
Hajiabad and Mehdiabad		300 kg superphos 300 kg amm nit 150 kg azurt	
Cahar Borche		300 kg amm nit	Fruit sprayed
Noucah Bildar Dehnou Piani Cah Heshk Ghoulestan	No chemical fertilizer used.		
Holy Shrine Gardens		200 kg superphos	Cucumbers - urea Trees sprayed
Khiaban		300 kg superphos 100 kg urea 350 kg amm nit 50 kg potassium	

Table 3.

Examples can be easily found, as in Kashef, where some 20 tons per hectare of animal manure is used as well as the chemical fertilizer, or in Mordarkeshan, Hajiabad and Mehdiabad where a chemical compound known locally as "azurt" is used in addition. Despite innumerable attempts it proved impossible to ascertain the constituents of azurt, so, as with other local names it had to remain undescribed.

The amount of actual fertilizer used depends very much upon the soil of the village and also what other fertilizers are used. For example, in Cahar Borche, if the land is also fertilized with animal manure then only 200 kilogrammes per hectare of ammonium nitrate will be needed; if no animal manure is used, then some 300 kilogrammes per hectare of ammonium nitrate will be needed. Equally the amount of fertilizer used can depend upon the nature of the fertilizer, for example, at Kalate Cheykha the sugar beet needed about 400 kilogrammes per hectare of German superphosphates or 800 kilogrammes of Russian superphosphates, the reason being that the Russian superphosphates are only half as strong as the German. In a small group of

villages to the West of Meshad centred around Bildar where no sugar beet of any consequence is grown, chemical fertilizers have been forced upon the headmen of the villages by the various landlords and landowners and it is quite obvious from the information gained in these villages that there was very scanty knowledge of the usefulness of fertilizers. Examples can be taken from all the villages revealing lack of knowledge. In all these villages, the fertilizers are known as 15/15 and Urea and these are the names used by the merchants who sell them in Meshad. A typical example could be taken in Noucah where the foreman had no idea at all as to exactly what fertilizer was given to what crop or how much. All he could say was that they used about 1,500 donkey loads, they had not sufficient and they could use more. Similarly in Dehnou, two or three types of fertilizer were used but the headman knew none of their names and claimed that their use depended upon how much fertilizer they had and which crop needed it most. At two of the villages in this small cluster there is at least some attempt to use the fertilizer to its best advantage. At Bildar, for example,

the 15/15 fertilizer is used when, or just before, the root crops are sown, and the Urea is used around harvest time. The foreman claimed that the amount depended upon the needs of the land but usually between 50 and 100 kilogrammes per hectare in total were used at two or three different times. Again at Piani a similar system was adopted but here the 15/15 fertilizer was used for the root crop at the time of ploughing and the Urea when the watering commenced. A final example of this ignorance as to the use and value of fertilizer was found in the Holy Shrine gardens of Ahmadabad, Moustafakhane and AbCou. In each of these three, urea, superphosphates and some potassium were used and for the sugar beet and cucumbers particularly, the urea was used twice, once at planting and once when the plants broke the surface of the ground. The farmers, themselves, however, had no idea how to use the fertilizer and the foreman claimed that the previous year, the Agricultural Department of the Holy Shrine had forced the farmers to use it. Apparently the full value of using chemical fertilizer has not been obvious to the farmers themselves as yet.

The actual price paid by the farmers per ton of fertilizer was very difficult to assess. The two principal sources of supply were the sugar beet factories and the Bazaar in the city. The variations in the two respective prices were given by the landlord of Bid-a-Bid, who complained bitterly at the considerable price difference.

TYPE OF FERTILIZER	FACTORY PRICE	BAZAAR PRICE
Superphosphates	1 ton @ 9000 rials	1 ton @ 12,000 rials
Ammonium Nitrate	1 ton @ 9000 rials	1 ton @ 12,000 rials

He claimed that the fertilizer for the factory usually came from the United States of America or from Europe via Khorramshah, whereas that from the Bazaar is usually from the U.S.S.R.. The reason why he must sometimes buy from the Bazaar and thereby pay more, is that the factory does not always have sufficient quantities of fertilizer available at the right time and that the factory must also divide its supply amongst all its customers. If the fertilizer has to be brought from Meshad its transportation costs the landowner

50 rials for 1 ton of fertilizer, the distance to Bid-a-Bid being some 40 kilometres. This particular landowner proved to be rather bitterly inclined towards the Bazaar merchants regarding the cost of fertilizer. A slightly more realistic cost rating was obtained from the foreman of Kalate Cheykha who claimed that most of the ammonium nitrate bought in the Bazaar was from the U.S.S.R. and that there were two principal types of superphosphate, one from Holland (48%) and one from the U.S.S.R. (19%). The relative prices of these two types of superphosphate were:-

1. that from Holland @ 8.5 rials per kilogramme or  
9.860 rials per ton.
2. that from U.S.S.R. @ 4.5 rials per kilogramme or  
5.220 rials per ton.

This more reasonable evaluation of the Bazaar price for superphosphates tended to be corroborated by the landlord of Dehnou who claimed that he had to pay 8 rials per kilogramme in the Bazaar in Meshad. Where the farmers buy their own fertilizer they will very often consult the merchants as to which fertilizer is most suitable for which crop. This system was found



particularly in the peasant proprietor village of Ghoulestan where the farmers transported their own supplies of chemical fertilizer from town by taxi, costing 15 rials for transporting one bag from Meshad.

Before leaving this brief study of the use of fertilizer, mention should be made of the use by the farmers of other types of manure and the use of chemical fertilizers in some cases on crops other than sugar beet and wheat. Considerable use is made of human or animal manure although where wool is not available for fibres, then the dung is more often used as fuel rather than manure. However, several of the villages, particularly those in the foothills where wood for fuel can be obtained fairly easily, use human and animal dung as fertilizer to quite a large extent. Several examples can be quoted where animal manure is used, notably in Dehnou, Piani, Cah Heshk and Ghoulestan. In Dehnou, for example, the animal manure was used principally for the "green leaf" crops when first planted and the chemical manure was used later, whereas, in Piani, for each square metre of land, the

farmers used about 45 kilogrammes of animal manure and this was put on all crops regardless of what they were. In this particular case, all the animal manure was obtainable within the village and there was no need to purchase any. In Ghoulestan, however, the situation was slightly different since the villagers needed to bring two thirds of their animal manure from town, mainly from the army barracks where the stables produce a large amount of manure. The villagers have to pay 10 to 12 rials per kilogramme for this manure or 60 to 70 tomans for each lorry load. Usually each individual buys what he himself needs. The foreman reckoned that the villagers used about 30 to 40 donkey loads of manure every 300 metres. In only one case was human manure mentioned as a major source of fertilizer supply and that was at Nasuhabad.

Apart from sugar beet and wheat some use of fertilizers has spread to other crops, particularly fruit and to some extent vegetables and melons. Perhaps the most extensive use of fertilizer was found at Telgerdt, where the grape gardens were tended very carefully. They were given animal manure once every

five years and in 1963 the owners of the gardens were experimenting with the use of phosphates. Some 200 kilogrammes per hectare were given to the crop. As well as this treatment the plants were also sprayed regularly with phosphorus and after the grapes had been picked the plants were treated with a nitrogen compound. Similarly on this farm the apple trees were given some animal manure as well as being sprayed once each year to rid the trees of pests. This spraying of the fruit trees occurred elsewhere, for example, at Cahar Borche, Cah Heshk and in the gardens belonging to the Holy Shrine. The headman of Cahar Borche explained the normal system for spraying tree crops. When insects are found the representative of the Ministry of Agriculture is called in from Meshad and his advice is asked. If necessary, a Ministry employee will spray the trees for the farmer. The idea of spraying trees against disease was initiated by the Ministry of Agriculture but, as with many other Government ideas, it has been very slow to catch on and full use is not yet made of this aid, which the Ministry offers free. Very little mention

has been made so far of the use of fertilizers for the melon plots but unfortunately up to the present time no chemical fertilizer has been found which does not also affect the taste of the melons, although it is understood that the problem is being tackled by the Americans. However, it is possible to use animal manure and the best example occurs at the two villages of Hajiabad and Mehdiabad where the land is given manure at the rate of 30 tons per hectare. It was calculated that the farmers needed something like 2,000 tons of animal manure each year to complete the manuring of the farm. Finally in two villages at least an effort is being made to produce better crops by using fertilizer on the vegetable crops. A typical example of this system occurs in Dehnou where chemical fertilizer is used on the potato crop. A similar example occurs in the village of Cah Heshk where animal manure is used on the plots of potatoes, cucumbers and other garden crops. In Cah Heshk the headman claimed that the farmers had sufficient fertilizer for the amount of water which they had.

The use of fertilizer is still quite

limited in the villages around Meshad. It is not that the farmers are ignorant of the fact that it is necessary to give some goodness back to the land but rather that they have always relied upon animal and human manure and are naturally reluctant to change to chemical fertilizer. There is no doubt, however, that once the benefit of using such aids to production are actually tangible then the farmers will be more willing to accept them.

## CHAPTER 8.

### METHODS OF IRRIGATION.

In reality, this chapter should be the preamble to the whole study of the agriculture and economy of this area around Meshad. A Persian proverb claims that "everything is alive by water" and in Iran, particularly to the South of the Elburz mountains, water is indeed the most precious commodity. Many of the landowners regretted that there was only a limited water supply since they claimed that with more water they could produce more food. The virtual desert could be made fertile with a reasonable supply of water.

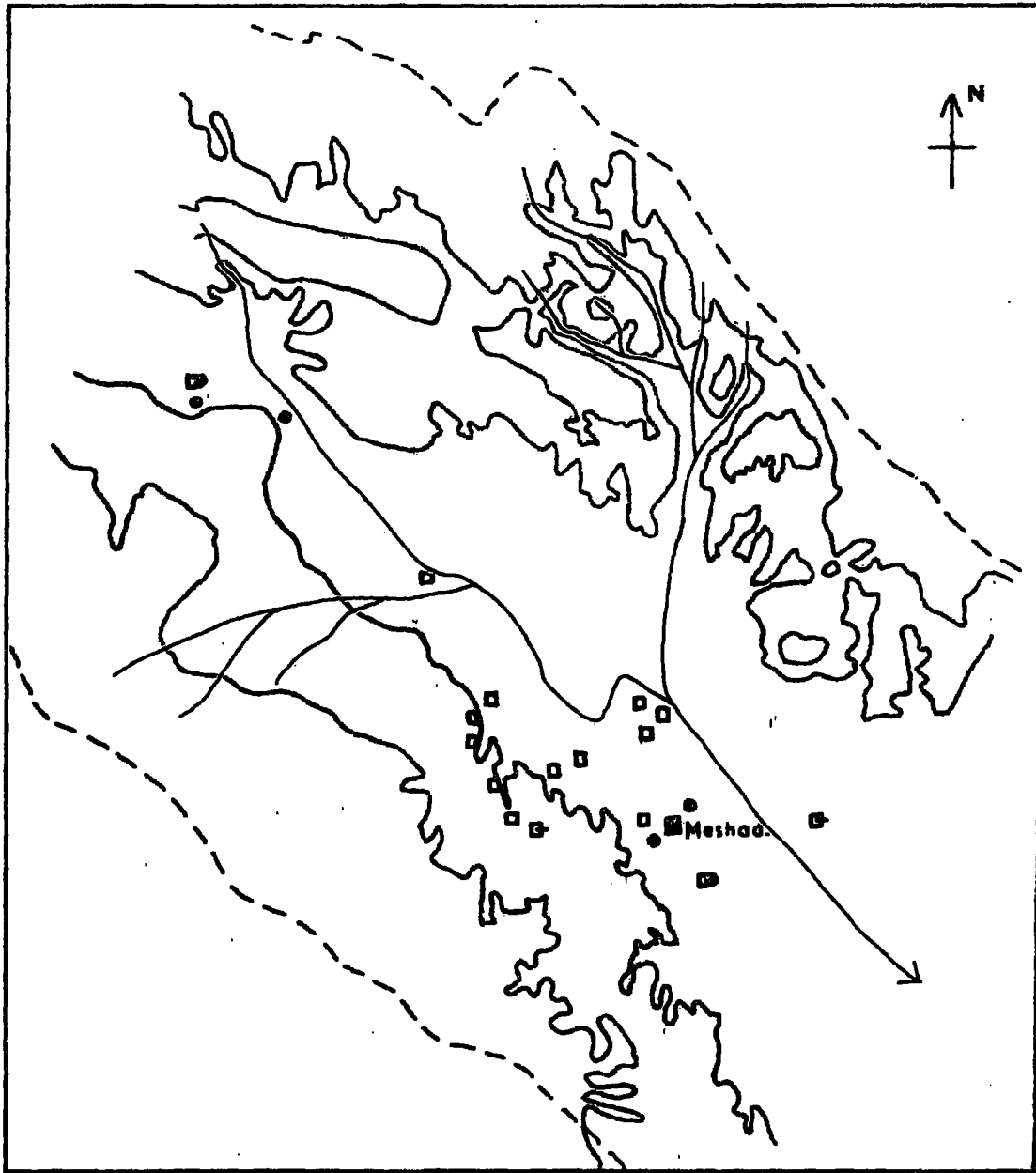
Away from mere speculation, however, there are three principal sources of water supply and irrigation within this area round Meshad, the qanat, the well and the river. In some cases duplication occurs, especially where water is needed for domestic purposes. The latter comes most often from qanats since it is much purer than that from the river, or from wells. The types of water supply available and

the villages which use each one are listed below:

(see also Fig. 5):-

QANATS	WELLS	RIVER
Kashef	Kalate Ali	Morghanan
Ghasemabad	Bid-a-Bid	(irrigation)
Nasuhabad	Kalate Cheykha	Ghoulestan
Mordarkeshan	(irrigation)	(irrigation)
Hajiabad	Telgerdt	
Hajiabad	Mehdiabad	
Cahar Borche	Khiaban	
Noucah	(part only).	
Bildar		
Dehnou		
Cah Heshk		
Piani		
AbCou		
Khiaban		
(part only)		
Ghoulestan		
(domestic)		
Kalate Cheykha		
(domestic)		
Morghanan		
(domestic)		

# TYPES OF IRRIGATION



Scale: 1" = 11kms.

FIGURE 5.

KEY.	
Qanats.	□
Wells.	●
River.	+



The most unusual and, in a way, most impressive form of irrigation was of the same type as that which fascinated the Oxford and Cambridge expedition in their book "Blind White Fish in Persia" and which is something peculiar, I believe, to certain parts of the Middle East. This system of obtaining water is known as the qanat system. (Plate 7) The exact method of locating an area to dig the mother well was supposedly a guarded secret but several of the villagers were quite willing to reveal how the construction of the qanat was carried out. The best explanation of qanat construction was obtained at Bildar. This village was built at the exit point of the underground tunnel, the "mazhar-e-qanat".

In the example quoted here, see Figure 6, the first well was dug to a depth of 80 metres until a source of water was found. Then a further 100 metres down the slope a second well was dug, and once these two sources of air had been constructed and lined with circular sun-dried supports of mud, then the first part of the underground tunnel was dug. This same process was repeated each time until the

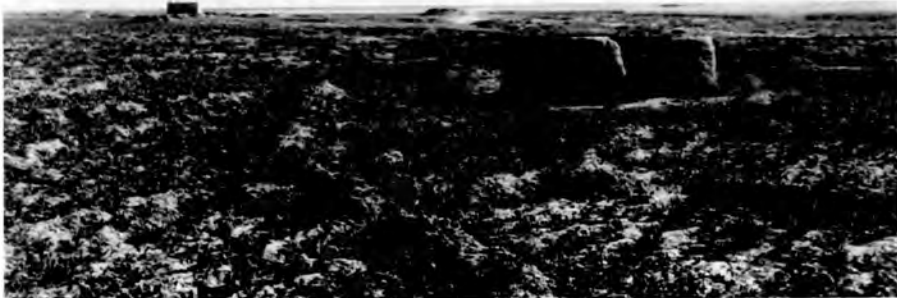


PLATE: 7.

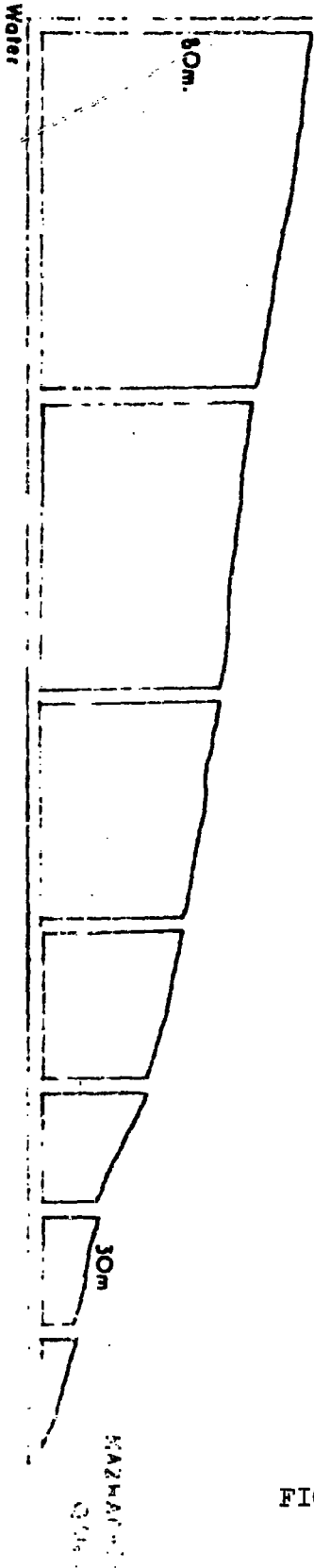
Surface qanat providing the sole source of water to a village.

PLATE: 8.

On the skyline in the middle of the photograph is the mound of soil indicating an air shaft of a qanat below ground.



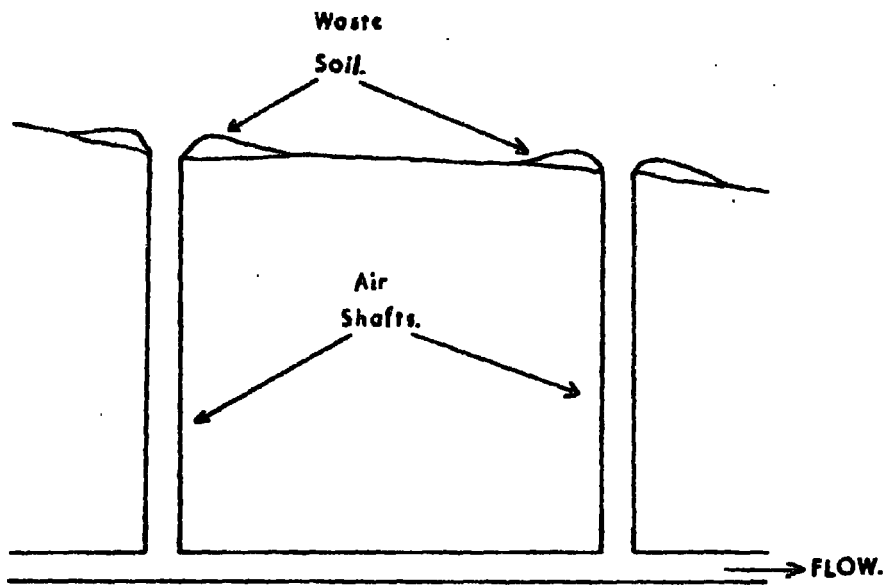
# THE CONSTRUCTION OF A QANAT.



SCALE : 1cm = 20metres

FIGURE 6.

# AIR SHAFTS AND WASTE MOUNDS OF QANAT



SCALE: 1cm = 10m.

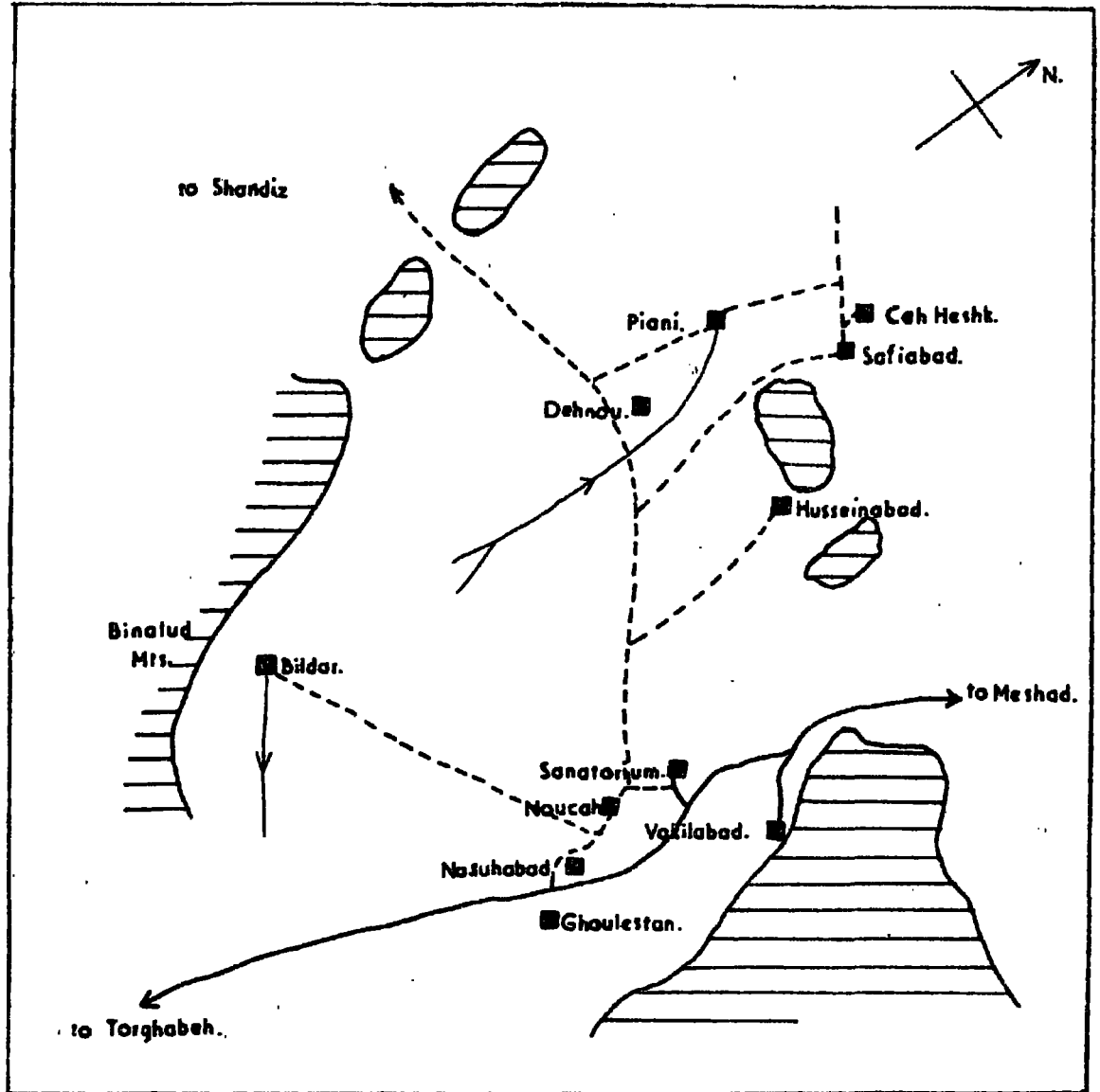
There are two possible ways of collecting water from a qanat. In the first, the water is collected from the shafts and flows down the shafts. In the second, the water is collected from the shafts and flows down the shafts. The first method is more common in the mountains, while the second is more common in the plains.

Figure 7.

tunnel was completed but as the vertical air tunnels, (Plate 8) became shallower than the horizontal distance between them lessens, from 100 metres to about 30 metres. These vertical wells provide fresh air for the qanat builders and repairers, (Figure 7). The point where the qanat reaches the surface is called the "mazhar-e-qanat" and it is from this point onwards into the plain that a village can be built. This latter statement is not strictly true since villages can also make use of a qanat which passes beneath it. An example of this is at Morghanan where the qanat flowed beneath the village across the South West corner. South of the village itself there was a steep descent to reach the qanat. A tunnel comprising fifty to sixty steps reached down to the qanat and at the bottom an enlarged space provided room for three or four women to wash clothes, dishes or themselves.

An actual map borrowed from the Department of Irrigation in Meshad showed the qanat systems serving the two villages of Bildar and Piani, and the adjoining table showed most of the

# SOME QANAT SYSTEMS



Scale: 1km = 1in.

FIGURE 8.

- KEY.
- village.
  - tarmac road.
  - - - unmade road.
  - highland.
  - qanat.

Qanat systems of two villages.

PIANI.

1. Gift to the Gohar Shah Mosque.
2. 4,500 metres in length.
3. 116 wells.
4. Constructed in average sands.
5. 2 branches to qanat.
6. Used for cropping and drinking.
7. Flow of water - 24.5 litres/second.
8. Crops: sugar beet, wheat, barley, wood and green leaf crops.

BILDAR.

- Remained as an inheritance for Holy Shrine.
- 2,000 metres in length.
- 65 wells.
- Constructed in big sands and bottom of well has reached to granite.
- No branches.
- Used for cropping and drinking.
- Flow of water - 25.2 litres/second.
- Crops: sugar beet, green leaf crops, wheat and barley.

salient features concerned with these two systems.

Figure 8. At the village of Bildar, the qanat flows first into a reservoir by the side of the village and then its flow into the irrigation ditches can be controlled by the foreman depending upon the needs of the various fields and crops. The bulk of the water is supplied from a spring underground and the foreman claimed that a considerable reduction in the supply of water occurred during the dry period of summer and autumn and hence the need for some kind of storage device, in the form of a reservoir, was great. At the time of our visit to the village there was an abundant supply of water, so much so that the foreman was trying to find another village which might want to buy water off them. This village was Piani. The qanat at Piani is considerably less constant in its supply of water and the foreman in the village claimed that it was essential for the garden to be kept watered but not so for the remainder of the land, therefore, if there was not sufficient water available they would lessen the area of cropland, or buy water if it were available

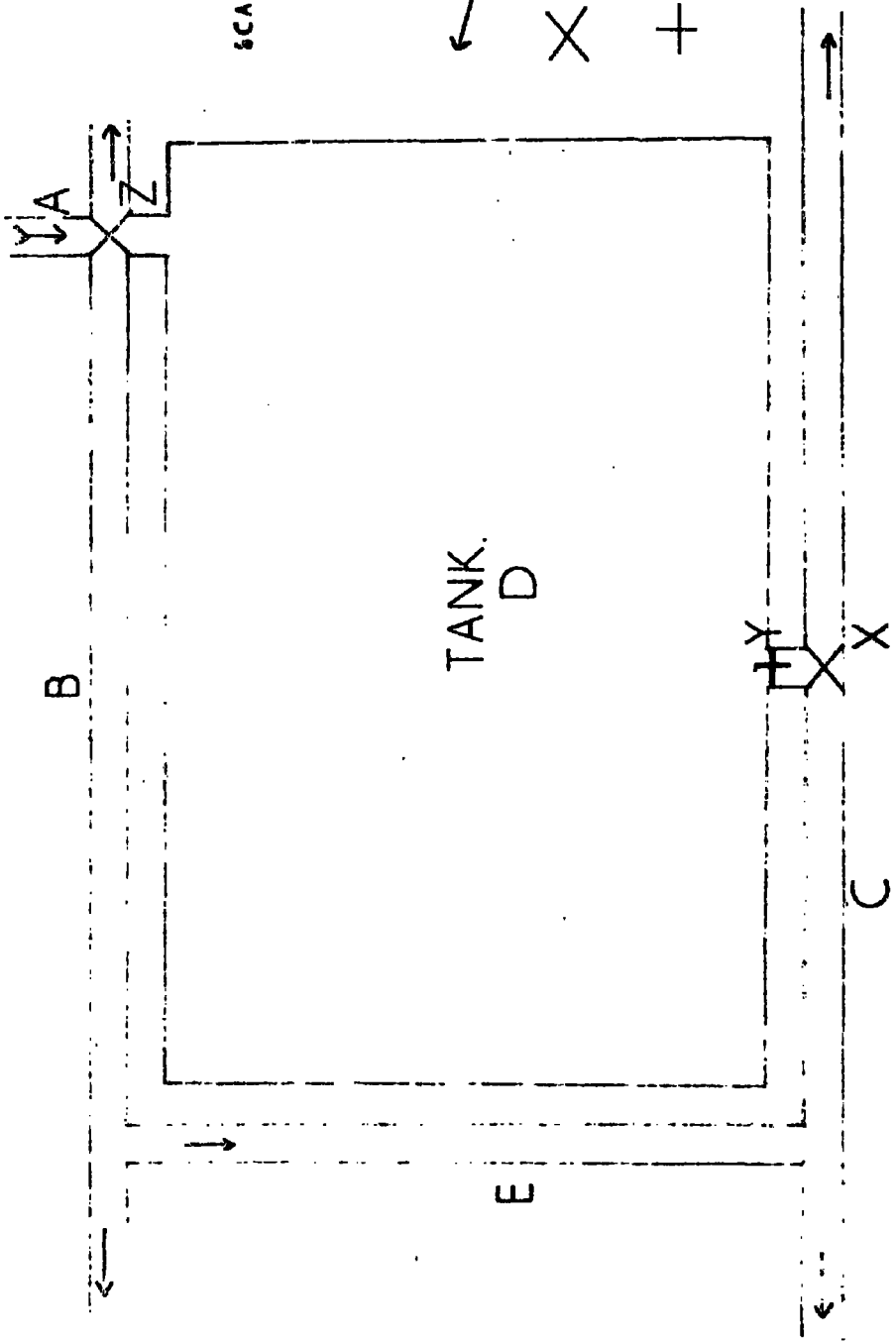


elsewhere. In fact, the previous year they had been able to buy excess water from Bildar at the rate of 300 tomans for 24 hours' supply along the connecting channel. The qanat at Piani is looked after by the villagers themselves, whereas at Bildar it is tended and repaired by an expert employed by the Holy Shrine.

An example of an even more elaborate method of controlling and organizing the water supply of the qanat system was found at Kashef. Here the landlord attempted to make the best use of the available water supply and this, he stated, was what all the landlords and foremen should attempt to do but it was not always the case. The villagers of Kashef irrigated the whole 134 hectares belonging to the farm in a rotation of 16 days so that the area under irrigation is divided into 16 area/days for irrigation purposes. The qanat which supplies the water to the village travels some 6 kilometres from the North West. The qanat is owned by the Holy Shrine but since the whole farm is rented from the Holy Shrine the qanat system is also included in the agreement. The flow of water in the qanat is fairly

# IRRIGATION RESERVOIR AT KASHEF.

FIGURE 9.



constant throughout the year but it is only in summer that day and night irrigation is carried on and this means that during the spring evenings it is necessary to store the water in a special reservoir or tank which has been built by the present landlord. Prior to the construction of this tank the water was allowed to flow away anywhere often causing considerable erosion. The tank itself (Figure 9) has an area of 400 square metres and the flow of water is arranged as shown in the diagram.

For a brief explanation of the working of this reservoir system the water supply from the qanat flows into the tank along the channel marked A. If the water is needed directly in the fields then the gate Z which allows water into the tank D is kept closed. The water then flows along the open channel B and can be dispersed to the whole farm area by allowing the water to flow down channel E running alongside the tank to join channel C. If the water is being stored at any particular time, the gate Z is opened allowing direct access of the water from the channel A into the tank D and closing any access

to the channel B. Thus, when irrigation is carried on from the tank the wooden plug Y is released and the gate X is opened to allow the water to pass either to the right or to the left along channel C. This system of water storage is no doubt a useful addition to the basic irrigation scheme offered by the qanats.

The qanat system at Kashef, although belonging to the landlord/tenant is, nevertheless, maintained by the Holy Shrine and, as in the case of Bildar, specialists from the local villages are employed directly by the Holy Shrine to clear the qanats and keep them in good repair. This means that the farmers themselves in the village pay little or no concern to the maintenance of the qanats. The landlord, on the other hand, is in constant touch with the Holy Shrine, even daily touch, so the qanats can be kept constantly in good repair. The foreman arranges the sharing out of the water. The landlord claimed, quite reasonably, that the irrigation of the wheat and sugar beet fields entails a much greater loss through evaporation since the area exposed is likewise much greater than the trench type irrigation

in the melon plots. So in the wheat and sugar beet fields the irrigation is less effective than in the melon plots.

There seems little reason why each village that has a qanat system should be looked at in detail since each system is very much like the one described at Bildar. However, it is interesting to see that there are various differences occurring in certain of the villages and these may well deserve some mention.

First, then, a brief look at Mordarkeshan which has a simple yet very good and well kept qanat as its only water supply. All the land belonging to the village can be watered by the qanat and the crops are usually watered once every 12 days in comparison with once every 16 days as in Kashef. The foreman suggested that for the first two months, that is during the period of formation, the sugar beet needs no water at all and it is only after this initial period that it receives its regular 1/12 days' supply. This factor of leaving the beet for two months without water is very much a matter of individual choice as

far as can be ascertained.

At Cahar Borche, the next village to Mordarkeshañ, only 100 hectares of the total 180 hectares of land is watered each year. The breakdown of these figures shows that 80 hectares of cropland are in use this year (1963), and 20 hectares of garden and the remaining 80 hectares are left fallow in preparation for the following year. The water for the village is obtained from two qanats, both of which were damaged by the floods which occurred in the early part of the year. Therefore, when we visited the village, it had no water supply whatsoever. Work was going ahead, however, to repair the qanats and it was hoped that they would soon be in working order. The cost of repairing the system was expected to be about 50.000 tomans and this money was going to be paid by the landowner himself. As well as causing damage to the qanats at Cahar Borche the floods had also damaged some 50 hectares of the original 80 hectares of cropland. Another village which is completely dependent on a qanat system for its water supply is Noucah. This qanat, as with most

of the others, depends for its water supply upon spring rainwater and meltwater and, therefore, it often has a distinct lack of water in summer when the need is greatest. The actual date when irrigation commences depends to a great extent upon the amount of rain that has fallen during the winter and spring months. Obviously the more rain that falls in spring then the later it is possible to leave the actual irrigation and therefore the available water supply may in this case last throughout the growing season. When irrigation is started then it is practised normally once every 16 days as in Kashef. Unfortunately the mother well of the qanat has now reached stone which means that it is impossible to dig any deeper. Hence there is a definite shortage of water and this will be especially so if any signs of drought occur.

In the study of Piani, (Figure 8), the necessity of having to buy water was discussed and another village which has a similar water problem is Cah Heshk. This particular village has one qanat providing its water supply and since there is usually a lack of water it is necessary to purchase it.

The foreman claimed that the water was bought from Noucah. There appears to be some discrepancy here since Noucah also has water problems. Nonetheless the foreman was adamant about his claim stating that the landlord paid 300 tomans for a 24 hour supply of water from Noucah. As this was the only one owned by the landowner he was hoping to invest more of his money in it and in lieu of this he was hoping that it would be possible for him to have a deep well constructed. Already he has had the area surveyed by an engineer and has received confirmation that it will be possible to construct a well in the village but that it will need to be 70 metres deep before it reaches water and then it will need to be another 30 metres deep in order to get the best supply of water. This construction will obviously be a very costly undertaking but it seems worthwhile provided that land reform does not rob the landowner of his land.

Two more brief studies should confirm the fact that it is very difficult to generalise on these matters of irrigation since differences can be found



in very small areas. Ghoulestan is one of the larger villages that was visited and it received its water supply from three qanats and from the river. Because the villagers can use as much of the river water as they want there have occurred several heated discussions as to the exact sharing out of the supply. In contrast the qanat water is shared equally and in a well organised manner. The Irrigation Department in Meshad has complete records of the qanat systems and the amount of water flowing in each. The supply to each individual is thus divided according to the amount of land which each has and it is measured in hours of supply. This basically ensures that fair dealing occurs and eliminates many of the difficult problems of sharing the water.

Finally in this outline of the qanat system of irrigation, the village of AbCou reveals yet more variation. Here the qanat travels some 60 kilometres but instead of flowing through earth-lined tunnels, metal pipes have been used as an experiment, ensuring more safety in times of heavy rain. At AbCou the method of measuring the water is done by counting

PLATE: 9.



Old fashioned method of collecting water from a well  
by the side of the main road through Cheneran.

the numbers of pairs of cows, 42 in all, in the village and this is the amount of water the village gets. Each individual receives the proportion of water dependent upon the number of pairs of cows that he owns.

The second principal method of irrigation used in this area around Meshad was by obtaining water from deep wells, (Plate 9). This method of supply was the obvious one for the future and there was considerable talk amongst landlords, landowners and foremen about the possibilities of constructing wells and the cost of keeping them working constantly. Several of these deep wells already exist around Meshad and their actual construction is the first consideration (Figure 10).

The deep well under construction at Kalate Ali was to be dug to a depth of 12 metres although water had been found at 7 metres. At the beginning of the construction a small two stroke engine had been installed on a small platform by the side of the well some 3 metres below the surface whilst at the surface across the top of the well was some

# CONSTRUCTION OF A DEEP WELL AT KALATE ALI

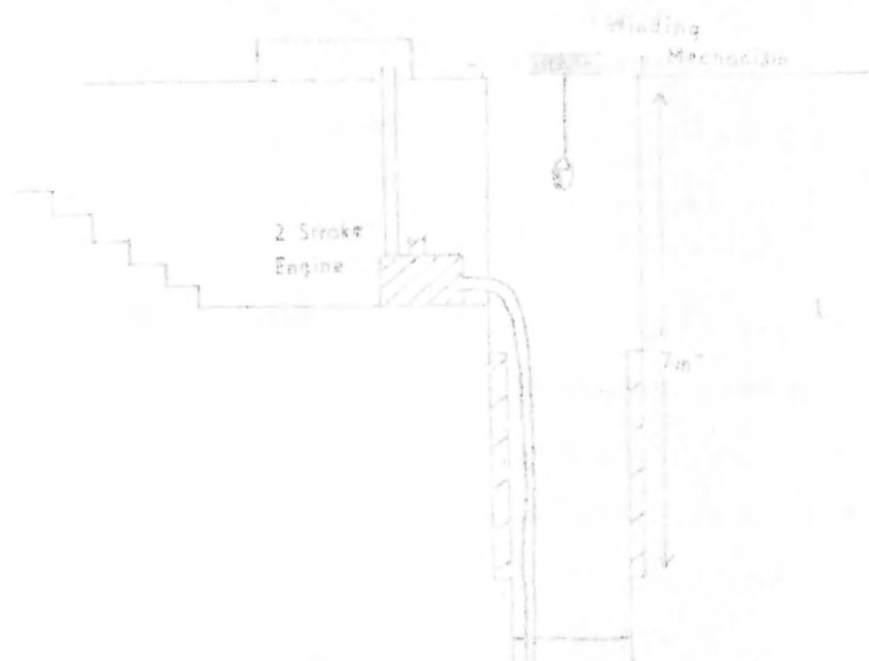
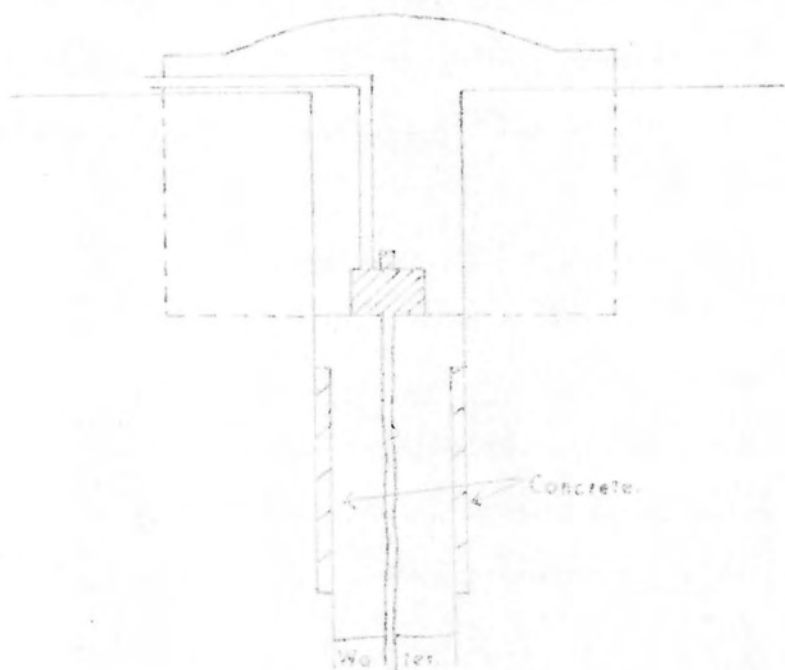


FIGURE 10.



winding mechanism with a bucket attached with which to extract the waste material. Seven men were employed on the digging of the well and they were paid four tomans per day. The pump was to extract the water from the well during the digging. For about 2 metres just above the water level on the sides of the well were concrete supports which were apparently being used because the clayey soil was rather more sandy lower down and therefore liable to subsidence. On completion a more powerful engine was to be installed although the exact type preferred had not been decided upon.

The best example obtained of an actual well in production was at Bid-a-Bid where the present landowner had constructed two deep wells in the last 6 years. All the area of land under crops at Bid-a-Bid was irrigated and it was an interesting traditional sidelight upon what was supposedly a reasonably modern Westernized farm that the landowner followed the set pattern of irrigation, watering the crops in the order, first wheat, then potatoes, peas, beans and finally sugar beet. The actual irrigation

of the various crops varied very slightly, the wheat being watered once every 15 days and the other crops once every 12 days. It is interesting to note that up to six years before our study, the farm, although still owned by the family of the landowners was not developed at all and it was not until the present owner sold his own farm and took over this one that any consideration was given to the land at all. Since that time the landowner has built two deep wells both of which have mechanical pumps and there is now sufficient water for the whole farm. The landowner claimed that when the pumps were working at maximum power they were producing something in the region of 500 cubic metres of water per hour. The two wells are about 50 metres apart and both have engines, one of which is driven by a 45 horse power motor and the other by means of a tractor engine, although the landowner is going to purchase another motor soon. The cost of running the present pump engine seems quite alarming. The machine is not needed during the spring when there is sufficient rain water but for 8 months or more the machine is

used, pumping 24 hours per day and never stopping.

The cost of running the pump is as follows:

In 24 hours the pump consumes 400 litres of petrol  
(@ 2.5 rials per litre).

In 24 hours the pump consumes 15 litres of oil  
(@ 20 rials per litre).

During the 4 months when it is not needed the pump must be repaired (again at extra cost). The landowner believed, and probably quite truthfully and sensibly too, that if electricity was available it would be quite easy to run the machine at a much cheaper rate than can be calculated above, especially since petrol itself costs about 31.000 tomans per year. Another example of the digging of deep wells was found at Telgerdt where a new well has been constructed at a depth of 80 metres and it is to have a German-made electrical pump installed. This garden at Telgerdt is being developed on reasonably modern lines and therefore this new electric pump, it is hoped, will provide all the water the garden needs.

The Khiaban complex which is run by Mr. Mormini contains five major villages, namely Khiaban,

Shahfi, Garijengau, Kederbak and Saxteman. The water for these five villages comes from Cheshkme Gilas by jube (open ditch) about 80 kilometres to the North East and 16 men have been given the task of looking after the water. Some 300 'jouft' flow from Cheshkme Gilas and only about 100 'jouft' reach the complex, thus a considerable amount of water is lost by evaporation and the flour mills in town also take some of the water. The system costs 15.000 tomans each year to keep it in order. Mr.Mormini claimed that these five villages cost about 1.500.000 tomans each year plus a quantity of wheat and barley but as the landlord he was not keen on giving crops as part of the rental fee. Each one of these villages takes its share of water that comes from Cheshkme Gilas. Khiaban has 20 pairs of cows and must, therefore, take a corresponding amount of water. A certain amount of water is permitted for each pair of cows, that is, 1 pair of cows equals 1 jouft of water and each village is allowed a specific time during which to take its water from the main ditch. Because of the large hectarage of land on the Khiaban complex



PLATE: 10.

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The final stage of a new electrically powered pump  
and its building on the Khiaban complex.

several qanats cross the land going towards other villages. The land occupied by the passage of each qanat allows some 20 metres on either side of the qanat itself. The landlord then considers how much they could have obtained from the land occupied by qanats and then charges the village that amount of money for the passage of the qanat across the land. Since Mr. Mormini has taken over the land, four deep wells have been constructed in the area, Plate 10, and he would like to build more although at the moment it is not economically feasible. The land really needs ten more deep wells and the digging of the wells has taken so far about three years but land reform prevents any immediate investment in more deep wells. Each well has cost about 120,000 tomans to build and has to be dug to a depth of 27 feet and the amount of water produced by each well can water about 7 hectares per day. The three major wells so far in operation cost about 1,000 tomans per day in fuel. The need for the construction of more of these deep wells is obvious especially as in some cases the supply of water from qanats is becoming less and less

reliable. The greatest difficulty is money and it is very often up to the landowner or the progressive landlord to supply the money to build and run these wells. Until it is possible for these villages to afford their own wells many of them are going to have to rely upon supplies of irrigation water from qanats and rivers.

The final major source of irrigation water that has not been studied so far is that from rivers. As can be imagined this water source is often more unreliable than that obtained through qanats since the flow of water down these Northern rivers tends to be very erratic. One village which obtained some of its water supply from a river has already been mentioned and that was Ghoulestan which made use of both qanats and the river, the one supplementing the other. The most detailed example, however, was obtained at Morghanan where the water used for irrigation was brought direct from the Kashef Rud, lying to the south of the village whilst the drinking water and water for washing was brought from a qanat which flowed under the village. The general pattern of the

IRRIGATION  
FROM  
KASHEF RUD

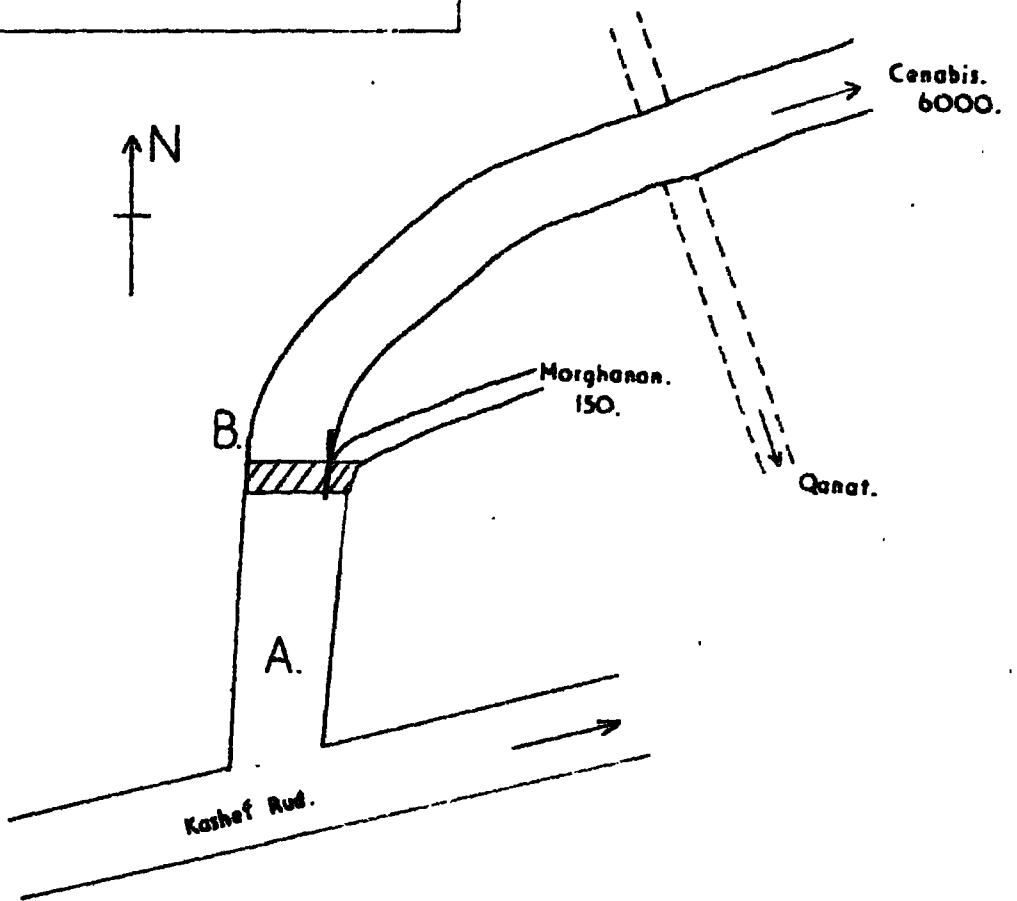
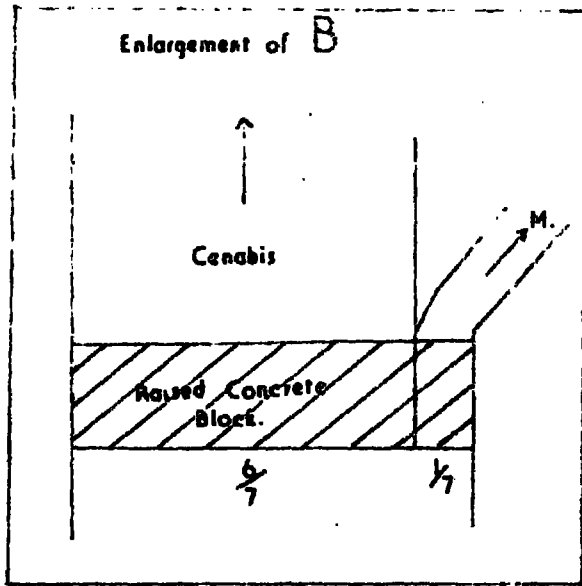


FIGURE 11.

arrangement can be seen in Figure 11.

The water was diverted along channel A when needed, by means of a small mud dam across the river, until it reached the concrete device at letter B (see inset for enlargement). Then, as the water served two villages, one seventh went to Morghanan (with a population of 150 to 200) and the remaining six sevenths went to Cenabis (population 6,000). Water seemed to be available at any time and as far as one could gather there was no rationing. If water was wanted for irrigation then the villagers merely went to the river, the Kashef Rud, and diverted some of the flow. The concrete barrier was to prevent a constant flow of water up the irrigation channels but when the water was diverted up the main channel A it easily overtopped the concrete block B which acted as a kind of water storing device. At the time of the visit during the period of the very heavy rain of April and May, there had been too much water for the crops and so the whole system was blocked off, and we were unable to see it in action. Nonetheless we were assured by the landlord that for

much of the time this proved to be an equally efficient way of obtaining the necessary water supply as the qanat system used at Kashef, both villages being rented by the same landlord.

Incidentally , whilst discussing with Mr. Torbati the various methods of irrigation, we commented upon the traditional order of irrigation that had been given us at Bid-a-Bid and the landlord gave us what he believed was a rational reason for retaining this traditional watering pattern. The reason given was this, that 'because the wheat is usually in a late stage of maturity and has a deep root system, it receives its water first, but the sugar beet needs very little irrigation at the moment and is even getting sufficient moisture by rainfall.' Whether this answer was the acceptable one or not it is difficult to say, however there appeared to be some reasoning behind the rotation.

This brief outline of the irrigation systems will give some idea of the complex methods which are used to obtain water and as water is so very necessary for the continuance of agriculture in the area then whatever methods are used can be justified.

Obviously the use of wells is going to increase in number provided that money is made available for their construction but unless care is taken as regards the water supply considerable damage could be done to the crops. The plan proposed by the Government for the redistribution of land could cause considerable development of deep well constructions, although many of the villages would find the cost prohibitive.

## CHAPTER 9.

### MECHANIZATION.

Mechanization in farming technique is an obvious development in the modernization of farming. As with many other facets of Iranian agriculture, little or no account is taken of the people themselves. Idealism, particularly a need to conform to the Western patterns of agriculture, makes individuals dispensable. Although mechanization is only beginning in this area of Khorassan, already, according to one landlord, "farm mechanization is starting unemployment since bullock usage makes work slower, and therefore, an all year round job, but machinery hurries and therefore, there is less to do".

The usual mechanization employed on a large majority of farms is tractors, used for ploughing, discing and cultivating. The remainder of the work is normally done by hand labour. The machinery is most often hired by the villagers and charges are made per hectare of land worked. In four cases studied the village, or the landlords renting the



village owned farm machinery, which, in some cases was hired by the landlords to the villagers. Javad Torbati, the landlord of Kashef, owned one German (M.A.N.) tractor, one disc harrow and one three furrow plough. This machinery is also hired out to Kalate Ali and the farmers themselves pay for all the costs of ploughing and cultivating. Similar examples of landlords or landowners owning farm machinery are to be found at Bid-a-Bid where Mr. Khorram has two tractors (one British and one German), a harvester, a plough, a disc harrow and a cultivator. Both the tractors have to be taken to Meshad for repair and one of the problems is that it is difficult to get a British tractor repaired because there is no agent in the area as yet. Similar facilities can be found at Kalate Cheykha which has two tractors, both American, a plough, a disc harrow and a cultivator, and at Cahar Borche, which has a tractor, a plough and a cultivator.

The costs involved in hiring a tractor to do any of the main tasks on the farm are very similar throughout the area; they will be found overleaf.

for ploughing ..... between 50 and 60 tomans per hectare.  
for discing ..... between 25 and 30 tomans per hectare.  
for cultivating ..... between 25 and 30 tomans per hectare.

The machinery is usually hired from wherever it is most easily accessible and this can be either from one of the landlord's other farms, from a nearby village or from Meshad. This system of hiring is adopted by the majority of the villages and there are only occasional variations. One of these latter occurs when one landlord owns many villages and thereby one or two tractors is sufficient to plough all the land necessary in all the villages. Examples of this can be found at Kashef, as has already been mentioned, and at Mordarkeshan. The other variation is to be found at AbCou village where the equipment belongs to the Holy Shrine and the hiring costs charged are slightly lower than in most other cases. They are:-

for ploughing ..... 50 tomans per hectare.  
for discing ..... 18 tomans per hectare.

In all cases, as has been emphasised already,

the costs are paid by the farmers and it is toward meeting these costs that the loans made by the sugar beet factories are offered. Most of the ploughing is done by machine except where tractors have difficulty in working and then a pair of cows and a plough, the more traditional equipment, are used. The broadcasting of seed is very often done by hand although again, many of the more progressive landlords claim that this method is wasteful and prefer to use modern machines. Often, during the autumn months, immediately after the harvest, the tractors will work 24 hours a day on the more progressive farms in an attempt to complete the ploughing as early as possible. When this occurs, the two tractor drivers normally work in shifts. The vast majority of the hoeing, weeding and harvesting is still done by traditional methods. One landlord claimed that he had used harvesters the previous year but because of the great saving of labour, the idea was dropped. He believed that it was more acceptable to allow the villagers to cut their corn in the traditional manner, otherwise unemployment was far too high.

One simple example which is deserving special mention here is that of Bildar. The latter is a village belonging directly to the Holy Shrine and the tractors used for ploughing here are lent to the village free of charge. The tractors, however, only plough the land, all the remainder of the work being completed by hand.

As can be easily gathered from this brief description of mechanization, the farmers still do a considerable amount of the work in the fields in the traditional way. The reason for this is not necessarily because of the backward nature of farming methods but also because of the difficulty of employing so many people if the farming is completely mechanized. Unemployment must be a primary consideration. As I have stated already, many of the more progressive landlords would like to be able to farm the land completely using machinery and having only about six workmen but under the present system of agriculture this is impossible. Neither is reform necessarily going to aid modernization of methods.

## CHAPTER 10.

### LABOUR.

The methods adopted for employing the large numbers of villagers on the various farms were almost as diverse as were the farm types themselves. The two principal types were "share-cropping", in which the worker received a certain percentage of the crop at the time of its harvesting and "wage-earning" where the worker was paid a fixed daily wage for his work. There seems no doubt that "share-cropping" is the older of the two methods and indeed it seems possible that it is the traditional method whereas the idea of wage-earning is a relatively new concept and is limited in its application. There is a standard official argument to show the merits of "wage-earning" but nonetheless many landlords and landowners are content to continue "share-cropping" as a more acceptable system.

Before assessing the merits or otherwise of the official argument, it will be more satisfactory to present individual cases on both sides showing

particularly how they work.

First, then, a look at some of the villages which still maintain modified forms of "share-cropping". There are no straight forward examples of this type, as each has some slight complication, so it will be simpler to discuss each in turn.

In Mordarkeshan, for example, all 50 men work on the farm or in the village and they all share, in some way or other, the 50% of the crop which is theirs to share. This means that by some method or other, each individual family will get a 1% share of the total crops produced by them for the landlord. It is not always the case that the crops themselves are shared; sometimes the landlord will sell the whole crop and then share out the money. The second is very probably slightly more profitable to the individual farmer since the landlord may, by having a recognized market, be able to obtain a better price for the crop than would otherwise be so.

A further example of "share-cropping" can be seen at Kashef. Here 18 of the men are occupied in the cultivation of wheat and sugar beet and 12 of

the men have melon plots. In addition the landlord sub-lets small sections of his land to 20 people from outside the village itself, some from the city, some from other villages, so that they may grow melons for their own use. For the growing and cultivation of wheat and sugar beet, there are three groups of six men and these groups are persuaded to work in competition, the one with the other. Each group has a leader and they work in co-operation under their leader who is responsible to the headman of the village. These 18 only share the 50% share of the sugar beet and wheat crops but in order to allow fair shares, these 18 men are not allowed to work any melon plots. Therefore, only those members of the village outside the 18 families are permitted to have melon plots. These 18 men are the same each year but by dividing the work in this manner it is hoped that the income of each family will be about the same. Of the wheat crop, each group cultivates a section and the <sup>n</sup> gets its share of the money from the amount produced in that part. The groups, during harvest time, can hire

labour from outside the village but they must pay the cost of hiring themselves. Equally, when labour has to be hired for hoeing the sugar beet, the cost must be paid by they themselves. Both the foreman and the landlord/tenant, however, agreed that in Kashef there was far too much labour for the amount of work and that mechanization plus five men could cultivate the same area much more efficiently. On an average it was believed that men worked about 45 minutes per day throughout the whole year, and with due consideration, this figure seemed reasonably acceptable if all factors were taken into account.

An equally complex method of "share-cropping" was to be found in Cah Heshk. Here the labour supply totalled about 28 men in all, of whom three worked in the field as share-croppers and the remainder were employed wherever possible. There are two possibilities for the three "share-croppers" at the beginning of the year, they either rent the land from the landowner or else agree to share the crop with him 50%/50%. The agreed rent previously paid to the landowner was 3.000 tomans for one year and the majority



of this cost was to cover the buying of water but because of the relative scarcity of the latter, the rental had been reduced to only 2.000 tomans per year. For this price they were allowed 18 hours of water every 10 days, that is 18 hours out of every 240 hours. Obviously, therefore, it was more profitable, overall, for the three men to rent the land outright from the landowner, but their problems lay in raising the capital. When it was not possible to do so they were obliged to share the crops.

The "share-cropping" system operated in Ghoulestan differed yet again from the two previous ones described. Ghoulestan was divided into 200 parts and of these 100 belonged to farmers who lived in the village and the other 100 belonged to people living in the city who hired gardeners from amongst those men unemployed in Ghoulestan. So of the labour supply in Ghoulestan itself about 100 of the men are peasant proprietors and about a further 100 are share-cropping gardeners, who get 25% of everything they produce. The major problem faced by these gardeners in Ghoulestan is that if the crop is of a poor

quality then they must, of necessity, go elsewhere to work as day labourers to earn their living.

A further example of pure share-cropping occurs in the Khiaban complex. Here the landlord believes that the men work much harder and are much more conscientious if they are sharing a crop whereas if they were being paid daily they are not particularly interested in their work, only in the money at the end of the day. 712 men are employed on the Khiaban complex and after putting aside an amount equivalent to that originally given as seed, the remainder is all shared, usually on a 50/50 basis. There are a few differences, however, as in the case of the melons where the landlord demands only 30% of the crop and the farmer gets 70%. This anomaly was explained by the fact that the landlord had to provide only water and land for the melon crop, the rest of the work was done by the farmers themselves. Equally a further anomaly occurred on land which was quite a distance from the centre of the work. Here the farmers were allowed to grow wheat, of which the owner only claimed 10%. In such cases the

landlord only provided the land and the farmers relied on rain water for their crops.

Share-cropping, as a system of employing labour, therefore, is fairly widespread and yet it has been and is being replaced in many villages by a much more orthodox method of payment, that of wage-earning. This system usually operates on a daily basis but it is impossible to generalise as to the type of farm, or the type of landowner or landlord who would adopt either of these systems. The idea of wage earning presents a much more uniform picture wherever it occurs and the daily rates of payment similarly vary very little.

The fullest picture of a village where the men were employed as wage earners was at Bid-a-Bid. The village belonged to Mr. Khorram who claimed that up to three years before this study, "share-cropping" had been the accepted method of payment for the villagers but since that time a system of wage earning had been introduced, the villagers receiving their pay weekly. During the weeding period, that is particularly the period when the sugar beet plants have to be sorted and

only the sturdier ones left, the villagers employed receive 40 rials or 4 tomans per day. The reason why weeding is necessary is that the seed for the sugar beet is broadcast and not sown, making some kind of selection of the various young plants essential. During the period leading up to harvest time the villagers are kept employed within the village or on the land. At harvest time, when the crops need to be gathered fairly quickly pay rises to 50 or 60 rials per day, depending upon the efficiency of the work. Immediately after the crops have been sold there is a period, usually of two months, during which the villagers receive no pay whatsoever and during which time they must, of necessity, go elsewhere to find part-time employment repairing buildings or cleaning qanats in order to earn a living.

Because of the relative simplicity of the wage earner system, there is no necessity to elaborate upon further systems of this type, suffice it only to state one or two straight forward examples. Noucah is an average example. Here the men work as

labourers both in the garden and on the farm as they are needed, the number employed depending very much upon the time of the year. Normally only four men work on the farm but the total number employed in the village can vary between 20 and 50, the extra labourers being hired where necessary. All the labourers receive 50 rials (5 tomans) per day when working. A similar example is Dehnou where, out of the 30 man labour force, about one half works in the garden and the other half is employed on the farm. In this instance the owners of the village employ as much labour as they consider necessary and are prepared to pay 50 rials (5 tomans) per day. Finally a fourth example of wage earning can be seen at Piani where there are a total of 80 men to be employed. Here there is some slight deviation. Whether all 80 labourers are employed at Piani or have to go elsewhere for work depends very much upon the amount of work available at the time. However, at the time of our visit, only 12 men of the 80 belonging to the village were actually employed there, 8 men working on the farm and 4 men working in the garden. One

interesting factor which occurred at Piani was that four families from that village go to Aklemat in the hills at the beginning of each summer in order to grow crops on land which they have there and then in the winter they return to live in Piani.

There were obviously many variations upon these two systems, the most common being where both were run in conjunction with one another in the same village. An example of this system is to be seen at Morghanan. In this village 12 families only, of the 45 living there, are actually involved in "share-cropping" and the remainder work as labourers when they are needed either in Morghanan itself or in some other village, wherever work is available. The share-croppers are divided into three groups of four for working purposes and each group has its leader. These three groups work allotted portions of the village land receiving their share from the land they have cultivated. The wage earners are paid, as is customary, by the day since regular employment is rare whereas daily hiring is common. A similar

system is in operation at Hajiabad. Here the total village population is 80 families, of whom 50 share the crops with the landlord and the remaining 30 act as paid labourers. The landlord himself seems very satisfied with the system and claims that he even goes so far as to offer a bonus for the group of men whose land produces the best crops. Whether or not this example of a bonus scheme can be believed is debatable since it is the one and only time we came across it. Yet another example of this duality of systems is found at Cahar Borche. Here the population is divided roughly into two parts; 40 families act as share-croppers with the landlord, receiving a 25% share of the crop, whilst the remaining 30 families act as paid labourers. The landlord claims that the paid labourers are necessary since much of the agriculture is done by machinery. Hence if all 70 families were involved in share-cropping there would not be sufficient work for them to do and likewise their share of the crop would be exceptionally small. The labourers are paid 160 tomans per month (an average income of

about 5 tomans per day) throughout the year by the landlord and if they are hired out to work elsewhere then the landlord receives payment rather than the labourers themselves. Again no other similar system was found which could verify its authenticity.

One or two slightly different systems of employment were found during the various studies and it seems necessary that each should be mentioned in turn, if only to show the complexity of ideas that were in existence. At Abulkhair, for example, the farm is run almost as a peasant proprietor establishment. The land is farmed by 5 families who call themselves "malekan" or landowners. These 5 families share the land between them, one having two hectares and the remaining four having 8 hectares each, a total of  $34$  hectares. The remainder of the inhabitants either own sheep or work in other villages as agricultural labourers. The lack of a single employer within the village seemed a serious handicap as there appeared to be no overall pattern of agriculture.

At Telgerdt, a private farm run by two



brothers, only four other individuals were employed full time. Of these four, one gardener received 150 tomans per month and the three dairymen received 170 tomans per month each. Whenever any extra labour was required it was hired from outside the farm itself, though most often from the village of the same name nearby. Casual labour was paid between 4 and 6 tomans per day depending upon the work they were required to do whereas female labour, which was used for hoeing and weeding, was paid 3 tomans per day.

A further example of the use of labour was found at Ahmadabad garden which was the property of the Holy Shrine, and which was sold by the Holy Shrine to an allop just before harvest time. Prior to putting the garden "into mozayede" the daily hired labourers were employed by the Holy Shrine and were paid at the rate of 5 tomans per day. Those permanent members of staff at the garden were normally employed only as clerks and their actual salary is unknown though it could be estimated at about 150 tomans per month. When the crop is sold the buyer employs his

own labour for tending and picking the crop, paying a slightly higher price at harvest time for 6 tomans per day.

Despite the obvious confusion of methods of employment, two methods of payment stand out quite clearly, those of "share-cropping" and wage earning. On farms which are being run on modern and progressive lines the conflict of the two methods is anything but solved, as the examples quoted have indicated, but it does seem possible to set forward a definite case for the adoption of the wage earning technique as it is more advantageous to the peasant. The reasons for the adoption of the wage earning method were clearly stressed by Mr. Torbati and though they seem very forceful, he himself found it extremely difficult to overcome the antipathy of many of his farmers who were convinced that they benefited more from the age-old method of share-cropping than from this newer method of daily, weekly or monthly payment.

The reasons given by Mr. Torbati against "share-cropping" were:-

1. that it is the peasant and not the landlord who suffers in a time of crop

failure since the latter usually has sufficient funds to last him through a further year whereas the villager has nothing.

2. that the peasant needs to borrow goods from shops to keep himself and his family alive and this means that he gets into debt.
3. that because the peasant has no fixed income he tends to hope for the best possible harvest the next year and therefore quite often spends more than he should on credit.
4. that when the peasant receives his pay at harvest time he tends to spend it all at once, either because he already owes the whole of his income or because he has some left he wants to buy some extra luxury for the house.
5. that because the crop is not all his own, he does not work very hard and what work he does is not always done conscientiously.

6. that the adoption of this system means that a peasant works on an average only a few days of each year, the remainder of the time being spent looking for jobs elsewhere or merely unemployed.
7. that the peasants themselves are not self-reliant and, therefore, they do not have a happy life, trivial matters upsetting them easily. This view was purely a personal one expressed by Mr. Torbati.
8. that the landlord or landowner himself needs to lend money to the peasants throughout the year to buy food and, therefore, it is impossible for there to be any spirit of co-operation between himself and his farmers.

Quite obviously many of these opinions as to the demerits of share-cropping are personal and may not be true in every case and yet, through them, it is possible to see the complexities and difficulties of the system.

Equally well the reasons for the adoption

of a wage-earning system were clear. They were:-

1. that if the peasant earns a weekly wage he can adjust his life to suit his form of income, much more easily than he could with an annual wage. Budgeting per week is much easier than budgeting per year.
2. that if he is very lavish in his expenditure he can only spend one week's income and he will be paid again in a few days' time. This fact is not altogether accurate though the possibilities of running into heavy debt are considerably less if the peasant receives a weekly wage.
3. that the money he receives buys more than if he has to borrow at regular intervals from other individuals.
4. that he has to work for his wage, or rather he has to earn the money that he is offered.
5. that this system also makes the landlord

work as well since if he is paying out wages every week he must supervise what is going on. The adoption of such a system should then mean the end of absentee landlords which was the plague of the old system of Iranian agriculture and consequently the rise of a set of landlords who are interested in agriculture, including the trying out of new methods.

To substantiate his claim that the adoption of wage-earning should be imposed by higher authority, Mr. Torbati quoted two examples from one of the villages, Kalate Ali, of which he was the landlord. The first man was aged 21 years and was a share-cropper. At the time of our visit in June, he had already borrowed 100 tomans from Mr. Torbati during the month of June and he claimed that he and his family were still hungry. During our stay he came to ask if he could borrow some 90 kilogrammes of wheat from Mr. Torbati's store in the village. It was claimed that by harvest time, two months hence, he would owe Mr. Torbati

about 50% of his total income from his share of the crop and, therefore, exactly the same difficulty would occur the following year.

By contrast, the wage-earner, also aged 21 years, was completely self-sufficient monetarily. When he had started as a wage-earner he was earning 2 tomans per day but after two years his wage had risen to 200 tomans per month. At the time of our visit he was earning 180 tomans per month. As a 21 year old, he had been married 6 years and had two children. Mr. Torbati claimed that this man was not in debt to any one and that he and his family ate and lived well. His house was well-carpeted (a sign of wealth) and he owned a bicycle. As well as these possessions he also had four milking cows, which brought him 200 tomans per month, and he owned a house in Meshad which he rented at 80 tomans per month. As his overall expenses were only about 25 tomans per month he was able to save almost three quarters of his monthly income.

Obviously these two examples were chosen especially by Mr. Torbati to give force to his

argument yet it seems feasible that similar circumstances exist though perhaps not to such extremes, in other villages. It was difficult not to be partisan as to the obvious merits of the wage-earning system when some of the very poor share-cropping villages were visited. Yet the reverse opinion was stressed forcibly by the foreman of Mordarkeshan who claimed that share-cropping was the best system at present since when the peasants were paid by the day, they sometimes found it difficult to earn an adequate living (for which purpose he quoted 5 tomans per day). Also the landlord was able to employ as and when he wanted and pay on a similar basis. By contrast, the foreman claimed that by share-cropping the peasant farmers were able to earn anything up to 15 tomans per day. Hence there was an equally forceful argument for the retention of the share-cropping system.

In all fairness to Mr. Torbati it was felt that his attack on the share-cropping system was not purely in consideration of the peasants but also took his own position very much into account. The more



examples of the systems that were studied the less clear became the merits and demerits of each, so much depending upon the individual landlord and the peasants. Not all the young modern landlords favoured the wage-earning systems, a prime example being Khiaban and it seemed sensible not to lay down any hard and fast rules.

## CHAPTER 11.

### ANIMALS.

One of the problems of studying the animal side of the economy of this area was the lack of any large scale animal husbandry, apart perhaps from sheep farming. Each village that was visited appeared to have some cows, sheep, poultry and donkeys but their importance varied inversely almost with the importance of crops. The only method of making an adequate study of the use and importance of the animals was to assess each group independently, village by village.

### CATTLE.

Throughout most of the area it was possible to divide the usefulness of cattle into two groups:-

1. for milk.
2. for work, usually ploughing.

As much of this study was centred on villages within the immediate vicinity of Meshad the use of cattle for ploughing appeared comparatively rare, tractors,

PLATE: 11.



Underfed calf - typical of many of the village animals.

albeit hired, having replaced them on most farms. Usually within any one of the villages the animals were divided amongst the various families, each having anywhere between one and six cows. These animals, which looked in extremely poor condition, (Plate 11) were used principally as suppliers of milk for the making of mast, part of the villagers' staple diet. During the course of our stay in Meshad we visited the one dairy farm, as well as the Agricultural School.

We had heard extremely interesting reports of the Agricultural School at Karadj near Teheran, and of the modern techniques which were being practiced there. However, the school at Meshad appeared to be teaching methods which were no better than those to be seen in many of the villages. The school had a herd of 12 Swiss Brown cows which had been flown in specially to see if it was possible to raise the standard and, thereby, the milk yield of the local animals. The average yield of milk per animal was 15 litres per day, whilst the record of any one day was 27 litres. The yield was quite high by comparison with the average British daily yield which is somewhere

around 16.25 pints for all dairy cattle or 24 pints for high yielding cows.<sup>1</sup> Equally staggering was the difference between the cows on the farm yielding 26.25 pints daily and those in the villages yielding around 5.25 pints daily. Quite obviously the standard of dairy cows throughout the region was exceedingly low and all attempts to develop better breeding were to be encouraged. Despite the relatively insanitary methods adopted at the Agricultural School their cattle were far in advance of any seen elsewhere around Meshad. The one exception to all these remarks was Telgerdt, the only dairy farm in the vicinity.

Telgerdt was run by two brothers who had inherited it as a private concern from their father. Their aim was to produce milk and cream for consumption as such and not for the making of mast. On this dairy farm, which was only a part of the whole farm, there were, at the time of the visit, 30 cows in milk, 20 heifers and 16 calves. The animals were a cross between Swiss Brown and a local Iranian

1. "Farming for Profits" by Dexter and Barber (Penguin).

breed. Originally under the auspices of Point 4 (now United States A.I.D.) a Swiss Brown bull was imported to Meshad but now all breeding is controlled by artificial insemination. The calves on the farm at the time of the visit ranged from 20 days old to 8 months old. For the first week the calves were normally suckled and from then on they were bucket fed, their first lactation being when they reached the age of 20 months. Each cow gave about 10 litres (17½ pints) of milk per day, the milking taking place in the early evening. The milk was usually sold to small mast shops in the town, the owners of the shops normally sending someone out to collect it. The milk was made into mast for sale to the general public and none was sold from the mast shops as fresh milk. The cost of the milk to the mast makers was 10 rials (1 toman) per 1 litre. The brothers explained that although the people in the town needed fresh milk there was not sufficient to supply everyone and what was really needed was a good creamery which could start a regular distribution. Until this occurred the milk had to be made into mast.

The usual diet of the cows was a mixture of clover, alfalfa, straw and fresh sugar beet pulp. The first three of these fodder crops were obtained from the village adjoining the farm and the fresh sugar beet pulp was brought from the AbCou factory and cost 40 tomans per ton in its dry state. Up to two weeks before the visit, that was towards the end of April, the animals were also fed a concentrate made up of salt, cotton seed and ground barley. They were given 400 grams of concentrate each, 1 gram of salt for each 100 grams of the concentrate. The barley for this mixture was grown in the village attached to the dairy farm whilst the cotton seed was obtained from a mill in town at a cost of 650 tomans per ton. The records were kept completely up to date for each animal and each lactation produced about 4,500 kilogrammes, or 984 gallons of milk. The normal butter fat content of the milk at Telgerdt was between 3% and 6%. There were, however, variations, the butter fat content being around 3.5% after the first lactation and averaging 4.2% for the remainder of the time.

The farm was reasonably experimental. The buildings were a part of the house, although they had been modernized, having concrete floors and stalls although the stalls were not individual. However, despite its clean appearance and the good looking cows, milking was done by hand into a dirty bucket by one of the cowhands. The two brothers were attempting to prove to themselves and to their friends that scientific farming could pay and yet the hygienic standard of the dairy was far below what one would have liked to have seen.

Apart from this dairy and the cows at the Agricultural School the remainder of the animals that were seen in the area were very emaciated and disease ridden. A complete contrast with the dairy at Telgerdt was to be found in Kashef village. Each family there had between 2 and 3 cows, making a total of about 45 cows in the village, though the number each family possessed varied according to their wealth. Of these 2 or 3 cows, one was usually a milking cow and the other two were for ploughing. Most of the time these animals were kept tethered in the various



yards and fed on wet straw plus occasionally a few greens. The cows were all of a small local breed and the milking animals produced about 3 litres of milk each day. Of these 3 litres of milk, one litre was kept by the family to be made into mast and 2 litres were sold via the milk collector in town. The milkman paid the villagers 24 rials per 3 litres of milk and the townspeople paid 32 rials per 3 litres of milk. The milkman collected the milk on a bicycle, arriving in the village about 8 a.m. and transported it to the town. If, however, he could not sell the milk to the mastmaker at an adequate price, he would then sell it in the streets. Usually the milkman had a contract with the mastmaker. Beef was not normally eaten in the village except if an animal was killed for a special occasion, in which case the skin was again usually sold in Meshad.

Similar factors relating to dairy cattle in other villages were found and there is very little merit in mentioning each in turn. Suffice it to say at the moment that most of the villages possessed about 2 cows per family and in almost every case half

were milking animals and the other half draught animals. The normal yield per day of one of the dairy cows was 3 to 4 litres of milk.

There are three examples which demand rather more detailed study in that they contained slight differences from the general pattern. The first of these was Kalate Ali where a herdsman was employed to look after the 44 cattle. The animals were taken out from the village in the early morning and returned in the evening and the herdsman's job was that of supervisor but unlike many of the other village employees, this cattle herdsman had no other job. For the most part of the year he was paid by the villagers at the rate of 1½ kilogrammes of wheat per cow per month and he was given the wheat at the end of each month. During the spring, however, he was allowed all the milk from the cows on one day of the week instead of being given the wheat. The reason for this change was obvious in that wheat was usually in short supply in the village by the spring.

The second interesting feature occurred at Morghanan where the animals, as at Kalate Ali, were

taken out during the day to graze on the area around the village. It was noticeable that the cows in Morghanan looked in considerably better condition than elsewhere and it seemed possible that the reason was simply that they had included in their diet alfalfa. Normally the food of the cattle was limited to dried grass with the occasional sugar beet molasses, so the eating of green fresh alfalfa could not be anything other than beneficial.

The final study concerns the village of Khanrud in the mountains. Here two herdsmen were employed, one looking after the milking cows and one the bullocks. The difference between these men and the herdsman at Kalate Ali was that the former also had land in the village. The herdsman in charge of the bullocks received 12 kilogrammes of wheat per animal during 9 months of the year and for the other 3 months received nothing, the income from his garden being adequate. The dairy herdsman, however, received as payment all the milk produced in one day of each week. In addition both men were also paid 24 kilogrammes of wheat for each calf they had to look after. The main

duty of these two herdsmen was to take animals beyond the village land onto the mountains each day. Only the pregnant cows and the very young calves stay in the village and they are allowed to graze on the grass in the timber plots.

On the whole, therefore, although cattle were kept in all villages their importance to the economy outside the individual villages was very limited. They were locally important in the supplying of milk particularly to the mastmakers but the use of bullocks for ploughing had, as I have stated earlier, decreased in importance with the use of tractors, especially in the vicinity of the city itself. It seemed likely that as the agricultural economy was changed there would perhaps be more emphasis on dairy farms as separate entities and thereby a noticeable decline in the keeping of cattle in the villages.

#### SHEEP.

The principal fact about sheep farming in the area under study was that there were a complete profusion of methods. Of the 25 farms under study only

PLATE: 12.



Mixed flock of sheep and goats.

8 did not have any sheep or goats associated with them. It was common to see mixed herds of these animals (Plate 12) roaming the apparently semi-desert landscape throughout Iran and it is with these animals that the nomads of the South are associated. For these reasons the existence of quite large numbers of sheep and goats in a large proportion of the villages was a common sight.

It would be more acceptable to draw at least some general conclusions as regards sheep rearing either before or after studying individual farms but in this section at least no very adequate conclusions can be reached. There are, however, two factors which occur in the majority of the studies and these are

- (a) the practice of transhumance,
- and (b) the existence of a shepherd.

By far the most fascinating feature of sheep farming was the occurrence of transhumance. Briefly the sheep (and goats) spent the winter within the village and the summer in the mountains some distance away, for example, 36 kilometres in the case of Cah Heshk. The animals normally left the village around late April (25th April in Kalate Ali) and were returned

to the village in late September or early October. More details of this system will be made in the various individual studies.

The animals were normally herded communally and, therefore, one or more of the villagers was employed the whole year to tend the flock. This man received payment for his services in kind. Usually more than one man from a village was involved in sheep tending during the spring and summer months when lambing was foremost. Again rates of pay and numbers of individuals involved will best be studied in individual farms.

The first study is of Kalate Ali. The village owned a total of 150 sheep though it contained several very large covered "houses" in which the sheep were kept during the winter months. Presumably the reason for these large "houses" could have been found in the history of the village but suffice it to say at the moment that sheep and goats from the surrounding villages were also allowed to winter in Kalate Ali where they were stall fed and in return for this service the villagers were allowed to keep all the manure

produced. During the winter period the sheep were chiefly fed sugar beet pulp obtained from the AbCou factory. The sheep were not usually killed for meat but were rather kept for their wool and milk. Occasionally, an animal would be killed for a special feast or festival, otherwise all the meat, when needed, was brought from Meshad, apart from poultry. At shearing time an average clip per sheep was about 150 kilogrammes and all the wool, apart from a little for home use, was sold in Meshad at anywhere between 20 and 40 tomans per three kilogrammes depending upon the quality of and demand for the wool.

A very similar set of circumstances was in operation in Ghasemabad where the flock numbered about 350. Again each sheep produced between 100 and 200 kilogrammes of wool at shearing (that is between 1 and 2 farsman, one farsman equalling 100 kilogrammes). The sheep were owned individually but herded communally with two shepherds who tended the flock throughout the year. The only difference between Kalate Ali and Ghasemabad as regards the tending of the sheep was that in the latter village clover was also grown for winter



feed as well as using wheat chaff and sugar beet pulp.

In Khanrud sheep and goats were of much greater importance. The flock numbered about 950, of which 450 were sheep. The flock was tended by two shepherds, one of whom looked after the lambs and kids for six months of the year and the other looked after the sheep and goats for the whole year. The shepherds were paid in wheat and wool. For each sheep the shepherd received 6 kilogrammes of wheat per year and also the amount of wool sheared on the rest day, Friday. The shepherd tending the lambs received 3 kilogrammes of wheat per lamb for the 6 months of his work. Both the shepherds owned land in the village and it was suggested that the full-time shepherd hired labour to work his plot of land. The flock was taken to the mountains each day and returned to the village each evening.

The only example where transhumance was not found was Morghanan. There the sheep were kept in the village all the year round though they were taken out into the fields and onto the lower hill slopes each day and were returned each evening. As there were only about 80 sheep in the village, the shepherd received

140 tomans per month for caring for them. This was the first example of a shepherd being paid in cash rather than in kind. Later, however, such cash payments became common. For example, at Abulkhair, where the shepherd tended between 70 and 80 sheep throughout the year, he was paid 1.200 tomans for the whole year. The animals were grazed in the mountains during the summer but also made use of the alfalfa at Morghanan during the spring, paying the landlord at Morghanan for the privilege. In Kalate Cheykha, too, the shepherd was paid cash for his work, receiving 70 to 80 tomans per month, plus about one ton, or slightly less, of wheat from each family owning sheep.

In both Mordarkeshan and Hajiabad, the shepherds received 1 toman per animal per month for tending the sheep, their income in both cases working out to about 1.200 tomans per year. Because of the large flock of sheep at Cahar Borche, 1.500 in all, 9 shepherds were needed to tend them and they were all paid in cash receiving 7 to 8 rials per sheep. There seemed in all these statistics an abiding attempt at fairness, that the annual income was fixed, if only by word of

mouth, amongst the villagers. In the next four villages, Noucah, Bildar, Dehnou and Piani, the shepherds all received 1 toman per month per sheep making an average annual income for all the various shepherds of around 1.200 tomans. There were one or two slight differences in these several villages as to the treatment of the animals. For example, in Bildar, the 100 sheep were taken to the upland pasture during the summer which was only about 500 metres from the village and they stayed in that area throughout the summer being tended by 2 shepherds at night but only 1 during the day. At Piani the animals were tended in a more complex manner. The villagers hired their summer grazing land from a Dr. Asgari, paying him 100 tomans per year for the privilege. Also some of the animals were sent, along with others from other villages to Saraks, in some cases for both winter and summer. These flocks often numbered 2.000. For this herding the villagers paid 15 tomans for each sheep during the winter season but only 3 tomans per sheep during the summer. Obviously because of this division of the sheep, it was difficult to give an accurate estimate of the total number owned

by the villagers but there were 220 in the village at the time of the study and they were tended by two shepherds.

Certainly the most interesting example of sheep rearing was found at Cah Heshk. The village possessed a total of 200 sheep plus a further 100 which belonged to the landowner but which were herded with those of the village. Each family used in full the milk it received from its animals whilst the landowner employed a married couple who made butter from the milk from his animals. This was their job all the year round. During the summer they accompanied the 4 shepherds who tended the flock some 36 kilometres from the village. Of these 4 shepherds, two were employed to look after the lambs and two the sheep. The main task of the couple was to look after the flock belonging to the landowner, the man acting as a shepherd as well as milking the animals and the woman making the butter which was sent to the village daily. The summer pasture cost the villagers one toman for every sheep which grazed on it. The foreman claimed that in order to pay for this summer's grazing land

the villagers had to sell most of their wool in Meshad where they received only 11 tomans for each kilogramme. He complained bitterly about the price since in the city the merchants sold the wool for 45 tomans for each 3 kilogrammes thereby making a considerable profit at the expense of the villagers. There seemed no doubt that this complaint might well have been justified but there seemed very little the villagers themselves could do about the situation. Sometimes the wool was bought and collected from the village in which case some of the profits might well have been classed as overheads but when the wool was taken to the city to be sold to merchants then it was not possible to explain the discrepancy. With the money they received from the wool the villagers rented the summer grazing land, as has already been explained, but also they needed to buy feed during the winter since the animals were kept in stables in the village during that time. In the stables their normal diet was dried grass and molasses, the latter being obtained from the AbCou factory and costing as much as 70 to 100 tomans per ton (dry) when the cost of transport had been added. The shepherds

received 1 toman per month per sheep, which was then divided amongst them, the two men who tended the lambs being paid only for the summer months when they were actually employed. The couple employed by the landowner to look after his animals were paid 40 tomans per month and had all their food found for them. This system at Cah Heshk was certainly the most complicated that was studied but there seemed no doubt that similar involved and traditional systems probably existed elsewhere within the area.

Finally a mention ought to be made of Ghoulestan which possessed in all about 300 sheep. The animals were kept by their owners in their own homes during the winter months and fed on a mixture of dried leaves and dried grasses for food. During the summer months again transhumance is practised, the animals being taken to the mountains by 2 shepherds though in this case no charge was made for the grazing facilities. Each family paid 5 rials per month per animal to the shepherd and from the sheep received about 5 sîr of milk each day, (just over one third of a litre as 1 sîr is equal to 74 grams). One further slight difference

was that the wool was all used in the village and none sold in the city. This factor seemed rather strange since Ghoulestan was near the main road from Torghabey to Meshad and, therefore, transport to the city would have been easy. However, since the sheep cost nothing to keep apart from the relatively small fee to the shepherds, presumably there was no great need to sell the wool.

The keeping of sheep was a much more widespread occupation than cattle rearing and the animals were much more fully used. In every case their milk was made into mast, often supplementing cow's milk, their wool was used in the villages or, in some cases, sold in Meshad and their droppings were collected for fertilizer or for burning in the bread ovens. It seemed that the possession of a few animals by each family was yet again an example of the family being a self-sufficient unit, providing all its own food. The changes that were taking place were aimed at destroying this self-sufficiency and placing an increasing reliance on monetary purchase for the villagers. The method was supposedly aimed at a higher standard of living.

## HORSES and DONKEYS.

A similar indication of change was to be found in the numbers of donkeys and horses, particularly the latter. All the villages possessed some donkeys whether as many as 50 as in Kalate Ali or Khanrud or as few as 5 as in Piani, Bildar and Noucah. The usual pattern was that each family in the village possessed either a donkey or a horse for transport purposes. Now, although the donkeys were still used as pack animals and were a common sight throughout the countryside, the bicycle and the taxi had replaced them as means of individual transport as both were much quicker. Similarly horses were kept to pull the carts to and from town either collecting or delivering goods (Plate 13). Even during the study it was common to see horses and carts in the villages though it was becoming more usual to use heavy lorries for transporting bulky goods, especially to and from the city, (Plate 14). Still more rare was to see a horse being ridden by one of the villagers although at Cahar Borche, the landowner did keep 12 horses for riding purposes, especially when entertaining guests.



PLATE: 13.



Usually transport to and from villages is by one horse cart. These carts are carrying human night soil.

PLATE: 14.

Longer distance transport or where more bulk is involved, decorated lorries can be hired from Meshad.



Horse transport was becoming less and less common near to the city but where other means of transport would have difficulties because of the lack of adequate roads, donkeys became even more common and were seen carrying anything from paniers of fertilizer to long white poplar trunks stripped of their bark.

#### POULTRY.

Finally most of the villages also possessed some poultry, either hens or turkeys. Certainly the area had been swept by fowl pest at sometime during the last two years though any attempt to establish just when, met with a complete profusion of answers. Roughly half of the villages claimed to have had fowl pest. In Morghanan it had occurred two years previously and so some of the original numbers had returned. In Khanrud and Bid-a-Bid, the disease had struck in mid-April 1963. In Cah Heshk, all the hens had been killed the previous year and in Noucah and Bildar the disease had occurred during the last winter. Even in some of the villages there was no mention of the disease at all, for example, Mordarkeshan or Ghasemabad or Kalate

Cheykha. It seemed possible that those villages that did not report the loss of any hens had either not suffered from the disease, which seemed unlikely since all around were villages that had had fowl pest, or else the Ministry of Agriculture had not been told and, therefore, neither were we. Nonetheless when the disease occurred remained a mystery and even the Ministry was not sure since often no mention was made to them. Whenever the disease was recorded the new poultry were injected free by the Ministry and in one village at least, Cah Heshk, a great fuss was made of the fact that none of the new hens had died since the injections.

Again each family usually owned two or three hens and whatever eggs were laid were consumed within the village, and in only one case, Nasuhabad, were any of the eggs sold outside the village. Normally the hens were allowed to wander around the village and eat what they could, though in one case, Kalate Ali, they were fed once a day with Dutch pellets to try and increase their egg yield. Hens were commonly used as food in the village especially when guests were being entertained. Apart from hens the only other poultry mentioned were

turkeys and these in only two villages, Bid-a-Bid and Dehnou. In Bid-a-Bid the landlord claimed that all the hens had been killed by fowl pest and all the turkeys had been similarly killed and eaten so that no poultry at all was kept any more. In Dehnou also all the hens had been killed by disease but the villagers kept ten turkeys principally because they could obtain such a good price for the chickens, 16 tomans each.

Animal husbandry is distinctly second place in the economy of the majority of the villages around Meshad. The importance of sheep and cows in the traditional mixed economy far outweighs their importance in the more specialized farming of wheat and sugar beet. Many of the more progressive landlords and landowners are aiming at a strict limiting or even elimination of animals owned on a small scale by individuals. Their existence provides a variety of diet, clothing, fuel and fertilizer, all of which, apart perhaps from fuel, can be obtained from Meshad for cash. The change being made is away from subsistence farming towards economic farming and hence animals, too, except on specialized farms are to be eliminated.

## CHAPTER 12.

### CONCLUSION.

The problems of agriculture in the vicinity of Meshad, and one presumes also throughout much of Iran south of the Elburz mountains, are many. Basically the country is trying to move from the traditional to the modern in the space of a decade. The people are seeing and demanding changes and the answer must be long term. An agricultural background is the essence of the country and although the facade changes it is the background that is of prime importance. The young people are tiring of the Shah and the Government all too often remote in Teheran. What happens in the capital is of little consequence to the villagers around Meshad unless they can see the direct results.

Basically the problems facing the Government in Iran are five, organization of farming method, water supply, lack of skilled experts, education and capital. These factors are the needs of the small part of the province of Khorassan under study, as well as of other parts of the country.

The organization of the farms is taking place under land reform (see Chapter 1.) and provided the system is applied fully there seems no reason why land reform of this type should not be successful. At the moment the problem is that enthusiastic young men full of Western farming method are attempting to turn the 80 family village which was almost self-sufficient into an economic farm. Principally this latter means specialization and this in its turn implies wage earners rather than share croppers. Provided the landlord is fair minded the system can work satisfactorily but exploitation is obvious especially as land reform is threatened. The problem lies in the fact that the village must feed its 80 families and not for the sake of modernization turn them out with no work to stand about begging for small jobs. Already the difficulty of unemployment is noticeable in Meshad. It would seem that the answer to land reform lies in collectivization, self-sufficient units producing also extra to help with the total economy of the region. The land ought to be worked as a collective unit with the village at the centre and the villagers holding all the land in common. Any

other solution seems difficult to defend and the adoption of the Soviet system of "kolkhozes" or collective farms would appear a possibility. In the suggested land reform instead of the land being divided equally each farmer would be given a few acres for his own purposes and then would be expected to help with the cultivation of the remaining land communally. Whatever system is adopted, however, the agricultural pattern must be reformed for the better and not merely put back into the traditional pattern from which at the moment it is breaking loose.

To make the system completely successful requires money and education both of which are lacking. The peasants need capital for starting and to back them as well as education in newer methods of farming. This idea needs presenting not as a lofty order but by slow gradual help from experts. It was obvious during the visits to villages that the villagers were wary of visitors and were expecting to be "told" rather than "asked" and they resented being told. What is needed are experts to show the farmers new methods, to point out improvements and work with the farmers but at the same time the experts need to be Iranian not American or British.

The education that these villagers need is not merely literary so that they can read and write but also basic education as to methods of farming, crops to grow and fertilizers to use, and this can best be taught by practical help. Attempts are being made to specialize in crops and animal husbandry but the specialization is so limited, except, perhaps, as regards the growing of wheat and sugar beet, as to be almost of no wider significance than the farm upon which the experiment is taking place.

The 8 point agricultural plan devised and presented by Dr. Arsandjani, a former Agricultural Minister, in 1961, covered most of the essential requirements of Iran's, and, as it happens, Meshad's agriculture. This plan outlined much of what was necessary in reform and, as can be seen from the list, the problems of full reform are complicated and long-term. The 8 points are:-

- (1) An immediate application of agricultural reform entailing the distribution of the land to the people and so encouraging small holders and the provision of



material aids for the peasant farmers.

- (2) an adoption of a rational method of agriculture and the abandonment of out-of-date systems. (The difficulty lies in defining what is a "rational system", Author.)
- (3) the foundation of schools and hospitals in rural areas.
- (4) the education of the peasant farmers in new methods of land use and stock rearing.
- (5) the development of agricultural schools and credit banks.
- (6) the fixing of agricultural prices and the guarantee of a minimum price, thereby assuring a reasonable living standard for all the peasant farmers.
- (7) the management of village matters by local councils on a communal system.
- (8) the creation of co-operatives for production and consumption in the villages.

If it were possible to add to this list the presence of experts actually working in the field to

help the farmers, then these 9 points would sum up the revolution that is needed in Iranian agriculture. The problems are immense and sweeping and complete changes are needed to solve them. On a small scale the hindrances and difficulties facing slow and undramatic reform were to be seen in the area under study around Meshad. The attitude of many of the villagers, and, indeed, of the so-called experts, the distance from Teheran, the opposition of the landowners, and many more, were all difficulties to be found in the area. This part of North East Khorassan revealed in microcosm Iran's agricultural difficulties. There is no simple solution. The modernists must remember the people who will suffer from lack of work because of their enthusiasm. The reformers must remember that the reform must be an advance not a return to traditional methods. To solve the problem successfully both more time and more money are first essentials.

Section II.

## CHAPTER 1.

### A CLASSIFICATION OF VILLAGES.

One of the problems of attempting any categorical division of settlement types in the Meshad area is that although several villages were visited near to the city and in the valley of the Kashef Rud only two were seen in the many valleys dissecting the foothills of the Binalud mountains. For this reason any categories that are to be presented must inevitably be debateable, but it is hoped that it will be possible to provide sufficient evidence to show that the suggested categories may well have some foundation.

In an assessment of the three categories that I would like to propose a study of village plans, house styles, materials used for construction and source of water supply will be considered.

A further difficulty is the nomenclature to be adopted since it would be unwise in so relatively brief a study to adopt any settlement terms. The three categories under study, therefore, are:

- (1) villages in the valleys lying to the South West of Meshad, in the Binalud mountains.
- (2) villages situated at the junction of the mountain regions and the valley of the Kashef Rud.
- (3) villages in the lowland area, that is in the valley of the Kashef Rud, itself.

The first basis for the selection of these categories is the plan of the village. There are distinct differences between the plans adopted in the three categories. The basic ideas to be presented do overlap, however, particularly in categories two and three.

The villages in the mountain valleys, (Plate 15), show the least organized form or plan. Every attempt appears to have been made to avoid wasting any potential agricultural land on the floor of the valley. The relatively exposed summits of the surrounding uplands are also avoided and the steep valley sides cause a very special village to be built.

The structure of the village tends to be in the form of a series of steps with no particular form,

Plate 15



A mountain valley, the site of Khanrud, in the almost barren mountains to the South West of Meshad.

such as is to be found in categories 2 and 3. The houses are usually of two storeys with the living section above that devoted to the animals. The villages are equally rather isolated the one from the other and from the main valley of the Kashef Rud and the roads leading from Meshad are no more than mere tracks.

The villages situated at the junction of the highland and the lowland take on a much more acceptable form. A typical example of this category is to be found at Bildar (Figure 17). The original form of the village lay within castellated mud walls with four towers, one at each corner. Presumably this style of construction provided some form of defence, possibly from attacks from the mountains, though no concrete evidence could be found to substantiate this possibility. Within the last 30 years or so, however, additional houses, stables, granaries and bath-houses have been added to the villages and they have been constructed, for the most part, outside the original village form. There is still, however, a regular form to these additions. Each group of houses and stables is built round a courtyard, with all individual doors and windows facing onto it. This pattern of

development makes each section a separate entity within the village with very often only one main entrance gate. Sometimes the courtyard itself is constructed even though there is no plan to construct houses and stables within the whole yard. In this particular case, the remainder of the courtyard will be built up when new houses are needed. An example of this proposed possible future development of the village can be seen in the plan of the village of Bildar.

The final group of lowland settlements usually present a much more open plan. An aerial photograph of such settlements would reveal that their presence can best be detected because of the presence of poplar trees. Unlike the previous two categories, in which the trees might be grown for wood supplies, here, in the lowland villages, the trees are primarily to provide shade for the village which would otherwise be exposed, particularly in summer, to the full effect of the sun.

The plan of the village takes on no definite form as appeared in category 2. The emphasis on defence appears almost to have disappeared. The one governing factor that did appear in common with category 2 was



the fact that any additions to the original village, again tended to be built round a courtyard. It must be emphasized at this point, however, that the original plan did not in every case adopt this rectangular style of construction. Later additions to the village appeared to be even more strictly confined to this form, as in the case of Kashef (Figure 14) and Morghanan (Figure 15). The strict rectangular form that appears in these plans was followed quite strictly by those planning new constructions.

The second group of features by which it is possible to substantiate the categories presented at the commencement of this chapter are those associated with house styles and the materials used for their construction.

The first category covers those villages in the valleys of the Binalud mountains. As was mentioned earlier the village has been built on a slope to avoid the use of fertile land within the valley bottom and, therefore, the builders have to take this slope, sometimes quite steep, into consideration when constructing the houses (Plate 16). Most of the

Plate 16.



Khanrud - a village style in complete contrast to  
the villages of the plains.

dwellings consist of two storeys, the upper one being occupied by the family and the lower one by the animals. Accordingly two entrances to the house are usual, one to the living quarters with a staircase leading to the stable below and one to the stable itself. Normally the living quarters consist solely of one room though its size is quite often twice that of the typical four metre square room associated with the lowland houses. The primary reason for the occurrence of these larger rooms is associated with the considerable use of timber in the construction of the houses. This large scale use of timber occurs principally because there are large quantities of wood immediately available. Wood is of particular importance in the construction of the roofs of the houses where much greater length can be obtained than if the construction were entirely of mud. Equally a considerable amount of stone is used, principally in the lower portions of the walls and on roofs, The reasons for the lower section of the walls being of stone is that the heavier rainfall associated with the mountain areas, plus the fact that the village is built on a slope means that drainage through the village is

often quite heavy. No obvious drainage exists and there is considerable evidence that the paths zig-zagging through the village provide an obvious channel for the rain water. Had the walls of the houses been of mud throughout any heavy drainage would have caused considerable damage. Likewise the occurrence of stones as part of the construction of the roofs will protect the houses from similar damage. Often the rocky slope is used as an integral part of the construction of the house and in many cases the bed-rock of the valley side protruded well into the lower portion of the building. In these particular villages their chosen site often makes construction extremely complex, much more so than was apparent in either of the other categories.

Moving down the valleys towards the second village category there is one very obvious change and that is concerned with the amount of wood that is used in the construction of the houses. Since trees are still grown for their timber value, wood is equally still available for construction purposes, although the amount of wood used appears to be more limited here than in the villages of the valleys. Wood is principally used

for two purposes in these 'junction' villages, primarily in connection with roof construction and secondly for door posts and lintels. The roofs of many of the houses are still flat and although mud is used as the final covering it is not difficult to see that timbered beams and supports are absolutely essential if this type of roof is to be built. However, the limitation of wood supplies is also made obvious by the fairly common occurrence of either dome or barrel roofs for many of the houses. The construction of the barrel and dome roofs is much more complex than that of the flat roofs but if wood is not available, or must be specially bought, then flat roofs become less common. Similarly the material used for the construction of the houses changes. Whereas in the valley villages, the materials consisted predominantly of stone and mud, the absence of building stone on the edge of the highland makes mud the sole available material and as a consequence the houses are constructed almost completely of mud. Again the use of this material on a large scale also suggests that the effect of drainage was not so important as in the mountain side villages. However, one must not

underestimate cost and availability as being probably the prime factors involved in house construction in the Meshad area. Finally in the 'junction' villages, the house styles have changed considerably from those to be found in the valleys. Primarily the house reverts to, for the most part, a single storey dwelling with a maximum size of four metres square for any one room. A family, however, often occupies more than one of these small rooms and occasionally uses a third as a stable for the animals. The village to be found in category 2 is really a transition from category 1 to category 3 though there can be no doubt that of the remaining two categories the greatest affinity is with those villages to be found in the valley of the Kashef Rud.

The final category, those villages in the river valley, show an almost complete absence of wood in their actual structure. The further from the highland the village is the less the apparent use of wood. The reasons for this absence have already been stressed and they are either that wood is completely unobtainable or that its expense is beyond the means of the average village peasant. It must, at this stage, be mentioned

that in some of the newer buildings belonging to the landowners or landlords, there is more use of wood than is to be expected. This is noticeably the case at Ghasemabad where a row of incomplete but new two storey houses are being built by the landowners, though in this case Ghasemabad's proximity to the highlands might account for this factor, and in the case of Kashef where the foreman's house provides an excellent example of a more modern urban structure. For the most part, however, the buildings in this category tend to be of sun-dried mud or mud-brick. The usual method of construction being that a rectangular area of land adjacent to the old village is enclosed by a mud wall and the houses and stables are then constructed within this wall, usually by mud obtained from the central part of the courtyard. This technique of building, therefore, often leaves in the centre of the yard a series of pits and hollows where the clay has been extracted, so making the surface of the courtyard very irregular. The principal form of roof style within this third category is the dome, though the actual method of its construction remained unanswered. It appears that some

form of support is used until the roof is dry and it can then be removed but whether this answer is acceptable is unknown. As can be seen from the various village plans in the next chapter there is a variety of roof types in most of the plains villages though by far the most common is the domed roof. Two-storeyed houses are also occasionally found but they prove to be the exception rather than the rule. There are differences between the villages in categories 2 and 3 as regards materials used for the construction of the houses, primarily wood, but little real difference in the style of house, save perhaps for the change from flat roofs to domed roofs.

The final reason for the selection of the three categories presented earlier must inevitably be associated with the water supply. Equally, this classification is by no means absolute, rather generally correct. The basis for the division can be summed up quite briefly. The proximity to a supply of water is an essential criterion to the establishing of any village. In the case of the villages of the highland, the usual source of water was to be found in the



mountain stream whose supply appears to have been reasonably constant, apart perhaps in the height of the summer months. Although the village is built in the valley it avoids using the alluvial land in the bottom of the valley and, therefore, water has to be carried to where it is needed. No other source of water is normally available in the mountain villages.

Those villages in the second category are for the most part associated with an artificial 'spring line'. The construction of a qanat system has been explained earlier in Chapter 8 under "Methods of Irrigation", suffice it to say at this juncture that at the point where the qanat emerges, that is the mazhar-e-qanat, there is usually a village. That this point should coincide with the siting of the 'junction' villages needs little explanation since their supply of water depends upon the qanat and the village is usually situated near the emerging artificial tunnel since no extra construction is thereby needed to obtain water.

Within the valley of the Kashef Rud, however, at least three sources of water supply are used depending upon the availability of each. These villages nearest

the river usually make full use of its water though often water for domestic use has to be obtained in addition either from a qanat or a well. Those villages situated too far from the river rely for their water supply upon a qanat or a well. The construction of wells within the valley has proved that there is a considerable reserve of water beneath the surface and obviously provided the source of water is extensive enough its controlling influence on the site of a village is going to be lessened.

It seems reasonable from a study of the various factors discussed here that there are differences in the types of villages that occur around Meshad. However, whether two categories would have been rather more adequate for the classification or whether there should have been many more categories it is difficult to say without a much more detailed study of the actual types and formations of the villages. Suffice it to say that the classification presented here might give at least some general pattern to an otherwise confused picture.

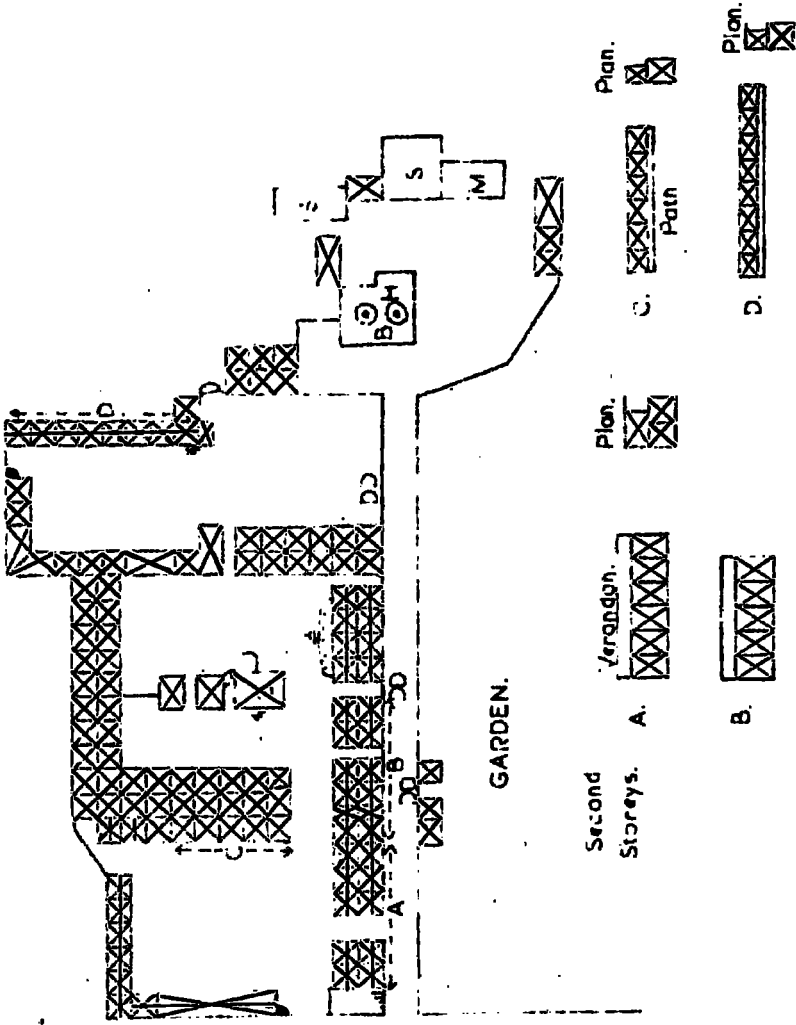
## CHAPTER 2.

### VILLAGE FORMS.

Throughout this chapter reference is to be made to a series of six village plans which are the result of a much more careful and detailed study of buildings and building styles. The aim of these studies is an attempt to find some over-riding form to the villages, some essential feature affecting the construction of each. It was only after several of the villages had been visited that any thought of form seemed feasible. Up to this point the villages had merely appeared a confused mass of buildings, usually surrounding a series of courtyards of varying sizes but beyond that without any significance. Equally after the study it may seem that the form of any of the villages is very intangible but it would appear that new buildings in all cases are added to a village plan after some thought, or some provision is made for them. Whatever is the case, these village studies might at least throw some light on the apparent complexity of construction and thereby the complexity of classification and generalisation.

# PLAN OF GHASEMABAD.

TO MESHAD  
VIA AKILORAD



KEY

- FLAT ROOFS.
- BARREL ROOFS.
- X DWELLINGS.
- X STABLES & STORES.
- OVEN.
- DD DOUBLE DOORS.
- S BRICK BUILT STORES.
- M MOSQUE
- W GRAIN STORES.
- BM BATH HOUSE.

Second  
Storeys.



Plan.



Plan.



Plan.

SCALE: 1" = 4metres.

Figure 12.

The simplest method of study is to look at each plan in its turn. The first of these concerns Ghasemabad, (Figure 12), which provides a very ordered and compact structure, especially when compared to the plan of Kalate Ali which is to be studied next, (Figure 13).

In its simplest form the village comprises a series of three courtyards around which the houses have been built and all the houses face onto the courtyard with no openings to the houses from the outside, except by the principal entrances. The village itself is separated from its garden by a track passing through it to join the main Torgahbeh to Meshad road after about 2 kilometres. The garden is also completely enclosed and the sole entrance is through large wooden double doors. Within these entrance doors, on either side, are buildings, one housing the foreman of the garden and his family and the remaining two acting as store houses, both for the garden requisites and those of the foreman's family.

As regards the village itself, each of the courtyards can be entered from the main track through similar double doors to those found at the entrance

to the garden and the courtyards themselves were interlinked once inside.

Most of the buildings bordering the road are two-storey and Ghasemabad is unusual in having so many of these houses compared to the few that will be seen later. The sole method of entering the second storey of these houses is by means of a staircase from inside the courtyard, with a narrow walk leading along the roof of the lower buildings. These buildings made obvious the considerable quantities of wood used in their construction. The upper storeys of these houses are used as dwellings whilst all the lower storeys act as stables or storehouses for the families living above them. Similarly a dwelling covers the main entrance to the first section of the village, so providing a tunnel-like opening. Each dwelling house comprises a single room 6 metres by 4 metres whilst the lower stalls consist of two 4 metre rooms. Also within the first courtyard is the only example seen during the whole of the survey of a completely mud built two-storey row of dwellings. Once again entrance to the upper storey is by a single external staircase at the end of the row

and along the whole length of the upper storey stretches a very narrow path linking the dwellings. In this particular case both the upper and the lower storeys are used as dwelling houses. The actual construction of this row of two-storey mud houses is not known in great detail but it seems almost certain that cross beams of poplar are used to support the second storey even though their presence is not obvious.

The majority of the buildings within the second courtyard are used as stalls either for the housing of fodder supplies, or for the sheltering of animals, particularly cows. The main section of the courtyard is divided into two parts by two single roomed houses and a grain store. There is no adequate explanation of this odd construction down the central line of the courtyard and yet apart from the landowner's house these two single rooms appear to be the only other human occupied buildings within this section of the village. The landowner's house stands entirely separate from the remainder of the buildings within the courtyard. It is a single storeyed building comprising essentially six small 4 metre square rooms which have been carefully

adapted to make three larger dwelling rooms and two extra rooms for storage. The house has a flat roof which projects beyond the building into the courtyard and is supported by a series of poles so forming a verandah to the front of the house and providing a shady and slightly raised platform. The style of construction and size of this house are indicative of the wealth of its owner compared to the other houses in the village.

The third and final courtyard appears to have been the most recently constructed of all and this fact is emphasized by the obvious unfinished quality of many of the buildings. Within this section a row of new two-storey houses, which are not yet occupied, have been constructed, apparently to house those families in the village who are still living in single rooms. The style of these particular houses is slightly different from those mentioned earlier and a more detailed study will occur later, suffice it to say at the moment that each lower and upper storey is connected by its own staircase though a very narrow balcony still connects all the houses on the upper storey.



The final section of the village contains some much newer buildings, including the bath-house, the Mosque and several large brick-built storage houses. The bath-house is, as usual, constructed below the ground in a series of carefully excavated rooms. Each room contains a mud tank full of water, varying from cold to hot and the rooms are interconnected by a series of tunnels. There is no running water to the bath-house so the tanks have to be emptied by hand whenever necessary, which incidentally, is not as often as once a day. The only surface feature of the bath-house is two shallow domes surmounted by small glass pyramids, these latter providing the only source of natural light below ground. The principal brick buildings outside the three main courtyards of the village are two very large and imposing storage barns, one 10 metres square and the other 12 metres by 6 metres. These two buildings have brick walls with flat mud roofs. They contained very little at the time of the visit apart from some fertilizer and several hens but the foreman indicated that they would be particularly useful at harvest time, being much more substantial than the one small grain silo within the

# PLAN OF KALATE ALI.

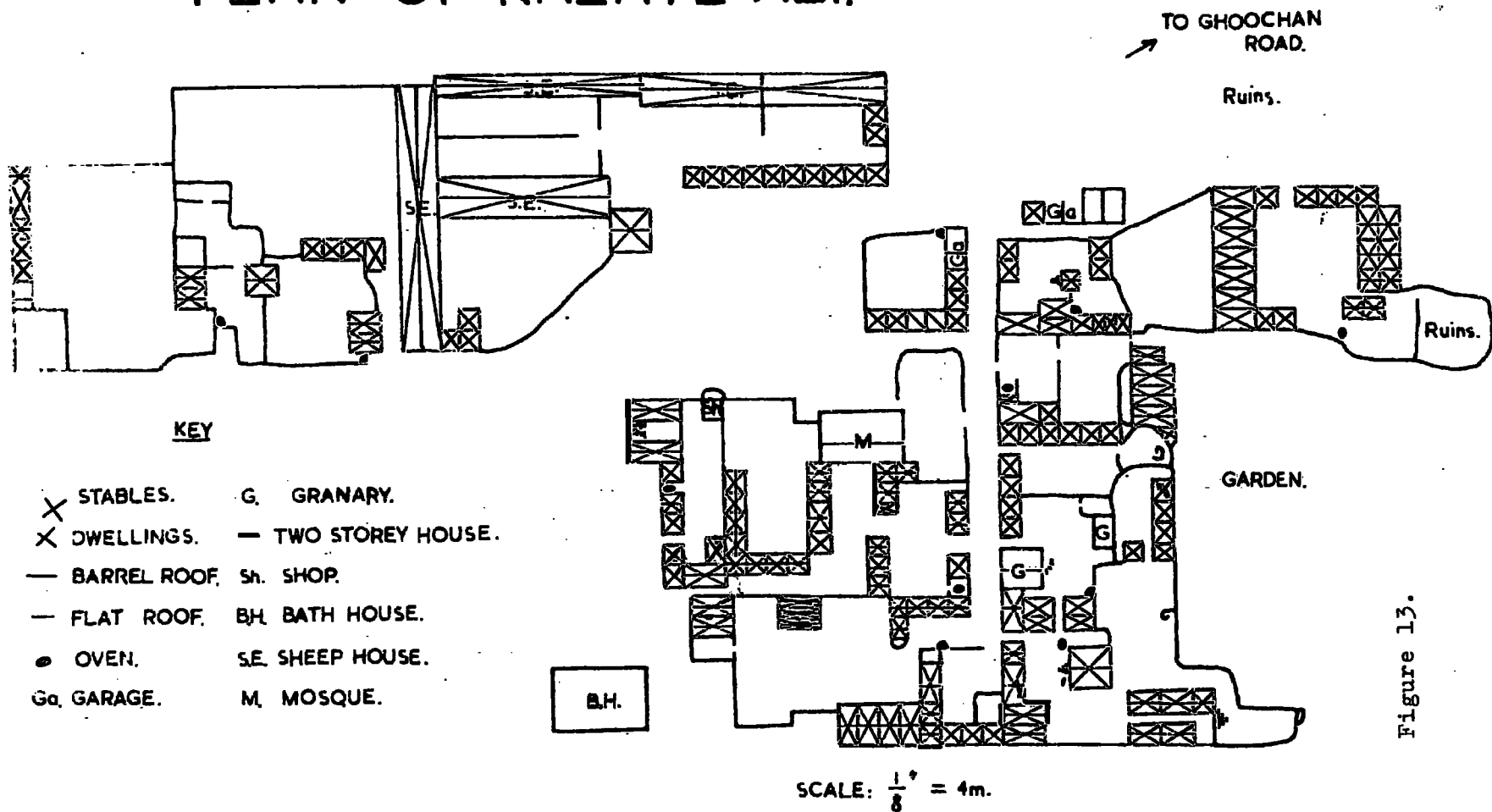


Figure 13.

village itself. Similarly the Mosque is a very new building, likewise of brick. Prior to its construction the villagers had had to travel either to Meshad or to a nearby village to hear the mullah preach on Fridays. The presence of a Mosque within a village is often a source of considerable pride amongst the villagers since it gives the village much more local importance. For the Friday services a mullah has to be hired from the city.

Ghasemabad, therefore, appears to possess a comparatively simple form, basically a series of courtyards each containing houses and stables and any new houses are merely either built within an existing courtyard or a new one is constructed for them.

However, this pattern is not continued so clearly in the next village to be studied, Kalate Ali, (Figure 13.), which indeed probably provides the least formalized village of all those visited, apart perhaps from Khanrud in the mountains. The only pattern that is obvious from the plan, apart perhaps from the confusion of buildings is the apparent use, once again, of the rectangular courtyard, around which houses and stables are constructed. In this case, however, there

is not a simple number of courtyards but rather a mass of very small yards, resulting in some cases from the segmenting of larger units.

The main village stands to the right of the secondary road which leads to the main Ghoochan to Meshad road, some 3 or 4 kilometres to the West, whilst on the left hand side of the road has been added some separate segments, principally, though not completely, associated with livestock. As has already been stressed, the principal problem is to attempt to find any type of form within the village itself. It is reasonably large as can be seen by the existence of its own Mosque, which has been newly built of mud brick, its own bath-house, situated separately from the village and its own shop, a single 4 metre square room which contains most of the general provisions needed by the families in the village, such as tea, charcoal and cigarettes. Small village shops of this nature are not common but the distance of Kalate Ali from Meshad, some 30 kilometres, makes it worthwhile for one member of the village to provide this service.

Possibly the most significant of all the

buildings in the village are those to be found at the entrance near the Ghoochan road. These constructions are quite obviously of recent origin and consist of two maintenance shops, two garages and a special one roomed house belonging to the mechanic. All the buildings are brick built with flat mud roofs. These additions are the work of one of the two landlords of the village and since he has made Kalate Ali the base for his machinery, especially his tractor then he also, he explained, needed facilities for its attention and repair. Beyond this new maintenance depot lies a quite extensive area of ruins, especially near the Ghoochan road, suggesting that either the village had once been much larger than at the present time or that a new section had been added to the old village and in time the latter had fallen into disrepair. No attempt has been made by the villagers to make use of the land occupied by the ruins, either as agricultural land or for building purposes.

The main section of the village is approached via a track from the road. This track leads into the village and off it, through small, low arches

open up many small courtyards. The track merely ends, however, after about 100 metres, not in a central square, or even a large courtyard as expected but merely being blocked by houses. The courtyard-style enclosures are common but often very small, many larger units appearing to have been subdivided by low mud walls dividing off the section belonging to one family or group of families from that of another. These small sections have no family or work group significance as far as can be ascertained, each family builds as it desires. There does appear to be a very large number of empty houses within the village suggesting that at one time the population was possibly much greater than at the time of the visit. Because of this apparent excess of buildings, more families than usual have 3 roomed houses, very often using two of the rooms for living in and a third for storage and the animals. The mere juxtaposition of an extra building appears reason enough for its use. Some new two storey dwellings have been constructed near the shop and they have a central staircase leading up to two large living rooms. A much more detailed study of these houses will be given in the next chapter,

suffice it to say at the moment that they are the most spacious seen outside those in Khanrud.

There are very few additional entrances to the village apart from the track already mentioned and, in fact, only three were discovered altogether, two leading to the bath-house and one to the landlord's garden. The significance of this factor is presumably to guard against intrusion and prying and equally to protect the women, following the Islamic code, whilst they are working, hence the courtyards.

The entrance to the foreman's house leads also to the landlord's garden and the foreman, although he has three large rooms is obliged to keep one at least for entertaining guests of the landlord. This house is very similar in design and construction to that of the landowner's at Ghasemabad except that it lacks a roof extension to cover the verandah, principally because of the lack of wood.

The buildings on the opposite side of the road from the main village are principally for housing animals, especially sheep, during the winter months. The style of construction will be mentioned later but

# PLAN OF KASHEF

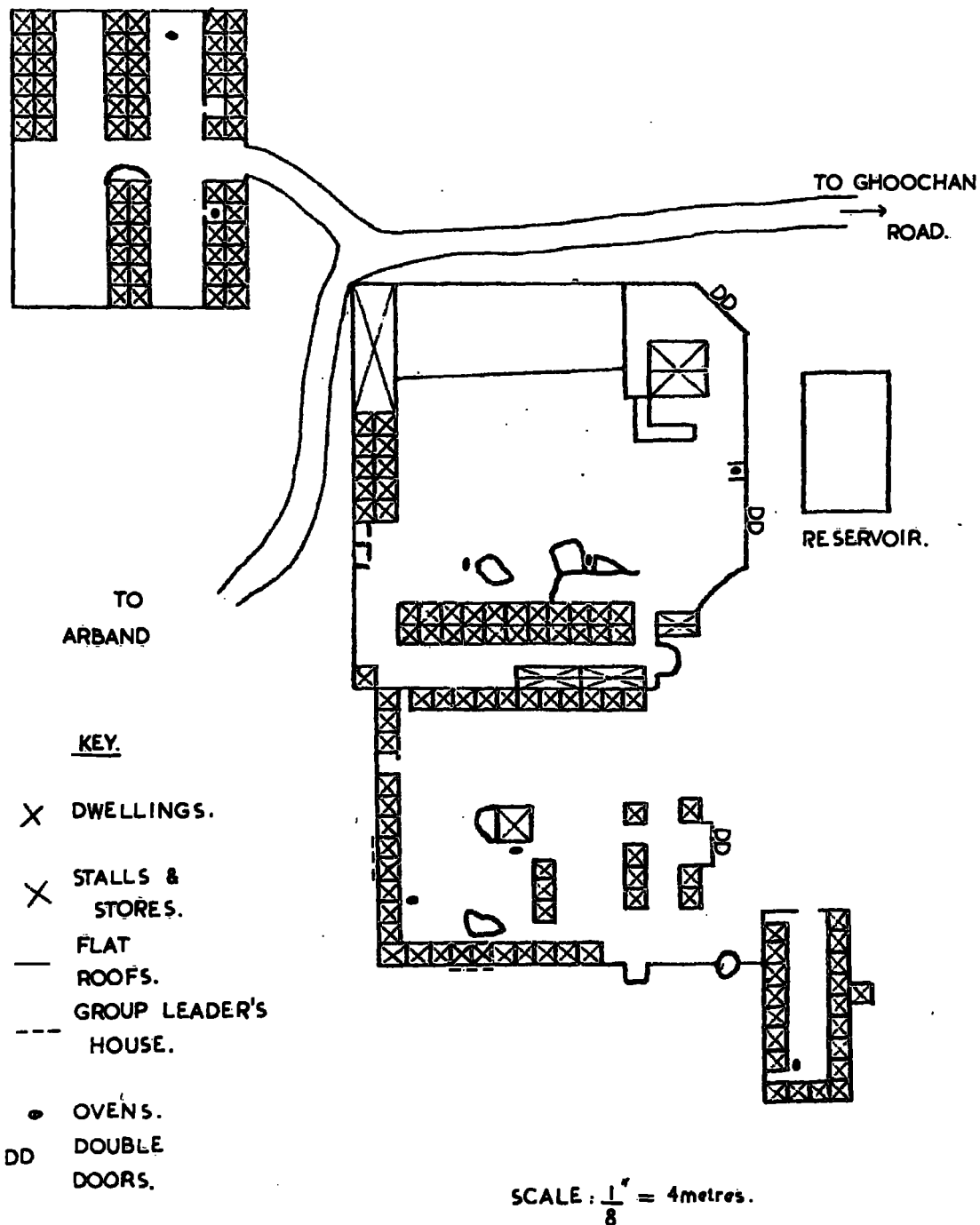
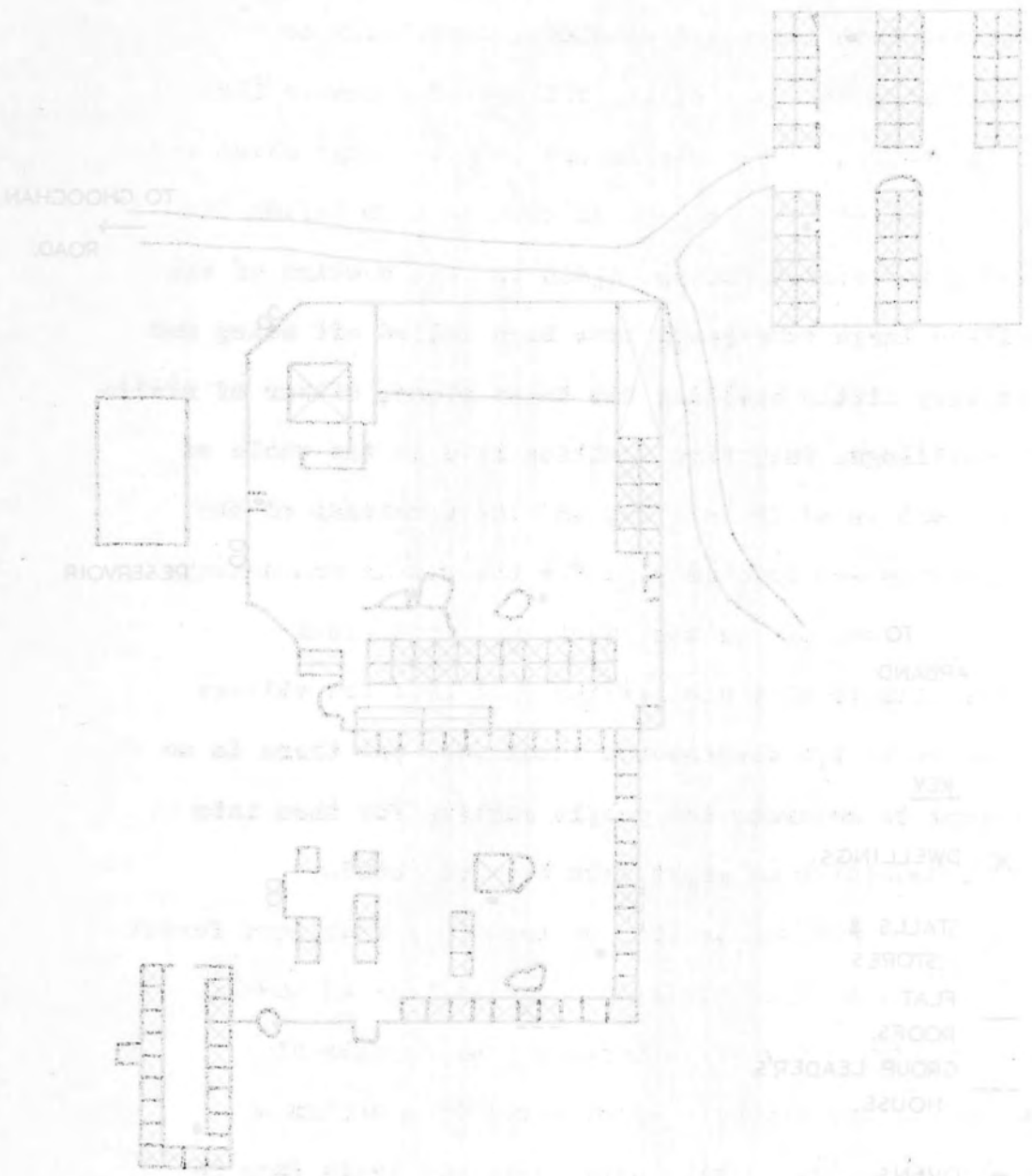


Figure 14.



# PLAN OF KASHEE



- KEY
- DWELLINGS
  - ▤ STALLS & STORES
  - ▥ FLAT
  - ▧ ROOF
  - ▨ GROUP LEADERS' HOUSE
  - OVENS
  - ◇ NOBLE
  - DOORS

SCALE 1" = 4 meters

they are both large and spacious, especially so considering the size of the village. The answer lies in the fact that the stalls are used to house sheep and goats from other villages, as well as from Kalate Ali, during the winter months. Again in this section of the village large courtyards have been walled off using mud but very little building has taken place, either of stalls or dwellings. Only five families live in the whole of this portion of the village and the remainder of the courtyards are used as pens for the cattle and donkeys.

One of the most striking facts about Kalate Ali is that despite the fact that the village is owned by two unconnected landlords, yet there is no attempt to separate the people working for them into two communities as might have been expected.

From Kalate Ali, we turn to a much more formal type of plan again, this time the village of Kashef, (Figure 14.). Kashef is another good example of a village which has been constructed in a series of sections, three in all. Once again the basic form is of a series of linked rectangles though in Kashef the net result produces a much more open plan than is to

be seen at Kalate Ali. The village itself is divisible into two sections straddling the secondary road leading from Arband to the main Ghoochan to Meshad road. The secondary road passes between the two sections, the one containing the oldest and the newest portions of the village and the other, the single section, which was built some 20 years ago.

The oldest part of the village is between 80 and 90 years old, according to the foreman, though this date can be treated with scepticism. All the houses on the three constructed sides of the rectangle are single storey and only three families occupy dwellings within the section. Two of the three village group-leaders occupy two each of the 4 metre square rooms and an old granary in the centre of the compound has been converted for another family. The remaining buildings within this section comprise storage rooms and stables, many of which remain unused or with no doors so that they can be used by the animals at will and the whole compound gives an impression of decay. The original enclosing walls of the compound remain intact on three sides but on the fourth only the large

double-doored gate and three stables remain, the rest having simply collapsed. Just beyond these double doors, a small compound has been constructed again of single storeyed buildings and it houses five more families, each in a two roomed house. This small rectangular compound with an extremely narrow entrance gate, appears completely segregated from the remainder of the village, though there is no evident economic or social reason for its existence, apart from as a normal section of the village.

The largest section of the village is the compound containing the foreman's house. This is the newest portion of the village but apparently lack of capital has held up the final completion of the work. The first completed construction has been the wall enclosing the section and again two sets of large wooden double doors bar entrance to the compound, though it is possible to obtain entrance by the oldest section. Most of the buildings, again single storey, are occupied by families living, for the most part, in two roomed houses. Some larger stables have been constructed in this section of the village, particularly to house the

sheep during the winter months. These larger buildings are either not completed or have flat roofs. Two very large enclosures have been made alongside the main compound wall near the road but these apparently are only used as pens for the animals. The foreman's house is completely different by comparison with the remaining houses in the village. It stands apart from the rest and is constructed almost wholly of brick though with a flat mud covered roof. The house had only been constructed two years previously and is divided into two parts, one for the foreman and his family and the other for his guests or the guests of his landlord.

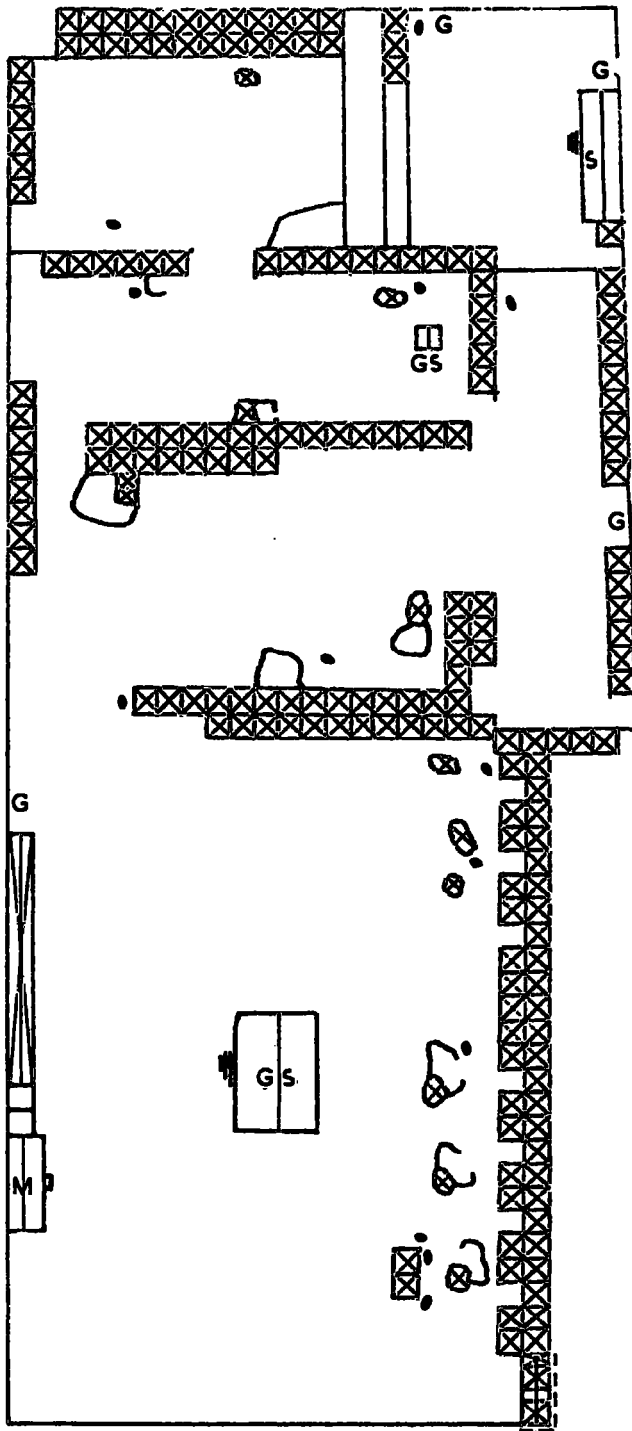
The section of the village at the opposite side of the road from those already described had been built only 20 years earlier and, although no longer the newest section, it is certainly the most obviously formally planned of all those in the village. The compound consists of five double rows of houses, each containing twelve 4 metre square rooms in all and only two of the houses have any other form of roof than the traditional dome, and they have barrel roofs. The construction is entirely of mud and the whole compound

has but one entrance which leads from the Arband road. Once inside the compound it is obvious that the mud for the buildings has been extracted from the floor of the compound since it is pitted with innumerable small holes from which the mud has been extracted. Within the compound the rooms are approximately equally divided in their usage between houses and stables or stalls. One interesting feature is the presence within this compound of the tractor driver's house in which two rooms are occupied by the family and the third is used as a storage room.

Again in this study certain obvious features of construction stand out and they will be re-emphasized by the remaining three villages each of which takes on a form very similar to those mentioned already.

The remaining three villages are very much on a parallel with those mentioned above, both Morghanan and Bildar approximating to the simple structure found at Ghasemabad and Kashef and Abulkhair being in some ways as complex in structure as Kalate Ali. The prime reason for the study is to give a more detailed

# PLAN OF M. TEHARAN



## KEY.

- × DWELLINGS.
- × STALLS & STORES.
- FLAT ROOFS.
- OVENS.
- GS GRAIN STORE.
- S SCHOOL.
- G GATES.
- M MOSQUE
- FOREMAN'S HOUSE.

SCALE:  $\frac{1}{8}'' = 4\text{metres.}$

Figure 15.

picture of the format and structure of Persian villages in this area of North East Khorassan.

The first study is of Morghanan, (Figure 15), which was probably the largest village from the point of view of land covered of any that were visited. Again its extremely open plan makes its study relatively simple. The village can best be divided into two sections corresponding to the old and the new though the addition of the latter has approximately doubled the size of the original village.

The older section of the village consists of a series of small rectangular compounds each containing a large number of buildings but with only a few still occupied by individual families most of them having been turned over to serve as stables or stalls or merely to remain empty. Within this section of the village lies the school and the school house all under one roof. The plan and building style of the school will be studied in detail in the next chapter, suffice it to say that the school has been constructed in a separate courtyard with its own double wooded doored entrance. The land within the compound has been dug and made into



some form of garden by the children, though lack of water made growth very limited. The school and the school house are of brick and contrast very strikingly with the mud buildings which compose the remainder of this section of the village. At the opposite end of this small compound, furthest from the school are three 4 metre square rooms which belong to the family of the man who acts as cleaner and caretaker of the school. The women of this household also cook and clean for the teacher. The remainder of this section of the compound opposite the school had been a covered stable for housing the sheep during the winter months but now it is in ruins though there is evidence that sheep are still kept there. This ruined stall is backed by another row of what had once been homes but are now simply ruins used again as sheep pens. In both cases it has been the collapsing of the roofs that has caused the buildings to be left in ruins. The remaining three sides of this second section are occupied by houses , most of which have been turned over to stables or stalls or have been merely left. So much room is available in this older section of the village that one family has

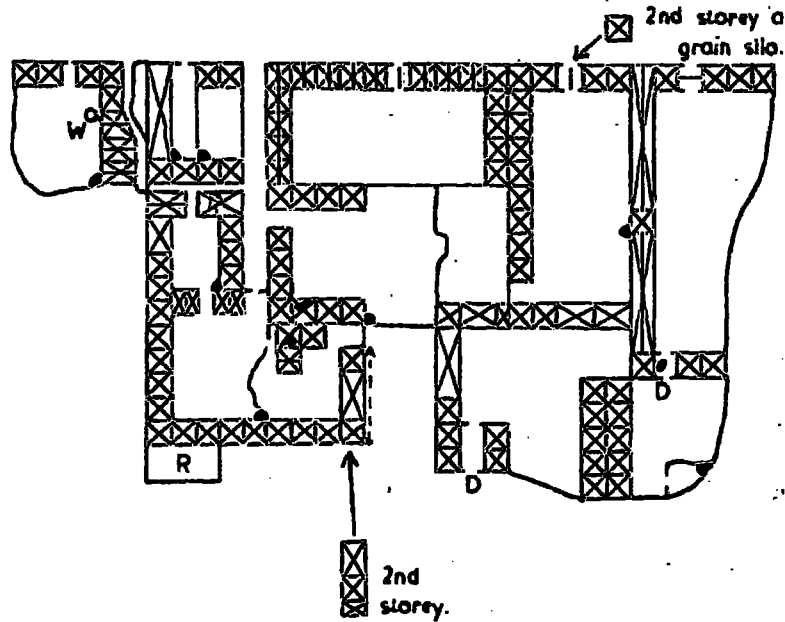
decided to occupy four 4 metre square rooms, no where else was such extravagance in housing seen. The remaining courtyards in this old section are very similar in appearance to the two described above with the majority of the buildings being used as stables and stalls and a quick glance into each is the only way in which the visitor is able to differentiate between what is a stable and what a dwelling.

The large majority of the population now live in the newer section of the village. This section consists of a very large compound completely surrounded by an enclosing wall and almost the same size as the whole of the old section of the village. This compound has buildings on three sides, the fourth side being made up by a blank wall. The principal row of new houses has been built in the traditional pattern of mud brick though the existence of a porch between many of the houses provides at least a slight variation in the pattern. The single rooms of the houses are all the standard 4 metre square buildings though the actual size of the houses owned by individual families varies from one to three rooms depending principally upon the

number of people within the family. Again the mud which has been used for the construction of these buildings has for the most part been taken from the courtyard immediately in front of the buildings so leaving large pits which have been converted by a mere covering of twigs and mud into underground stables. At the end of the row stands the foreman's house which is built of brick and has two slightly larger rooms than in the traditional pattern. This particular house is unusual in that it does not stand apart from the normal peasant dwelling as in the case of Kashef, Kalate Ali or Bildar. Two other points of interest concerning this particular house are that as a complete contrast to all the other houses in the row which have domed roofs this particular one has a flat roof and secondly the inside walls of the house have been plastered which is a feature normally found in newer foremen's houses but never in the peasant dwellings. The landlord has installed this particular foreman in the village and has built him a house to emphasize his importance in the village.

Directly opposite this row of houses stands

# PLAN OF ABULKHAIR.



SCALE:  $\frac{1}{8}$  = 4 metres.

## KEY.

- X DWELLINGS.
- X STABLES & STORES.
- OVENS.
- BARREL ROOFS.
- FLAT ROOFS.
- D DOMED ROOFS.
- W WELL.
- R RUINED HOUSE.

Figure 16.

the brick built Mosque and an uncompleted house which is to be for the mullah (priest). Apparently as with Kashef, lack of funds has made it impossible to finish the mullah's house though the Mosque has been completed and is used regularly. The actual building housing the Mosque is a simple design with no more external or internal elaboration than appears in the foreman's house, apart from a small decoration over the door. Along the side of the wall from the unfinished mullah's house to the main gate a new sheep stall has been built of mud brick with a flat roof supported by cross beams of poplar. This new stall is to be used in place of the two mentioned earlier to house the sheep during the winter months.

Lack of funds has similarly held up the construction of houses along the blank wall adjoining the foreman's house and the Mosque, though foundations for these houses have been laid and then merely abandoned. The centre of this huge compound is dominated by a large grain silo whose height has been emphasized by its construction on a small hill. The silo measures 14 metres by 20 metres and has been constructed

so that it is raised slightly off the ground. By this system ventilation of the building is assured and rats are unable to reach the reserves inside the building.

The village which lies next to Morghanan is Abulkhair, (Figure 16.), and the contrast in village form between the two can hardly be greater. Whereas it has been possible to divide Morghanan into two sections on the basis of age, in Abulkhair there are no obvious signs of the sectional division. Similarly the symmetrical pattern of the compounds of Morghanan are missing from the confusion of oddly shaped courtyards which make up Abulkhair. Essentially this latter village is more akin to Kalate Ali in its form though perhaps it is not quite so confused.

Having stated that there is no apparent age division within the village, if it is essential to find a newer section then the obvious choice will be the several courtyards nearest to that containing the well. This idea is substantiated by the fact that the main entrance to the village lies at the furthest extremity as the village is approached along the track leading from Morghanan. In consequence there are several

openings leading into individual courtyards long before the main entrance is reached. Many of these entrances, however, are not as imposing as those met with in Ghasemabad or Kashef. The main feature about the principal entrance apart from its large wooded double doors is that it has built above it a grain silo which can be reached only by a staircase from inside the courtyard. There seems no doubt that such a building served a more formal purpose in earlier times as a type of gate house. The courtyard into which the entrance leads lacks the symmetry which has appeared elsewhere in all the other villages. Apart from two or three houses on either side of the entrance gate the principal wall is occupied by two very long barrel roofed sheep stalls, for winter quarters, whilst at the opposite end from the main gate a dome roofed entrance leads into an equally unsymmetrical compound containing dwelling houses and stables. In both these cases the fourth wall consists merely of a very rough mud construction which destroys the normal rectangular pattern. In addition the external mud constructed ovens shown on the all the maps reveals that for the most part bread was baked in

communal ovens outside the huts. The remaining courtyards within the village are very similar to those already described in the village except that they tend to conform much more to the general pattern noticed elsewhere of a more strict rectangular form.

Apart from the grain silo over the main entrance being a second storey building, the only other example in the village stands out most markedly. It consists of two dwelling houses and a very small store house built over stables. The whole structure of this two storey building is in mud but cross beams of, presumably, poplar have been used as the basis for the roofs of the stables to support the second storey. Access, once again, is externally by means of mud stairs.

Possibly the most interesting building in the whole village is the ruined house belonging once presumably to the landowner. This house has obviously been quite large, measuring in all 12 metres by 6 metres and it faces what looks like the remains of an equally large garden. Buildings of mud decay very quickly if not attended regularly and this particular house, according to the villagers, has not been lived in for over 20



Plate 17.



Semi-aerial view of a village typical of the plain;  
it is built almost entirely of sun-dried mud and its  
dome roofs are an extremely common sight.

years. The reason that they know that it was so long ago is that they themselves have owned the village, as peasant proprietors, for that length of time.

The well in one of the newer courtyards is one of the few old wells that was seen during the study. The well had been dug merely to provide drinking water but it was almost dry by the time of the visit and was certainly of very little use.

It seems feasible that at one time the village had had a larger population than it now possesses. The decaying state of many of the houses and stables is perhaps indicative of the fact that the village is not thriving as well as some in the vicinity.

A typical example of one of the villages in the lowland can be seen in Plate 17.

By contrast with Abulhair, Bildar appears to be thriving considerably. It provides yet another example of the very regular form that has been encountered at both Kashef and Ghasemabad. In essence Bildar, (Figure 17.1), consists of 4 courtyards, three of which contain houses or stables and the fourth containing only a grain silo. It is quite easy to

Plate 18.



Several of the villages bordering the plain and the mountains to the West of Meshad were surrounded by castellated walls, presumably for defence,

# PLAN OF BILDAR

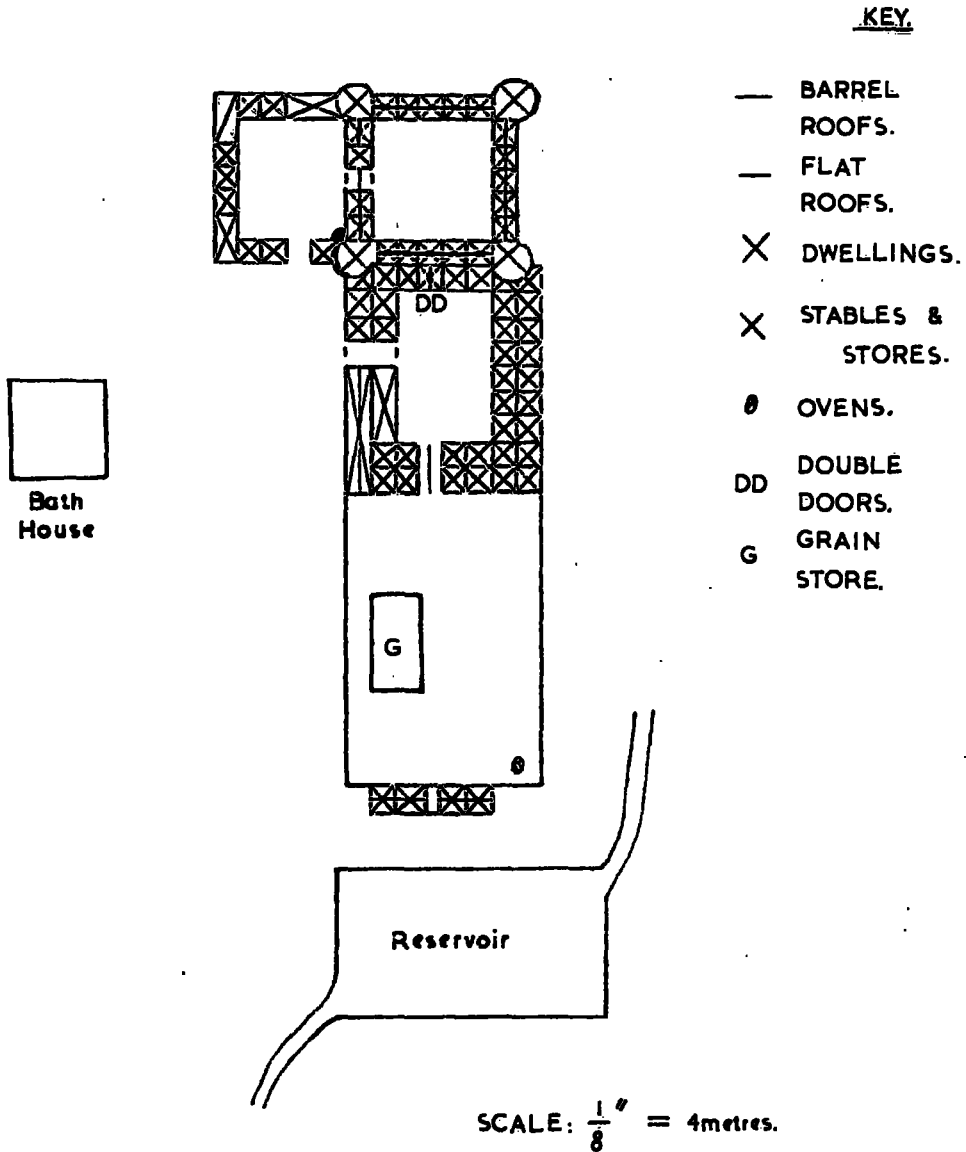


Figure 17.

decide upon the original size of the village in this case since it is completely enclosed by a castellated wall and four turrets, (Plate 18.). If this was indeed the original village then it could have been no more than a very small group of houses, since in total it contains only 21 rooms 4 metres square. However, the assumption that it was the original village was verified during talks with the foreman. All the buildings in this castellated section have flat roofs apart from those within the turrets where the roofs are shaped to give the look out or defender more height. The only other variant is a house near the gateway with a domed roof, perhaps a replacement after the original roof collapsed. All these buildings within the walls are now used as stables and storage houses and are not particularly well cared for. The majority of the population live in the two more conventional sections which have been added to this original village. The first of these has been constructed in the front of the main entrance to the old building and is used entirely as living quarters whilst the second ~~has~~ been added at the side and contains a mixture of dwellings and stables.

This particular section contains one very large store house where the seed and fertilizer is kept and it is covered by a barrel roof. The buildings nearest the wall of the original section are all used as stables and the dwelling houses occur on the other three sides. Passing from the section through a barrel vaulted entrance leads to a very large, uneven floored compound which contains only two constructions, the one a large oven and the other an equally large grain silo. The latter is built of sun-dried mud brick, has a flat roof and, as with the grain silo at Morghanan, stands on mud supports lifting it clear of the ground. At the opposite end of the courtyard from the dwellings stands the foreman's house. The three roomed building is considerably larger than any of the other houses in the village and faces onto a large reservoir surrounded by trees. Again as with many of the villages visited the house of the foreman remains separate from the remainder of the village. Similarly once again, the only construction to remain outside the main part of the village is the bath-house, presumably so avoiding the smell with which they are associated.

The principal aim of this detailed examination of the form and structure of these six villages is to attempt to provide some idea as to the complexity of a detailed settlement study. The form of the villages at least has some regularity in that the rectangular compound occurs throughout and various other features, such as the position of the foreman's house and the separate sectional growth of the villages provide some idea at least of the overal structure. It is obviously difficult to generalize beyond these few points but at least some background to the economy of the area is provided by a study of the villages themselves.

## CHAPTER 3.

### THE DESIGN AND CONSTRUCTION OF BUILDINGS.

Already several times in this study of settlements mention has been made of particular houses, their design and the style of their construction and it seems important that more detailed reference should be made at this juncture in order to give an accurate and complete impression of the villages in the Meshad area. Particular emphasis in this chapter will be laid upon the plans of the houses and the method of their construction, externally as well as internally.

However, before the house styles can be discussed in detail some mention must be made of the materials available for construction. In Chapter 1 of this section, part of the attempted village classification was founded upon building materials, therefore, only a brief recapitulation will be necessary here. The commonest material used throughout the area is mud, sometimes simply in handfuls constructing a layer at a time as in Plate 19, othertimes in the



Plate.19.



Construction of a wall showing the layer method of heightening. Mud is the basis of the construction.

Plate. 20.



The building of a house at Cheneran.

form of sun dried mud brick or even as merely a form of protective plaster over timber and brush wood roofs. The mud used for these processes is almost always immediately available on the building site. Plate 20 shows in detail the way the mud is obtained and used. First it is dug from a pit like the one in the foreground and heaped at the base of the wall, then water is added and a boy mixes the two by trampling up and down in bare feet. When the correct consistency is reached the mud is passed to the builder on the wall who is in charge of the actual construction.

Mud is replaced more and more as wood becomes available hence the fact that the nearer the village is to the mountains or the foothills even, the more likely is the use of wood in the construction. Finally in the mountain valleys mud is only used as a secondary material, the primary ones being stone, brick and wood, Plate 21. The reason for this change of materials lies primarily in the fact that more suitable raw material is available and secondly that the heavier rainfall makes a much more elaborate structure necessary.

Plate 21.



A predominance of stone interbedded with the clay is obvious in Khanrud.

Plate 22.



The two other principal types of roof found in villages on the plain are flat roofs and barrel roofs.

# ONE ROOMED HOUSE



SCALE: 2cms. = 1m.

Figure 18.

KEY.

==== Shelf.

Perhaps the most straightforward method of discussing these houses will be to start with the simplest structure of a one roomed house in Kalate Ali and work through to the complex two storey houses encountered in Khanrud.

Figure 18 shows the plan of a simple one roomed house. This building measured 7 metres by 4 metres and at its entrance the roof was just over 2.4 metres high. Although this must be classed strictly as a one roomed house its size made it almost the equivalent of the more common two roomed houses, each room being 4 metres square. Equally important is the fact that a separate store house existed nearby, so the available space proved to be quite large. The whole house was built of mud brick and had a barrel roof, (for an example of this latter feature see Plate 22). Just inside the door of the house the floor was raised 30 centimetres in a semi circle, quite near to the front wall of the house at the door but getting further away towards the fireplace. This raised floor separated off the cooking section of the house from the section that was used for eating and sleeping. The raised floor

# SINGLE STOREY HOUSE

KALATE  
ALI

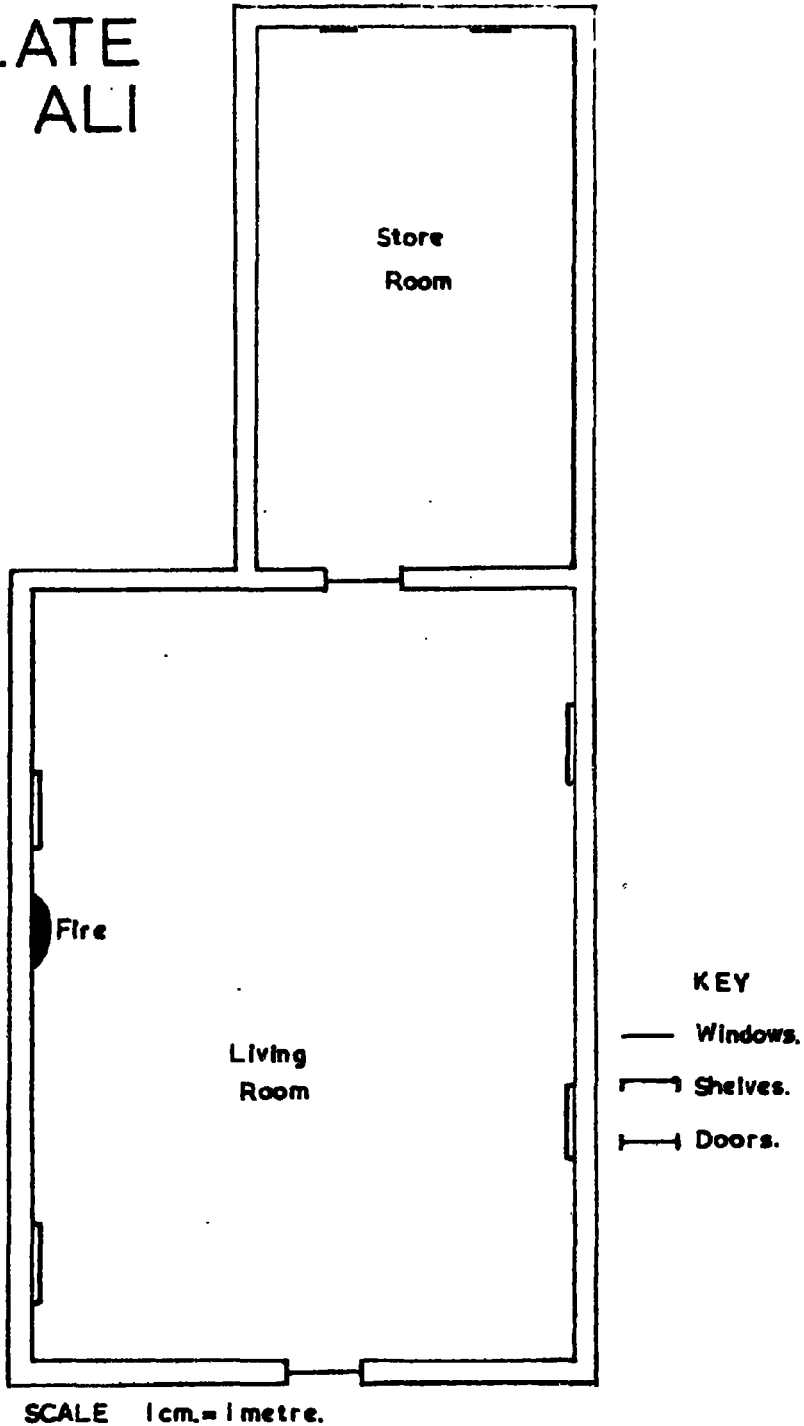


Figure 19.

was merely an extra 30 centimetres of mud and though covered by carpets its surface was uneven. At the far end of the room, let into the back wall were two shelves, 1.5 metres in length. Quite simply the mud brick had been taken out to a depth of about 22 centimetres thus allowing space for storage and display purposes. The fire place was only distinguishable from the remainder of the room by the sooty wall and the small mud wall built to confine the fuel.

A slightly more elaborate house style was the one depicted in Figure 19. This single storey house comprised two units, the living room and behind but interconnected the store room. The living section of the house was 7 metres long and 5 metres wide, very slightly larger than the one roomed house previously discussed. In this part of the house again was the fire place and again no opening had been provided in the roof to accommodate the smoke. The roof itself was flat and stood some 2.4 metres above the mud floor. Its construction was similar to that seen in Plate 22, simply a series of cross beams of poplar wood, then a layer of smaller branches acting as laths and some

dry grass and finally a layer of mud to cap all. This roof style was typical of most of the flat roofs that were encountered either in the lowland villages or in the "junction" villages. Each of the two 7 metre long side walls contained 2 shelves, each 1 metre in length and 0.6 metres in height, again used for storage and display. A simple curtain separated the living quarters from the storage section of the house. The store room was 5 metres long and 3 metres wide and contained a number of quite large earthenware pots in which the grain was kept and each of which had a wooden bung at the base by which the jars could be emptied. At the far end of the storage room, furthest from the door, were two small holes which had been filled with an almost opaque glass, providing a very crude form of window.

One of the simplest forms of two roomed house was also found at Kalate Ali, (Figure 20). This comprised two straightforward 4 metre square rooms which had been joined by a connecting doorway in the form of a hole in the wall. Once again the walls and roof were of mud brick though in this particular case



# TWO ROOMED HOUSE KALATE ALI

SECTION.

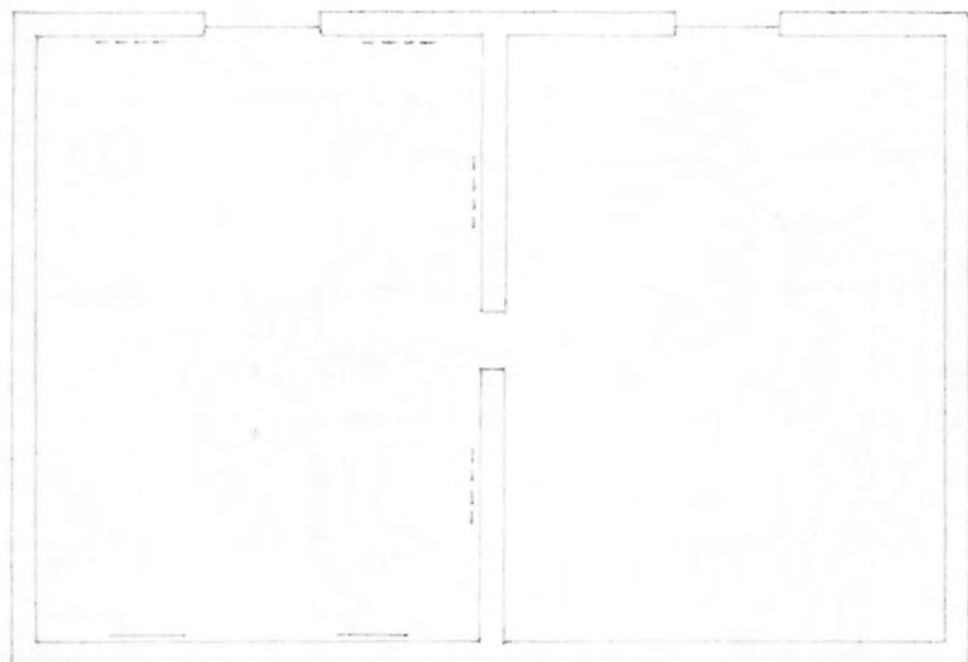


KEY.

— large shelves.

- - - small shelves.

PLAN.

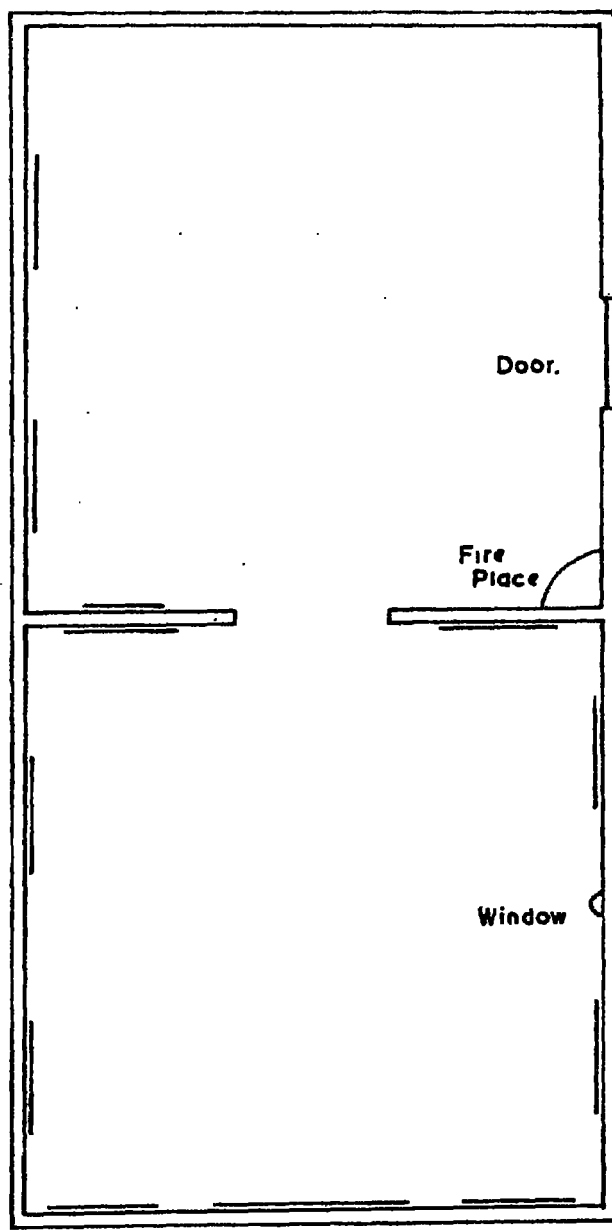


SCALE: 2cm. = 1metre.

Figure 20.

the height of the walls at the junction with the roof was merely 2 metres whilst at the highest point of the domed roof the distance between floor and ceiling had reached 3 metres. The upper part of Figure 20 shows a cross section through a typical 4 metre square room and the domed shaped structure of the roof. In this particular house a hole had been left in the centre of the roof to provide an outlet for the bad air which accumulated in the close confines of such a small space. Often, in other domed houses, this small hole in the roof would be plugged with either mud or a piece of glass depending very much upon the whim of the owner. The plan of this two roomed house revealed that each room had a separate external entrance but the living room only was furnished yet again with a series of shelves. On this occasion the rear wall of the living section of the house contained two 1.5 metre long by 0.6 metre high shelves again let into the wall whilst the side wall nearest the store house and the front wall each contained two smaller shelves one either side of the door, this time only just over 0.6 metres square. These inlet shelves appeared

# HOUSE AT MORGHANAN



KEY.  
Large Shelf \_\_\_\_\_  
Small Shelf \_\_\_\_\_

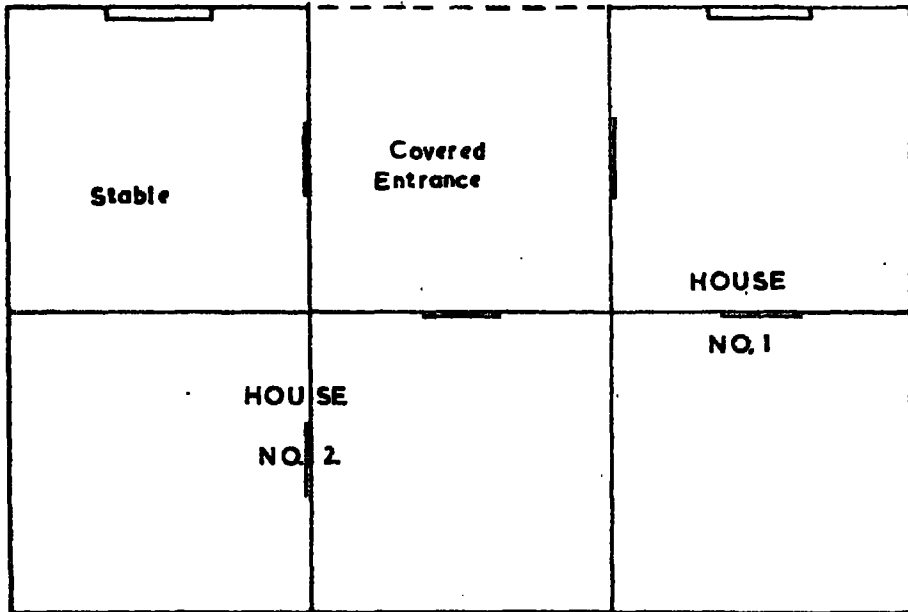
SCALE: 2cm = 1m.

Figure 21.

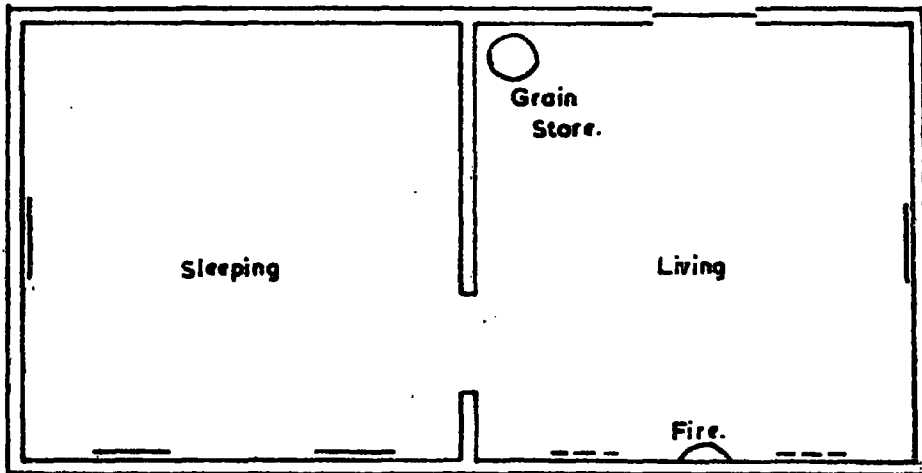
to provide the only storage space available within the living room portion of the house. The use of the store room adjoining the house was limited to keeping grain and other food supplies, as well as providing a stable for any animals the family might possess. Again the problem which was of most interest in the structure of this particular house was in the method of constructing the dome so smoothly, this dome being solely of mud brick. It would seem certain that some form of wooden frame was employed to hold the roof in position until it dried.

A slightly more elaborate version of the same pattern was studied at Morghanan, Figure 21. Here was a two roomed house of very similar proportions to the one already mentioned. In this case, however, both of the 4 metre square rooms were used by the family as living accommodation and no stable for the animals was apparent. There could be no doubt, however, that somewhere in the village the family did own a stable for their animals. There was only one external door leading to the two rooms and over the connecting entrance hung a curtain. It appeared that the external

# NEW HOUSE AT MORGHANAN



SCALE: 1 cm. = 1m.



SCALE: 2cm = 1m.

KEY      Shelf      ———  
          Small Shelf      - - - -

Figure 22.

door led into the living room whilst the other section was used almost exclusively for sleeping purposes. If anything the domed roofs of these two buildings in Morghanan appeared a little steeper than the domed roofs in Kalate Ali though this may very well have been simply an illusion. The living room contained a fire place in the corner nearest the door, as well as having a hole in the roof to let out the smoke and when any cooking was taking place the main door was left open to let out the smoke and smell. The rear wall of this room contained two small shelves about 1 metre square let into the mud and a similar shelf had been constructed in the wall adjoining the sleeping quarters. Within this latter section were a whole series of small 1 metre square shelves, two on each wall and on the main interior wall opposite the curtained entrance there was also a slightly larger and deeper shelf which apparently, housed the oil lamps. The only other feature of note in this room was a small hole not more than 22.5 centimetres across into which a small piece of glass had been placed to act as a form of window looking out onto the courtyard. This form of two roomed

accommodation was probably the most common seen in the villages visited.

Also in Morghanan a visit was made to the newest of the houses which lined one wall of the new compound in the village. The style of design of these houses is shown in Figure 22 and a very similar pattern can be seen on Plate 23 though the houses in the photograph are not those at Morghanan. The houses appeared to have been constructed in blocks of six rooms with a central covered entrance or porch and five 4 metre square rooms constructed round this entrance. The style of roofing of the entrance varied somewhat in the different villages. In Kashef the entrance, as with that in the photograph, Plate 23, had a barrel roof whereas in Morghanan the covered entrance had a flat roof. The only explanation of this difference presumably being a whim of design. The three rooms opening off this covered entrance each had external doors and the two rooms on either side of the entrance both possessed glass windows in wooden frames very similar to the ones that can be seen in Plate 23. Again it must be mentioned, however, that the windows

Plate 23.

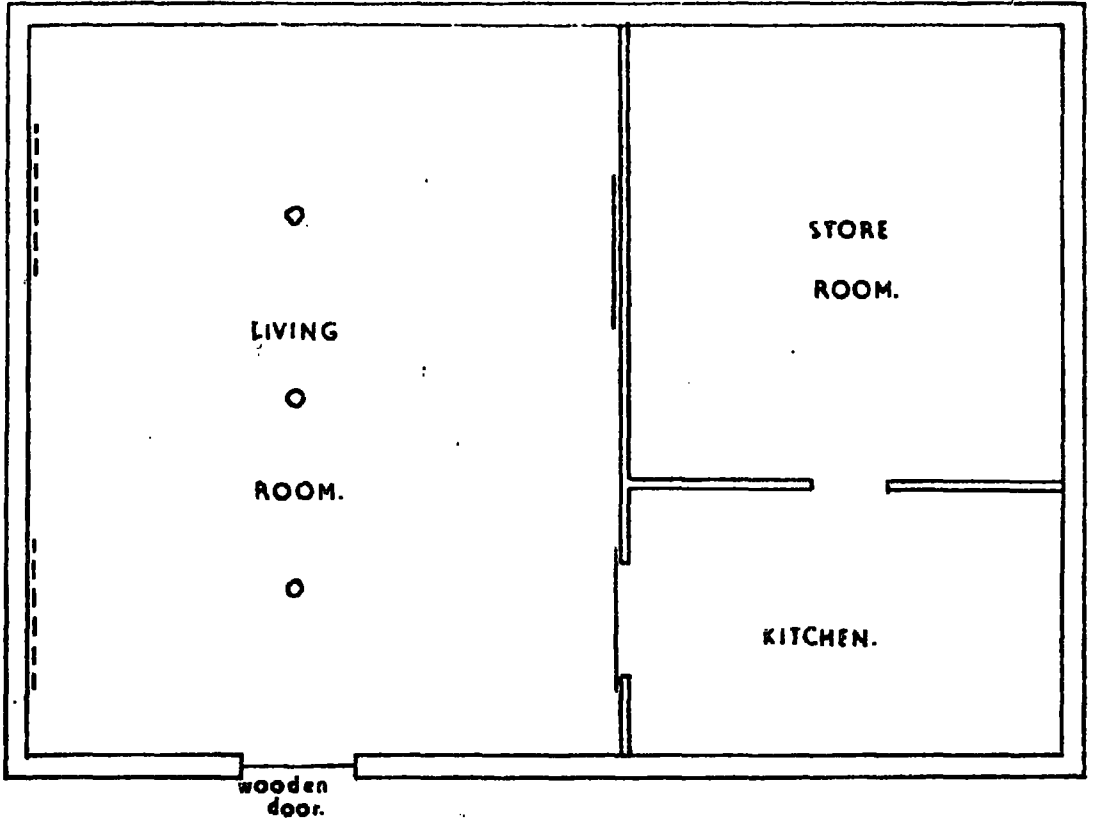


A further slight variation in house styles, showing barrel vaulted openings acting as porches each for two houses, one opening off either side.



opened onto the courtyard and that the walls at the back of the houses facing the fields possessed no windows whatsoever. The roof styles of the remaining five rooms were all of the traditional dome shape. The arrangement of houses within this five room area varied considerably though the standard practice appeared to be that each family had two rooms and that a fifth was used for storage. The example presented in Figure 22 shows house number two without a window. In this case the store room had been selected as one of those rooms with a window facing the courtyard. Again the house was divided into two sections, one for living and the other for sleeping. Entering by the courtyard the first room was the living room. In this house the fire place had been built against the wall directly opposite the door but this was not so important as in previous houses since a much more elaborate form of chimney allowed most of the smoke to pass out through the roof. On either side of this fire place were two small shelves 0.6 metres square let into the wall to a depth of about 22 centimetres, this was made possible by the fact that the mud walls were often over 0.5 metres thick.

# A HOUSE AT GHASEMABAD



SCALE: 2cm = 1metre.

Figure 23.

KEY.

Shelf. -----

Curtain. \_\_\_\_\_

Roof Support. ○

A slightly larger shelf took up the middle of the external wall of this room, measuring 1 metre square and standing about 0.6 metres above the ground. On this larger shelf stood the lamps and the samovar. In one corner beside the main door stood a 1.2 metre high grain jar containing a supply of wheat which was obtained by a hole in the base of the jar. Yet again the living and sleeping quarters of the house had been separated off by a curtain hanging over the entrance. The sleeping room had no source of day light at all save through the connecting door; and its only extra feature was three shelves each 1 metre square set in the walls. Despite the modernity of this house there was very little difference in style of construction and ornamentation between the very first house described and this newer one.

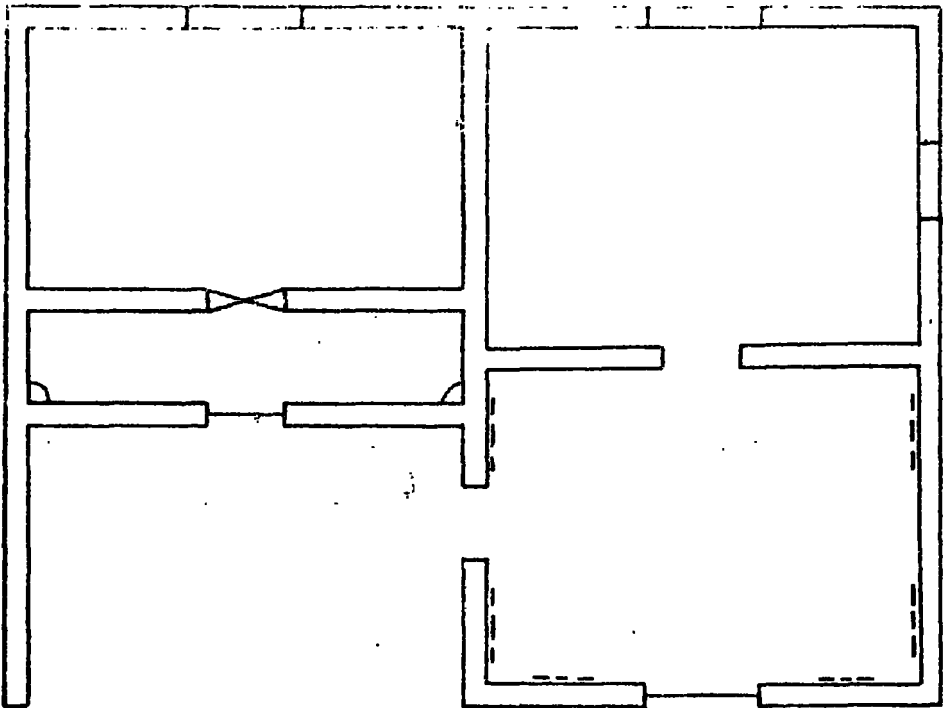
A variation in house styles was found at Ghasemabad, a change not only in construction but also in use of rooms, (Figure 23). This house was built of mud brick with both an external and internal mud coating added in an attempt to provide a better finish. The house consisted of three rooms, a living room, a

kitchen and a store room. The whole building measured 4.8 metres by 9.6 metres, the living room being 4.8 metres by 3.6 metres, the kitchen 1.8 metres by 3.0 metres and the store room 3 metres square. The height of the main living room was 2.4 metres and it had a flat roof, constructed in the same way as the roof portrayed in Plate 22, with cross beams of poplar, then lattice branches and grass and finally mud. The roof of the living room was supported by three poplar poles evenly spaced down the centre of the room. A wooden door provided an entrance to the room and a curtain covered an entrance to the kitchen through which one had to go to reach the store room. The main entrance from the living room to the store room had been sealed with mud brick and a curtain hung over the repair to hide it. Despite its unusual construction the house contained no windows of any description but it did possess the usual inlet shelves, in this case, however, only two, 0.75 metres square. The kitchen, so called, contained no fireplace though all the cooking utensils were kept there and the store room housed the usual grain pots, plus other odds and ends, such as small farming implements. This house then though

more elaborate in structure was less endowed with furnishings than some of the more traditional buildings already discussed.

An equally elaborated design was to be found at the house of the tractor driver in Kashef, (Figure 24). The house was built within the separate 20 year old compound at the opposite side of the Arband road from the main village. The houses were all of the same 4 metres square design referred to so often apart from two and they were situated on either side of the main gate. The reason for their difference was not given but in style they were similar to those seen at Morghanan, (Figure 21 and Plate 23). The sketch of the front view of the house shows that they differed principally in the construction of the arch over the entrance. In the case of the photograph (Plate 23) the arch is a simple curve of mud brick whilst at Kashef the arch had been elaborated with a square front facing, giving the entrance the appearance of more height. Although this arched entrance had a slight barrel roof, this latter was not constructed in the usual way. In this case poplar poles had been placed






# HOUSE KASHEF.



KEY.

SCALE:  $\frac{1}{2}$ cm. = 1m.

FRONT-VIEW.

-  Window.
-  Shelf.
-  Wooden Door.
-  Trough.
-  Small Door.

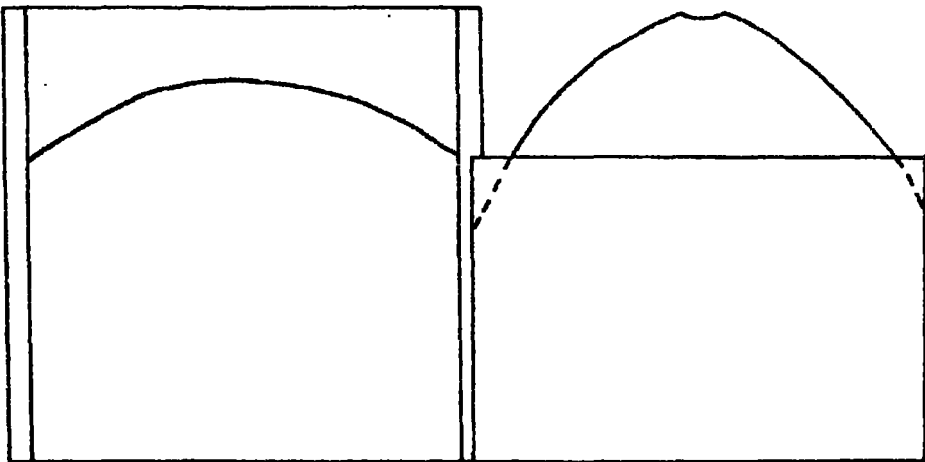


Figure 24.

lengthwise along the roof following the shape of the arch and these poles had then been crossed by smaller twigs and sticks and finally covered in mud, as a protective finish. The house itself consisted of three rooms and a small addition as well as the arched entrance. The living and sleeping accommodation was all compressed into one room which was shut off from the entrance simply by a curtain. This main room contained one window, set about 0.6 metres from the ground and containing glass in the top half and wood in the bottom and four shelves, two on each of three walls but none on the wall adjoining the store room. A curtain also separated the living accommodation from the store room. In this latter there had initially been two windows similar in size to the one in the main living room. Both these had been blocked up, however, and only a small hole existed in one of them with a piece of bottle glass covering it. The stables which were not accessible from the store room consisted of two rooms, the first only 1 metre in width. This was enclosed by a wooden door and had in two corners troughs for animal feed. The second stable lay behind

Plate 24.



Some of the new houses built by the owners of the sugar beet factory at Cheneran for their workers. The style of building is much more modern using sun-dried brick and even stone for the main walls.



this and could only be entered through a small door set 0.6 metres above the ground so preventing the animals from getting out easily. This room also contained a window space but no window. Finally the entrance itself was used as a kitchen and the tractor driver's cart was stored in this entrance when not in use.

The final example of a single storey dwelling is in complete contrast to the ones which have gone before. It is the house of the foreman at Morghanan, (Figure 25). This particular house was referred to earlier in Chapter 2 of this section as being in the newer compound at the end of a row of new houses. At the same time reference will be made to the photograph (Plate 24), of the new houses built by the owners of the sugar beet factory at Cheneran; the two house styles being at least similar. The most significant feature about both styles is their size. These newer houses have abolished the old 4 metre square room and now make some attempt at elaboration and even design. The buildings are normally constructed of sun dried brick or in some cases of manufactured building bricks if

# FOREMAN'S HOUSE, MORGHANAN

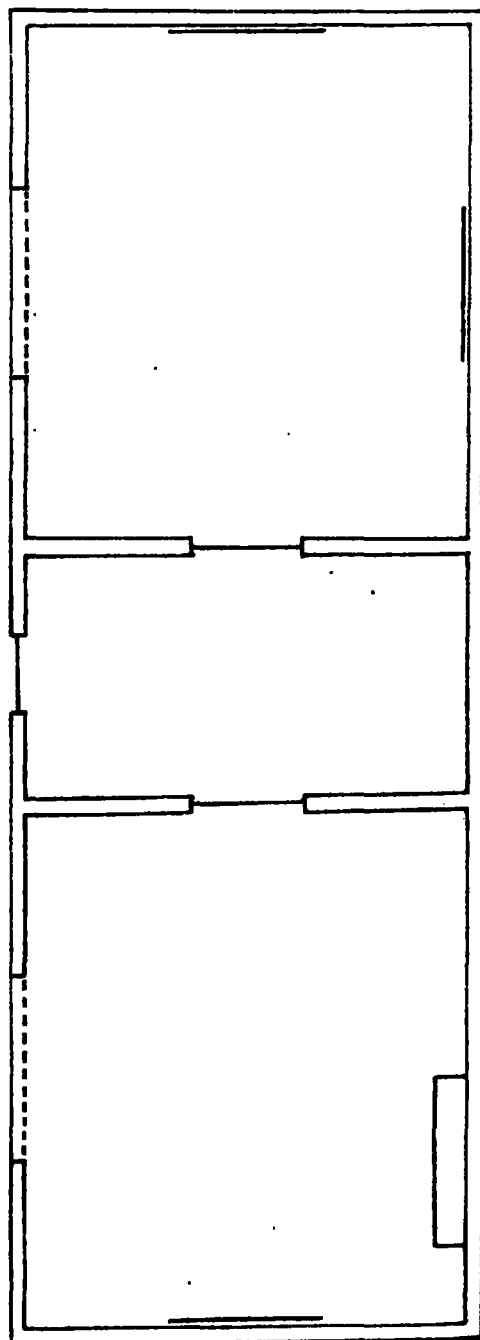






Figure 25.

## KEY

-  Windows.
-  Doors.
-  Shelf.
-  Wooden Shelf.

SCALE  $\frac{1}{2}$  cm. = 1 metre.

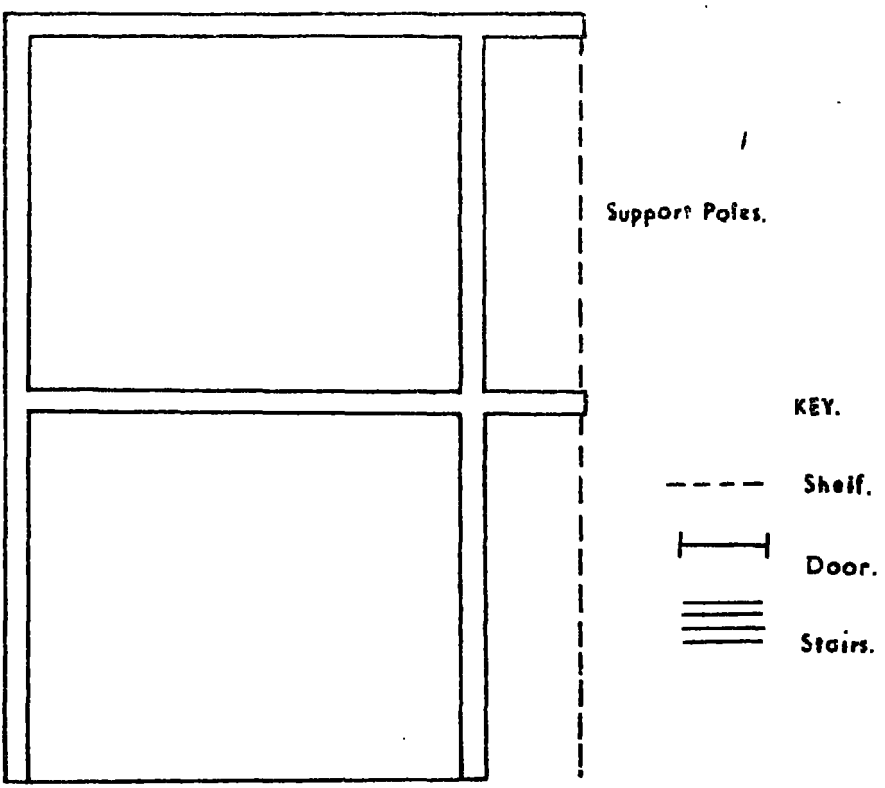
they are available though mud is occasionally used and, as in the photograph, stone is useful also. A second feature which makes them rather different is the flat roof, normally still constructed in the same method, as that already described in Figure 19. The foreman's house consisted of two rooms each 3.6 metres by 4.2 metres separated by an entrance hall 2.1 metres wide. Inside the house, the most noticeable features were that the floor was of concrete and not earth and that the walls had been plastered to give them a slightly more professional finish. By contrast with some of the houses that had been visited this was luxury. At the time of the visit the rooms were fairly empty and there was no indication as to which room was to be used for what purpose. Each room contained a wooden framed glass window, 1.5 metres wide by 1.8 metres high and at least two shelves, either set into the wall, as referred to previously or in one instance a wooden shelf jutting out from the wall 2.1 metres above the ground. There can be no doubt that this change in design which has been traced in single storey dwellings, is one of considerable

improvement in almost every way.

The next five studies are all concerned with at least two storey houses. As has already been pointed out the existence of such houses in the lowland or even "junction" villages was unusual and, therefore, special mention needs to be made of their existence and their structure.

Probably the simplest form of two storey house in the entire study was that found at Ghasemabad, (Figure 26). In the third section of the village some new "terraced" two storey houses were being constructed, basically as simple as one room upstairs and one room downstairs. The buildings were of sun dried mud brick, with flat roofs and a considerable amount of timber was needed in their construction, especially for the roof, the inter-floor structure and the support poles for the verandah. The rooms were 3 metres wide by 4 metres long by 3 metres high, with a 1 metre wide verandah facing into the courtyard. A wooden door barred entry to the downstairs room but once inside a staircase led up to the second storey. Again this proved a variation since the remaining two two storey

# TWO STORY HOUSE GHASEMABAD



SCALE:  $1\frac{1}{2}$  cm = 1m.

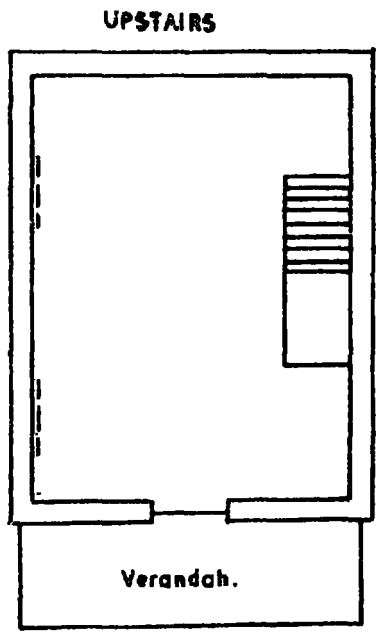
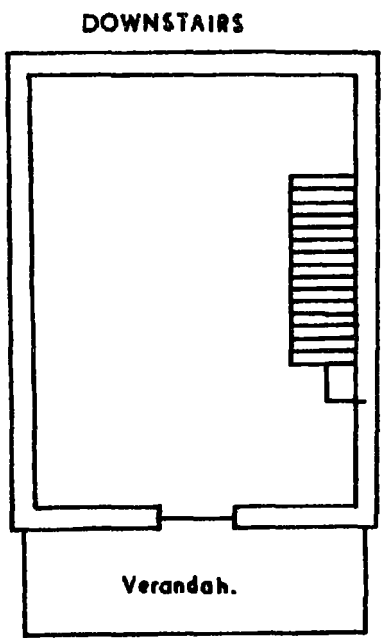


Figure 26.

rows of houses in Ghasemabad all had a single staircase leading outside at the end of the row. The upstairs room was slightly more elaborate than the downstairs one in that it had two shelves let into one of the walls and this factor seemed to suggest that the downstairs room would be used either for storage or as a stable and the upstairs would be the living quarters. This factor was not verified, however, since none of the houses were occupied at the time of the visit.

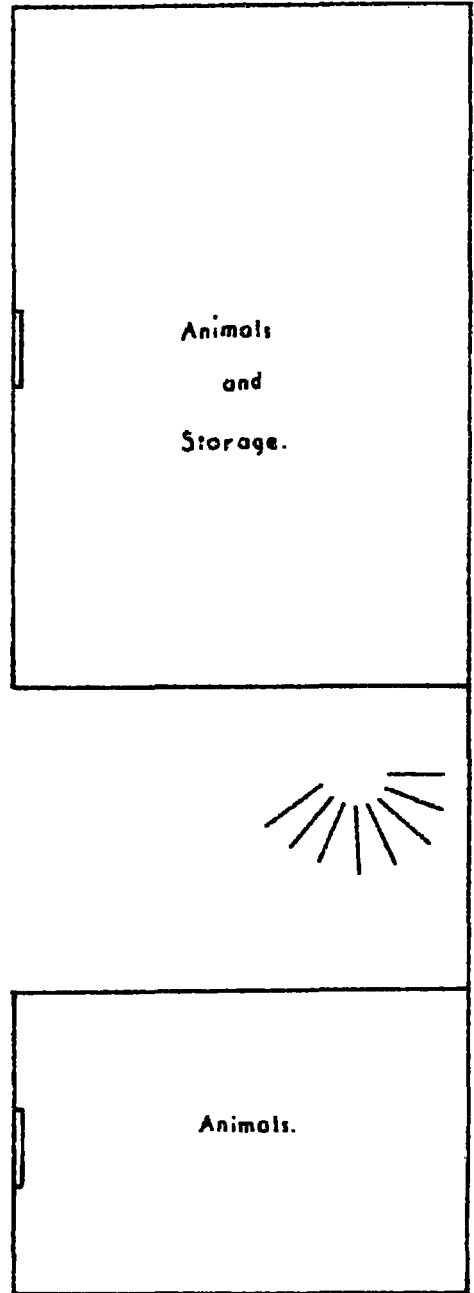
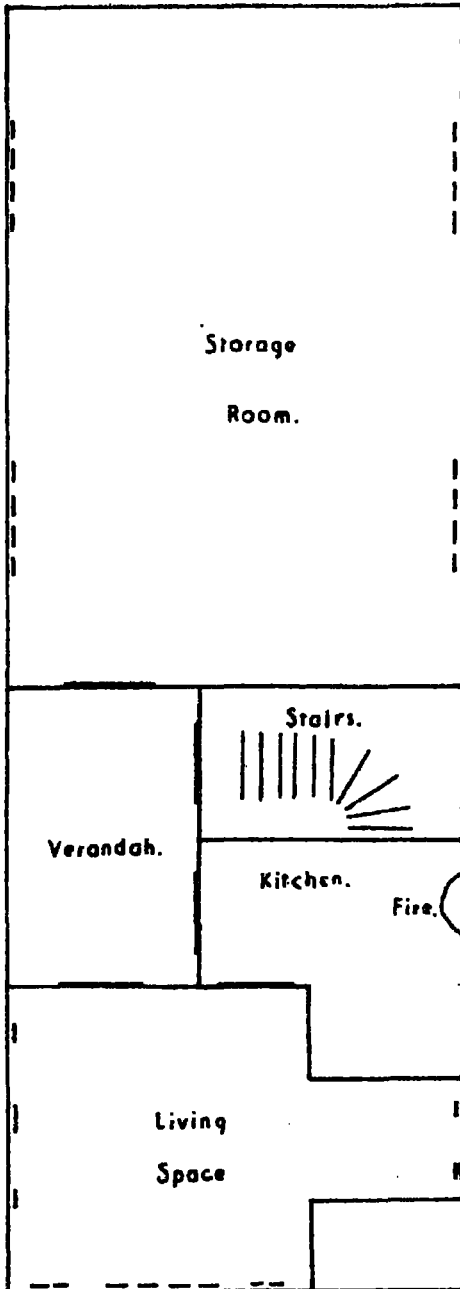
A much more elaborate two storey dwelling was visited in Kalate Ali and despite its size it was occupied by a single family, (Figure 27). By comparison with all the other houses so far described this particular one was very large indeed. It was one of the most modern buildings in Kalate Ali and had been built in a courtyard just behind the shop. Again its structure was principally of mud brick though a considerable amount of wood had again been necessary for the construction of both the roof and the inter-storey section. The lower portion of the house consisted of two rooms separated by an opening which led to the staircase. The smaller of these lower rooms,

4 metres by 6 metres, was used solely as a stable for the animals whilst the larger room, 9 metres by 6 metres was used both as storage space and for the animals if necessary. It seemed fairly obvious that this huge storage and stable area could be used in the future as living accommodation for another family, provided some light was available. Once again there were no downstairs windows in either of these two rooms. The second storey of the house was considerably more elaborate than normally encountered. The staircase led up to a verandah from which entry could be made to the three major rooms of this floor. Adjoining the downstairs was the kitchen which had been altered slightly to give rather more room. Entry to this kitchen was through a wooden door so sealing it off from the remainder of the house. The kitchen contained an open fire with a hole in the roof above the fire place to let out the smoke. The main living area was accessible both from the kitchen and from the verandah. Essentially it had been made of 4 metre square rooms with a 2 metre adjunct leading to the back of the house. This living space contained

# TWO STOREY HOUSE KALATE ALI

UPSTAIRS.

DOWNSTAIRS.



Scale: 1cm = 1metre.

KEY.

 Door

- Window.

-- Shelf.

Figure 27.

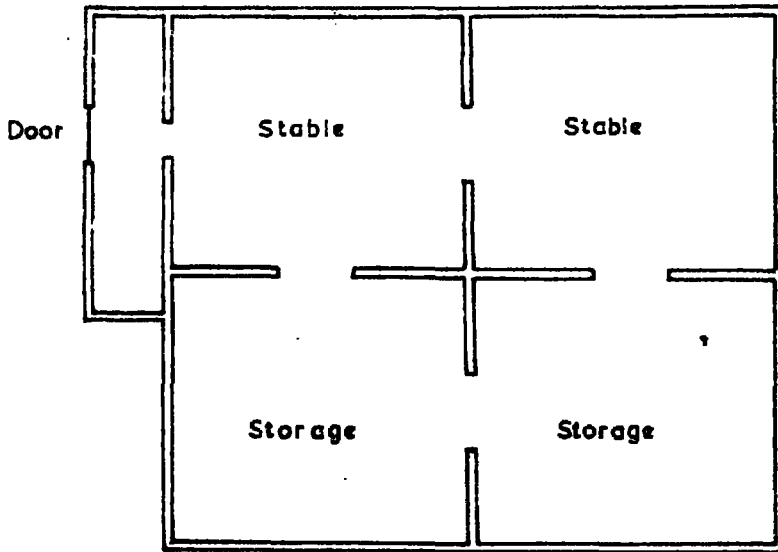


five small windows, three overlooking the courtyard and two in the back wall of the room. These small windows although only 0.6 metres by 0.3 metres provided the room with some light. Along the wall immediately opposite the entrance to the room were three shelves, the centre one being sufficiently large to take the bedding from the floor once it had been rolled up. The remaining two shelves were quite small, only 0.6 metres by 1 metre and approximately 22 centimetres deep. At the other side of the verandah and taking up the remainder of the house was a large storage room, 9 metres by 6 metres. Once again this room had a series of small shelves but no windows. Although this house was occupied by only one family at the time of the visit, it was quite obvious that they had no need of so much space and that the house had been built for at least two families.

Included in this study of two storey houses since strictly it is in this category is the mullah's house at Morghanan, (Figures 28(a) and 28(b)). Although the house was originally built to house the mullah and, therefore, was very close to the Mosque,

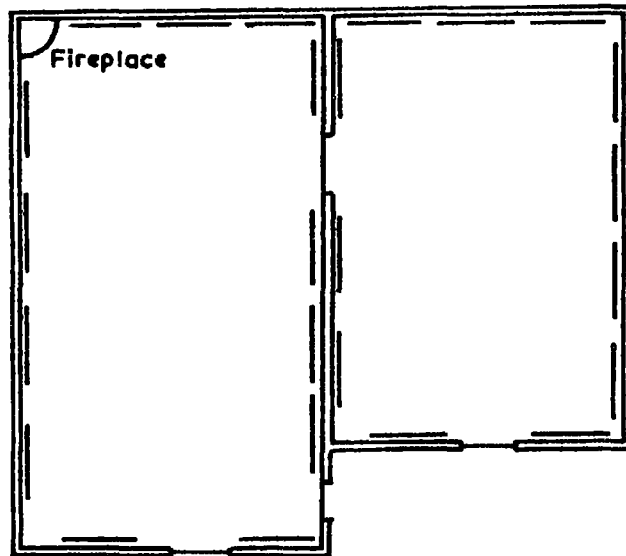
# MULLAH'S HOUSE, MORGHANAN

Ground Floor Plan.



SCALE 1cm. = 1metre.

Upstairs Floor Plan.



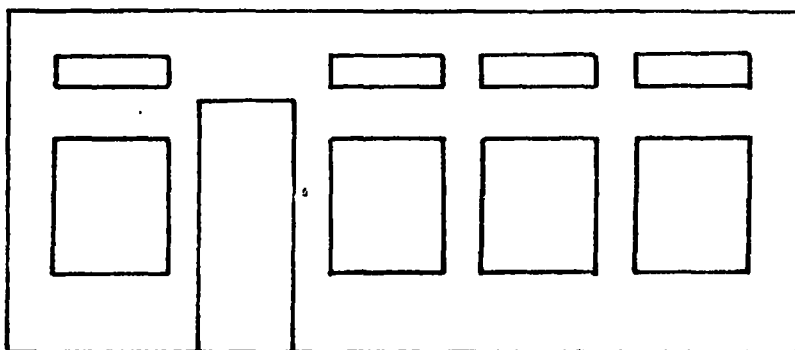
SCALE 1cm. = 1metre.

KEY

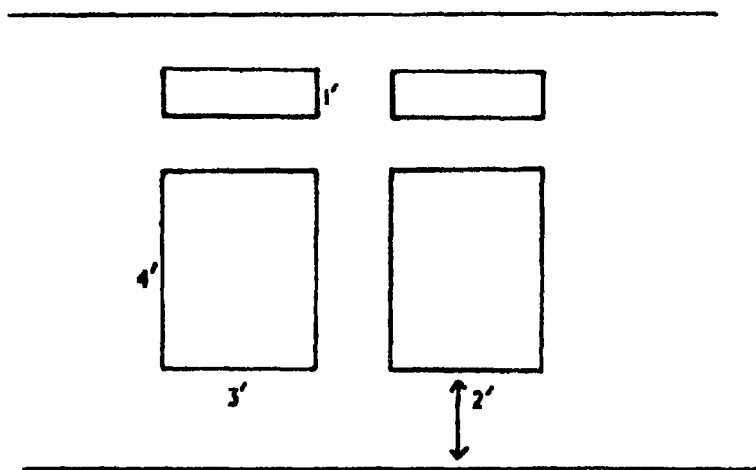
—|— Door

— Shelf

Figure 28(a)



**Characteristic Arrangement of Shelves.**



**Shelves.**

Figure 28(b)

the village had no mullah and, therefore, the house was occupied by one of the families from the village. Strictly speaking the house was single storey with a basement. Built on two levels, the stables and storage rooms of the house were entered by means of a door on the lower level at the side of the house. Once inside there was a small steep staircase down to the first of the stables. In all there were four rooms in this basement area, three acting as stables and the fourth as a store room and all four were of the same general size, 3.5 metres by 4 metres and only about 2 metres high. These stables had flat roofs and although each room was partitioned off from the next there were no doors between them. The living quarters, technically almost the ground floor, though in this case referred to as the upstairs, consisted of two large rooms, one 4 metres by 5 metres and the other 4 metres by 7 metres. Entrance to the larger room was by two doors and once inside there was a profusion of shelves, reference to which will be made later. At the corner furthest from the door was the fireplace with a small chimney opening above it. The room was

# HOUSE AT KHANRUD

Street

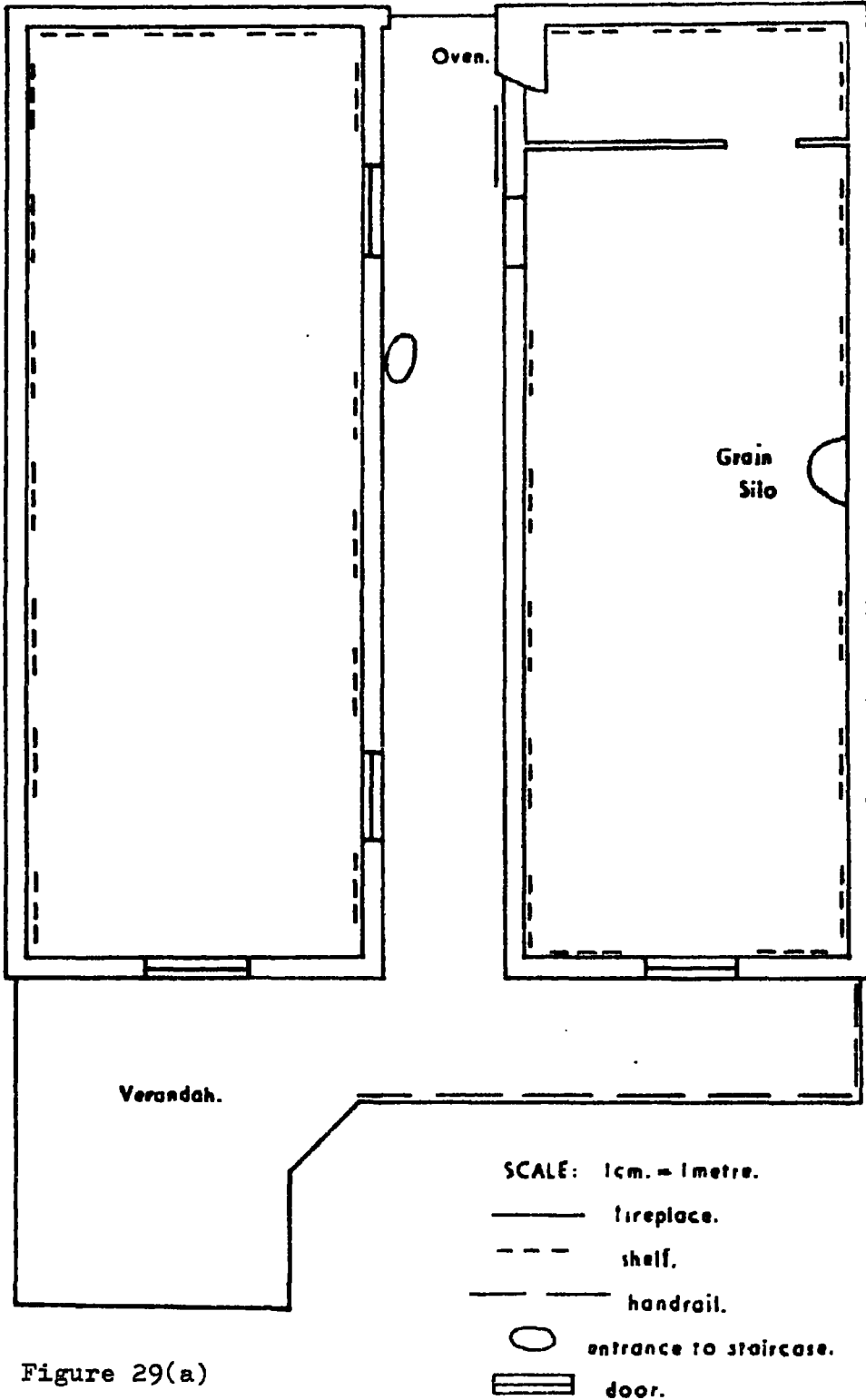


Figure 29(a)

# CROSS SECTION

SCALE : 1cm = 1metre

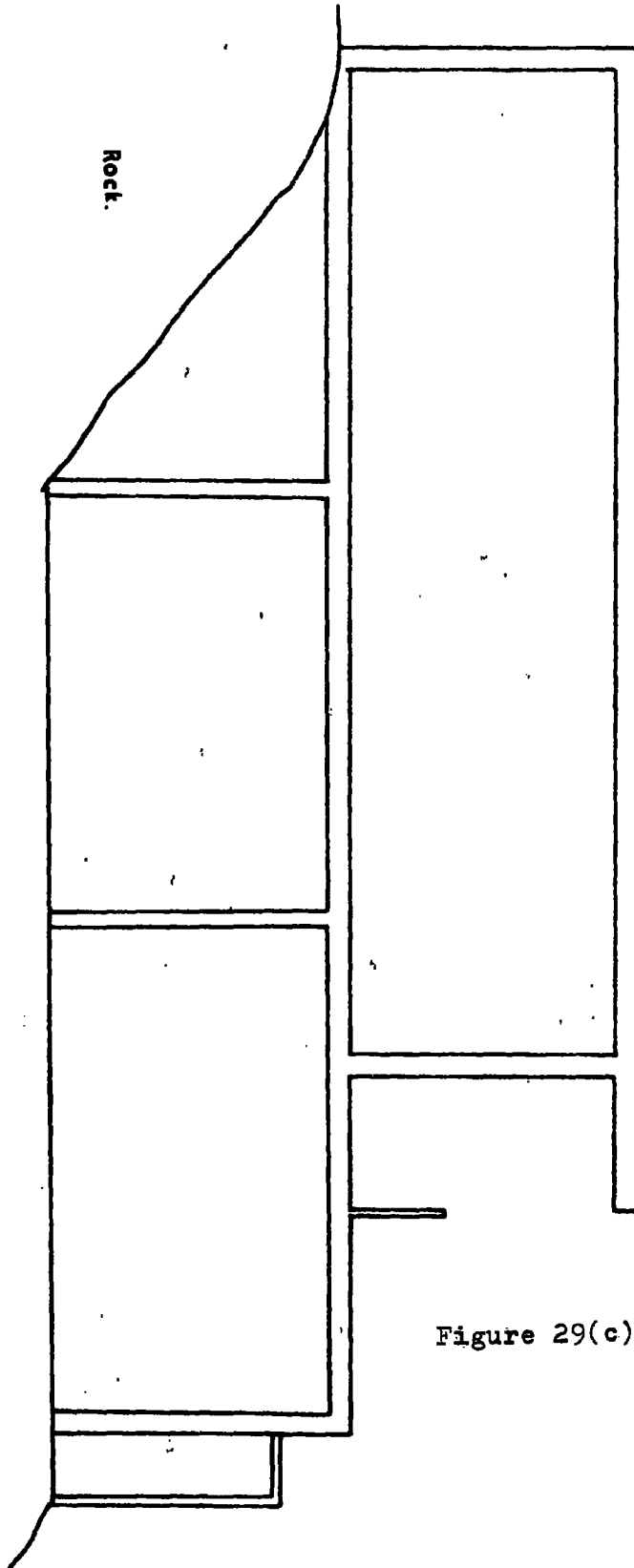


Figure 29(c)

2.4 metres high and had a flat roof. It was connected to the smaller room, though this latter also had an outside door. If any distinction could have been made, this second room provided the sleeping accommodation for the family. Again there was a profusion of shelves let into the wall. The one surprising fact about the whole house was that there were no windows of any kind, despite the relatively recent construction. The characteristic arrangement of shelves in this particular house can be seen in Figure 28(b). This arrangement occurs throughout the whole house wherever a shelf is indicated. The larger shelf is set 0.6 metres above the ground and measures 1 metre by 1.2 metres being set to a depth of 10 centimetres or so into the wall. Above this main shelf is a much smaller one only 0.3 metres by 1 metre. Each of these shelves is used for storing articles needed round the house. A similar elaborate pattern of shelves to the one described here was also noticeable in the next study of one of the houses in Khanrud.

The style of the construction of the houses in the mountain villages was expected to be very

Plate 25.



Close-up view of the structure of houses in Khanrud.  
The greater use of sun-dried brick is obvious as well  
as the abundance of wood in the structure.



different from those encountered on the lowland and mention has already been made of the differences in materials used in the construction of these houses in Chapter 1 of this section. The most obvious differences in the houses themselves are shown by the photograph of Khanrud, (Plate 25). Almost all the houses in Khanrud were two storeyed to cope with the slope of the valley side and an example of the style of construction is shown in Figure 29(a), (b) and (c).

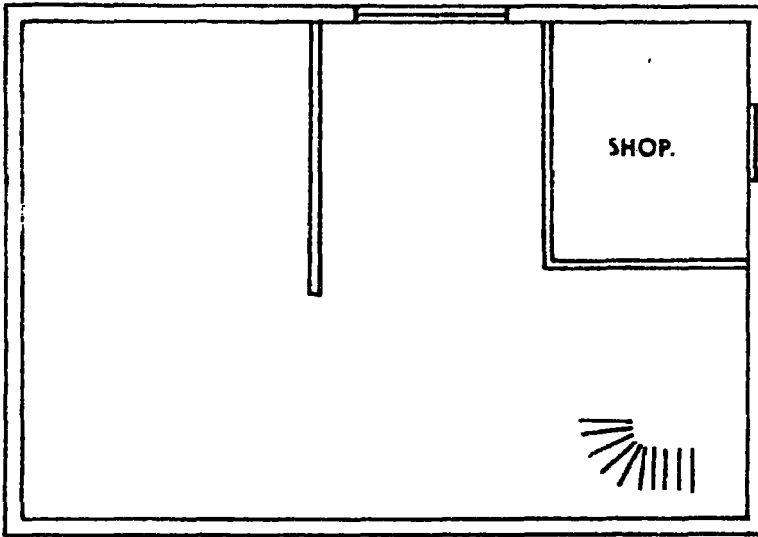
As can be seen from the cross-section, (Figure 29(c)), the house was built on a slope, although some attempt was made to level the land to take the main part of the structure. The main dwelling section of the house was accessible from the street, whilst the stables and store rooms below were accessible from lower down the slope by the side of the house. The house was constructed primarily of mud brick and timber though there was a profusion of the latter material because of its availability. Stone was used in the lower sections of the walls. The principal part of the house was used by only one family and, therefore, its size was considerable. The

main feature of the house itself was that it was divided into two sections each 14 metres long by 5 metres wide and the sections were separated by a corridor 2 metres wide which ran the whole length of the building and emerged on the verandah which overlooked the valley. Just inside the main door from the street stood both the oven and the fireplace both in the corridor and since no chimney existed then their location presumably had something to do with getting rid of the smoke and smell. Further along the corridor was an entrance in the floor leading down into the stables. The main rooms could be entered either from the corridor or the verandah. Each room was 4 metres high and had a profusion of shelves along almost all the walls, mostly constructed about 1 metre above the floor and measuring 1 metre by 0.6 metres. The main living and sleeping room had three doors leading into it and the room on the other side of the corridor was used primarily for storage though there were some signs of occupance. This latter room had a small section divided off at one end which served no obvious function and built into the main wall was a large grain silo.

The verandah was merely the roof of the buildings beneath though because of the drop from it to the valley a wooden hand rail had been fitted. The basement, (Figure 29(b)) consisted of a series of small rooms, each of which was separated by a wooden door. One of the rooms was virtually useless as the bed rock of the valley side intruded into most of it but the other four main rooms were used either for keeping the cattle during the night or as storage rooms. The two extra rooms which led off from the main block and provided the extra part of the verandah were merely a store room and a toilet. It was unusual for an individual house to have its own toilet as usually there were communal ones in the village.

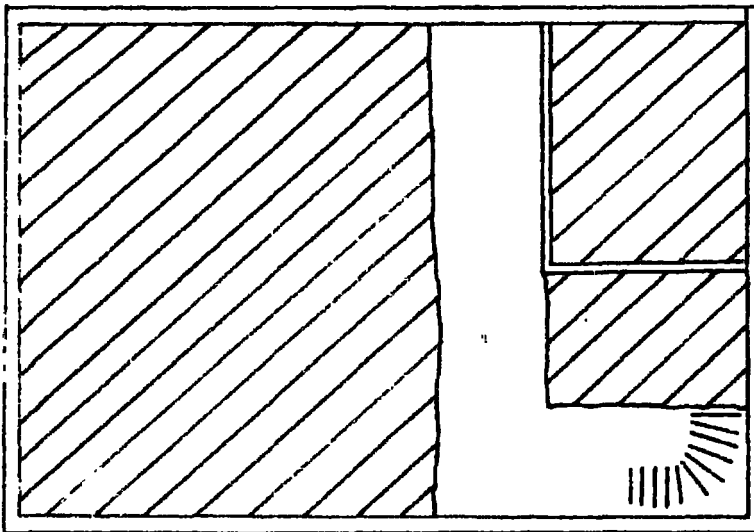
An equally elaborate structure was an almost three storey house which was found at Khanrud. The word 'almost' is important as the central portion of the building which would normally have formed the first floor was falling into decay. The whole structure, (Figure 30(a) and (b)) contained a ground floor shop with a huge storage space behind, then the first floor, already mentioned, and finally the second floor house which was unoccupied. The only section of the building

# HOUSE and SHOP KHANRUD.



DOWNSTAIRS.

Scale: 1cm = 1m.



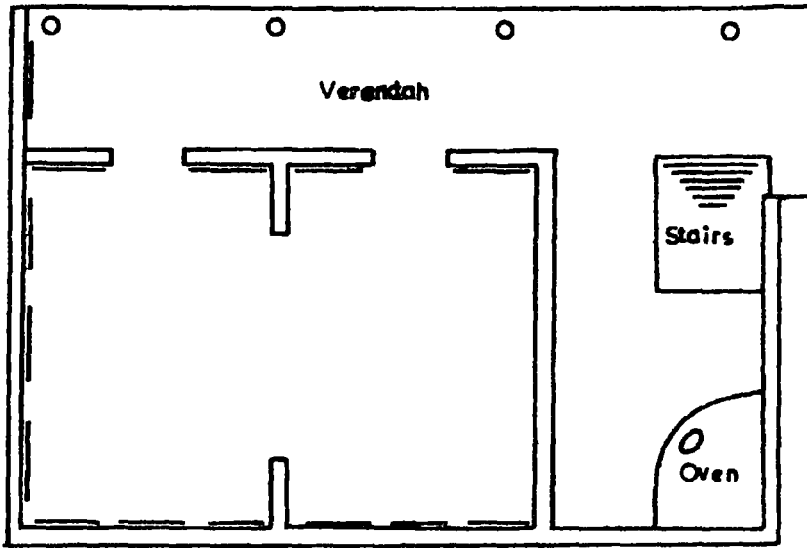
KEY.

-  door.
-  staircase.
-  roof.

Figure 30(a)

UPSTAIRS.

SECOND STOREY FORMING HOUSE



SCALE 1cm=1metre

KEY

— Shelf

○ Poles supporting roof

Figure 30(b)

in normal use was the shop. Again the principal building material was mud brick though slate formed the lower 0.9 to 1.2 metres of the building. The shop itself took only a small section of the ground floor, measuring only 3 metres by 2.4 metres altogether. The remainder of the 7 metres by 10 metres ground floor was used as storage space or merely standing empty. Entrance to this ground floor was made via a large double door and the staircase leading to the first floor stood in the corner almost opposite the main door. The staircase led up to the first floor where the roof between the shop and the remainder of the building had collapsed. The remaining available area was used for storing brushwood for the fire and a few poplar poles had been left but the most significant part of the building was the dwelling accommodation on the second floor, (Figure 30(b)). The head of the stairs opened on to a long wide verandah whose roof was supported by four poplar poles and one end of which was blocked by the side wall of the house. The floor of the verandah was built of wood, laths, straw and finally mud, the mud being 15

centimetres deep. The main cooking area in the house was behind the staircase where there was a separate oven. There was no direct entry from the kitchen to the dwelling section of the house, entry to both the 5 metre by 3.5 metre rooms was made via the verandah. The rooms were not kept completely separate and a 3 metre gap allowed them to be used either as one or separately. All the doors had wooden thresholds, door jambs and cross beams and equally even the shelves were supported both top and bottom by wood.

Both these houses at Khanrud provided examples of complicated structures compared to the simple one roomed house described at the beginning of this chapter. It is not possible to form many more generalisations as regards houses than have already been presented in Chapter 1 and Chapter 2 of this section, suffice it to say that elaborate houses can be found, as well as very simple ones, the latter, however, perhaps being the more common.

In order to complete the picture, however, it is necessary to look at one or two special structures. Already mention has been made of the bath

Plate 26.



In the middle distance is the mud constructed entrance to an underground bath-house, the top of which is denoted by a glass pyramid.

Plate 27.

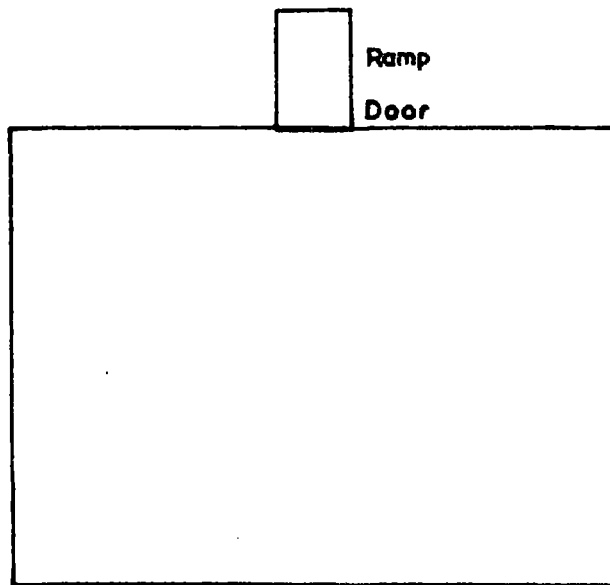


Grain stores raised above ground level to allow ventilation and avoid attacks by rats.



house excavated below ground and with only two or more domes with little glass pyramids, (Plate 26), showing above the surface. Equally most villages contained at least one grain silo, perhaps less elaborate than the one at Morghanan, (Figure 31), but with many similar features, comparing it to the two grain silos in the photograph, (Plate 27). The silo at Morghanan stood in the centre of the newer section of the village, (Figure 15), measuring 16 metres by 12 metres. It was constructed mostly of mud though the first 1 metre of the base wall and the first 0.5 metres up either edge of the walls were of oven baked brick. The most significant feature of the silo was the fact that it was raised above the ground and around its base were holes allowing free circulation of air, preventing moisture rising and also lifting the contents of the silo clear of rats. The traditional design was in evidence elsewhere in the area though the method of raising the silo differed, for example, in Kalate Ali where logs of wood and boulders were used to raise it above the ground. The most striking difference was the fact that at

# GRAIN SILO AT MORGHANAN



SCALE 1 cm 2 metres

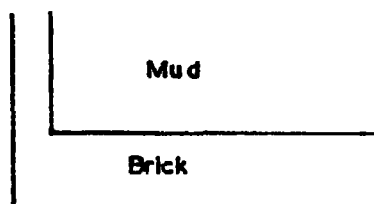
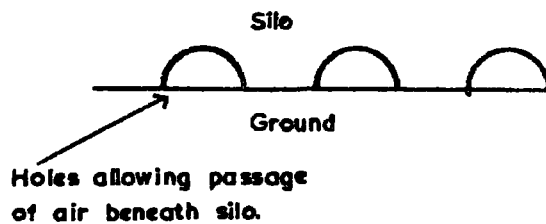


Figure 31.

Morghanan a ramp led up to the large doors of the silo so allowing a cart to be backed right up for unloading. Elsewhere the entrance to the silo was often minute though usually about the height of an empty cart above the ground, (Plate 27).

Another feature of many of the villages discussed in the preceding chapters has been the existence of sheep houses or sheep stalls. A good example of two of these houses was provided at Kalate Ali where both had been constructed in a completely different style. The first of these buildings is shown in Figure 32. This particular house followed the traditional line of having a barrel roof. The measurements of the cross-section were width 3.6 metres, height of outside walls 1.5 metres and height at centre of barrel roof 3 metres. By the standards of the other sheep houses in the village this particular one was both small and very badly lit. Along the base of both outside walls were two feed troughs, constructed out of mud and running the whole length of the building. Above those were a series of small alcoves every 1 metre though the purpose of these was not either obvious or

# PLAN OF SHEEP STALL

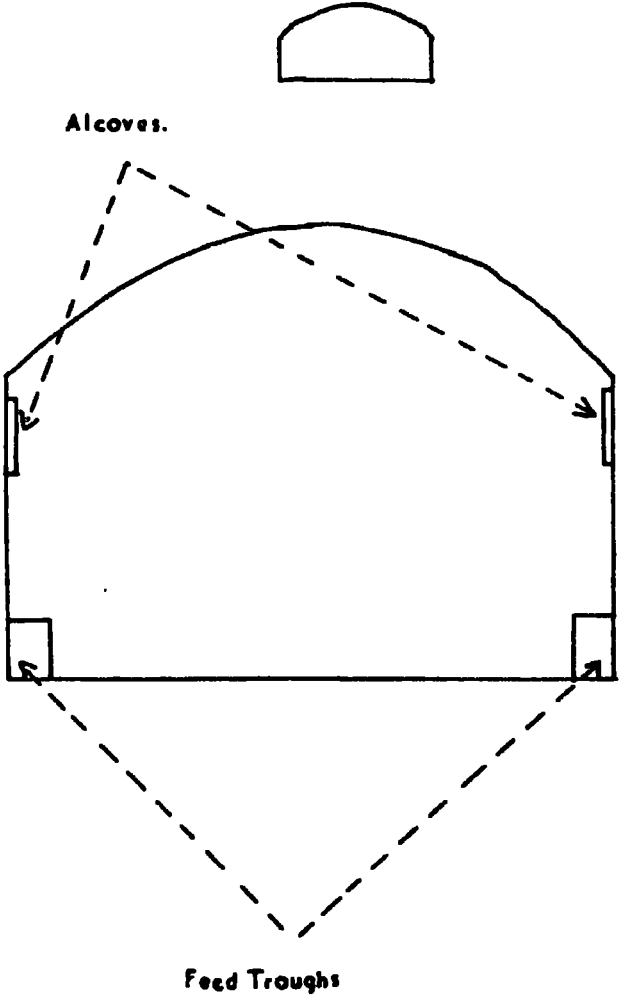
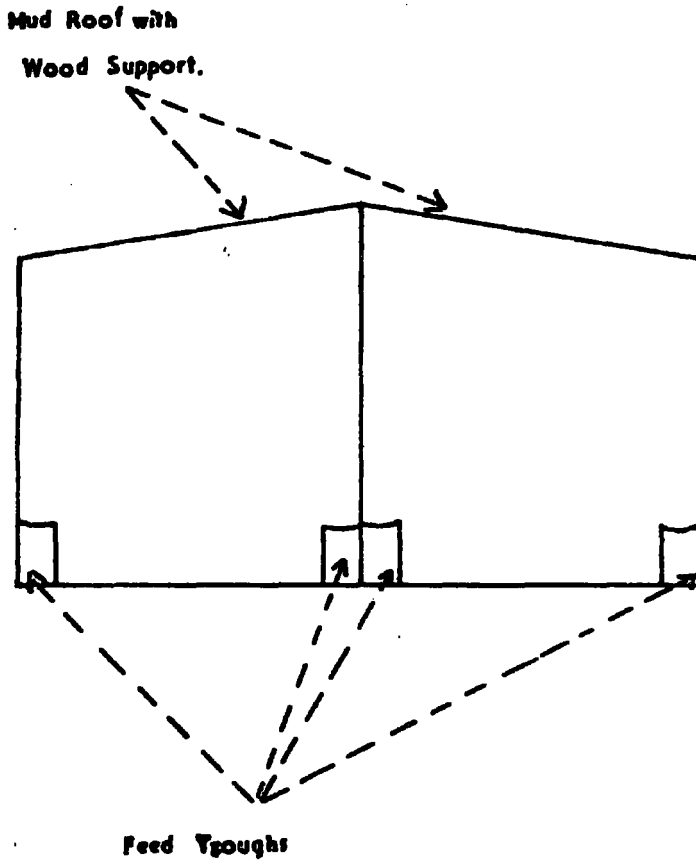


Figure 32.

# PLAN OF SHEEP STALL



Scale: 1cm = 1metre.

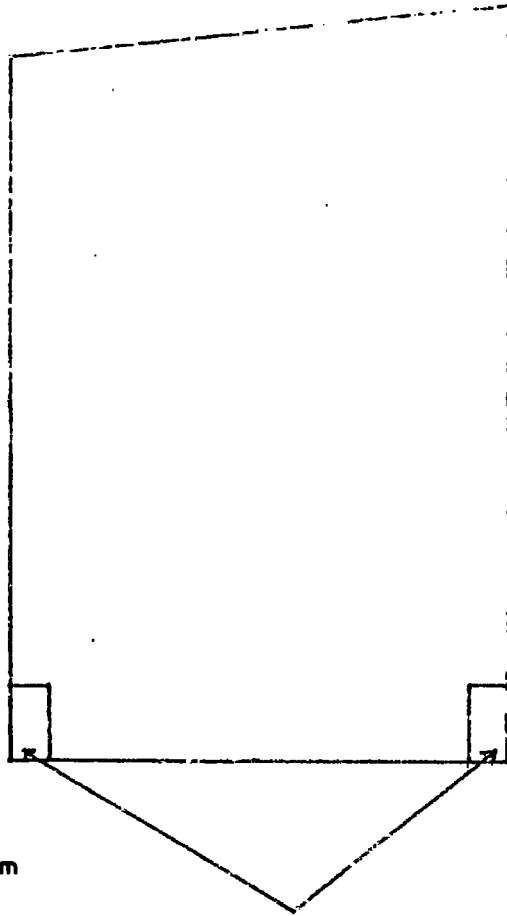
Figure 33.

known.

By contrast the newer sheep house at Kalate Ali, (Figure 33), was much more open and light. The building was 9 metres wide and was divided down the centre by a series of 9 supporting roof poles, each 4.5 metres apart and 4.5 metres high and along the base of these ran two feed troughs, continuous except for gaps at either end to allow movement. The outside walls of the building were each 3.9 metres high, so allowing a slightly sloping roof for run off of water. Similar feed troughs again followed the base of these walls. The roof was a series of wooden beams meeting at the centre and criss crossed by branches and overlain with mud.

The final example of a sheep house was at Morghanan, (Figure 34), and its design was very similar to the newer one at Kalate Ali, though only representing half of the structure. The outside wall of the village provided the 4.2 metre wall and the inner wall was basically a series of 47 poplar poles along a wall measuring about 40 metres, covered in between with mud. These two walls were 3 metres apart and at their

STATE OF TEXAS  
MORNING STAR



SCALE: 2ft = 1cm

Sheep  
Troughs.

Figure 34.

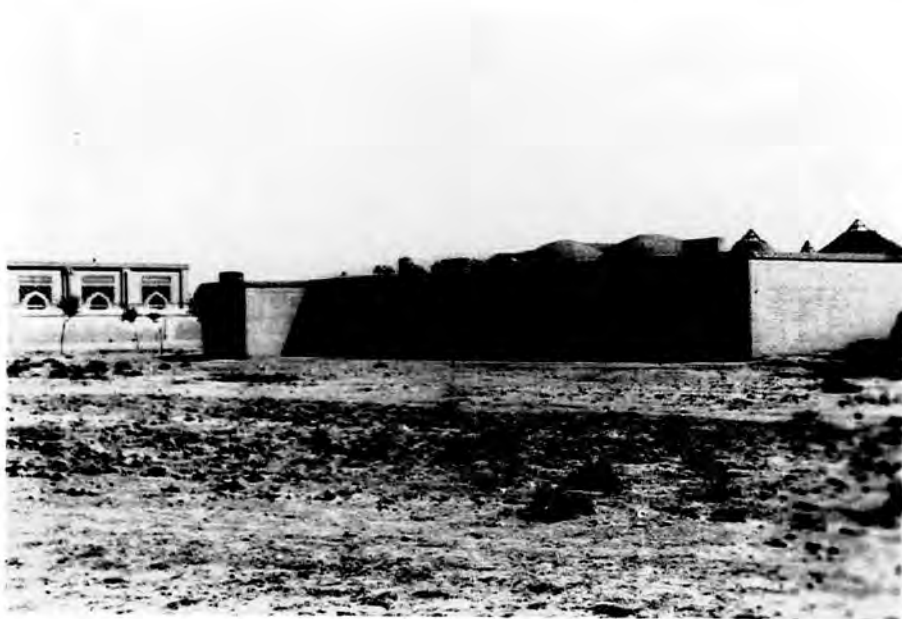
base were two feed troughs which once again ran the whole length of the building. The roof of the sheep house sloped towards the outside wall and was again constructed of poplar poles, branches and mud.

These sheep stalls were, therefore, fairly simple in their construction and only really became more elaborate when there was sufficient wood available to make them longer and higher.

Finally reference must be made to the sole example of a school that was seen outside the city of Meshad itself, Figure 35. The new buildings which were under construction and where a landlord or landowner was supplying the capital were almost all of manufactured brick from the city though the roofs of the buildings were still made in the traditional way. Plate 28 shows some of these more modern constructions at Cheneran, including the Mosque and the bath house but such new buildings were not common primarily because landowners were not prepared to invest money. The school at Morghanan had been provided by the Government and its construction was very much like that of the newer buildings on Plate 28. The walls of the school were

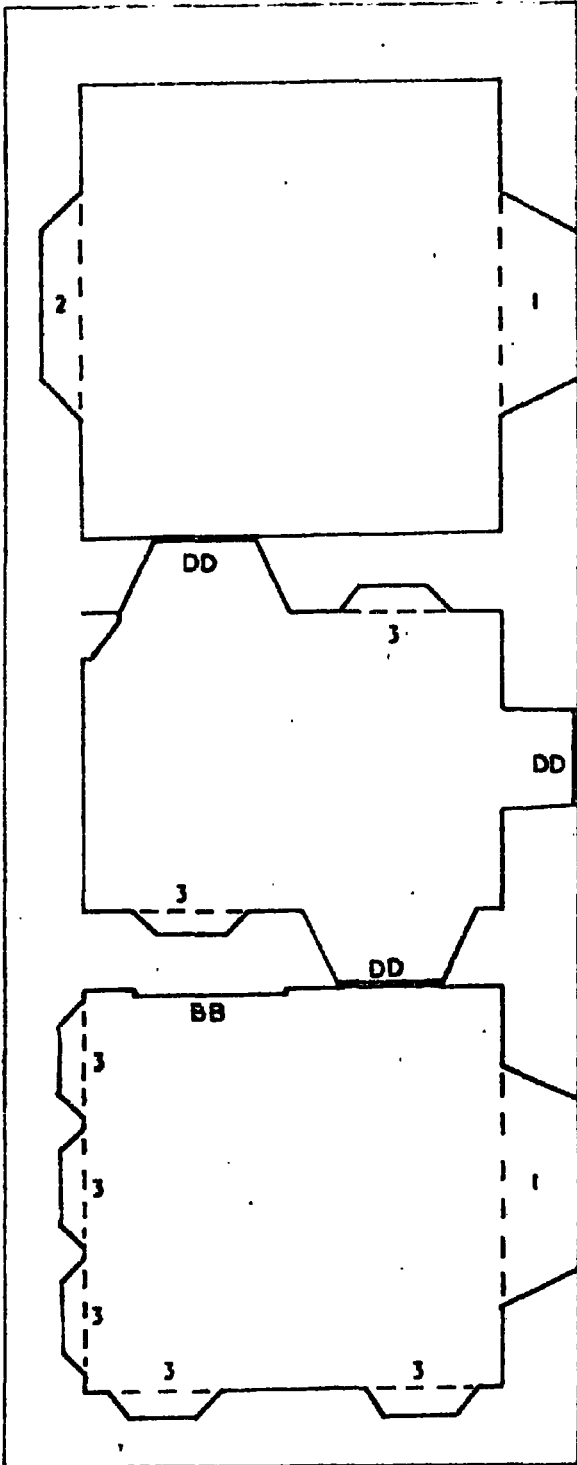


Plate 28.

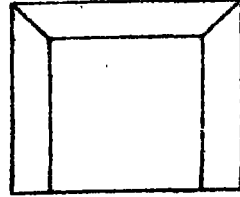


More modern buildings constructed of sun-dried  
brick, plus examples of decorations on a mosque.

# SCHOOL AT MORGHANAN

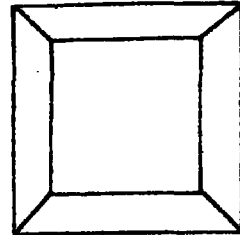


1 Windows.



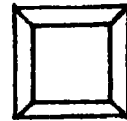
Floor.

2 Large Shelf.



Floor.

3 Small Shelves.



Floor.

KEY.

DD = Double Door

BB = Blackboard

Figure 35.

SCALE 1cm = 1m.

of brick and inside they had been plastered and the floors had been tiled. The roof, however, remained of wooden cross beams, laths and mud; here at least was no variation. The school itself consisted of two major rooms, one a class room, 4.8 metres by 4.2 metres and the other a room for the teacher, 4.2 metres by 5.4 metres and the two were separated by a large entrance hall, 4.2 metres by 3.6 metres. The walls of the school were noticeably very thick, as much as 0.6 metres. In the class room there was a blackboard near the door and one window opening onto the courtyard, the window measured 1.5 metres by 1.8 metres. There were also a series of shelves round the room for pictures. The seating accommodation consisted of 11 benches, each 1.3 metres long, for some 40 children who attended the school daily. The accommodation for the teacher was rather larger and his room also possessed one large window and a larger shelf as its only elaboration.

The standard of the building within the villages varied enormously, depending upon the area in which the village was constructed, the wealth of the village itself or in some cases the wealth of its

landlord or landowner. The most significant factor about the houses was that they were tending towards being better constructed against the weather which could occasionally be poor, particularly in spring, and also they were being built for the most part larger than the 4 metre square rooms mentioned at the beginning of the study. However, one must not avoid the fact that the variations in house styles selected here are a relative minority of the total number of houses in the villages studied and that for the most part it was the 4 metre square rooms which were the most common.

## APPENDIX A.

### The Ferriman Sugar Beet Factory.

The Ferriman factory was opened in 1958 as a private venture by a group of landowners. It is situated 84 kilometres along the Teheran road. In 1962 the factory dealt with 195,000 tons of sugar beet and produced 26,000 tons of sugar. The system of obtaining the beet is similar in all three factories. At Ferriman the village headman, foreman, landlord or landowner makes a contract with the factory whereby the latter provides the seeds (20 kilogrammes per hectare) and the fertilizer (200 kilogrammes per hectare) and the actual cost of these things is then deducted from the price received by the village for its beet. A further service supplied by the factory is that of spraying the crop, if this is necessary, the factory providing the equipment, the village the labour. The workers at the factory can be divided into three types:

- (1) permanent, of which there are about 60.
- (2) seasonal labourers paid daily, between 100 and 400.
- (3) the four resident engineers.

Only the first and third types work at the

factory continually and the seasonal workers are normally employed for about 100 days in Autumn and early Winter when the harvest is collected. At the moment the factory is working at maximum capacity for about 150 days in the year because of the very large crop of beet. The factory is bound by the contracts to take all the beet which the villages produce. Normally the actual amount can be predicted fairly accurately since the majority of the villages produce only about 20 tons of beet per hectare of land. However, the more experienced farmers using a more systematic and careful cultivation are now obtaining yields as high as 70 tons beet per hectare of land and it is this general increase in tonnage per hectare which is causing the overloading of the factory. Any surplus beet is thus stored for a varying length of time until it can be used. Normally the storage period does not exceed 2 months. At the time of the visit stocks of beet were of the order of 18,000 tons.

The beet at present grown on the farms has a sugar content of between 18% and 20%, so the crop is usually bought by weight rather than quality. As the

loads are received at the factory they are examined by experts who decide upon the standard of the crop and who can if they so determine reject a load. Normally about 90% of the loads are accepted. The sugar produced is sold to the city merchants who collect it in their own lorries from the factory. The pulp waste from the process is also sold back to the farmers as cattle fodder at 5 tomans per ton(wet). Any farmer can buy pulp from the factory.

One rather interesting facet of the organisation of the factory was the existence of a differentiation in prices paid for the beet the further one went from the factory. This meant that farmers quite a distance from the factory were still encouraged to send their beet to it. The price differential is listed over the page, see also Figure 36, :-

Distance(kilometres)	Price(tomans per ton).
0 - 20	97)
	) 21% of total.
21 - 30	101)
31 - 40	105
41 - 50	112
51 - 60	114
61 - 80	116
81 - 90	120
91 - 120	124
121 - 140	126
over 140	128

The basis of this price-distance correlation is that the factory must ensure that it is covering transport costs for the greater distances. The increasing prices, therefore, really only benefit villages with their own transport since if lorries have to be hired to carry the crop then the actual price from the factory is no greater than that obtained from the Government owned AbCou factory.



# FERRIMAN SUGAR BEET FACTORY

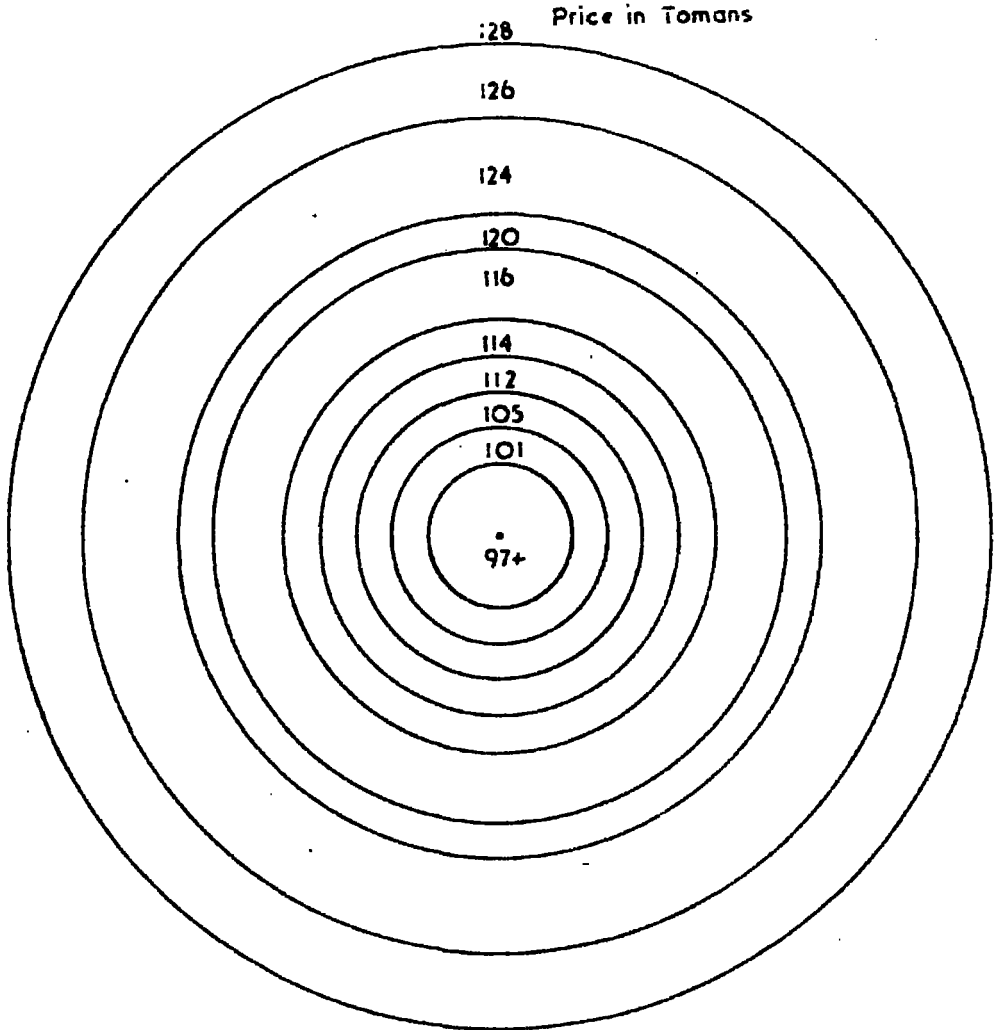


Figure 36.

SCALE:  $\frac{1}{4}$ " = 10kms.

## APPENDIX B.

### The AbCou Sugar Beet Factory.

The Government owned factory has been open now 26 years. Its total intake of sugar beet for 1961 was 108,000 tons which produced some 15,000 tons of sugar. The factory usually receives about 20,000 tons of beet in each of 5 months from October to February and likewise during this period about 3,000 tons of sugar is produced monthly. This latter fact is rather debatable as later in the interview I was told that the percentage of sugar is highest in the earlier beets brought in in October and as the season wears on the sugar percentage declines slightly. The factory has made no attempt to increase its output or capacity for the last 14 years as the Director believes that it has been at maximum production during this period. During the 5 months of the season the factory employs about 500 workers but at other times, especially during the factory's 'black' season, only about 150 men are employed.

The agreements which are reached between the farmers and the factory total 521 in all and contrary to what was found at Ferriman these agreements are not

all with individual farms rather with individual farmers, each man owning so many hectares of beet. Altogether this factory collects beet from about 6,000 hectares with an average yield of 20 to 25 tons per hectare.

Again the factory advances fertilizer and seed to the farmers deducting the cost of these when the final price for the crop is paid. A further aid to the farmers is the advancement of a money loan of 600 tomans per hectare of sugar beet sown. Not all the fertilizers listed below are needed by all the farmers and the need depends considerably upon the type of soil in which the crop is grown. The principal types of fertilizer are listed below along with the recommended amount per hectare and price per kilogramme charged to the farmers.

Type.	Amount.	Price.
Ammonium Nitrate	200 tons	6.5 rials
Superphosphate	800 tons	8.5 rials
Urea(46% Nitrogen)	500 tons	9.5 rials
Ammonium Sulphate	-	6.5 rials
Potassium	80 tons	7 rials
Borium Ammonia Sulphur Nitrate	20 tons	7 rials

Three principal types of seed are used by the factory and each farmer is allowed 25 kilogrammes of seed per hectare of land to be cultivated. Sometimes this amount is increased if uneven germination takes place. The three types are known as Z.Z., 461 and 1.770. The Z.Z. seed is an Iranian developed seed from the Karadj Agricultural School near Teheran.

Again when disease occurs, the factory sprays the crop at no extra charge to the farmers. The main diseases affecting the sugar beet in the area are:-

Lita Ocellatella.

Bothynoderes Punctiventris.

Conorrhynchus Pistor.

Chaetocnema Breviscula.

Pegomyia Betae.

Laphigina Exigus HB (moth type).

Aphis Fabae.

For these diseases four types of spray are normally used, these being:-

Lindene.

D.D.T..

Diptrex.

Multanin Altera.

The price paid for each ton of sugar beet

received at the factory is fixed at 104 tomans and the beet is inspected as it arrives, the rejection of the beet depending particularly on the weather during the growing period, especially upon frost damage. From this basic rate of 104 tomans per ton of beet a tax of 10 rials (1 toman) is levied for education and the money so gained is used to build schools in the city itself and in the surrounding villages.

If the local farmers wish to improve their land then the factory is willing to loan money, especially for the building of deep wells, at a 3% interest rate. Again the factory offers two major bonuses each year, the first for the highest yield of beet per hectare and the second for the individual who produces the most sugar beet from his farm. These were some incentives at least to more careful and more systematic cultivation.

The two main types of sugar produced at the factory are sold to the Government at varying rates. The ordinary sugar costs 12.75 rials per kilogramme and the lump sugar 17.5 rials per kilogramme. This sugar is collected by Government owned lorries and taken to the city for sale.

Attached to this factory at AbCou were houses for the permanent workers, as well as a small hospital, a public bath house, a school, a kindergarten and several co-operatively owned shops where credit could be obtained easily.

Although no price variation occurred with distance from the factory, it was still possible to determine where the majority of the beet was obtained as follows:-

(Figure 37 provides a correlation between the Ferriman factory and the AbCou factory, showing the area of overlap.).

# PRICE-DISTANCE CORRELATIONS BETWEEN THE FERRIMAN AND ABCOU SUGAR BEET FACTORIES

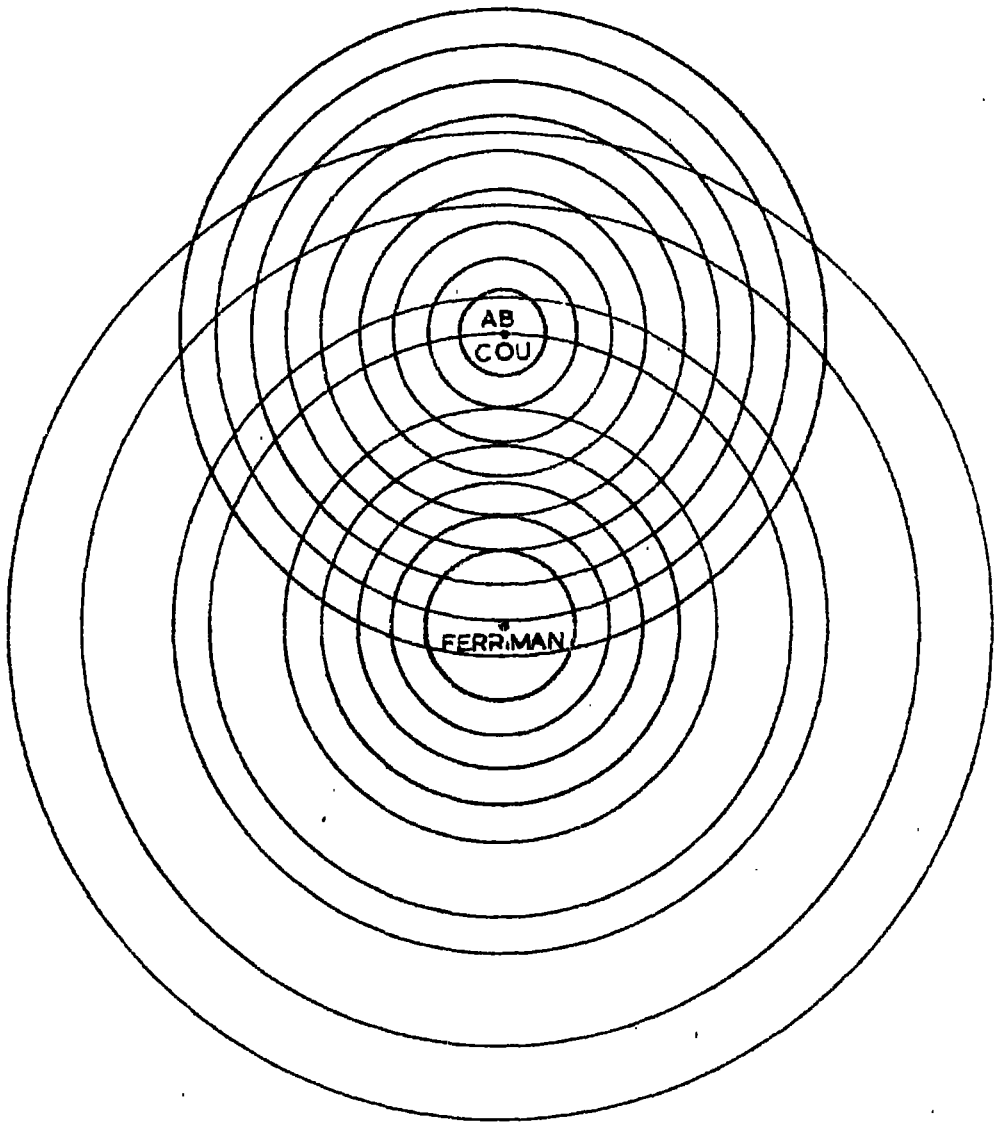


Figure 37.

SCALE:  $\frac{1}{4}'' = 10\text{kms.}$

<u>Distance.</u>	<u>Percentage.</u>
0 - 5 kms.	7.16%
5 - 10 kms.	11.69%
10 - 15 kms.	3.574%
15 - 20 kms.	3.96%
20 - 25 kms.	25.68%
25 - 30 kms.	2.497%
30 - 35 kms.	12.04%
35 - 40 kms.	12.01%
40 - 45 kms.	7.169%
45 - 50 kms.	1.982%
50 - 55 kms.	1.469%
55 - 60 kms.	1.795%
60 - 65 kms.	3.204%
65 - 70 kms.	2.976%
70 - 75 kms.	1.381%
75 - 80 kms.	0.9842%
80 - 85 kms.	0.3536%
85 - 90 kms.	0.6918%



## APPENDIX C.

### The Cheneran Sugar Beet Factory.

The Cheneran factory is the second of the major Government run factories in the area and it is situated some 60 kilometres to the North West of the city of Meshad along the Ghoochan road.

In 1962 the factory took 55,000 tons of sugar beet from 580 farmers in about 110 villages. The beet yielded on average between 14.8% and 15.2% sugar per ton. The factory itself works at full pressure for about 5 months of the year and during this time 350 men are employed there, excluding the office workers and the men who unload the beet. These latter are free lance, not employed by the factory but paid by the lorry owners. Throughout the year there are about 60 permanent employees plus the office staff. Most of the extra workers employed during the peak period come from local villages although some even come from as far as Meshad. The men work either 'days' or 'nights' and have one day off in every fifteen.

The factory produces 2,200 tons of molasses per year as well as 50,000 tons of pulp. The Director

of the factory has been having great difficulty in selling the molasses and he is hoping for some early improvement but the pulp is generally sold to one man for about 28.000 tomans to 30.000 tomans and he then resells it. The sugar that is produced is sold to the Government at rates similar to those at AbCou, the loose sugar bringing 13 rials per kilogramme and the loaf sugar 18 rials per kilogramme.

Before the farmers actually plant their crop they are loaned, by the factory, 600 tomans for each hectare of beet to be planted. As well as this the factory sells the farmers fertilizers and will lend money for the construction of deep wells. In addition each farmer is entitled to buy wholesale 12 kilogrammes of loaf sugar or loose sugar for each ton of beet which he sends to the factory. During the last two years (1961 and 1962) the factory has made a 1% levy on every ton of beet which enters the factory. This money is kept at the factory to be used under the direction of the Meshad education office for local education.

Originally the factory was built to handle

350 tons of sugar beet per day but last year because of the boom in sugar beet growing it averaged 380 tons per day and some days it was even working at 400 to 420 tons per day. According to the Director these high totals can only be reached at the beginning of the season when the machinery is still clean. When it becomes dirty, after about a month, the capacity falls to 350 to 360 tons per day.

BIBLIOGRAPHY.

1. Planhol, X. de

"Un village de montagne de L'Azerbaïdjan  
Iranien - Lighwan".

Revue de Géographie

Vol.35 No.4 1960.

2. Dexter and Barber

Farming for Profits.

Penguin 1961.