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Brief Comment

Oases in South Sinai

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INTRODUCTION

For its Bedouin inhabitants, South Sinai is not a desert (*sahra'*), an inhospitable region, but a country (*bilad*) with variegated features. Although they admit that most of it is arid and mountainous, they see it as a complex and differentiated region, in which each site has special characteristics and possibilities. Thus water can be tapped in many locations, and pockets of soil are found in numerous sites. The Bedouin know how to exploit these major resources, they all are adept in horticulture, and some of them have specialized in well digging, in the grafting and pruning of deciduous fruit trees, and in the pollenation of date palms. They even haul soil and water from one location to another. When Bedouin decide to develop a certain site, they take into account its physical characteristics; but these are always outweighed by various extraneous economic considerations, such as its proximity to a smuggling route, or its inaccessibility to unwanted outsiders. The ethnographic data, as well as the scattered historical information, indicate that in the Sinai oases are not simply concentrations of natural resources but rather human artifacts. Even an unpromising site can become an oasis if it serves an ulterior purpose. Conversely, a potentially fertile site will remain derelict if it does not suit the Bedouin's interests. These interests change over time so that a seemingly thriving oasis may outlive its social usefulness as its inhabitants become aware of its drawbacks and gradually abandon it.

It appears that oases are established for a variety of reasons. In South Sinai, five major types of oasis can be distinguished: first, there are the orchards, vegetable plots, and palm groves planted over the course of the

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centuries by the monks of St. Catherine, oases which pointed the way for Bedouin who wished to emulate them. Second, there are the irregular clusters of orchards established by Bedouin in many parts of the mountains. Almost every Bedouin household owns one or more orchards in which they grow fruit and vegetables. Third, there are the tightly compressed settlements developed by smugglers in mountain hideouts. They are characterized by large numbers of fruit trees of many varieties. Fourth, there are the large oases covered by extensive palm groves in which some Bedouin reside throughout the year, and on which many Bedouin households converge toward the end of summer. Finally, there is the unique village Tarfat Qadren, where market gardeners cultivate irrigated vegetable plots and orchards year-round. Each variety of oasis has its particular pattern of settlement and vegetation, and imprints a distinctive mark on the landscape. But these oases should not be viewed as permanent geographical features. Some of them have survived through the centuries, adapting to changing conditions. Others have emerged, disappeared, and shifted sites. Even during my relatively short fieldwork, spanning a mere 10 years during the Israeli occupation, I observed some rapid and radical changes (Marx, 1980). The Bedouin orchards in the mountains alternated between periods of neglect and intensive cultivation. Their fate seemed to be inversely related to that of the "permanent" semi-urban hamlets that grew up around the service centers set up by the Israeli authorities: whenever the opportunities for wage labor declined, people tended to leave the solidly built houses in these hamlets and either repaired to their orchards or moved, with their flocks and tents, from one pasture to the next. They thus entered a different, and less affluent, kind of market economy. And conversely, whenever the wider economy flourished, people moved back into the hamlets and tended to merely maintain their orchards and to keep only a handful of animals.

Sinai

The peninsula of Sinai is situated in the Asian-African desert belt. It receives scant rainfall, and vegetation is sparse, but as a land-bridge between Asia and Africa and between Egypt and Israel, it has tremendous strategic significance, and because of its mineral wealth, oil fields, and deposits of gypsum and magnesium, and for its tourist potential, it is a region of great economic importance. Although the Bedouin have no share in its mineral wealth and only a small stake in tourism, the region's strategic location exposes them to the presence of armed forces and the dangers of sporadic foreign occupation. Even their land rights are frequently contested by

other users. The most active and aggressive among these have always been agencies of the state, and in recent years, economic entrepreneurs, such as Israeli settlers or international hotel chains. These organizations pursued development agendas that totally ignored the existing land uses. Thus, when the Israeli occupation authorities sunk a well in a hitherto uninhabited location, they caused a realignment of patterns of settlement over a large area. By providing services in a particular site, they precipitated the establishment of permanent settlements whose inhabitants, Bedouin and Israeli colonists living in separate hamlets, no longer relied on horticulture and pastoralism. When the authorities offered work outside the region, they induced ever more Bedouin to settle in the vicinity of service centers. And wherever the Israeli, and later the Egyptian, authorities constructed military installations or economic projects, such as tourist villages and hotels, they dislodged long-established local populations and deprived them of their land (Gardner, 1994, pp. 297 ff.).

The Bedouin

From the beginning of the nineteenth century, and probably earlier, and up to the middle of the twentieth century, the Bedouin obtained most of their income as migrant laborers in and outside the region, and also engaged in the mobile way of life of caravaneers and smugglers. But they persistently tilled some land and raised goats, sheep, and camels. The situation today has remained almost unchanged, except that smuggling and caravaneering have declined drastically. The mountain-dwelling Bedouin still cultivate orchards, but argue that these yield little or no income today. Most Bedouin households also raise small flocks of goats and sheep and one or two camels, but claim that flocks have to be small because they only cause losses. In addition, most Bedouin own date palms in the large oases on the coast, such as Dhahab, Nuweb'a, and al-Tur, and in the interior of the peninsula, such as in Wadi Firan. While they do not consider dates a valuable food, but rather a kind of sweet (*halawa*), they invest prodigious amounts of labor and money in carving oases out of the inhospitable environment (Perevolotsky, 1981), and in raising the small flocks. At first sight one is tempted to dismiss these practices as a set of traditional sources of income which have lost their economic significance. But a closer look shows that the orchards, flocks, and palm groves play an important role in the lives of the Bedouin: they are major elements in an alternative economy, which can be activated at quite short notice. This economy includes other components, namely the protection of tribal territory, maintenance of networks of kinsmen and agnates, as well as the laying in of stores of staple

foods in caves or small secure buildings (*qerie*). Even religion and the regular pilgrimages to the tombs of saints become part of the system (Marx, 1985).

The proclaimed lack of income from horticulture and pastoralism is both a reflection of temporary conditions and a strategy of survival. During periods of abundant employment, when the men go abroad as migrant laborers, other members of their households stay behind in order to care for the orchards and flocks. As wage labor offers a much higher income than horticulture and pastoralism, the households of labor migrants tend to reduce the labor inputs in their home economy. They carry out the minimal amount of work needed to maintain them in working order. In these conditions the orchards and flocks do not yield an income, but are an economic reserve. Whenever the need arises, Bedouin make a powerful effort to put them into shape and make them profitable. In the meantime, they consider it good policy not to attract the covetous eyes of the authorities who may be tempted to tax the property or, worse still, to hand it over to colonists. They well remember how the Israeli occupation authorities expropriated farm land and palm groves owned by Bedouin in Nuweb'a oasis in order to settle Israeli cooperative farmers.

Sources of Information

At this point I should note that my discussion relies partly on the Arabic and Turkish documents preserved in the archives of Saint Catherine's monastery, and the accounts of travelers and pilgrims who visited the area. The more informative travel accounts begin with Felix Fabri's 1483 journey (Prescott, 1957), and culminate in the accounts of Niebuhr of 1761, Burckhardt of 1816, and Robinson of 1838. But the documents are very thinly and unevenly distributed, and they deal only incidentally with the subject of oases. I should add that most anthropological studies of Middle Eastern oases address this historical variability and changeability only indirectly (Kilani, 1992, p. 49; Boucheman, 1939, p. 16; Altorki & Cole, 1989, p. 15). Davis (1987, p. 12) noted that Kufra oasis was undergoing rapid change at the time of his fieldwork, but was mainly concerned with contemporary political developments. The exception is Rusch and Stein's (1988) careful study of 200 years of change in Siwa, which describes the ruin of one town and the founding of another, and the cycles of growth and decline in the oasis.

I shall now examine the special features of each type of oasis in greater detail, and show how they developed in response to prevailing conditions.

It will be seen that the various oases are interdependent parts of a complex economic system.

DISCUSSION

Climate and Geography

South Sinai is the mountainous southern part of the Sinai peninsula, bounded on the north by the escarpment of the Tih Plateau. It covers an area of some 17,000 square kilometers. Most of the interior of the peninsula is bare and rugged; the mountains gradually ascend to the Mount Sinai massif, with peaks rising to a height of 2600 meters. The rocks are mainly red granite, which holds water very well, but produces immature soils with only small amounts of clay (Perevolotsky, 1981, pp. 335–6). Because water is the most critical economic resource, the Bedouin construct orchards mostly in the granite mountains, even though the soil there is not suited for cultivation.

South Sinai is an extremely arid region. The average annual rainfall along the coast is about 10 mm, rising in the high mountains to about 60 mm (Ganor, 1973, p. 35). Rainfall is irregular, and there may be several consecutive years without any rainfall. The spatial distribution of rains is almost random, so that pastures vary from season to season. Therefore Bedouin consider the whole of South Sinai as one region as far as pasture is concerned. Any sizeable rain results in flash floods, causing serious damage to Bedouin property. From time to time torrential rains occur, resulting in widespread flooding of the valleys; in May 1968 one such flood (*fayadan*) carried away hundreds of palm trees, houses, and gardens, laying waste most of a 2-kilometer stretch of Wadi Firan oasis. Another in February 1975 was almost as disastrous.

The cool season between December and March can be quite cold, especially at night. In the mountains, temperatures occasionally fall as low as −10°C. In summer, temperatures are uniformly high. In the low-lying areas, such as Wadi Firan, they often rise to over 40°C during the day, and in the mountains to around 30°C. Radiation is very high, and the air extremely dry.

The natural vegetation is adapted to the harsh climate and relies largely on groundwater. The climate also limits the varieties of trees that can be grown. Palms grow only in sheltered, low-lying valleys where groundwater is available, and near the seashore. In the mountains, hardy varieties of deciduous fruits, such as apples, quinces, pears, and pomegranates are grown. Almonds are a favorite crop because of their nutritive value, but

they are a little too delicate for the climate, and late frosts often nip them in the bud. If these trees are not watered regularly in summer they may wilt and die.

Transportation and Accessibility

During the period of my fieldwork the only asphalt road on the peninsula ran close to the seashore. A number of dirt roads gave access to the interior (Fig. 1). The main west-east route through the mountains leads from the port of al-Tur on the west coast to the oasis of Dhahab on the east coast. This route was in those days only suitable for trucks, jeeps, and other cross-country vehicles. From al-Tur it crosses the coastal plain and ascends the meandering Wadi Firan, passing through Firan, the largest palm grove in South Sinai, 10 kilometers in length. From there the route, now called Wadi al-Sheikh, ascends the high mountains, passing Tarfat Qadren, a center of commercial gardening. It continues to the Nebi Saleh junction, where the descent to Wadi Nasb and Dhahab begins. A short branch road leads up to the Bedouin village Milqa' and the ancient monas-

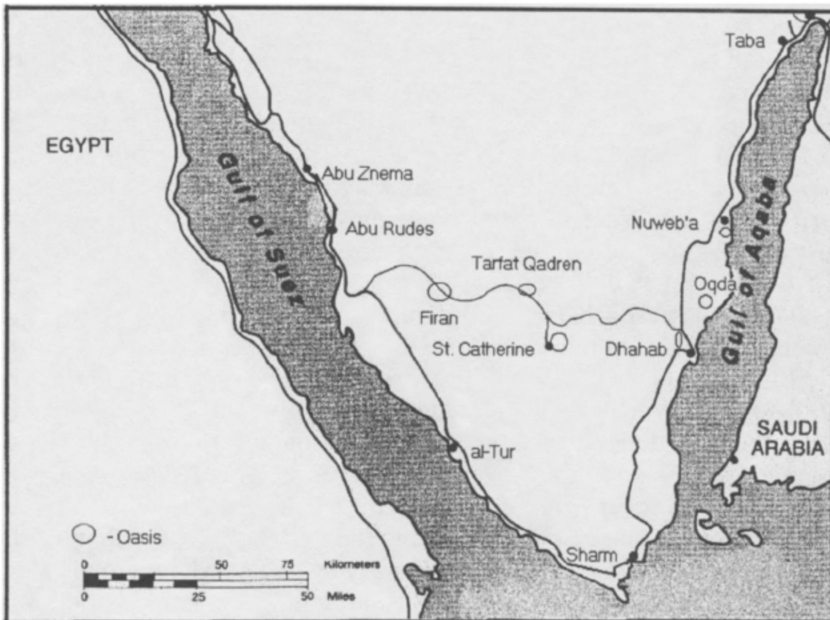

Fig. 1. Oases in South Sinai.

tery of Saint Catherine. A journey through the main thoroughfare of the Sinai, then, provides views of several types of oases, and also passes close by the major concentrations of cultivation.

Transportation in the interior is by car, and in the mountains by camel or donkey. There is no public transport, but over 200 pick-ups and jeeps owned by Bedouin are available for hire.

The arid environment can sustain only a small population. There are about 10,000 Bedouin in South Sinai, giving a population density of one person to two square kilometers. A considerable part of the population usually lives close to the main east-west passage through the mountainous interior, moving up into the mountains in spring, and down to the seashore in late summer. Most of the permanent settlements were established in the early 1950s, when the smuggling of narcotics became widespread. The newly acquired wealth was invested in orchards, flocks, and gold. At that time numerous new wells were dug. This trend continued in the 1960s and 1970s, during which time more work, mostly in the form of wage labor, became available. Thus, the Bedouin village near Saint Catherine's monastery, which appears to be have been standing since time immemorial, was in fact established in the 1950s.

The Monastery of Saint Catherine

Even before the monastery was established, monks had been living in hermitages in South Sinai. In the sixth century, they consolidated their hold when the Byzantine emperor Justinian built forts at Qulzum, today's Suez, and Raitu, today's al-Tur (Euthychius, 1985, p. 89), and the fortified monastery of Mount Sinai (Procopius, 1954, p. 357). Built around the year 550 CE (Nandris, 1990, p. 49), the monastery has been inhabited almost continuously. Sometimes only a handful of Greek and Arab monks resided in it, and on two or three occasions the monks moved out for a short while (Labib, 1961, pp. 78, 97). At its zenith, the end of the fourteenth century, the monastery was inhabited by some 200 monks (Labib, 1961, p. 43), but in recent times the number of monks usually hovered between 10 and 20. The monks always cultivated orchards in and around the monastery and in several plantations in Wadi Firan and near al-Tur. This is documented in the monastery's rich archives, going back to the period of Mamluke and Ottoman rule (Ernst, 1960; Schwarz, 1970; Humbsch, 1976). In numerous documents, extending from 1517 (Schwarz, 1970, p. 25) to the middle of the nineteenth century, the Ottoman rulers constantly reaffirm the monastery's customary tax privileges with regard to their plantations. As early as 1518, one document refers to the monastery's "orchards, palm groves and culti-

vated lands in al-Tur and Firan," and 10 years later another document mentions "vineyards, olive groves and palm groves in the Mountains, Wadi Firan and the coast of al-Tur" (Humbsch, 1976, pp. 175, 239). The monks apparently introduced numerous varieties of fruit trees and new horticultural techniques, which they had acquired in their Greek homeland. An Arabic document from 1565 refers to the importation of olive saplings (Humbsch, 1976, p. 356). The documents also show that the number of orchards and their locations varied over time.

The Bedouin employed by the monks gradually picked up the horticultural techniques and developed their own orchards, albeit on a smaller scale. There are major concentrations of orchards close to the main east-west thoroughfare, from Wadi Firan to the lower reaches of Wadi Nasb. Others are found in the high mountains, at an average altitude of 2000 meters, in Wadi Jibal and elsewhere. These are the territories of the Jebaliya and Awlad Sa'id tribes.

The Economy

Governments tend, in the best case, to pursue a *laissez-faire* policy in their relations with Bedouin; they often assume that Bedouin are economically self-sufficient, living on their garden produce and flocks, and only seek work in order to earn more spending money. This belief may serve as a convenient explanation for the exclusion of Bedouin from some types of work. Both under Egyptian rule and under Israeli occupation, most of the skilled work available in the Sinai was done by outsiders, whether Egyptians or Israelis. Most Bedouin were employed in menial tasks, as waiters, watchmen, laborers, and so on. Yet wage labor has for generations been, and still is, the Bedouin's main source of income. Before 1967, under Egyptian rule, many young, unmarried men went out to work in Suez or Cairo, and sent home remittances to support their families. After spending 3 to 5 years abroad they returned home with their accumulated savings and got married. Then they would once more go out to work, but now for shorter periods, perhaps for 6 months or up to 1 year. Only when their sons were old enough to become wage laborers themselves could the fathers "retire," that is, stay at home and cultivate their orchards and partly rely on the son's remittances. Under Israeli occupation a different work pattern developed. There was work for everyone, and practically the whole adult male population, irrespective of age and marital status, worked in Israeli towns and settlements in the Sinai and in southern Israel. The number of employed men rose from about 500 to 1500, and remained at that level until the return of the region to Egyptian control in 1982. (The only slack

period occurred after the 1973 war between Egypt and Israel, and then the Israeli military authorities provided some employment for the Bedouin). Transportation became easier and faster, so that even men working in relatively distant towns like Elath and Sharm al-Sheikh could return home every month or two. Men who worked closer to home, in government service or work projects, or building wells and houses for other Bedouin, could return home almost daily or at least weekly. In that time the standard of living rose about threefold, and Bedouin became accustomed to new foods, such as biscuits and canned meat and vegetables, as well as new manufactured goods. Produce from their orchards therefore played a smaller part in their economy. Only a handful of men went on working for the monks of Saint Catherine's. Many of them had spent decades in the service of the monastery, and stayed on because work there seemed to remain secure for life, and therefore they grudgingly accepted the low wages.

Yet practically every Bedouin, no matter how large or secure his income, owned orchards and a small flock. Perevolotsky's (1981) survey of orchards in the mountains showed that 170 Jebaliya men owned 220 out of a total of 405 orchards. All the adult men encountered in the survey owned at least one orchard, and over 40% owned two or more. Only some of the young men were still dependent on their fathers and did not yet own orchards, while some men had sold theirs, but were about to construct or acquire new ones. My own inquiries show that almost every Bedouin owns a flock averaging 10 goats and a sheep or two. Only among the Jebaliya, there are a few men who rely mostly on orchards and do not raise animals.

Bedouin claim that they invest labor and money in orchards and flocks without getting an adequate return. Owners of flocks even argue that they lose money on them, because they have to feed them grain during 4 to 6 months every year. Yet they confirm that in the past, before the Israeli occupation, they obtained a considerable part of their food from the sale of fruits, besides consuming some of the fruit themselves. They used to sell fruit, especially a late variety of pear called *shitwi,* in the markets at al-Tur, Suez, and Cairo, and with the proceeds obtained a year's supply of grain.[2] Similarly they claim that in the past they led a more nomadic way of life, did not feed their animals with grain, and subsisted on their flocks. The flocks were larger in those times; 50 to 60 animals were the minimum required for subsistence.

[2]Niebuhr (1968, I P. 241) reports the same practice in 1762: "the Arabs living on the western side of Jabal Musa every year bring many dates, grapes, apples, pears and other beautiful fruit to Suez and Cairo," (my translation).

The strategy adopted by the Bedouin is plain. They consider that they live in an insecure world, where work and income may disappear overnight, and in which they must prepare for such contingencies. Therefore, in times of plenty and security they cultivate orchards and raise flocks, which can become alternative sources of livelihood. When the going is good they invest a limited amount of work in the orchards and keep only a small number of animals: that is, they maintain the alternative economy at idling speed. Should the need arise they could work their orchards more intensively and also grow vegetables, and they could rapidly build up their flock. Within a year or two they could fully adjust to the new conditions.[3]

During the period of fieldwork there were two major occasions when such shifts in the economy actually took place. The first was in 1973, in the wake of the Yom Kippur war between Egypt and Israel. At the time most Bedouin men were employed far from home. The war caught them unawares, and for some of them the first indications that something had gone wrong were Egyptian planes flying overhead and bombs exploding. All the Israelis left immediately, and the Bedouin working for them were left on their own and made their way home as best they could. As no transportation was available, they had to walk. One man reported that he joined some other men, and walked for 3 days without sufficient food and water. Only when he was back in the mountains with his family did he feel safe.

Now that all the men were at home there was much visiting among relatives. The 'Araishieh, roving traders from al-'Arish on the Mediterranean coast, who supply food and merchandise to the Bedouin and buy their animals, no longer made their rounds. However, there was sufficient food for the present, for most Bedouin had stored food to last them for 3 months. There was a brisk trade in animals among the Bedouin, as many of them wished to increase their flocks. Prices went up, and several Bedouin turned almost overnight into animal traders. Many Bedouin left the larger settlements, such as that near Saint Catherine's, and pitched tents in small camps closer to pastures. People took a renewed interest in their orchards: they discussed their relative value and reminisced about how in the years before 1967 they had sold their fruit in the markets of al-Tur, Suez, and even Cairo. Numerous people started new orchards and made improvements in old ones. Some tried to acquire new gardens, but none were for sale. It took several months before the food supply and services were fully restored and wage labor again became available. Only then did the Bedouin's concern with flocks and gardens become less intense.

The Bedouin reacted in the same manner to the Israeli evacuation,

[3]A similar situation seems to prevail in Omani oases (see Zimmermann, 1986).

which proceeded in several stages from 1977 to 1982. But this time they also took care to ensure their continued possession of plots of land in the oases of Dhahab and Nuweb'a. They assumed that the thriving vacationing centers set up there during Israeli rule would now be run by Egyptian entrepreneurs. Before the Israeli occupation, Bedouin had frequented these oases for the date harvest in late summer, and some had at those times engaged in fishing. The holiday villages set up by the Israelis provided opportunities to earn money, and more and more Bedouin settled permanently in the vicinity. As the population grew, land became scarce, and the occupants of sites became concerned about their rights. They marked boundaries with barbed wire fences or even stone walls, and created documents of ownership by arranging fictitious sales of plots to one another. In order to reinforce their claims of ownership before the Egyptian authorities came back, they hurriedly built houses or wooden huts on their plots. These activities accelerated as the date of evacuation approached. In the end, the Egyptian authorities did not contest the Bedouin's claims of ownership; for the time being they did not expand the holiday villages and therefore did not require the land. Many Bedouin left the oases, without relinquishing their claims of ownership and returned periodically to inspect and maintain their houses. While returning to work in the basic economy they now claimed a stake in the conjectural economy that might once again flourish.

The Development of an Oasis

A Jebaliya orchard is a man-made oasis. It is laboriously carved out of the desert, and its construction often extends over several years. First the Bedouin chooses a site, usually in a valley where members of his subtribe have already laid out orchards. Any land in the tribal territory that is not already occupied is available to him. Bedouin do not claim ownership of the land itself, for there is plenty of it. Only cultivation bestows rights to the land: a well, walls, and trees belong to the individual who made or planted them and pass on to his male descendants. Only when the property is in ruins and completely abandoned can another person establish himself on the site. As an orchard deteriorates slowly, there may arise doubts as to whether it has been relinquished or not. It may not have been worked for many years. Yet as soon as someone tries to take it over, old claims may be revived.

The next step is to dig a well. Bedouin have a good idea of where groundwater can be tapped. They look out for the vertical dark stripes on rocks indicating geological dikes, for long, gradual slopes, and for patches of dense vegetation. They prefer to dig the wells near the edges of the

valley, so as to prevent the silting up of the well by flash floods. The digging of wells is always a risky business. One may dig a few meters and reach the bedrock, or dig a deep pit without reaching water. Several attempts may be made before water is found. This is considered the most expensive stage in the construction of an orchard. Sometimes the male members of a family will do the work collectively, especially when they hope to strike water at a shallow depth. The construction of deep wells, often up to 10 or 12 meters deep, is left to experts, who are invariably Jebaliya. The financial reserves of a family may well be exhausted by the time the well is completed, and they may wait several years before attempting the next steps.

The next stage is the construction of a rectangular enclosure around the future orchard and the well. Walls of dry stone construction are built to prevent animals from entering and to mark the boundaries of the property. Then the land is leveled, and the topsoil is mixed with clay from the mountainous slopes or soil from ancient habitations. A counterbalanced water hoist (*shaduf*) is built over the well. Only then can the garden be cultivated.

The trees and vegetable patches must be tended all year round. In summer they are watered twice a week, and in winter once in two weeks, on the average. Watering is a full day's work, but can be done by any member of the household who can spare the time. The journey to the orchard up in the mountains may take anywhere from 1 to 3 hours. Watering may take an hour or more of energetic work, but it is usually done at a leisurely pace and connected with additional activities in the orchard. Then comes the long return journey.

During the hot summer months many families stay in their orchards in order to enjoy the cool breezes and to consume the home-grown fruit and vegetables. They do not consider these to be important items in their diet, but rather as tasty additions to it. Watering, of course, is at these times no longer a heavy chore. The stay in the orchards is viewed as a summer vacation, a treat to look forward to.

The orchards, then, are constructed and maintained at considerable expense and effort, but while wage labor is abundantly available, orchards are viewed as sources of enjoyment, and not as productive resources. They come into their own when conditions deteriorate and people are out of work. Then the returning men cultivate them more intensely for food, and generally produce a surplus, which they sell in urban markets.

The Importance of Oases

Toward the end of summer, in August and September, there is no more fruit left in the orchards, but the dates in the oases are ready for

harvesting. Now people leave their orchards in the mountains, as well as their places of work, and congregate in large numbers in the major palm oases, in Wadi Firan, Dhahab, and Nuweb'a. In each oasis 300 households or more may gather. The migrant workers reunite with their families and visit their relatives and friends. Only a handful of families remain in the mountains to take care of the orchards.

All the members of a household, as well as relatives and neighbors, take part in the date harvest. When wage labor is plentiful, the dates, like the produce of the orchards, are described as sweets (*halawa*), and are not treated as a staple food. This tendency is perhaps reinforced by the patterns of ownership. Few people own complete palm groves; most people do not own more than a few trees. In addition, they hold shares in numerous palm trees in various parts of the peninsula. When a man dies his palm trees are divided up among his male heirs. When several persons have claims on the inheritance, rights in trees may be divided up among them. Each of them is then said to own a portion (*qarat*) of the tree. The portions are stated as fractions of 24; the unit (i.e., a tree) is said to consist of 24 parts. Thus most people own shares in palm trees in locations all over the peninsula, and do not consider it worth their while to invest much effort in the cultivation of the trees. Many do not bother to collect their share of the fruit, and donate it to relatives who happen to camp in the vicinity of their trees. They are satisfied with being served dates when visiting the relatives. Shared ownership thus turns the trees into foci for kinship links; the relationships are reaffirmed annually at the date harvest. The joint owners of palm trees tend to meet at harvest time. When inspecting the trees they own in various locations, they ipso facto make the rounds of relatives. Although they may have seen the men only recently at work, here they meet them in their family circle, in the sociable atmosphere of mutual visiting and food-sharing among the many relatives gathered in the oasis.

Some orchard and palm grove oases have in recent decades developed new features. Smuggling of narcotics interested the Sinai Bedouin since the beginning of the century (Dumreicher, 1931, p. 204; Russell, 1949, p. 272), and some of the orchards located in relatively inaccessible locations in the mountains served as hideouts for bands of smugglers. Some of these retreats were created from scratch, even when ecological conditions were not ideal. The South Sinai Bedouin are a link in a multinational network of drug distribution, especially hashish and opium. Apparently the drugs usually originate in Lebanon, and are routed through Jordan and Saudi Arabia, across Sinai, into the Nile valley. On their way over the mountains, the drugs crossed the territory of several tribes who either shared in the transportation or collaborated in other ways. It was therefore in the Bedouin's interest to preserve peaceful relations between the tribes. In between

hauls, there would often be months of inactivity. The smugglers would spend them in their mountain retreats, away from prying eyes. The leaders of smuggling rings and their henchmen planted small but intensively cultivated orchards, which often included varieties not commonly found in the South Sinai mountains, such as mandarine, tangerine, plum, and avocado. They were keenly interested in introducing new varieties. The aim was to spread the supply of fruit over the longest possible period. In the 1950s smuggling became a major source of income, and there were times when it provided about 30% of the aggregate income of the South Sinai Bedouin. This led to further investments in these oases. The entrepreneurs invested a great deal of money in diesel engines and pumps, in order to make irrigation less arduous.

Bir 'Oqda and Bir Zrer are good examples of this type of oasis. In the early 1970s, the population in Bir 'Oqda rapidly declined, and most of the 20-odd households moved to Dhahab on the coast. In former years they had gone to Dhahab in the late summer, to enjoy the breeze and supplement their diet with seafood, and wait for the date harvest. Around October they used to return to the mountain village. Now they simply stayed on in Dhahab. Only a few men made short trips to Bir 'Oqda, where the water pumps fell into disrepair and the fruit trees dried up. They explained the situation in ecological terms: the water sources in Bir 'Oqda were not as copious as they used to be, and therefore the yield of their fruit trees was dwindling. There simply was no point in cultivating the oasis. But another explanation may be more relevant. From 1970 onward, the smuggling of narcotics to Egypt had stopped almost completely. Therefore the hideout was no longer required and men saw no reason why they should invest more resources in the construction of new wells and in improving the orchards. The big operators were still hoping for conditions to change, and hanging on to their orchards. In the meantime, they lived on their often quite substantial hoarded savings. Other men who could not hold out so long became labor migrants like the rest of the male population. From time to time they returned to Bir 'Oqda to look after their orchards and to postpone what they considered to be the inevitable demise of the oasis.

The inhabitants of Bir Zrer responded differently to the changed situation. A new highway from Elath to Sharm el-Sheikh, constructed by the Israeli administration, passed close to their village. They built a track to the main road, invested money in trucks and pickups, and became involved in transporting migrant workers and tourists. The population of the village actually grew.

The new-found wealth from smuggling also transformed the larger palm oases, especially the central oasis in Wadi Firan. Here, too, mechanical

pumps were installed. More Bedouin now resided permanently in the oases; they cultivated the palms and grew vegetables under the trees. One outcome of the new situation was that the water level in the oasis gradually fell. In consequence the wells had to be sunk deeper and became more expensive to maintain. The shallower wells downstream dried up and only wealthy Bedouin could afford to carry out the required improvements. The poorer Bedouin moved out of the palm groves into the vicinity of perennial wells upstream. The trend of oasis society to become ever more exclusive ended, however, under the Israeli occupation, when wage labor became plentiful and almost all the men became involved and earned good wages. Now every owner of an orchard could afford a motor pump, and the downward spiral of declining ground water levels and ever deepening wells accelerated.

The increased flow of money boosted the development of another type of oasis, where vegetables were grown commercially. The major example is Tarfat Qadren, a village on the main track from Wadi Firan to Saint Catherine's monastery. Until the middle of the twentieth century the site was uninhabited, although the existence of tamarisks (*tarfa*) indicated that ground water ran close to the surface. E.H. Palmer describes it in 1868 as "a fine grove of tamarisk trees" (1871, p. 48). The first well was sunk in 1938 by a member of the Jebaliya (Ben-David, 1981, p. 76). But only in the early 1950s, when smuggling was at its height, did more people take up horticulture. In the 1970s, when smuggling became impossible, but the income from migrant labor increased rapidly, some men began to grow vegetables and tobacco in commercial quantities for Bedouin consumers. While the area of ordinary orchards ranged from 1 to 2 dunams (1/4 to 1/2 an acre), here the plots ranged from 2 to 20 dunams (1/2 to 5 acres), and most of the 18 owners settled permanently in their gardens (Lida, 1979, p. 28). There were few farmers elsewhere who grew produce for sale, and here too they could do so only as long as Bedouin earned enough money from wage labor. Once this source of income dried up, Bedouin would once more grow produce for home consumption and sell their surplus fruit in urban markets. Then Tarfat Qadren would become a cluster of orchards like any other: only part of each garden would be maintained as a reserve to fall back on in time of need.

When Dhahab and Nuweb'a and, to a lesser extent, Wadi Firan, became permanently settled in the early 1970s, and the scramble for privately owned plots of land began, people planted palm saplings on 'their' land. Now they sought to grow their own palm trees, which were to supply them with a staple foodstuff. These trees were carefully cultivated and watered regularly. They became part of the basic economy that was to sustain their owners in the event of an economic setback or political upheaval. In this sense, their function was similar to that of the orchards in the mountains.

CONCLUSION

In South Sinai, then, oases are tracts of land, which are cultivated for a variety of reasons. They are man-made, in more than one sense. First, men select them for cultivation in preference to other tracts which might have been equally suited for cultivation. The locations are chosen mainly on social grounds, and not so much on the basis of their natural endowments. Second, the choices become 'rational' when viewed as elements in the Bedouin economy. The oases as such must not necessarily be profitable; they just play their part in the Bedouin's conception that they need an economic reserve. As the oases do not in themselves provide sustenance, they do not attract a permanent settled population who might in the course of time be categorized as a separate "ethnic" category of oasis dwellers. And third, the oases are literally made and maintained by men. Countless abandoned sites, some dating back to prehistory and some to recent times, testify to the fact that whenever men cease to cultivate oases they revert to desert (Birks & Letts, 1977). Land values, too, are determined by complex social conditions. Neither the amount of labor expended in the construction of orchards, palm groves, or dwellings, nor the market price of the produce or the natural qualities of a site determine the land values to the same extent as people's appraisals of political and economic conditions. The amount paid for an orchard is always based on its potential yield in an emergency, when it is cultivated intensively. Nevertheless, it is true that prices oscillate around this estimate. When conditions become unsafe and unstable, and labor migrants gravitate homeward, prices tend to go up; when the crisis is over and people return to work, they fall again.

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