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East Pokot Camel Husbandry

Michael Bollig

The pastoral Pokot of northwestern Kenya only started to practise camel husbandry to any larger extent this century. Nowadays about one third of the population possesses camel herds. However, even these herds are usually small and a herder with more than ten camels is regarded as exceptionally rich. This paper documents biological data on Pokot camel herds (fertility, mortality, diseases) and summarises information on management practices (herding, milking, veterinary treatment). Finally the use of camels in non-subsistence-oriented types of exchange is described. Camels are valuable assets in bridewealth donations and formalised livestock-friendships, they are a means of exchange in the local market and a currency which can be exchanged for goats or cattle in times of need.

Camel husbandry has been discussed by many development planners working in East African arid and semi-arid lands (ASAL) as a partial solution to ongoing desertification (Stiles, 1983; Hjort, Hussein and Krokfors, 1991; Teka, 1991). The droughts of the seventies and eighties have revealed that cattle and small-stock husbandry are more prone to disaster than camel-based economies are. Given that camel husbandry will spread in East African countries over the next decades to pastoral societies which have so far concentrated on cattle and small-stock, it is of interest to study a pastoral economy where the keeping of small camel herds is combined with cattle and small-stock husbandry (Stiles, 1983; Sperling, 1987). The research on Pokot small-scale camel husbandry, in northwestern Kenya, may be able to forecast trends in other pastoral systems adapting to the camel. This paper intends to outline basic facts on herd ecology, on management practices and consumption demands relating to camels.

Methods

Data on East Pokot camel husbandry was collected over a period of several years. From 1987 to 1989 I undertook 2 years field research on the economy of the pastoral Pokot of northern Baringo District (or Nginyang Division). Inquiries into camel husbandry were an integral part of the research agenda. In 1988 John Young, a veterinarian working

in the area, and I gathered several thousand progeny histories on all the species of livestock herded by the Pokot. Progeny histories consist of a large amount of individual animal life histories, and have some disadvantages. On the one hand it is difficult to give a clear idea of, for example, how many animals died per year, how many were sold and how many were born. On the other hand they result in reliable data on herd ecology and patterns of consumption demands. We collected data on mortality, fertility, diseases and patterns of consumption (i.e. for what reasons animals were slaughtered, sold or exchanged). We paid special attention to camels in order to put an ongoing exchange-programme involving mainly camels on a sound basis. As a follow-up to this statistically oriented analysis we held a number of interviews with Pokot camel-keepers on management problems. These were carried out with either participants of a veterinary project John Young was running, or with core informants of a study on household economy I was undertaking at the same time. Additionally, detailed data were collected on 12 individual camel herds. In the spring of 1991 I spent another month in Nginyang Division to document the effects of livestock diseases which had befallen Pokot herds in 1990/91. Camels were especially hard hit and in some areas there were losses of up to 65 percent. Accordingly a lot of time was spent documenting the spread of the diseases and the way in which

the Pokot interpreted and handled them. In the spring of 1992 I spent a further 6 weeks gathering data on Pokot strategies for coping with drought and interethnic conflict. At the same time I collected information on the size and structure of some 138 camel herds.

History of Camel-Keeping

The pastoral Pokot of the northwestern Kenyan lowlands are not classic camel herders, as are the Somali or the Rendille. Only about one third of all Pokot households in the Nginyang Division—usually the richer ones—possess camels and even their herds are small; about 75 percent of the 138 herds recorded in March 1992 had fewer than ten animals. However, in those households which possessed camels, the animals were important for supplying the family with milk, especially during the dry season. Whereas camel owners still had some milk in the harsh dry season of 1992, most other households did not even have enough milk for tea.

There is some evidence that the Pokot herded camels in pre-colonial times. One clan (*Oro*), which claims ancestry from "the east" (*kongasis*), has the camel as its clan-specific symbol. In their clan-songs they cherish the camel as "their" main herding animal and point out the central place it has in their clan's history (Bollig, 1990a:77-78). The Pokot families with ancestry in the Turkana or in the Rendille ethnic groups—and of there are quite a few—were definitely camel herders prior to colonial contact. The oral traditions of other ethnic groups of the region indicate that camels have been part of the pastoral system of the lowlands, west of Lake Turkana, for a long time (Herren, 1987:17). Ethnic groups like the Kor and the Siger, who preceded the Turkana in the lowlands west of the lake, probably had knowledge of camel husbandry. However, there is ample evidence that camel pastoralism was not widespread among the pastoral Pokot of the 19th century. If we listen to the elders' accounts of the vegetation cover of the twenties or thirties of this century—

the days when they were herdboys—we learn that grazers (cattle, sheep) were more important than other animals: the plains were then covered by perennial grasses interspersed with some trees. *Acacia* thornbush and other shrubs, which now dominate most stretches of the landscape, were still rare.

Oral traditions reflect that all through this century the Pokot were determined to enlarge their camel holdings—perhaps reflecting a reaction to deteriorating environmental conditions. When they participated in the so-called punitive expeditions against the Turkana in 1917, they were paid with the livestock looted from the Turkana (Odegi-Owuondo 1990:49; Bollig, 1987:19). They were eager to convince the British officers to hand the camels over to them. This was probably not too hard since the Njemps and Tugen warriors, employed by the British on such punitive expeditions as mercenaries, did not have any experience in camel husbandry. The Pokot were awarded several hundred camels out of the booty. From then on camel holdings rose. However, camels were not counted by colonial officers for administrative reasons with as much zeal as cattle and small-stock were.¹ As soon as interethnic peace was guaranteed in the 1920s, trade in camels over ethnic boundaries started. Whereas small-stock husbandry has always relied on the natural reproduction of household herds and obtains only a few animals from outside, camel husbandry relies heavily on interethnic trade relations. In the fifties the Pokot, still eager to enlarge their camel holdings, were trading oxen for camel heifers with itinerant Somali traders. In the fifties and sixties they would trade up to three oxen to obtain one camel heifer. For the Somali it was a very profitable business: due to the reluctance of central Kenyans to eat camel meat, they were unable to sell their camels directly to urban markets. They needed to first exchange female camels for cattle oxen before they could participate in the urban meat markets. The Turkana participated to a lesser extent in this exchange. They, too, would offer camel heifers for oxen.

In a survey of progeny histories of the camels herded today we found that out of 328 dams (mothers of the most recent generation of camels) 82 (23%) were acquired from outside. Of these 46% were of Somali origin and 43% of Turkana origin (of these 17% traded and 26% raided). We can assume that during the fifties and sixties the Pokot succeeded in enlarging their camel holdings considerably. Unfortunately we do not have any reliable figures on the camel population of the sixties or seventies, but it may be assumed that the Pokot of Nginyang Division potentially owned up to 5000 camels in those days. Camels were then mainly herded in the lowlands of Loyamoruk and Ribkwo. They were rarely found on the higher elevations of Tangelbei and Churo, or in the Kerio Valley. Even today the Pokot would regard these areas, in the absence of any specialised veterinary care, as unfit for camel husbandry.

The Pokot regard the camel as their animal best adapted to aridity, but they are also aware that as a domestic animal it is very sensitive to all sorts of parasites. Camel holdings have always fluctuated in size due to various endemic diseases. However, it is hard to quantify these fluctuations in the absence of reliable figures. Pokot informants maintained that wet years—that is with rainfall of over 700 to 800 mm—seem to be more risky for camel husbandry than exceptionally dry years (cf. Stiles, 1983:2). Parasites, such as worms and ticks, develop quickly and trypanosomiasis also becomes more widespread. However, that the outbreak of a still unidentified camel disease in 1990/91, which caused a camel mortality rate of up to 65 percent in the central areas of Loyamoruk, appears to have been unprecedented.

The exchange of camels for oxen and with it the rapid expansion of Pokot camel holdings, came to an end only when interethnic warfare between the Turkana and the Pokot in the seventies and eighties made trade a risky business. Interethnic raiding had detrimental effects on the pastoral economy. The Pokot had to give up about one third of

their grazing lands. Migrations were more geared towards the evasion of raids than to the adaptation of microclimatic conditions (Bollig, 1990b). Many Pokot informants declared that their camel herds had been taken in raids by the Turkana. It is, of course, very difficult to quantify net losses, as the Pokot themselves were active raiders. By the early eighties camel holdings had notably decreased to between 3,000 to 3,500 animals (Saltlick, 1991:24).

In 1988 the KFFHC programme started an exchange programme with camels they had purchased in Wajir, Isiolo and Maralal in order to boost the milk and meat production of local camels. About 200 animals were exchanged up to 1991. Exchange rates were changed several times, ranging from one camel heifer for eight goats (or one oxen) to one camel heifer for four goats (or one oxen). The effects of the programme were hampered by the outbreak of a major epidemic among the camels (Bollig, 1991). Pokot informants today claim that most of the camels obtained in exchange have died in the meantime. However, local camels were also affected by the disease and the 1990/91 disaster was perhaps the worst blow for Pokot camel husbandry in this century.

Herd Size

Data on the size of camel herds was gathered in 1988 and 1992. Whereas in 1988 a complete sample of 12 herds in Paka Sublocation (Loyamoruk Location) was surveyed, in 1992 a total of 138 herds from households all over Loyamoruk and Ribkwo Location were registered. On account of their different sizes, the samples are not easy to compare. The 1992 data will be the starting point for future development work. The data for 1988 are used here only as a reference to give information on pre-epidemic conditions and to show the dynamics of camel pastoralism in Pokot society.

In 1988 the average herd size was 11.6 animals per household ($n = 12$ herds). According to several informants we may as-

sume that the figure for average camel holdings would probably have been larger if richer households living farther from the trading centres had been taken into account more consistently—due to logistical problems this was impossible in 1988. Furthermore, there is no doubt that average camel holdings per household were lower around Nginyang and Kositei, where many poorer herders settle.² By 1992 average camel herds per household had been greatly reduced. Of 138 recorded herds the average herd size was 7.28 animals. However, herd size averages differed from region to region (see Tables 1 and 2): The Nyaunyau area still seems to be the area preferred by wealthy camel-owners. Average herd sizes are considerably higher there than anywhere else and the largest herds to be found today

are in this area. In fact, Pokot herders claim that the browsing of Nyaunyau and the neighbouring localities, Tuwö and Rimoita, is especially well-suited for camels and that some saline grasses add to the health of the camel. They say that only the Kadingding area, Nginyang itself and Kapedo can match this area for camel husbandry. However, these areas had other major shortcomings in the dry season of 1992. Kadingding did not have any watering places nearby after the dam dried up and the vicinity of the trading centre Nginyang is regarded as too overcrowded by many livestock owners; especially the richer ones shy the proximity of trading centres. Kapedo Sublocations (East and West) were endangered by Turkana raiders and between December 1991 and April 1993 nobody grazed there.

Table 1. Average herd size (March 1993)

Subsample*	Average herd-size	Average std. dev.	Herds surveyed	Animals surveyed
Nyaunyau	11.48	10.7	21	241
Donya Sas	5.76	4.5	25	144
Chesemiriyon	6.31	4.9	29	183
Kositei	7.10	6.0	63	436
Total	7.66	6.5	138	1004

* The Nyaunya Subsample includes places like Rimoita, Salawa, Tuwö. Many households of this sample settle in Kadingding when the dam there has water. The Donya Sas sample includes households near Nginyang and down to Seretio. The Chesemiriyon sample is confined to households settling around this small trading centre. The Kositei sample includes households from Kasitit going down to Chesanja and about 20 households from Nakoko.

A closer look at the distribution of herd sizes emphasises again that most herds are fairly small.

Table 2. Range of herd sizes (March 1993)

No. of animals in herd	No. of herds	%
1-4 animals	57	41.3
5-9 animals	45	32.6
10-14 animals	19	13.8
over 14 animals	17	12.3
Total	138	100.0

More than 40 percent of all herds consist of only one to four animals. Such herds represent several problems for their owners. Does the owner really want to give such a small herd to a herdboys? Or should he give these few animals to a friend who owns more camels or who has more herdboys at his disposal? The Pokot usually decide to keep such a small herd if there is at least one animal in milk among them. That holds true even in a dry season such as that of 1991/92 when all the cattle were dry and the goats were almost dry due to lack of adequate fodder. Although camels also produced much less than in better years, they were at least still able to supply a household with enough milk for tea.

Herd Structure and Biology of Camel Herds

There is no doubt that drought and major livestock epidemics not only change herd sizes, but also alter herd structures profoundly. In times of need herders try to sell male stock or slaughter it commercially, in order to supply the household with grain and other commodities. Pokot herders argued that it was sometimes better to sell an oxen or slaughter a camel oxen (instead of continuously selling small-stock) in order to obtain a larger sum of money. Again transactions including camels are hampered by the fact that there is almost no market for camel meat in down-country Kenya, so Tugen livestock traders shy away from buying camels. Local butcheries are then the only commercial outlet for camel meat and the only opportunity for camel-owners to make cash out of their surplus camel stock.

Herd Structure

The following herd structures for camels were found in 1988: 38.0% of all animals were adult females, 19.8% heifers, 14.9% immature males, 4.1% oxen, 3.3% bulls and 19.8% calves (see Table 3). By 1992 the proportion of mature females had gone up—though on the whole camel holdings went down, as

explained above—and the percentage of males had decreased: 46.9% of all recorded animals were adult females, 19% heifers, 11.2% immature males, 1.5% oxen, 1.5% bulls and 19.8% calves. Whereas the percentage of calves remained stable, the number of immature male and female camels decreased from 34.7% to 30.2% in number. The percentage of immature males decreased from 14.9% to 11.2%, the proportion of heifers remaining almost stable. The proportion of mature females within the herds went up from 38.0% to 46.9%; at the same time that of mature males (oxen and bulls) was reduced from 7.4% to 3.0%. Altered herd structures reflect herd-management practices during a crisis. Of course, male stock was slaughtered and sold more frequently. In times of health stress, scarce medicine is given to dams and heifers rather than to males.

The Biology of Camel Herds

The biology of the individual animal (fertility, mortality, diseases) and the ethnology of the herd (flocking behaviour) are dependent on the genetic potential and the way in which management practices take advantage of this potential. As the camel is only to be found under human management, variables determining biology and ethnology of camel herds are inextricable. According to Pokot informants the symbiosis between herdsman and domestic animal has become so close that the herdsman will for example, ensure that a calf does not drink too much milk, which would cause diarrhoea, or he might even assist the bull when mating. The reproductive and social behaviour of camels differs between camel-keeping societies, with various different management practices moulding the genetic potential in accordance with different aims of production. Although a comparative approach will not be adopted here, some striking differences between various camel-herding societies should be pointed out.

Table 3. Comparison of 1988 and 1992 herd structures (in percent)

	1988	1992	Change
Adult*	45.4	49.9	+4.5
females	38.0	46.9	+8.9
males	7.4	3.0	-4.4
Immature	34.7	30.2	-4.5
females	19.8	19.0	-0.8
males	14.9	11.2	-3.7
Calves	19.8	19.8	+/-0
Total: females (excl. calves)	57.8	65.9	+8.1
Total: males (excl. calves)	22.2	14.2	-8.0

*Animals older than 4 years were counted as adults, those between 1 and 4 years as immature animals, and those under 1 year as calves

Fertility

The completed fertility rate (CF, the number of births given by dams which have completed their fertile phase) had a mean of 4.45 (range 0–10, standard deviation 1.55, $n=166$ animals). Twinbirth (TB), which is extremely rare amongst camels, did not occur in this sample. The mean rate of abortions (AB) was 0.21 (range 0–2, standard deviation 0.49, $n=166$ animals). The mean intercalving inter-

val (II) was 20.73 months (range 14.0 to 48.0 months, standard deviation 5.94, $n=840$). This is a short interval for camels. The normal span between two calves is about 24 months or even slightly more (Dahl & Hjort, 1976:80). This short intercalving interval is attributable to the impact of fertility management by the herd owner, which will be discussed below.

Table 4. Comparison of fertility data between different livestock species (in brackets the total number of animals surveyed)

	CF mean	TB mean	AB mean	II mean
Camels	4.4		0.21	20.73
Cattle	5.3	0.2	0.41	15.62
Goats	4.7	17.0	?	10.27
Sheep	4.2	9.4	0.26	9.97

$n=166$ camels, 49 cows, 85 goats, 67 sheep with completed fertile phase.

The main season for calving is the early rainy season (386 animals, 30.02%) and the rainy season (454 animals, 35.30%). There are fewer calves in the early dry season (205 animals, 15.94%) and in the dry season (241 animals, 18.74%) ($n = 1286$). Calving at the beginning of or during the rainy season increases the calf's chances of survival as fodder, and therefore milk, is more abun-

dant. However, calving peaks in camel herds are much less accentuated than with other livestock species (see Table 5). This is on the one hand attributable to human interference with mating and, on the other hand, it is a consequence of the better adaptation of camels to arid climates. Even during the dry season they still produce enough milk for the calf and for human consumption.

Table 5. Comparison of calving peaks by season between different livestock species (as percentage of all births)

Season	Months	Camels	Cattle	Goats	Sheep	Total
Early rainy season (<i>sarngatat</i>)	Apr.-June	35	52	13	15	29
Rainy season (<i>pengat</i>)	Jul.-Sept.	30	28	32	27	29
Early dry season (<i>kitokot</i>)	Oct.-Dec.	16	4	18	24	15
Dry season (<i>komöy</i>)	Jan.-Mar.	19	16	37	34	27
<i>n</i>		1286	916	394	422	3018

Mortality and Diseases

On account of the sampling technique the data on mortality rates per year is not conclusive. However, progeny histories can give a rough idea of the importance of certain diseases over longer periods of time³. Mortality rates may be highly variable, as the years 1990 and 1991 showed, when more than half of all pregnancies were abortions and adult animals were dying throughout the year. A crude age-specific herd structure which was extracted from the progeny histories gives some idea of mortality rates. However, causes for offtake other than disease, such as slaughter and exchange, are included here.

Pokot camels obviously do not grow as old as their brethren in Somalia or Ethiopia do; while other authors report camels of 25 to 30 years of age (Dahl & Hjort, 1976:81),

the oldest camels that the Pokot possess are only about 15 to 18 years of age. I am only able to give a tentative explanation: Pokot camel husbandry is geared towards herd increase, milk production being only a secondary aim of production. Therefore, animals which have only recently calved are sometimes after a few months made to breed again—as indicated by the short intervals between calving. Especially after abortions, even late ones, it is only 2–3 months later that the bull is taken back to the female camel again. This may cause exceptional stress for the female.

The data on fatal camel diseases is more informative: the cause of death could be ascertained for a total of 129 animals (Table 7). The Pokot could only give their vernacular term for the fatal disease; John Young has tried to correlate their terms with western terms for the diseases (Young, 1989).

Table 6. Age-structure of Camel Population (as number of camels still surviving per year of birth)

Year of Birth	Total	Males	Females
1988	65	32	33
1987	77	37	40
1986	68	29	39
1985	62	25	37
1984	41	16	25
1983	68	27	41
1982	50	33	17
1981	62	40	22
1980	43	32	11
1979	27	24	3
1978	17	13	4
1977	6	4	4
1976	3	3	0

Some of the results of this survey are quite astonishing: the Pokot see ticks as the most frequent cause of premature death. However, veterinary science teaches us that ticks which befall camels in this region do not transmit lethal diseases. But the Pokot are correct in their observation that ticks are a menace to the camels. Informants reported that they infest the ears, the nostrils, the leg axilla and the anus. They weaken the animal, cause infections and make the animals prone to other diseases. Especially camel calves may be killed by ticks in this way. In 1990/91 many camels were killed by a disease which the Pokot did not initially have a name for. Whereas in 1989 there was still no name for this disease, by April 1991 there were already two names signifying its symptoms; the first was *kapoy*, literally "madness", meaning that the animal goes crazy and loses its sense of spatial orientation during the final phase of the disease. The other name *chepirpirmöt*, literally "dizzy head", signifies the symptoms of the acute state of the disease just before death:

the animal sways its head and walks around in circles without taking food regularly. In 1992 Pokot referred to the disease mainly by this latter term. The Pokot claimed that the disease was caused by certain ticks which first affect the ears of the camel and then enter the brain. Some elders claimed that they had never seen this sort of tick before, hence the problems of naming the disease. However, veterinary science suggests that two things happened here: the extraordinarily wet year of 1988 (about 1100 mm rainfall) caused a rapid increase of ticks and probably at the same time the expansion of trypanosomiasis. Pokot camel herds probably contracted a different strain of trypanosomes—*Trypanosomiasis congolensis*—whereas in normal years *Trypanosomiasis evansi* is the strain which causes the most problems for Pokot camels.

While a total number of 129 animals of the progeny-history sample died of diseases, another 109 camels were stated to have died prematurely because of other causes: 52 of these were killed by predators, 31 on account

Table 7. Causes of death

Western term	Pokot term	Male	%	Female	%	Total	%
Trypanosomiasis	<i>lokurucha</i>	5	9.6	3	3.9	8	6.2
diarrhoea ("cholera")*	<i>kiyitagh</i>	4	7.7	10	13.0	14	10.9
worms	<i>tiompö mu</i>	4	7.7	4	5.2	8	6.2
skin necrosis	<i>lomitinaa</i>	1	1.9	6	7.8	7	5.4
ticks	<i>tilis</i>	13	25.0	16	20.8	29	22.5
East Coast Fever	<i>lipis</i>	4	7.7	5	6.5	9	7.0
East Coast Fever	<i>cheptikon</i>	0	0.0	1	1.3	1	0.8
pneumonia	<i>psosoi</i>	3	5.8	1	1.3	4	3.1
coughing	<i>röhyon</i>	2	3.8	2	2.6	4	3.1
Foot and Mouth	?	1	1.9	10	13.0	11	8.5
bloat	<i>lessana</i>	1	1.9	1	1.3	2	1.6
orf	<i>ngirimen</i>	0	0.0	3	3.9	3	2.3
bloat (?)	<i>musarer</i>	0	0.0	1	1.3	1	0.8
evil eye**	<i>wutöt</i>	0	0.0	2	2.6	2	1.6
too much milk	-	4	7.7	5	6.5	9	7.0
handicap	<i>solwö***</i>	0	0.0	1	1.3	1	0.8
swollen knees	-	2	2.8	0	0.0	2	1.6
unknown disease	<i>kitongunogh</i>	8	15.4	6	7.8	14	10.9
TOTAL		52	40.3	77	59.7	129	100.0

**"Cholera" is frequently used as a general term for more severe camel diseases connected with diarrhoea. Obviously the term is a borrowed one. It does not fully substitute the Pokot term *kiyitagh* which is frequently used to denote less severe forms of diarrhoea.

** The cause of death stated is *wutöt* (which is derived from the verb *kewut*, to shoot somebody). Some informants claimed that *wutöt* can be detected when the dead animal is dissected. Then a small round or oval stone is found in the cavity of the stomach.

***Pokot use this term to describe a severe physical or mental handicap. It may be translated by both "cripple" and "idiot". It has a strongly derogatory connotation.

of drought, 11 of injuries, 4 of birth difficulties, one was killed by a snake bite and one by "too much rain". In 9 cases no reason was given for the premature death. The extraordinarily high number of animals killed by predators was attributed to the fact that camels are frequently lost during the day, and then roam around outside the homestead for a night, or maybe even for some days. In the spring of 1991, when most camel herds were affected by *chepirpirmöt*, many of the surviving remaining animals were left to roam in the bush. This does not seem to be uncommon in the case of severe epidemics. Of course, these animals, especially when they are sick, are easy prey for predators. The predator was specified for 32 cases of camels killed in this way. In 20 cases hyaenas were named, 11 times lions were the culprits and in one case it was a leopard which killed the camel. The high number of hyaenas killing camels indicates that many camels which fell prey to predators must have already been very sick when they were killed. A hyaena would otherwise not be able to kill an adult healthy camel.

Causes of death were stated by the informants and due to the sampling technique could not be cross-checked by a veterinarian. This accounts for some terms which obviously denote bovine diseases primarily to be transferred to camel diseases. East Coast Fever and Foot and Mouth disease are confined to cattle. Pokot adopt concepts like *lipis* (East Coast Fever) to denote health problems in camels, when they show similar symptoms to the bovine disease (I am indebted to an anonymous reviewer for this comment).

Herd Management

Camel husbandry is necessarily integrated into the management of the other species of the household herd. Those households owning camels usually possess some cattle and small-stock, too. But only if labour is very short are camels herded together with the small-stock. Very small herds of one or two animals are sometimes left to roam

around the homestead or are given to a relative or friend who owns a larger camel herd. However, a camel-owner will usually allot a herdsboy to his camel herd, even if it consists of only a few animals, and try to find a herding pattern which best suits the needs of his camels.

Herding Patterns

The camel enclosure, built from the branches of *acacia* thorn bush, is always some metres away from the main homestead. The Pokot will say it is "outside". They have a clear explanation for this: camel calves in particular are very prone to the malevolent effects of the evil eye (*wutöt*). Many guests visiting the homestead may be envious at the sight of some camel calves and automatically throw an evil eye on these animals. If camels are kept outside the homestead this danger is partly decreased.

The Pokot can identify the fodder trees which camels prefer during certain times of the year. As with other livestock the herdsman selects his daily routes in such a way that fodder species vary from day to day. Camels will leave the homestead in the morning shortly after the cattle and small-stock have left. While cattle and goats usually need two herdsboys, camels are generally left with just one boy. This is not because it is believed that they are easier to herd than cattle. On the contrary: the Pokot regard camels as the species which causes the most herding problems. Camels do not stay together; they stray all over the pasture. Frequently one hears of herdsboys coming home reporting that one or two camels got lost during the day. To some extent this seems to be attributable to the fact that Pokot herders frequently give a young, inexperienced herder to the camel herd, because herds are very small. However, camels do have quite a different flocking behaviour from that of cattle or small-stock. Even during the night they are likely to escape from the enclosure and stray. The most nervous camels have to be prevented from moving around in the evening. One leg is

hitched up and tied to the thigh with a rope. While goats and cattle go far and hence need experienced herdsboys, camels frequently roam in the vicinity of the homestead. Camel fodder is not scarce in East Pokot and even in many degraded areas with no grazing and little browse for goats, camel fodder is still in plenty. Many Pokot herd-owners voiced the opinion that a camel herd could be used to train younger boys and girls, who are usually between 6 and 8 years old, to take over more arduous herding tasks later on.

Mobility is also required for watering the camels. The Pokot water their camels more frequently than other camel-keepers do. Camels are taken to a well at least every third day. I was quite astonished that even during the harsh drought of the spring of 1992 the Pokot took their camels to watering places far away every third day. They argued that their camels would suffer if they were not watered frequently. It is hard to establish whether this is a management decision which has been extended from cattle to camels, or whether Pokot camels do actually live better when watered every third day.

Camels are rarely taken far from the main household. They are not taken to dry-season pastures as cattle are. Occasionally a herd-owner may decide that the area he lives in is too tick-infested, and then the camels are taken to other browsing areas. Others take their camels away from the main homestead during the rainy season when the soils get too soaked in some parts of the Division. They will then take their camels temporarily to areas where the soil drainage is better. In most cases one of the women plus one or two herdsboys will move to the camel homestead. Pokot camel-owners regard the lack of salt-licks as another deficit of most of the Nginyang Division. If a camel-owner sees that his camels are sick, or are just not doing so well (*kitongunogh*), this will frequently be attributed to a lack of salt (*ngeny*). The camels will then be taken for as long as 2 weeks to Nginyang or Kapedo salt-licks. If a car is available—which is rarely the case—they will bring two sacks of salty earth

back to their homestead and empty them into the camels' enclosure for the camels to lick.

Milking

The lactation of Pokot camels lasts from 9 months to 1 year. But cases of camels being milked for 14 or 15 months also occur. While lactation of cattle and goats has a sharp peak during the rainy season, from May to August, and then decreases quickly, the lactation of camels is more evenly spread over the months. However, this is, of course, dependent on fodder availability. The amount of milk being taken from camels was not measured. It may be assumed that the lactation of Pokot camels resembles in quality and quantity that of the Ngisonyoka-Turkana camels (about 100 kilometres away), which has been excellently documented by Cathleen Galvin (1987). Compared to other East and North African camel varieties, Pokot camels are generally bad milkers. Their advantage definitely lies in their resistance to diseases and favourable reproduction rates.

The milking, as with all other livestock, is done by women. Every woman milks those camels which are allotted to her by her husband. She will also work the milk, put it into her calabashes, curdle it and so on. Only in times of scarcity is milk shared between the women of a homestead. As long as every house has at least some milk there is no need to worry about an equal distribution of milk. Camels are milked at least three times a day: once in the morning, then when camels come back in the evening, and again around 10 o'clock at the night. Shortly after delivery, camels are milked up to five times a day for at least 1 month. To ensure against over-milking the calf is allowed to sleep with the dam for this time. Then the mother is milked in the morning before being taken out, at 6 o'clock in the evening, again at 9 o'clock, at midnight and a fifth time at about 4 o'clock in the morning. After the first month the calf is taken away from the mother around midnight. After the second month the calf is

only left with the dam once in the morning and once in the evening. Milk is drunk either fresh or soured. If a calf dies while still suckling the Pokot ensure ongoing lactation by milking with a dummy (*arak*). This puppet is usually produced from the skin of the dead calf.

It is not only the milk of camels which is used. Camels are also bled, though perhaps not as frequently as cattle. Camels cause more problems than cattle when being bled. Both front-legs are bound to the thighs so that the animal is forced to lay down. Then, one person has to hold the head while another binds a rope around the neck, so that the main vein protrudes. Finally somebody shoots a special arrow for bleeding the camel (*teremwa*) into the protruding vein. Between 2 and 3.5 litres of blood are taken. The wound closes at once when the rope is released. Rarely have I heard of bleeding wounds becoming infected. The blood is rarely drunk pure. First the fibrin (*naiket*) is removed by stirring the blood with a twig. The remaining blood may be drunk and the fibrin is roasted. More frequently the blood is mixed with fresh or soured milk. In rare cases blood is boiled and mixed with maize flour.

Veterinary Treatment

Pokot veterinary terms and terms of western veterinary medicine do not fully correspond. Also, Pokot ideas on disease aetiology are not the same as those of western veterinarians (Bollig, forthcoming). The Pokot roughly differentiate between fly-borne and tick-borne diseases, epidemic diseases ("diseases which are in the ground, in the dust or in the grass"), and deficiency diseases. Many of these diseases result in "bad" body fluids, they are "diseases of the intestines". Consequently many treatments involve the administering of concoctions to cause diarrhoea in order to "take out bad body fluids". On the one hand, this treatment aims at removing the substances from the body which cause the disease. On the other hand, this sort of treatment has a

definite ritual touch to it; the body affected by the disease has to be purified.

The Pokot know of many herbal veterinary medicines, which can be roughly differentiated into those which cure directly and those which cure via purging. About twenty or thirty plants are used for treatment. Burnings (*machey*) and minor operations are the major manipulative techniques. Blessings usually accompany the treatment. The traditional treatments of some frequent camel diseases are listed below:

Lomitinaa (skin necrosis⁴) is described as a deficiency disease, caused by lack of salt. In order to prevent *lomitinaa* camels are frequently taken to browse in areas where the salt content of the earth is high. Only when the animal is already sick is soda ash (*pariyan*) dissolved in water and administered orally in some quantity in order to cause diarrhoea. Additionally the entire plant (roots, stem, leaves) of *sukur* (*Kleinia spec.*) is ground down, put into water for some time and then rubbed on the camel's body (all plant specifications after Barrow and Long, 1981; Tanaka, 1983; Timberlake 1987; in cases of diverging information Timberlake 1987 was given credence).

Cholera or *kiyitagh* (diarrhoea) has diffuse symptoms—it is only the second term which singles out one of the symptoms; the first term, of course a borrowed word, signifies rather the deadly character of the disease. Herdsmen said that the disease is rarely treated effectively by traditional means. However, one could try the following treatments: the head of a sheep is to be burned in the ashes of a fire and then put into a pot to boil. The resulting soup is administered orally. This causes the sick camel to "diarrhoea the disease out". An oral infusion of a concoction of smashed unripe *sorich*-fruits (*Boscia coreacea*) has the same effect.

Psosoi (pneumonia). A number of treatments exist. The bark of *sökwon* (*Cyperus alternifolius*) is pounded down and dissolved. Administered orally it will cause slight diarrhoea. Additionally a solution of

the pounded roots of *malutyān* (*Cissampelas pareira*) will cause intensive urinating. These treatments are frequently accompanied by applying burns along the ribs and by washing the animal with a solution of soda ash.

Ngirimen (orf) is frequently observed among younger camels. The Pokot have a very effective treatment for this disease. The fruits of *kimyotwö* (*Ximenia americana* L.) are boiled and the resulting paste is smeared on affected parts of the snout to smoothen lesions.

Lokurucha (trypanosomiasis) may affect all livestock species. The treatment differs from species to species, but all aim at causing diarrhoea to "take out the disease". For camels the disease is most effectively countered by solutions from the pounded roots of *chepopet* (*Clerodendrum spec.*), from the pounded roots and bark of *pelel* (*Acacia reficiens*) or from dried and pounded fruits and bark from *songowowö* (*Zanthoxylon chalybeum*). Another purgative is produced from the ashes of the roots of *asiokonyon* (*Salvadora persica*) which are mixed with water. All medicines are administered orally to cause diarrhoea.

Tilis (ticks) are best countered by washing the camel with a solution of crushed roots and leaves of *chebliswö* (*Hibiscus sidiformis*) or with the juices of crushed fruits of *kaliya* (*Commiphora cf. erythraea*).

Nowadays, treatment with modern veterinary drugs has superseded traditional curatives in many sectors. The Pokot can buy antibiotics like Terramycin from small-scale itinerant traders. The problem is that they rarely get advice on dosages. Sometimes they use the wrong drug. So camels suffering from trypanosomiasis have frequently been treated with a drug which only cures bovine trypanosomiasis (*Novidium*). The drug does not have any effect on camels. Traditional and modern treatments are frequently mixed together.

Management of Fertility

Pokot camel herders try to actively manage the fertility of their camels. As with other livestock species, they castrate most of the males. Only between 1.5% and 3% are left for breeding. When selecting a bull for breeding, they carefully screen his progeny. While with cattle there are sometimes aesthetic aspects to consider—although I would like to point out that this criterion has been overemphasised for a long time by anthropologists—camel bulls are selected according to aspects of production and reproduction only. First of all the herder will only accept a bull from a mother which was a good milker, with many offspring and few abortions. Then he will look at the physical condition of the animal itself. However, this is not the only way the Pokot interfere with camel breeding.

Camels allow for more active control of fertility. Frequently a herder will assist the bull in mating. He does not want to wait until the female accepts the bull by herself, which is usually 12 months or more after calving. Sometimes he might decide that only some 6 months after calving he wants the camel to reproduce again, in order to increase the herd. By means of a number of tricks—i.e. beating the front hooves with a light stick, uttering certain sounds—he convinces the female to lay down. Sometimes he has to pull away the tail of the female or actually insert the penis of the camel bull. He then carefully scrutinises the behaviour of the camel because not every mating leads to insemination. He is only convinced that his efforts have met with success when the female camel lifts her tail (*kikurdoköy*) when a bull is near her. This happens only a week or two after a successful fertilisation. Herdsmen are, of course, aware that this forced insemination shortens lactation. But they reason that it is more important to increase camel holdings rapidly. Asked how they would act when they had some five camels calving in one month, they said that they would single out only two camels for breeding some 3 or 4

months later. Another camel would be re-mated after 6 months and only the two best milking camels would be left the entire 12 months before being inseminated again. When asked if such management practices did not cause a risk to the calves, they pointed out that as soon as a camel is fertilised and her milk starts to decrease, the remaining lactation is given to the calf alone. The milk ceases after about 3 months of pregnancy, by which time the calf has had about 7 months' milk which the Pokot regard as being just about enough. If this is not enough, they will feed the calf for another month or two with the milk of another camel.

Consumption Demands

Most quantitative data on slaughter, selling and exchange was obtained from the survey of progeny histories in 1988. Data was obtained for 1300 camels. Of these 612 (47.1%) stayed in the herd, another 239 animals (18.4%) died prematurely and 27 (2.1%) were lost or stolen. The remaining were sold (124 animals), slaughtered (61 animals), given away as presents (100 animals) or exchanged (66 animals). Hence, camels are not only used for home consumption but are also important for transactions between pastoral households and between pastoral households and larger markets.

Slaughter

Most animals were slaughtered during ceremonies. Out of 61 slaughtered animals, (see Table 8)—56 males and only 5 females—about 50% were slaughtered in ceremonies of the neighbourhood council (*kokwö*) or during meat-feasts of the neighbourhood (*asiwa*). Another 26% were slaughtered at the initiation rituals (*sapana*) for boys. Rich herd-owners can afford to slaughter a camel for a curing ceremony (*tapa*). Only two camels were slaughtered for food for the family, goats and sheep seem to be more appropriate for home consumption. However, it should be noted that some parts of the animals slaughtered at the neighbourhood council, the meat-feasts of the neighbourhood or initiation ceremonies, also go to the household. Only two camels were slaughtered commercially. The opportunities for commercial butchering in Nginyang or Chemolingot have expanded. There are several ways of bringing the meat to the consumer: one may sell the animal to a local butcher or even rent the butcher for a day in order to sell the animal through a young and educated relative.

Table 8. Reasons for slaughter

Reasons for slaughter	Males	%	Females	%	Total	%
Household food	2	3.6	0		2	3.3
Food for guest	1	1.8	0		1	1.6
Curing ritual (<i>tapa</i>)	4	7.1	3	60.0	7	11.5
Initiation (<i>sapana</i>)	16	28.6	0		16	26.2
<i>Kokwö, asiwa</i>	30	53.6	1	20.0	31	50.8
Slaughter for cash	2	3.6	0		2	3.3
Slaughter for prophet	0		1	20.0	1	1.6
Other	1	1.8	0		1	1.6
TOTAL	56	91.8	5	8.2	61	100.0

Those animals slaughtered at a neighbourhood council or at an initiation ceremony frequently result in exchange relations. Rarely does the herder who offers the animal to the council slaughter the animal himself. He selects another man to slaughter his animal. The man who has slaughtered the animal then has to return another camel oxen, a camel or bovine heifer or eight goats to the donor. Camels (and cattle) slaughtered in *sapana* are rarely from the herd of the household hosting the ceremony. Animals for slaughter are frequently borrowed from friends. Again these animals have to be repaid after a few years (Bollig, 1992).

Reciprocal Gifts

Out of 1300 animals surveyed, exactly 100 were invested into reciprocal exchange relations (see Table 9). More than three quarters of these were females, as it is deemed appropriate to give females in bride price exchanges or as a token gift in stock-friendships. Most of these (73%) were given in bride price transactions; these include the transfer of animals to the bride's family as well as the dispersal amongst kin of incoming bride wealth payments for the daughters and sisters. Another 14% were given as presents to stock-friends.

Table 9. *Reasons for reciprocal exchange*

Reason for exchange	Males	%	Females	%	Total	%
Bridewealth	11	45.4	62	79.5	73	69.0
Stock-friendship	9	40.9	5	6.4	14	14.0
Present to relative	1	4.5	10	12.8	11	11.0
Present to friend	1	4.5	1	1.3	2	2.0
TOTAL	22	22.0	78	78.0	100	100.0

Change of Animals

Like other animals, camels are also exchanged for other types of livestock. In order to readjust the structure of his camel herd and to obtain more bovine heifers or increase his goat herd, a camel-owner may offer a camel oxen for exchange. The incentive on the side of the exchange-partner is usually festivities, at which a camel is to be slaughtered. One camel oxen will be exchanged for a camel heifer, a bovine heifer or between eight and ten goats. Out of 66 camels exchanged in this way 65 were males and only one was female. Of these 48 (72.7%) were exchanged for bovine heifers, 8 (12.4%) were exchanged for camel heifers and 10 (15.1%) for mainly female goats.

Sale

Out of 1300 animals surveyed 124 were sold, of which 103 were male and 21 were female (see Table 10). They were sold for money to obtain grain—many of these are then slaughtered commercially in one of the trading centres. Others were sold to obtain the necessary cash to buy beads, to pay *harambee*-funds or school-fees for secondary schools.

It is difficult to sell camels at the weekly livestock markets in Nginyang, Tangelbei or Tot as camel meat still does not have a market in the urban centres of central Kenya. If a herder wants to sell a camel he has to rely on his personal ties to local Somali and Pokot butchers.

Table 10. Reasons for sale

Reasons for sale	Males	%	Females	%	Total	%
Beads	16	15.5	6	28.6	22	17.7
Grain	53	51.5	8	38.1	61	49.2
Harambee	19	18.4	0		19	15.3
School-fees	8	7.8	4	19.0	12	9.7
Medical drugs	1	1.0	0		1	0.8
Fines	2	1.9	1	4.8	3	2.4
Other	2	1.9	1	4.8	3	2.4
Unknown	2	1.9	1	4.8	3	2.4
TOTAL	103	83.1	21	16.9	124	100.0

Summary

While only some few Pokot clans with historical roots in Cushitic-speaking communities to the east obviously raised camels in pre-colonial times, the importance of camel husbandry increased at the beginning of this century when Pokot mercenaries taking part in punitive expeditions against the Turkana were awarded with camels by the British. Throughout recent decades Pokot have been eager to exchange camels either with itinerant Somali stock traders or, during the last few years, with several development projects operating in the area.

After expanding for some decades the camel population in Nginyang Division received a major blow by the combined mischief of raiding and diseases. Today Pokot camel herds are quite small. Only about one third of the population own camels and even their camel herds are quite small, usually not exceeding between 10 and 15 animals. A recent epidemic brought down herd sizes and altered herd structures. The percentage of males within the herds decreased rapidly and nowadays many herds consist of just some few mature females. Young males, camel oxen and even camel heifers have been sold. Pokot camels in general seem to have comparatively high

reproductive rates. They are the only herd animals which do not have clear-cut calving peaks. Hence they are important for a steady supply of milk for the household.

Herd management is determined by the small size of the camel herds. Usually herds are kept in the vicinity of the household guarded by a small child. Camels are rarely taken to far-away pastures. Occasionally camels are taken to salt licks for some days.

Mainly male camels are sold. Usually local butchers buy camels and slaughter them on the spot. Livestock traders coming from urban centres rarely take any interest in camels. As there is no market for camel meat in urban areas there is no incentive for them to buy camels. Mainly female camels are given away in bride wealth payments or as prestations within a stock-friendship. Camels are then an important asset to richer households to master the unpredictability of the environment: camels give milk even in very dry years. They only start losing weight when it is already hard to sell goats or cows, hence they are important market goods to interact with the market when other pastoral products are devaluated. Last but not least they are prestigious goods for several types of social exchange.

Notes

- ¹The Annual District Reports (1928–1932, KNA DC BAR 1–3) give the following numbers only: 756 camels were counted in 1928, 1184 camels in 1929, 1288 camels in 1930, 1480 in 1931 and 1207 in 1932. Then district administrators stopped counting camels.
- ²Barrow (1980) gives an average of five animals per household for households in Nginyang West Sublocation. A number which almost equals figures I found in 1992 for the same area (Barrow and Long, 1981).
- ³We listed progeny histories of many animals which had died; e.g. we took the mother of a dam which was in the herd at the time of the survey as a starting point and listed all her offspring. The animal itself may have died some 10 years previously and several of its offspring had died, too. We listed the causes of death for all these animals which entered the survey as dead "ancestors" or dead "kin" of the animals which were in the herd presently.
- ⁴I would like to thank Ilse Köhler-Rollefson for hints on this disease.

References

- Barrow, E. 1980, "East Pokot Agricultural Project Range Management Report. Preliminary investigations". Manuscript. Nakuru.
- Barrow, E. & M. Long 1981, "Index of Plant Names in Pokot". Manuscript. Nakuru.
- Bollig, M. 1987, "The Imposition of Colonial Rule in North West Kenya: interethnic conflicts and anticolonial resistance", *Afrikanistische Arbeitspapiere*, 11:5–41.
- 1990a, "An Outline of Precolonial Pokot History", *Afrikanistische Arbeitspapiere*, 23:73–92.
- 1990b, "Ethnic Conflicts in North-West Kenya. Pokot/Turkana Raiding 1969–1984", *Zeitschrift für Ethnologie*, 115:73–90.
- 1991, "Preliminary Report on Livestock Losses During 1990/91 Dry Season". Manuscript. Nakuru.
- 1992, *Die Krieger der Gelben Gewehre. Intra- und Interethnische Konfliktaustragung bei den Pokot Nordwestkenias*. Münster: Lit Verlag.
- n.d., "The Veterinary System of the Pastoral Pokot". Forthcoming.

- Dahl, G. and A. Hjort 1976, *Having Herds. Pastoral herd growth and household economy*. Stockholm: Stockholm Studies in Social Anthropology.
- Galvin, C. 1987, *Food Procurement, Diet, Activities and Nutrition of Ngisonyoka. Turkana pastoralists in an economic and social context*. Ann Arbor: University Microfilms International.
- Herren, U. 1987, *The People of Mukugodo Division Laikipia District. A historical and anthropological baseline*. Berne: University of Berne, Institute of Geography.
- Hjort af Ornäs, A., M.A. Hussein and C. Krokfors 1991, "Food Production and Dryland Management: a Somali camel research agenda", *Nomadic Peoples*, 29:113–124.
- Odegi-Owuondo, C. 1990, *Life in the Balance. Ecological sociology of Turkana nomads*. Nairobi: ACTS Press.
- Saltlick 1991, "A Baseline Data Survey in the Nginyang and Tangelbei Divisions of Baringo District, Kenya". Manuscript. Isiolo.
- Sperling, L. 1987, "The Adoption of Camels by Samburu Cattle Herders", *Nomadic Peoples*, 23:1–18.
- Stiles, D. 1983, "Desertification and Pastoral Development in Northern Kenya", *Nomadic Peoples*, 13:1–14.
- Tanaka, J. 1983, "List of Plants Collected from Baringo, Elgeyo/Marakwet and West Pokot Districts", in B.E. Kipkorir & R.C. Soper & J.W. Ssenyonga (eds.), *Kerio Valley. Past, present and future*. Proceedings of a Seminar held in Nairobi at the Institute of African Studies, University of Nairobi. Nairobi: Institute of African Studies.
- Teka, T. 1991, "The Dromedary in the East African Countries", *Nomadic Peoples*, 29:3–20.
- Timberlake, J. 1987, "Ethnobotany of the Pokot of Northern Kenya". Manuscript. London.
- Young, J. 1989, "The KFFHC/EPAP/ITDG Community Animal First Aid Worker Programme". Manuscript. Nairobi.

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Michael Bollig, Ph.D. at the University of Tübingen, currently lecturer at the Institute für Völkerkunde, University of Cologne, research on pastoralism in northern Kenya. Publications on conflict management in northern Kenya and on risk-minimising strategies of pastoral nomads.