

# Commission on Nomadic Peoples

“The Raika Dromedary Breeders of Rajasthan: A Pastoral System in Crisis”

Ilse Köhler-Rollefson

Nomadic Peoples, Number 30, 1992

The Commission on Nomadic Peoples of the International Union of Anthropological and Ethnological Sciences (IUAES) is collaborating with the Ford Foundation to digitize, preserve and extend access to the journal of *Nomadic Peoples*. For more information regarding the journal *Nomadic Peoples* visit the Commission on Nomadic Peoples website at [www.nomadicpeoples.info](http://www.nomadicpeoples.info) and the Berghahn Books website at [www.berghahnbooks.com](http://www.berghahnbooks.com)

# The Raika Dromedary Breeders of Rajasthan: A Pastoral System in Crisis

*Ilse Köhler-Rollefson*

The Raikas of Rajasthan herd sheep, goats and camels and are the predominant pastoral caste of western Rajasthan. Although only a minority of them are specialized camel breeders, the dromedary plays a central and identifying role in their culture. The Raikas are the most eastern representatives of dromedary pastoralism and their utilization pattern differs strikingly from that reported for other camel pastoral cultures. They almost totally ignore the food potential of their camels and the prime rationale of their pastoral system is the production of male camels for the draught animal market. Other products such as milk and wool are of very little significance, and the slaughtering of camels for meat is absolutely forbidden. This article describes their camel breeding and management patterns, and focuses on the dilemma currently inflicted on the Raikas by the diminishing of the common property resources that are a prerequisite for their economic survival.

## Introduction

Dromedary pastoralism reaches its most eastern extent in India, which has the third largest camel population in the world. The majority of India's 1.1 million camels are found in its most western state of Rajasthan (70.13%), with much smaller percentages in Haryana (11.22%), Gujarat (6.96%) and Punjab (5.94%) (Khanna et al., 1990). The Indian pattern of camel utilization differs notably from that practised in other countries; camels are used almost exclusively as draught animals, and their food potential is largely ignored (Köhler-Rollefson, 1992).

Rajasthan lies at the eastern extremity of the Old World Arid Zone Belt. Within the arid and semi-arid part of Rajasthan, annual rainfall varies from 100 mm in the Jaisalmer area in the extreme west to 450 mm at its eastern boundary which is the Aravalli mountain range. Rainfall occurs mostly during the monsoon months from July to September. With 48 persons and 80 heads of livestock per km<sup>2</sup>, the Great Indian (Thar) Desert was by the 1970s supporting a higher density of human and livestock populations than any physically similar area in the world, (Dhir, 1982). Human and livestock popu-

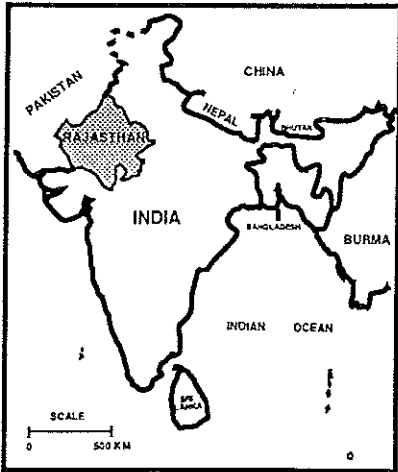
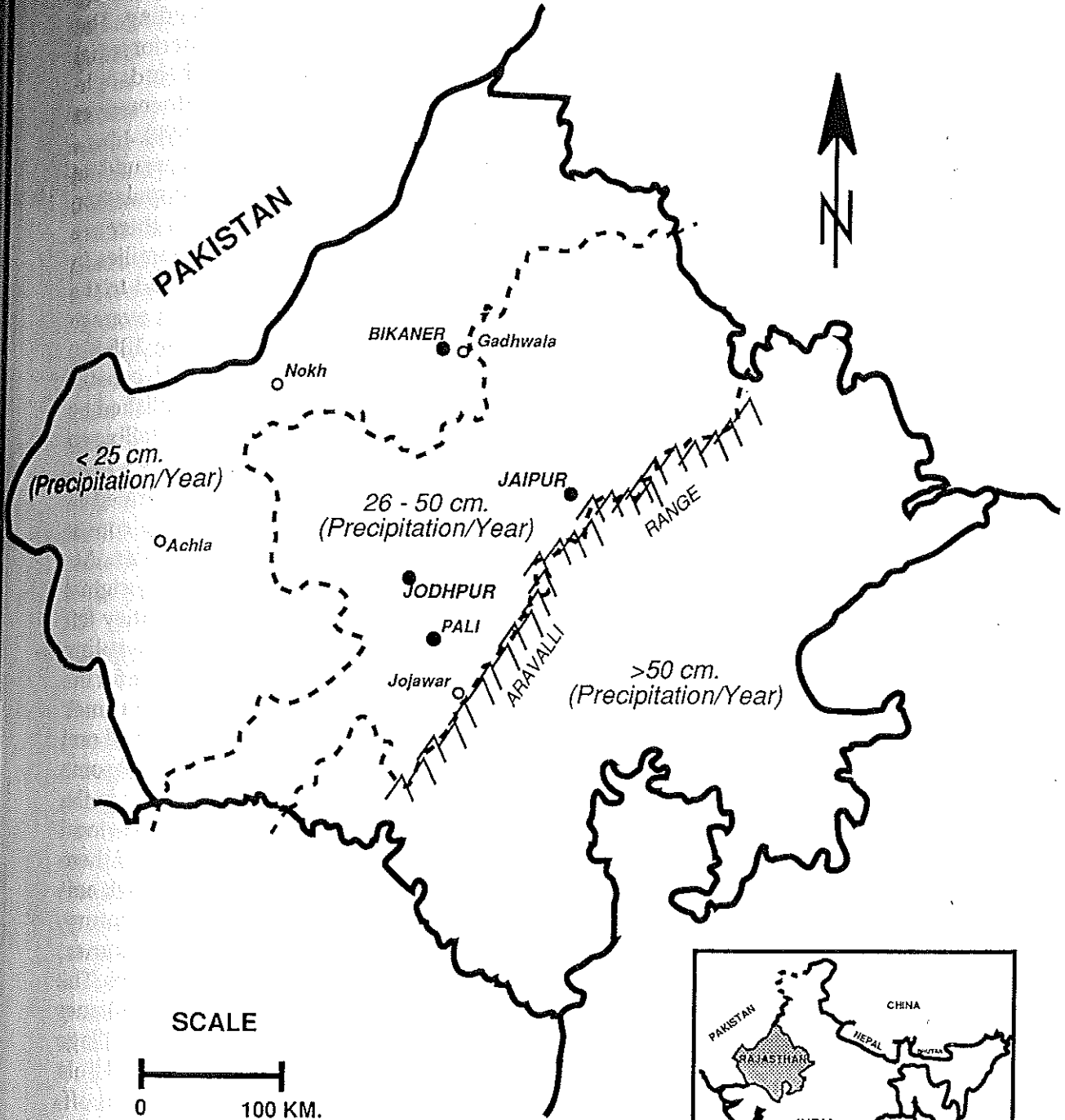
lations have further increased since then; in fact, the population growth rate in the arid parts of the state is higher than in Rajasthan as a whole and significantly above that of India as a whole (183% in the arid zone versus 150% in Rajasthan state, and 132% in India, from 1901 to 1972; Jodha, 1986).

Pastoralism represents the dominant economic activity, and livestock consists of goats, cattle, sheep, water buffalo, and camels, in descending order of numbers. Dromedaries represent an integral facet of Rajasthan's rural scene, being indispensable for the transportation of goods and people especially between the isolated villages in the west. These animals have been described as the lifeline of the rural population. In addition to pulling carts, they also represent the most energy- and cost-efficient means of ploughing in sandy soils; they power wells, and are used for threshing (Khanna and Rai, 1989). Ownership of a camel plus cart enables a person to earn a living by hauling a wide variety of loads, such as fodder, fuelwood and bricks.

While many peasants own one or two working camels, the large-scale breeding and supply of camels to the rural population is the traditional domain of the Raika

Map 1.

# LOCATION OF PLACES MENTIONED IN TEXT IN RAJASTHAN



CREATED BY RICHARD BARON, 1992  
CESAR, DEPT. OF GEOGRAPHY  
SAN DIEGO STATE UNIVERSITY  
(Used Adobe Illustrator)

caste, who keep large herds of 100–200 or even more camels. Members of other castes, such as Rajputs and Jats, also frequently own some breeding stock, but usually place it in the care of the Raikas. In the area close to the border with Pakistan, some Sindhi Muslims also have large herds of camels.

Very little has been written about the Raikas of Rajasthan. There are a few references to them in the British Gazetteers, and a short study of their ethnography and oral traditions has been conducted by Westphal-Hellbusch and Westphal (1974). A more comprehensive study of their social structure is in progress by Srivastava within the context of his Ph.D. thesis. The present article is concerned mostly with the relationship between the Raikas and their camels; it argues that although there is a strong demand for the camels they produce, it is becoming virtually impossible for them to make a living from this enterprise. At the core of the problem is the decline in grazing resources caused by a diminishing common property resources and overgrazing of the remaining pastures, compounded by general population pressure. As a result the Raikas are losing their traditional source of income to members of the cultivating castes whose agricultural holdings allow them to breed camels more profitably.

## The Raikas

The Raikas represent the predominant pastoral group of western Rajasthan. They are also called Rebaris<sup>1</sup> or Dewasis<sup>2</sup>, but in Rajasthan Raika<sup>3</sup> seems to be the most frequently used term. They engage in sheep, goat, and camel breeding, and have traditionally herded and taken care of the livestock of other castes as well. Although relatively few Raikas are specialized camel breeders, the community as a whole identifies itself closely with this animal. According to their myth of origin, the first Raika was created by Lord Mahadev (the god Shiva) for the specific purpose of looking after the first camel that his consort Parvati shaped from clay. The popular epic of the

Rajasthan folk hero Pabuji holds that a Raika named Harmel was instrumental in introducing the camel to Rajasthan. The camel is also an essential component of Raika wedding rituals. The Raikas are divided into two groups, the Maru and Chalkia, of which only the Maru engage in camel breeding. The Maru are considered to be of superior social status since they do not allow their daughters to marry Chalkia men, while themselves taking Chalkia brides (Singh, 1990).

Although there are no recent census data available on the size of the Raika population, according to their own estimates there are currently about 200,000 Raika families in Rajasthan.<sup>4</sup> This would correspond to the number computed by projecting average population growth rates on the 135,820 Raikas counted during the 1931 census, when population data were established by caste for the last time (Westphal-Hellbusch and Westphal, 1974:256).

Most of the Raikas are concentrated in the area around Jodhpur that once constituted the princely state of Marwar. According to their caste traditions their original home was the Jaisalmer area but they left there because of a dispute with the ruling family. There is no concrete evidence for the origin of their association with the camel. By piecing together historical data and oral traditions it seems likely however, that some of the Raikas took up camel breeding in the 14th century to supply these animals to local Maharajahs and Rajahs who required them in large numbers as mounts and pack animals for desert warfare. In the 18th century, the Maharajahs of Jaisalmer, Bikaner, Jodhpur, and Jaipur all had camel corps. The breeding camels of the Maharajah of Bikaner were looked after by the Raikas of the village of Gadhwal. In 1914 this State Camel Tola still consisted of 1,819 she-camels and offspring plus 44 breeding males (Administrative Report for Bikaner, 1914–1915), although it was dissolved not much later. The camel herd of the Maharajah of Jaisalmer was in the charge of the Raikas inhabiting the villages of Nokh and Achla. The Raikas of these three villages attest that several

centuries ago their ancestors migrated to their present locations from Jodhpur at the specific request of the local Maharajahs. Some Raikas subsequently outmigrated from these villages and attached themselves to other settlements where their services as camel breeders and caretakers were required.

The Raikas represent something of an anomaly among dromedary pastoralists world-wide insofar as they are basically sedentary and live in permanent habitations (Köhler-Rollefson, 1992). As one of the many specialized occupational castes that compose the rural society of Rajasthan they tend to live on the outskirts of villages in a separate *dhani* or *bas* (colony). These *dhanis* usually consist of between 4-20 families, but may be more, as in the case of Jojawar whose *Raika ki dhani* is composed of 80 families. Only recently has lack of grazing resources forced many of them into long-distance migrations. However, even now most of the family members remain in the villages and camel herds are accompanied only by some of the younger men.

### Camel Utilization

The rationale of the Raika camel production system is to supply male animals for the draught animal market. Demand has been rising during the last few years and prices have also increased; although no statistics on camel prices are available, this price increase is confirmed by everybody concerned. The popularity and demand for camels as draught animals is indicated by the success of a state-sponsored loan programme for the purchase of camels and carts which resulted in higher income increases for those participating than any other poverty alleviation programme (Desai, 1988).

The demand for camels is confined, however, almost exclusively to male camels which are much preferred as work animals on account of their greater strength. As a consequence, they fetch much higher prices than females for which there is not much of a market. At a recent Raika caste meeting, it

was agreed to prohibit the sale of all female livestock, but this rule is probably not generally adhered to, since there were nonetheless a large number of female camels for sale at the Pushkar fair in 1991, of which only a few, however, were bought. This situation is in stark contrast to other camel-breeding areas of the world where it is usually impossible to obtain any female animals. Camels are mostly marketed at the big fairs, such as at Pushkar, Nagaur and Tilwara. Breeders from areas with acute pasture shortage sell their male camels as early as possible, from the age of 6 months onwards, whereas others prefer to keep them until they fetch top prices at the age of 4-5 years.

The second most important product is probably wool which is shorn in spring, usually at the time of the Holi festival in March. It is spun by Raika men and then given to members of the weaver caste (Meghwal) who manufacture blankets and rugs from it for the domestic use of the Raikas. The wool can also be made into jackets, charpoys (string-beds) and ropes. Camel wool is not usually sold, although it is not clear whether this is because of social restrictions or because there is little profit to be gained from it.

Camel milk is used only sporadically, although there are some exceptions. Some Raika families might keep one lactating camel near the house to provide for household needs. Many camelbreeding Raikas also own a couple of buffalo or cows to supply them with milk, but in some cases they prefer to sell the milk of these animals and use camel milk for themselves. By milking a domestic camel three or up to five times a day they can obtain up to 10 litres of milk. While on migration, the herdsmen usually subsist on camel milk for weeks on end. (Their entire equipment in such circumstances consists of a milking bowl, a blanket and a rope, and since they are not usually in possession of cash, they depend on camel milk for subsistence, unless a friendly landowner offers them a meal.) The sale of any animal milk is prohibited in one

of the ten rules that govern Raika society. Common sentiment holds that milk is a gift of god, and if there is more than needed, it should therefore be given away for free. Selling milk is sometimes equated with selling children. These traditional rules are nowadays not followed as strictly and, although camel milk is not marketed, the milk of other animals often is.

Camel milk is sometimes boiled and sweetened with sugar or made into rice pudding, but never processed into curds or into butter/ghee, and it is difficult to determine the reasons for this situation. In some regions, such as Godhwar, there appears to be an explicit taboo against turning camel milk into curds and even the suggestion of it is viewed with fear and suspicion. According to one story, a curse was placed on churning camel milk; according to another version Pabuji recommended that camel milk should not be processed, since it was more effective against disease in its original state. In other areas the consensus appears to be that camel milk does not have the right properties for being processed. According to one Rajput in the Jaisalmer area, at the time of a drought in 1937 during which all the cattle died, people attempted to make curds from camel milk, but without success.

There is an absolute taboo against the killing of camels and the eating of camel meat. Indian camel pastoralists are unique among camel breeders in the world in their uncompromising attitude in this matter and the origin of their attitude is difficult to determine. Although it seemed likely that such a restriction could be ascribed to the Hindi beliefs of the Raikas, several Sindhi Muslim camel breeders interviewed also stated that they refrained from eating camel meat. It is often said though that some "low caste people" scavenge the meat of camels which have died a natural death.

Camel dung is systematically collected by those Raikas whose herds return to the settlements overnight. It is regarded as a good fertilizer, superior to cattle dung, although it takes upto 3 years to decompose

and attain its fertilizing effect. Camel dung is also highly regarded as fuel and marketed in some areas.

## Camel Management

The current camel herd management patterns of the Raikas are extremely diverse, varying from free-ranging for most of the year at one extreme, to continuous closely supervised herding at the other. The ecological setting and the degree of competition from other land use strategies determine which particular herding system is adhered to. In the extremely arid and sparsely populated most western parts of Rajasthan where hardly any agriculture is practised, camels can be left to themselves for most of the year. Many of them return at regular intervals to the villages for water, but they can also range several hundred kilometres from their owner's home. The Raikas are able to keep track of their movements, because they can identify the footprints of each of their camels, and a well-functioning information network on the whereabouts of individual animals seems to exist (Srivastava, 1989). This network reportedly extends even across the border with Pakistan, with the Border Security Force aiding in the retrieval of stray animals. In addition, camels can also be identified by brands.

Even under these extensive management conditions, it is usually necessary to collect camel herds during the 3 months of the rainy season (July to September) to prevent them from damaging crops. Most, but not all, herders also like to supervise their camels during the breeding season which traditionally falls between the two Hindu festivals of Diwali (around November) and Holi (around March), in order to control who sires the offspring of their females and to prevent fights between competing males.

In the semi-arid districts of central Rajasthan where irrigated agriculture has expanded significantly in the last decades (see below), camels have to be kept under constant supervision. Smaller herds (upto about 30 camels) can sometimes be accom-

modated by feeding off the trees and on the fields around villages, returning to the homestead of the owner every night. But because of the drastic decline in common property resources since the early 1950s it now requires complicated arrangements and presents tremendous difficulties to support larger herds. In the past, pastoral herds were often welcome to graze and thereby fertilize fallow or already harvested fields, but lately competition for these patches has become so severe, that there are often bitter fights among individual graziers or between land owners and herders, that on occasions have ended fatally. The situation has been compounded by the recent closure of the Aravalli Range, an area which was formerly the main summer grazing ground for the Raikas of Godhwar, but has now been earmarked for development as a wildlife park and for reforestation. It was closed for grazing by the central government in early 1990 without advance notification to herd owners, who were threatened with the seizure of their livestock when they inadvertently entered the area in July of that year. Following intervention by the Rajasthan State government 25% of the Aravalli Range were soon reopened, but pastoralists still complain about the fairly substantial grazing fees and the frequent bribes they are asked for.

The situation is especially severe in the village of Jojawar (Pali district) whose Raikas are widely known for their skills in camel breeding, and who in the 1920s still owned 10,000 camels. These camels grazed in the vicinity of the village and only during the rainy season were taken to the nearby Aravalli Range. In the words of the Raikas of Jojawar, "there was a time when camels were lost and we never even tried to find them". Today, the Jojawar Raikas own a total of less than 2,000 camels. These herds have become totally divorced from the village and return there only for one annual visit at Holi for shearing; during the rest of the year they migrate. The reasons for the decrease in camel numbers were firmly stated by the Jojawar Raikas as "lack of grazing" and

"disease". Despite repeated attempts it was not possible to elicit whether this development is due to their active intervention (by selling female breeding stock) or circumstances beyond their control (decimation due to starvation or epidemics, and stagnation of reproductive activity).

For most camel herders (as for sheep breeders, c.f. Bharara, 1989; Kavoori n.d.; Salzman, 1986) one solution, albeit unsatisfactory, to the pasture problem has been to take their animals into the adjoining states of Madhya Pradesh, Harvana and Uttar Pradesh where large expanses of uncultivated shrub-covered land are still available. Here they face the understandable scorn of the tribal population. These areas are also inherently unhealthy for camels because of their high humidity and infestation with biting flies that transmit trypanosomiasis, a camel disease which has a drastic impact on productivity.

### Breeding Practices

The Raikas are astute animal breeders who keep careful track of their camels' pedigrees and memorize their ancestry over seven or eight generations. There are certain famous bloodlines which are regionally known. The Raikas are careful to avoid inbreeding and change their herd sire every 4 years. The selection of the breeding bull is made with great care and many factors are evaluated, such as food temper, strong body build, colour (red and brown are preferred), the milkyields of female relatives etc.. They also profess to look for bulls that sire a high proportion of male offspring. In their opinion it is the sire who is mostly responsible for the qualities of the offspring, the females playing only a passive role.

Since the Raikas do not buy camels, the main mechanism for the exchange of breeding stock is marriages at which a certain number of camels usually change hands as dowry payments. The Raikas have marriage relations only between certain villages and one can therefore conclude that these reciprocal transfers of camels have

consolidated the genepool and led to the development of several quite distinct local breeds. Especially famous are the reddish-coloured Bikaneri, a multipurpose camel, and the swift and long-limbed Jaisalmeri camel; in addition there are the dark brown Marwari, and the whiteish heavy-boned Mewari. The Ramthalia used to be a famous riding strain bred in some villages in the Barmer area.

### Ethnoveterinary Knowledge

Since modern veterinary treatment is difficult to obtain, the Raikas continue to rely on a wide range of traditional techniques and medications to keep their animals healthy. The types of treatment and remedy vary tremendously not only regionally, but from village to village and from one healer to another. Even taking local differences in resource availability into account, the variety of therapies in use is bewildering, and it is difficult to arrive at a classification. For all camel diseases the most common rejoinder is probably to worship at the shrines of Pabuji or other local deities.

The most economically significant disease is trypanosomiasis or surra (*tibursa*, *galtiya*) which appears to be the curse of camel breeders in the semi-arid zone, although in the arid parts of Rajasthan it becomes a problem only when unusually heavy rains fall. This disease is transmitted by biting flies and the Raikas diagnose it from the smell of the urine, a practice that is also widely known among African camel pastoralists (Köhler-Rollefson, n.d.) and quite reliable according to the camel authority Leese (1947). Most Raikas state that indigenous remedies are not effective against the disease, although one Raika recommended oral treatment with a suspension of the ashes of *Colocynthis* (*tumba*) and salt in water. Unfortunately, western trypanocides are currently not available in Rajasthan, a situation that is causing a lot of frustration among camel breeders and leading to a large number of losses.

The second health problem of camels is mange (*pom*) which leads to deterioration in condition and not infrequently to death. It is widespread and in some herds all the animals are infected. The usual treatment consists of rubbing the affected parts (often the whole animal) with burned diesel oil or with a mixture of DDT and whey. The pulverized bark of the rohira tree (*Tecomella undulata*), mixed with whey, is also used. Western treatments such as Ivomectin are available, but at a prohibitive cost for most herders.

The third most frequently mentioned disease is ringworm (*tikriya*, *dad*) which is treated with an application of burnt cow dung, followed by ghee.

### The Shortage of Grazing Grounds

The rising demand and price for draught camels in rural Rajasthan notwithstanding, it is somewhat paradoxically becoming increasingly difficult for the Raikas to eke out a living from the breeding and supplying of these camels. Although according to live-stock census data the number of camels in Rajasthan has been increasing (Khanna et al., 1990), the Raikas that were interviewed during this study and which represented the Bikaner, Pali, and Barmer districts of Rajasthan. All reported significant reductions in their camel herds over the last few decades. This decline in herd size was unanimously attributed to the shortage of grazing and the problems of providing adequately for the nutritional needs of the camels.

The Raikas have always depended on common property resources such as community pastures, forests and wastelands for supporting their camels and other livestock and, in the semi-arid area, access to harvested and fallowed fields. There has been a severe decline in all these different types of fodder resource. The circumstances behind the decrease in Rajasthan's common property resources were detailed by Jodha (1986). With Rajasthan's land reform acts in the early 1950s, the bulk of previously



feudally owned land was distributed to landless peasants, and 3.4 million ha of common property resources became available for crop cultivation, leading to an almost 50% increase in the land under agriculture. According to another source, Rajasthan's common property resources declined from 11.3 million ha to 7.6 million ha between 1956 and 1987 (Venkateswarlu, 1989).

Concurrently, the spread of irrigated agriculture, making it possible to grow two crops per year, reduced the amount of land available for post-harvest grazing. For instance in Pali district, the area under double cropping was 20,000 ha in 1956-57, and 48,000 ha in 1977-78 (Malhotra et al., 1983).

There is overwhelming evidence, although this is difficult to demonstrate with figures, that the remaining pasturelands have been overgrazed and are much less productive than previously. Jodha (1986) attributes this in part to the elimination of grazing taxes which in the feudal days had prevented indiscriminate grazing. But it is probably more to the point that the stocking density increased from 33 to 57 adult cattle units per km<sup>2</sup> between 1956 and 1987 and that desertification is estimated to affect 20% of the arid part of Rajasthan (Venkateswarlu, 1989). The degradation of brush and tree vegetation within their lifetime is indeed frequently commented upon by Raika elders (Srivastava, 1990).

The Raikas, who as pastoralists were not eligible to receive any land during the land reforms of the 1950s, remain to the present day essentially landless, and are thus at a severe disadvantage on all accounts. Since private landownership is impossible to attain, their livestock represents their only asset, but the reduction of common property resources makes it impossible for them to provide for their animals. Wherever the Raikas take their herds to graze, they face the antagonism of landowners, forest officials, competing animal herders or the tribal population. Many of them are forced to sell their camels immediately after weaning, at an age at which they fetch very low prices. These animals are usually bought by peo-

ple with some agricultural land who are in a position to fatten them up on crop by-products and resell them, sometimes after only a few months, at considerable profit.

## Health Status of Camel Herds

As a consequence of pasture shortages, the nutritional condition of many Raika camels is dismal and this predisposes them to infection and disease. A brief survey of camel herd health was conducted in November 1991 in Pali district where pasture is especially scarce. In all herds, at least 50% of camels were infected with mange, in some cases the proportion was as high as 75%, or even 100%. Similarly, the Raikas, basing their diagnosis on the smell of the urine, proclaimed 50% of their animals to be infected with trypanosomiasis. They were especially concerned about an unprecedented rise in abortions during the past year. In some herds, all the pregnant females had aborted, usually shortly before they were due to give birth. The Raikas attributed this to trypanosomiasis infection, but the possibility that some other agent is responsible should not be discounted.

## The Raikas and the Government

The vast majority of the Raikas are illiterate and they seem to regard themselves as helpless victims of the various developments that are responsible for the shrinking of their pastures and consequently undermine the economic basis of their existence. Since they are a very dispersed group they also lack the central leadership required to bring their grievances to the attention of the government. Although there is a caste association, the "All India Raika Samiti", it seems to have little, if any, political clout. There may be hope for change, since the present state government appears, or at least professes, to have a sympathetic ear for their cause. A general assembly of the Raikas held during the Pushkar fair in November 1991 was attended by the Chief Minister of Rajasthan, The Hon. B. S. Shekhawat, and

several other state dignitaries. At this meeting the Chief Minister promised to allot the Raikas pastureland on the banks of the Indira Gandhi Canal. He was presented with a strongly-worded letter in which the Raikas detailed their wishes. Their demands included official recognition of the Raikas as an underprivileged class, a land grant for the establishment of a school and hostel for Raika youths, a quota of jobs for Raikas in the sheep and Wool Department and in the Animal Husbandry Department, arrangements for the payment of grazing fees to the State of Madhya Pradesh, the opening up of the Aravalli Range for grazing, improvement in the distribution of animal medicine, and organizational improvements for mutton and wool marketing cooperatives.

## Conclusion

Camels represent a crucial and, for the foreseeable future, irreplaceable component of Rajasthan's infrastructure and rural economy. The Raikas possess unique and remarkable skills in camel breeding and by supplying them to the rural population provide a valuable service to the wider community. There is also little doubt that in terms of long-term sustainability, pastoralism is ecologically the most suitable means of utilizing the arid and semi-arid parts of Rajasthan, and that camels are the only type of livestock that can exploit the arboreal vegetation that characterizes much of Rajasthan. It would therefore be in the interest not only of the Raikas, but also Rajasthan's rural society at large, to implement measures that would allow the Raikas to continue in their traditional pastoral occupation. This will require concessions and compromises by both the Raikas and the government institutions.

## Notes

<sup>1</sup> The term Rebari does not necessarily refer to caste membership, but was used in Northern India as a generic term for camel men or people knowledgeable about camels. For instance, in the *Ain-i Akbari* it says: "Raibari is the name given to a class of Hindus who are acquainted with the habits of the camel..." (Abu'l-Fazl Allami, p.155).

<sup>2</sup> The term Dewasi derives from the fact that Raika society is governed by ten (*das*) rules.

<sup>3</sup> According to Westphal-Hellbusch and Westphal (1974:267-268) the term Raika was originally reserved only for those Rebaris who served as camel mounted messengers to the royal courts of the Rajputs.

<sup>4</sup> This figure was stated in a letter written by the Raikas to the Chief Minister of Rajasthan on 21 November, 1991.

## References

- Abu'l-Fazl Allami 1965, *The Ain-i Akbari*. Translated into English by H. Blochmann. 2nd edition. Delhi: Aadiesh Book Depot.
- Bharara, L. P. 1989, "Socio-Economic Aspects of Livestock Migration and Pastoral Nomadism in Drought-Prone Areas of Rajasthan", in *Livestock Economy of India*. New Delhi: Oxford and IBH Publishing Co.
- Desai, P. P. 1988, *Financing Camel and Camel Carts for Rural Development Strategies for Credit Flow*. Paper presented at the National Seminar on Perceptions and Potential of Camel Research in India, held in Bikaner, 9-10 Oct., 1988.
- Dhir, R. P. 1982, "The Human Factor in Ecological History", in B. Spooner and H. S. Mann (eds.), *Desertification and Development: Dryland Ecology in Social Perspective*. London: Academic Press.
- Jodha, N. S. 1988, *The Decline of Common Property Resources in Rajasthan, India*. Pastoral Development Network Paper 22c. London: Overseas Development Institute.
- Kavoori, P. S. (n. d.), *Pastoral Transhumance in Western Rajasthan. A Report on the Migratory System of Sheep*. Submitted to Norwegian Agency for Development, New Delhi.
- Khanna, N. D. and A. K. Rai 1989, "Work Performance of Camel", *Indian Journal of Animal Science*, 59(9):1172-1177.
- Khanna, N. D., A. K. Rai and S. N. Tandon 1990, "Population Trends and Distribution of Camel Population of India", *Indian Journal of Animal Sciences*, 60(3):331-337.
- Köhler-Rollefson, I. 1992, "The Raika Camel Pastoralists of Western India", *Research and Exploration*, 8(1):117-119.

## Acknowledgements

This study was funded by a scholarly development fellowship from the American Institute of Indian Studies. Research was conducted in cooperation with the National Research Centre on Camel in Bikaner (Raj.) and I am very grateful for the support of the director of this institute, Dr. N. D. Khanna.

Data for this study were collected between November 1990 and June 1991, and in November 1991. Initial attempts to elicit information from the Raikas were abortive, partly because of their well-known tight-lipped attitude towards outsiders, partly because of problems of communication requiring a two-step process of translation from local Rajasthani dialects into Hindi and from Hindi into English. My luck changed when I met Dr. Dewaram Dewasi, a Raika and veterinary surgeon, under whose tutelage I gained access to the Raika community and who was able to translate directly between Raika informants and myself. I was also very fortuitous in being able to spend several days in the field with Mr. V. K. Srivastava of Delhi University (currently a Ph.D. candidate at the Department of Social Anthropology, Cambridge University) who at the time was concluding his own anthropological study of the Raikas and very generously provided a great deal of helpful information about their ways. Without the kindness, esprit de corps and congenial attitude of driver Mr. H. S. Rathore I would never have reached many of the more remote corners of Rajasthan where the Raikas and their camels can be found. I would like to express my sincere thanks to all the above for their help and friendship.

- a.d., "Traditional Management of Camel Health and Disease in Northern Africa and India", in Mathias-Mundy et al. (eds.), *Ethnoveterinary Research and Development*. London: Kegan Paul. (In press).
- Malhotra, S. P. et al. 1983, *Population, Lands, Crops and Livestock Statistics of Arid Zone of Rajasthan*. Jodhpur: Central Arid Zone Research Institute.
- Salzman, P. C. 1986, "Shrinking Pasture for Rajasthani Pastoralists", *Nomadic Peoples*, 20:49-61.
- Singh, M. H. 1990, *The Castes of Marwar, being Census Report of 1891*. Jodhpur: Books Treasure.
- Srivastava, V. K. 1989, "Raika jati ka vikas: kuch vichar" ("The development of the Raika caste: some ideas"), *Manav*, 17(3):104-110.
- 1990, "In Search of Harmony between Life and Environment", *Journal of Human Ecology*, 1(3):291-300.
- Venkateswarlu, J. 1989, "Strategies for Harvesting Natural Resources in Arid West Rajasthan", *Indian Farming*, 39(7).
- Westphal-Hellbusch, S. and H. Westphal 1974, *Hinduistische Viehzüchter im nord-westlichen Indien. I. Die Rabari*. Berlin: Duncker & Humblot.

**Ilse Köhler-Rollefson** received her Ph.D. from the Veterinary College in Hannover, Germany for a thesis on camel domestication, and is currently Adjunct Professor in the Department of Anthropology at San Diego State University, U.S.A.. She is interested in camel pastoralism from a crosscultural perspective and in the different ways in which camels are applied to the exploitation of the arid environments. She has also conducted research on the Bedouins of Jordan and the Rashaida in Sudan. Her current concern is to help the Raikas find a solution to their predicament.