

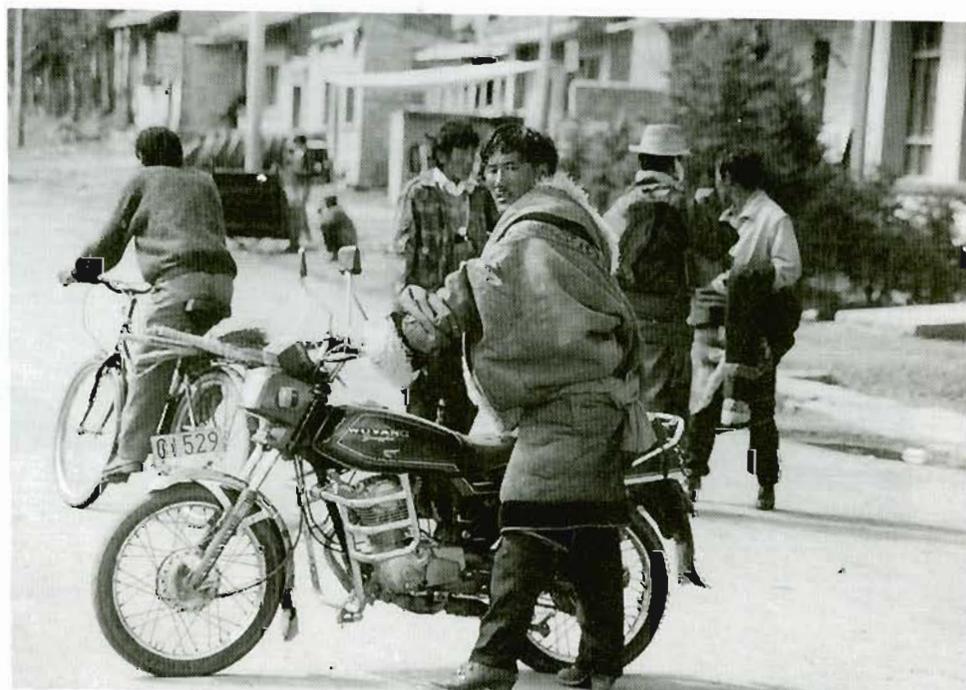
# C H A N G E S

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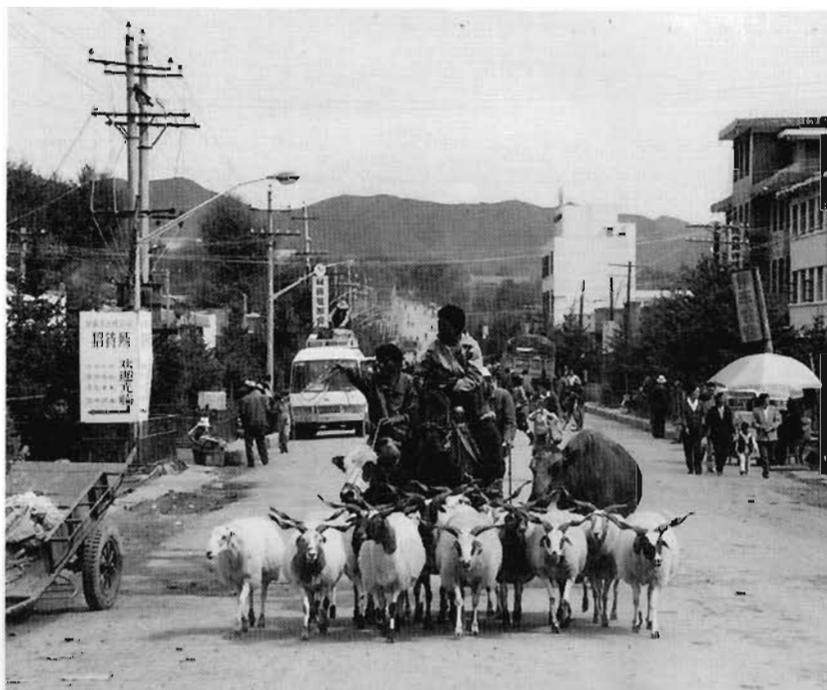


**Nomads with little to do, Shuanghu, Tibet, China, 1993**



**Nomads heading home, Hongyuan, Sichuan, China, 1997 (chapter photo)**

**Faster than a horse, Lugu, Gansu, China, 1996**



**Sheep being brought to market, Lugu, Gansu, China, 1996**



**Modern nomad way to travel, Damxung, Tibet, China, 1993**

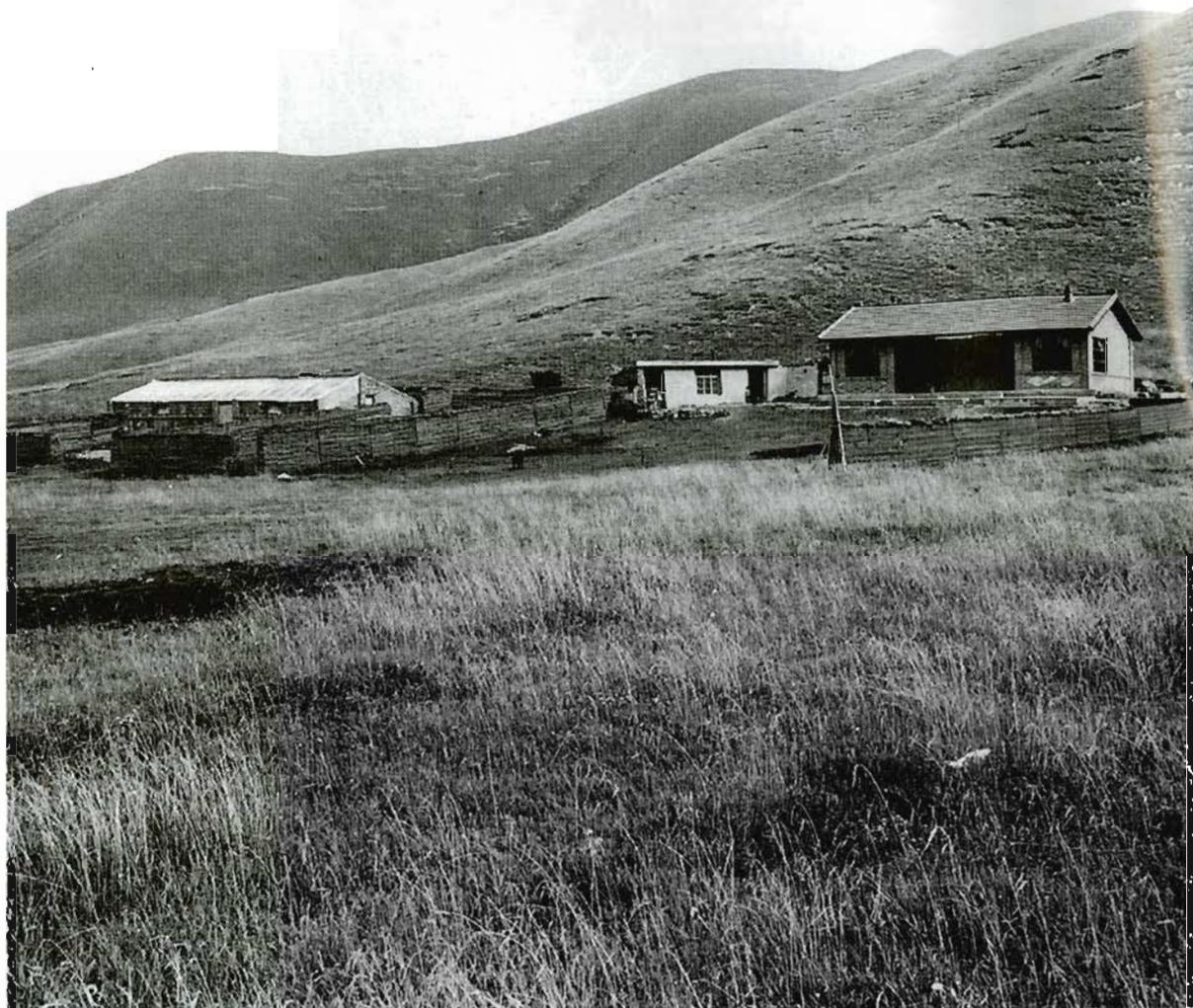
In recent decades, many changes have taken place on the rangelands that are transforming traditional rangeland use and conditions, pastoral systems, and the lives of herders dependent on rangeland resources. Nomads and their pastoral systems have always been confronted with events that change their lives – droughts that wither grass, winter storms and livestock epidemics that wipe out herds, and tribal wars that displace people and their animals – but the changes nomads are facing today on Himalayan and Tibetan rangelands are more profound and likely to have more significant, long-term implications on their way of life and the ecosystems in which they reside than any previous changes.



**Road, truck and fences, Near Zeku, Qinghai, China, 1997**

**I**ncredible socioeconomic and political pressures have harried Tibetan nomads over the past five decades. Raising livestock on the harsh Tibetan steppes — a risky venture at the best of times — has often been exacerbated by hostilities, political repression, and unsuitable development policies. In some areas, growing human populations have brought increasing pressures from farmers extending cultivation on to grazing lands formerly occupied by herders. Renowned for their independence, nomads throughout the Tibetan Plateau have encountered processes of change, integration, and development that have pulled them into much broader spheres of economic production and Communist Chinese administration. These processes have often created new problems for nomads, but they have also opened doors for new opportunities.

Such new changes include the modernisation process itself, which has brought improved access and services to previously remote nomadic areas and increased demand for livestock products; the expansion of agriculture on to rangelands and decrease in the amount of grazing land available for herds; disruption in traditional trade networks, which were often an important part of pastoral systems; the expansion of the protected area system with increased regulation limiting livestock grazing; and, more recently, policies to settle nomads and divide rangelands into individual family parcels. In many cases, the changes have altered previous, often stable, relationships between pastoralists and their environment. Pastoral systems are still in a state of transition, and it is not yet clear what patterns will eventually emerge.



**Tibetan herder's house and barn, Henan Mongol, Qinghai, China, 1997**



**Street scene, Henan Mongol, Qinghai, China, 1997**



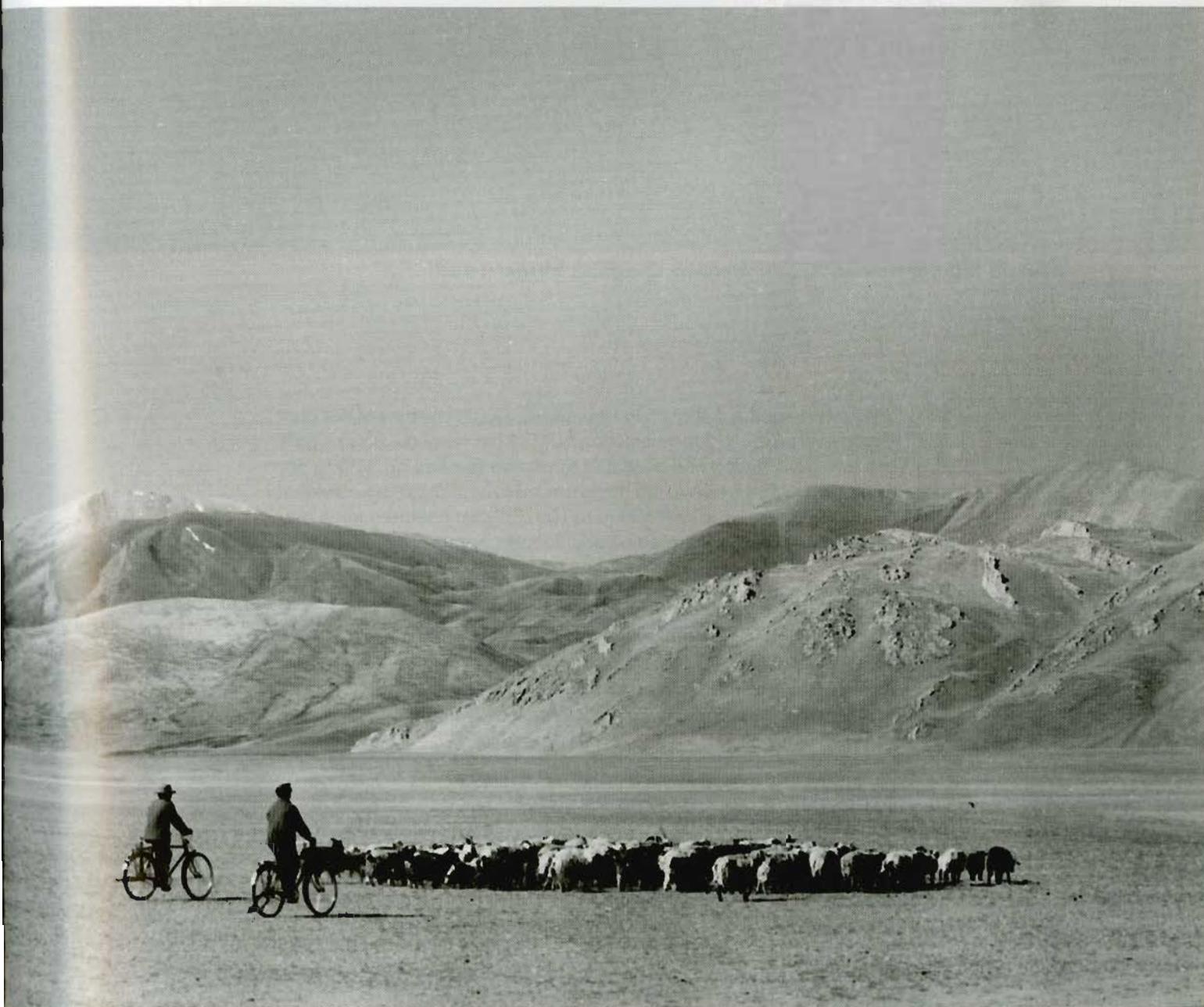
**Yak milk being collected for market, Hongyuan, Sichuan, China, 1996**

**Nomads returning home from town, Hongyuan, Sichuan, China, 1997**



**W**ith the increase in human population in the region, along with a rise in people's incomes, there is an increasing demand for livestock products from pastoral areas. Many nomads have now entered the market economy, selling their livestock products and purchasing goods they require, in contrast to traditional barter systems. Many pastoral families have greatly improved their standards of living. Nomads throughout the Tibetan pastoral areas of western China, who until a few years ago still lived in tents the year-round, have now built houses and barns and have erected fences around private winter pastures, although most herders continue to live in tents in the summer. Herders are also demanding improved social services (schools, health clinics, etc), as well as improved veterinary services and market outlets for livestock products. Keeping abreast of the changes taking place on the grasslands is an important task for pastoral researchers. These changes and the effects they have had - and are having - on the rangelands, livestock production, and socioeconomic dynamics of pastoral societies need to be analysed.

**Modern way to herd sheep, Phala, Tibet, China, 1997**



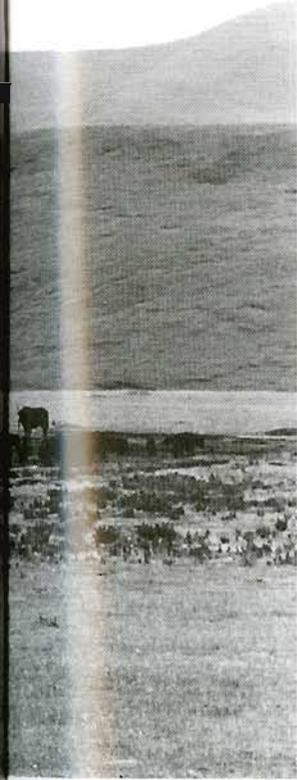


**Tibetan nomad house, Henan Mongol, Qinghai, China, 1997**

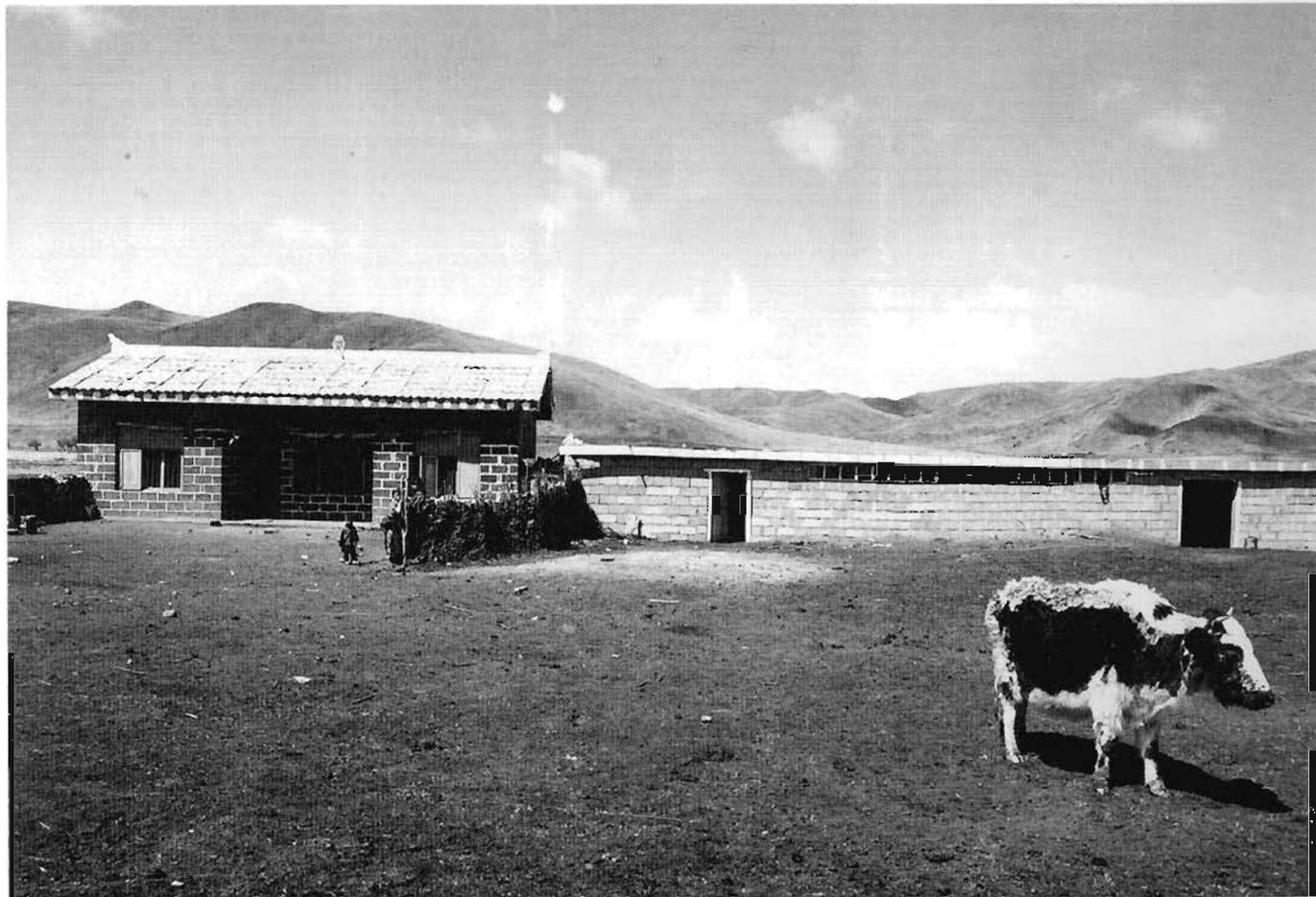
**P**astoral development policies in Tibetan Plateau rangelands of Western China now promote the settling down of Tibetan nomads. Rangelands are being privatised and allocated to nomad families on a 30 to 50-year contract basis. Rangelands are being fenced to demarcate an individual nomad's land that has been contracted to him. Special pastures for winter grazing or for hay meadows are also being fenced. The growing of oats for winter forage is encouraged. Houses for nomads and barns for livestock are being constructed. Roads, schools, health clinics, and service centres are being established in nomad areas. The government hopes that such activities will lead to improved management of the rangelands, increased livestock off-take, and an improvement in nomads' livelihoods. Given the generally poor experience with settling of nomads in other pastoral areas of the world, it will be interesting to watch the process of sedentarisation as it unfolds on Tibetan rangelands.



**New nomad house, Hongyuan, Sichuan, China, 1996**



**New nomad house and barn, Hongyuan, Sichuan, China, 1997**



In many parts of the Tibetan Plateau, current pastoral development policies and development programmes are transforming pastoral nomads into commercial livestock ranchers, operating on well-defined grassland properties (or at least increasingly more defined with grasslands being contracted to nomads). What effect will this privatisation and enclosure, of what was once 'open range', have on rangelands in the future? Will nomads overgraze pastures that they view as their own property now? How will private pastures and fences affect traditional mechanisms for pooling livestock into group herds and group herding over large areas? Fencing is expensive, relative to the benefits. Is the huge investment being made in fencing Tibetan rangelands really economically sustainable? Is privatisation of the rangelands really the best approach to adopt in Tibetan pastoral areas where the low productivity of the land may make it uneconomic to create individual rights? These questions, and other related ones, need to be answered in order to better understand pastoral production systems and to be able to make wise decisions for the best use of the rangelands.

**Tibetan nomad camp, Henan Mongol, Qinghai, China, 1997**





**Carts taking yak dung to market, Henan Mongol, Qinghai, China, 1997**



**Nomads riding into town, Henan Mongol, Qinghai, China, 1997**

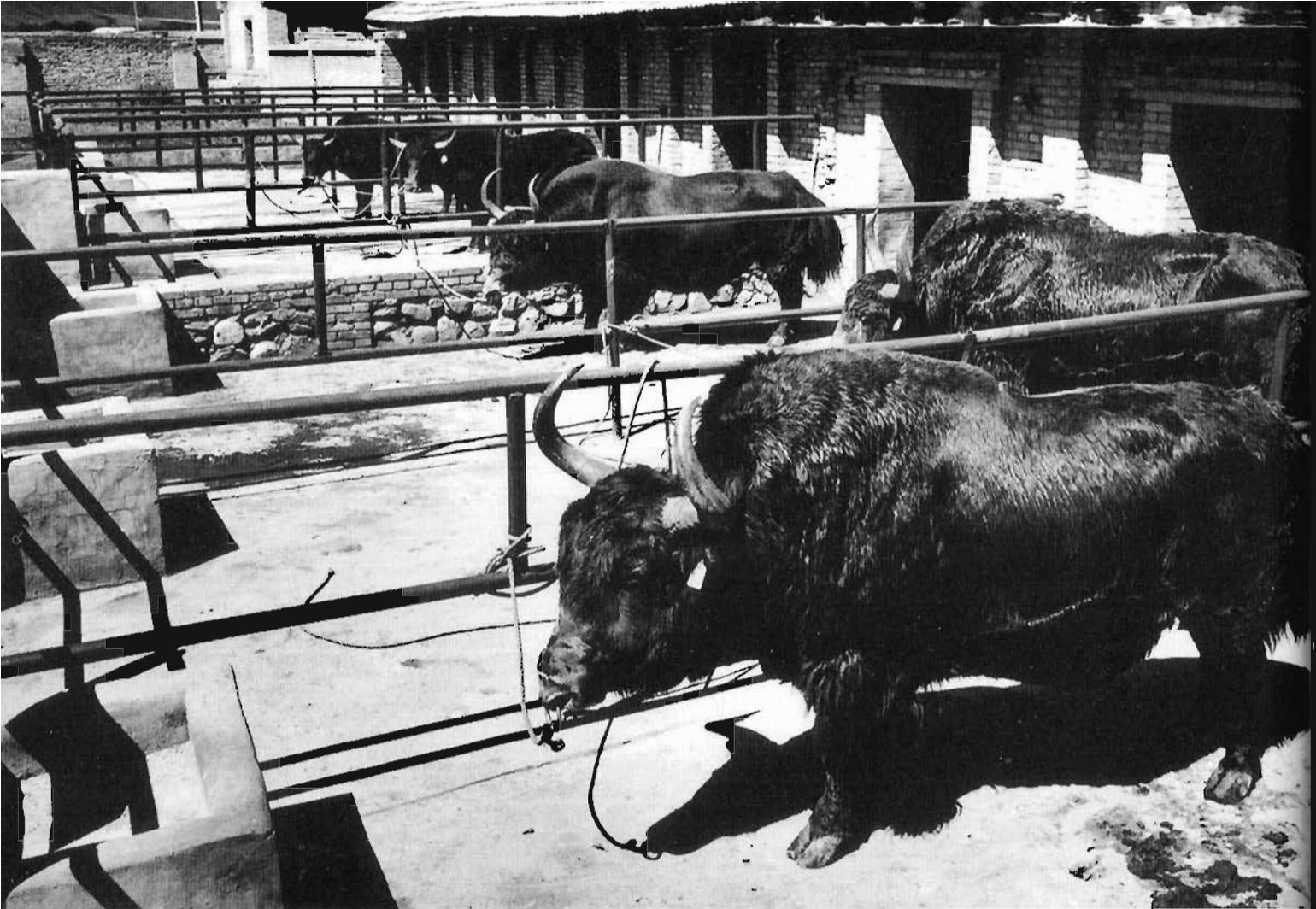


**Wild yak skull, Chang Tang Wildlife Reserve, Tibet, China, 1994**

**W**ild yaks characterise the rugged wilderness of the Tibetan Plateau. No other animal so evokes the raw energy and wild beauty of the Tibetan landscape. Standing almost two metres tall, wild yak bulls can weigh up to a tonne. Their horns, which can be a metre long, are still used as milk pails by Tibetan nomads. Wild yaks are magnificent animals. Their long hair hangs like curtains, almost sweeping the ground, and makes them appear even more massive than they actually are. Female wild yaks and their young congregate in large herds, sometimes made up of one hundred or more animals, while most bulls are solitary or live in small bachelor herds. The wild yak is a totem animal of the Tibetan wilderness and achieved mythic status long ago in Tibetan life. Superbly adapted to the rugged conditions of the highest plateau on earth, wild yaks are a keystone species: their presence identifies one of the last, great unspoiled ecosystems of Central Asia.



**W**ild yaks once roamed throughout the Tibetan Plateau and numbered in the millions. Now, only an estimated 14,000 wild yaks are left, and these animals can only be found in the most remote areas, far from the hunters' guns. Wild yaks are probably the wildlife species under the greatest threat in Tibet today. Despite the fact that wild yaks are officially protected under Chinese wildlife protection legislation, poaching of wild yaks continues and wildlife authorities are often ill-equipped to deal with organized gangs of poachers. Preserving the remaining herds of wild yaks is crucial for biodiversity conservation. Without the wild yak, the rangelands of Tibet will have lost one of its characteristic species.



**Wild yak stud bulls, Datong Yak Farm, Qinghai, China, 1997**

**W**ild yak bulls are now being used for cross-breeding programmes with domestic yaks to improve yak productivity in China. Semen is collected from wild yak bulls that were captured as calves and now raised on government farms. Wild yak semen is frozen and used in artificial insemination with domestic yak cows. The male F1 crosses from these matings are also used as breeding yak bulls to improve yak productivity. Domestic yak calves sired from wild yak bulls (and bulls that are 50% wild yak) are much bigger and more productive than pure domestic yaks. These programmes highlight the need to conserve and manage the remaining herds of wild yaks still found on the Tibetan Plateau of China.





Deer, such as the white-lipped deer which are native to the Tibetan Plateau, are being raised on government farms in China. Their antlers are harvested for medicinal purposes. When considering management of rangelands and pastoral development in the Himalayas and on the Tibetan Plateau, greater attention needs to be directed towards animal resources other than livestock that could be raised by pastoralists to earn additional sources of income. With increasing reliance on market economics and some visionary rangeland planning, some Tibetan nomads may be raising deer instead of yaks in the future. Of course, then they will be probably be competing in the international market with New Zealand's deer farmers – who are already well advanced in deer farming. Who knows? in the future, nomads in northern Tibet may also be managing large herds of Tibetan antelope in order to harvest their valuable wool.

**White-lipped deer, Datong Yak Farm,  
Qinghai, China, 1997**

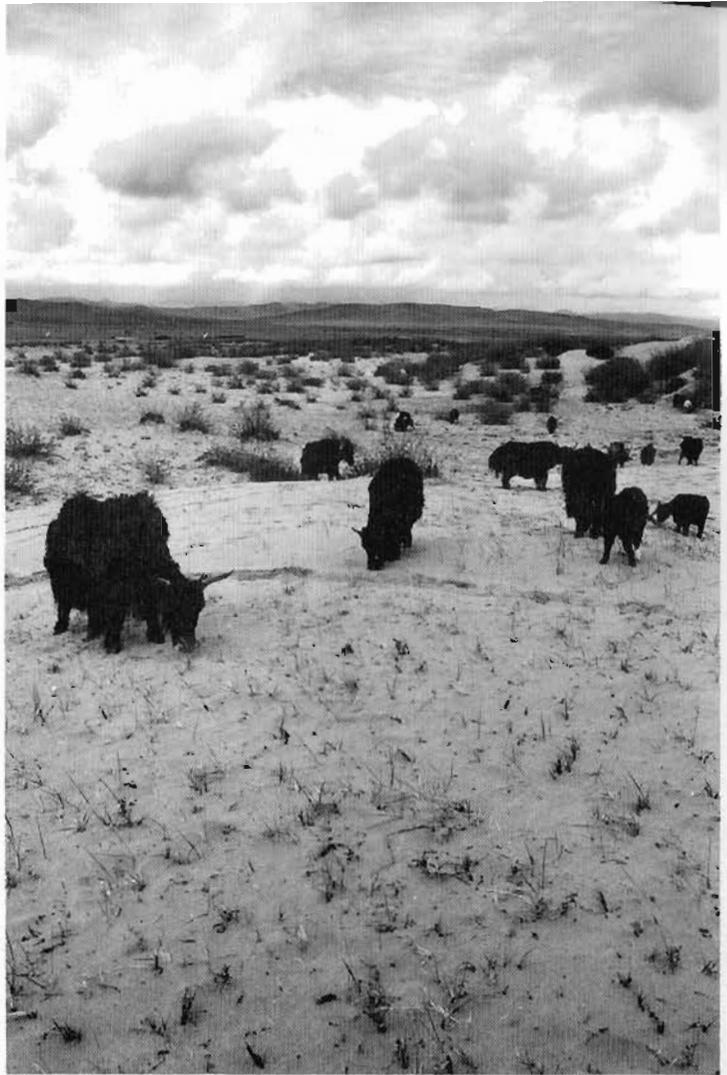




**Rangelands, forest, and log trucks, Zhongdian, Yunnan, China, 1998**

**R**angeland degradation, loss of biodiversity, and increased marginalisation of pastoralists result from mismanagement of rangeland resources. The general lack of concern for rangelands in the Himalayas and on the Tibetan Plateau means that not enough, good ecological research has been carried out in these grazing land ecosystems and, therefore, rangeland dynamics are not well understood. This complicates proper assessments of the causes of rangeland degradation and decline in rangeland productivity and biodiversity.

While overgrazing by livestock is a problem in many areas, livestock are often wrongly blamed for vegetation changes and rangeland degradation. There is increasing evidence that a general climatic trend of desiccation may be responsible for much of the vegetation change and apparent degradation that is taking place. When the actual causes of perceived rangeland problems are misinterpreted, as is often the case on the Tibetan Plateau when the ecology of the rangelands is not well understood, efforts to address the problems are often frustrating and unsuccessful. Successful efforts to conserve and manage rangeland resources must address the full range of causes of rangeland degradation, loss of biodiversity, low livestock productivity, and marginalisation of pastoralists and embrace the opportunities that rangeland ecosystems and pastoral people offer for sustainable development.



**Yaks and sand  
dunes, Zoige,  
Sichuan, China,  
1996**



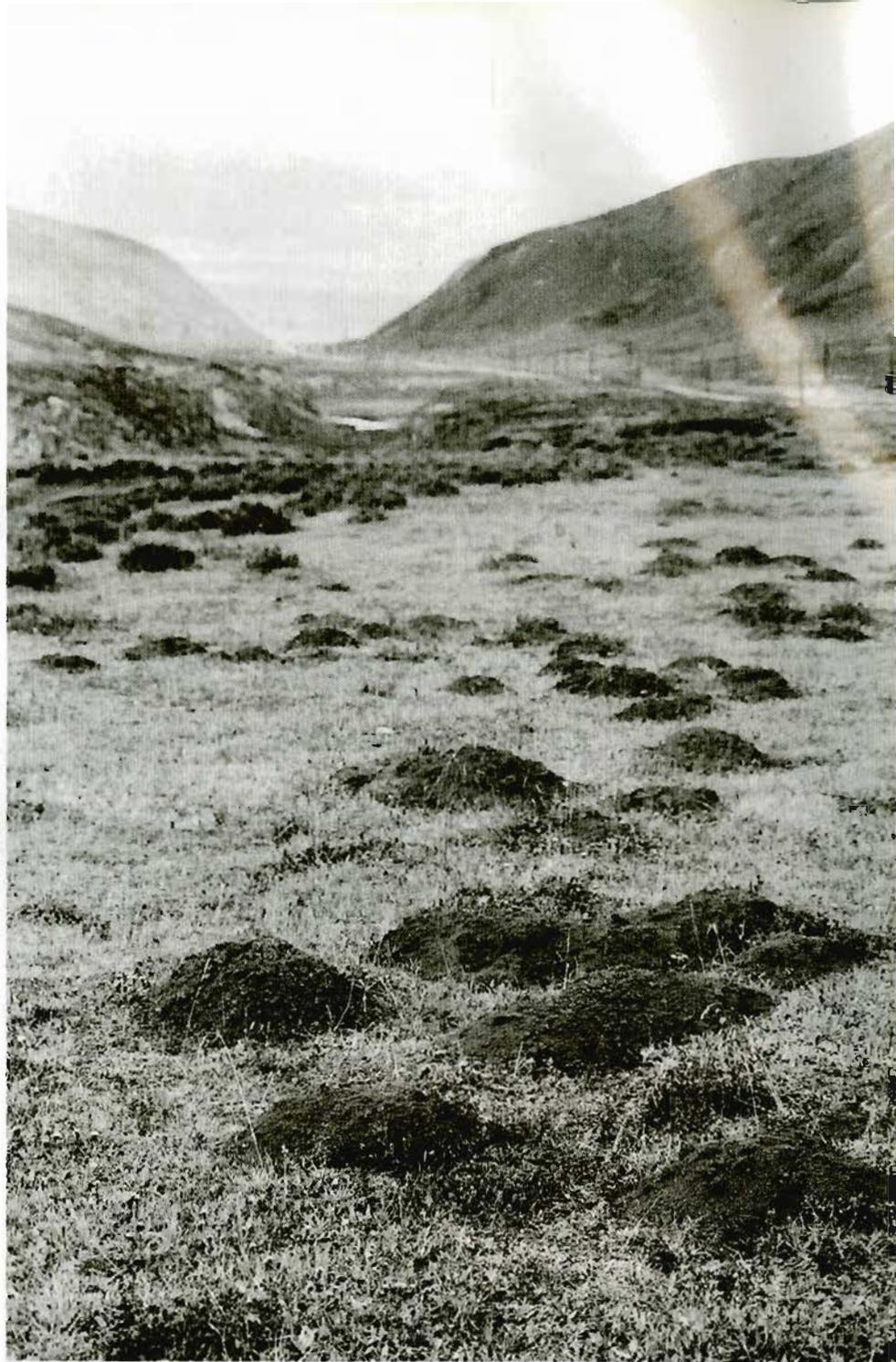
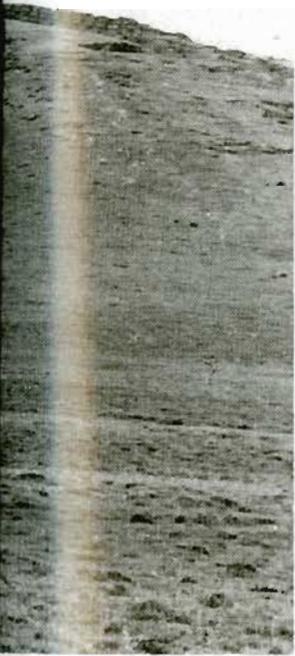
**Eroded landscape,  
Mustang, Nepal,  
1992**



**Degraded rangelands ["black beach"], Zeku, Qinghai, China, 1997**

**M**isconceptions about the sustainability of nomadic pastoralism on the Tibetan Plateau are widespread. Popular misconceptions include fallacies that livestock numbers have greatly increased in recent decades; livestock are the cause of environmental degradation taking place; degraded ranges could be improved if stocked at carrying capacity; large herds maintained by nomads are uneconomic and only a status symbol of wealth; grazing lands can be turned to more productive uses; and that new institutions and organizations need to be put in place to improve range resource management.

The realities are that, in many Tibetan pastoral areas, livestock numbers have not increased in recent years and current attempts to limit animal numbers may be ill conceived. Secondly, there is increasing evidence that a general climatic trend of desiccation and warming may be responsible for vegetation changes taking place that may be wrongly perceived as degradation due to heavy livestock grazing. Even if overgrazing is taking place, it is not livestock but people and their inappropriate policies and mismanagement of resources that should be blamed for degradation. It is also becoming increasingly apparent that existing paradigms for explaining the dynamics of rangeland ecosystems have not captured the dynamic nature of Tibetan rangelands and, therefore, traditional measures for range conditions and carrying capacities have not been effective gauges for management in pastoral systems. Thirdly, even if seemingly uneconomical, herders often will not be willing to reduce animal numbers, since large herds provide insurance against losses and competitive advantage in exerting control over grazing resources in addition to social status and livestock products. Fourthly, much of the land being used for grazing is marginal and unsuitable for cultivation, and ruminant livestock are the most efficient land use means to convert plants into products useable by mankind. Finally, pastoral societies have usually developed sophisticated ways of managing range resources which outsiders often do not understand or acknowledge.



**Mole-rat mounds destroying the grasslands,  
Zeku, Qinghai, China, 1997**

**R**angeland degradation, illustrated by areas of rangeland that have lost their vegetative cover (known as 'black beach' in China) is an issue on the Tibetan Plateau. Large areas of this 'black beach' are found in the eastern parts of the Tibetan Plateau in *Kobresia* sedge meadows. While the causes of this degradation are still not well understood, it is believed by some researchers that the general desiccation, or drying up, taking place on the Tibetan Plateau may be responsible. The rangeland environment can no longer support *Kobresia* plant communities and the rangeland is going through changes to a plant community more dominated by drought tolerant grasses and forbs. Livestock grazing, often perceived as the cause of 'black beach', may actually just accentuate natural ecological processes taking place on the landscape. Small rodents such as pikas ('rabbit-rats') and zokers ('mole-rats') also cause considerable rangeland degradation.



**Old beach lines of Mun Tso lake, Phala, Tibet, China, 1997**

**M**any of the large lakes on the Tibetan Plateau are much smaller than they were thousands of years ago. Old beach lines, in some cases 40 metres above the present shore lines, indicate the degree to which lakes have dried up. This general desiccation that is taking place is also affecting vegetation and is especially apparent in the alpine *Kobresia* sedge meadow communities. Researchers have noted that, in many of these plant communities, the environment can no longer support sedges and the vegetation is changing to a grass steppe type. These vegetational changes have important implications for the future of the Tibetan Plateau rangeland ecosystem, as these sedge meadows provide vital grazing for livestock and wildlife. Reduced plant productivity in these areas could have serious repercussions for livestock production and pastoralism over a wide area, with critical implications for wildlife as well. These climate-induced vegetation dynamics need to be better understood and vegetation changes should be monitored to detect changes and to develop appropriate pastoral management plans.

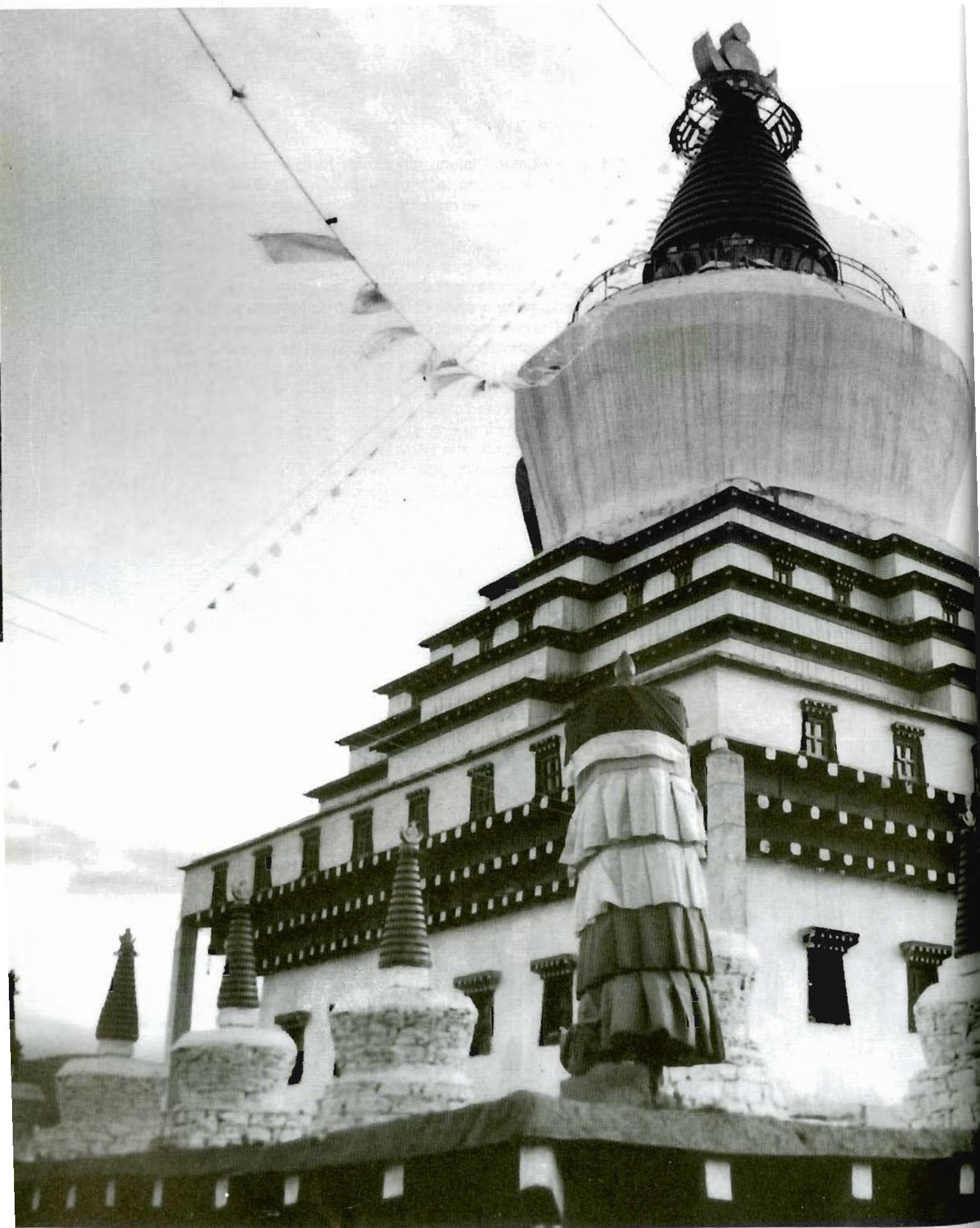




Since Tibetan Plateau rangelands have been subjected to livestock grazing for thousands of years, livestock have probably affected rangeland vegetation composition in many areas. Analysing the nature of these man-induced changes will help to explain ecosystem processes and the impact of livestock on the rangelands. New perspectives about non-equilibrium ecosystems, such as are often found in pastoral areas, provide fresh paradigms for analysing the Tibetan rangelands and pastoral systems. The new concept of relatively stable, multiple vegetation states with thresholds or transitions between these vegetation states is also emerging as a framework for analysing rangeland vegetation. These perspectives differ markedly from the Clementsian Paradigm of plant succession and plant climax communities, offering promise for improved descriptions and measurements of rangeland conditions. Exploring the relevance of these new concepts for Tibetan and Himalayan rangelands could have important implications for the future management of these pastoral areas.

**Rangelands and mountains, Phala, Tibet, China, 1997**





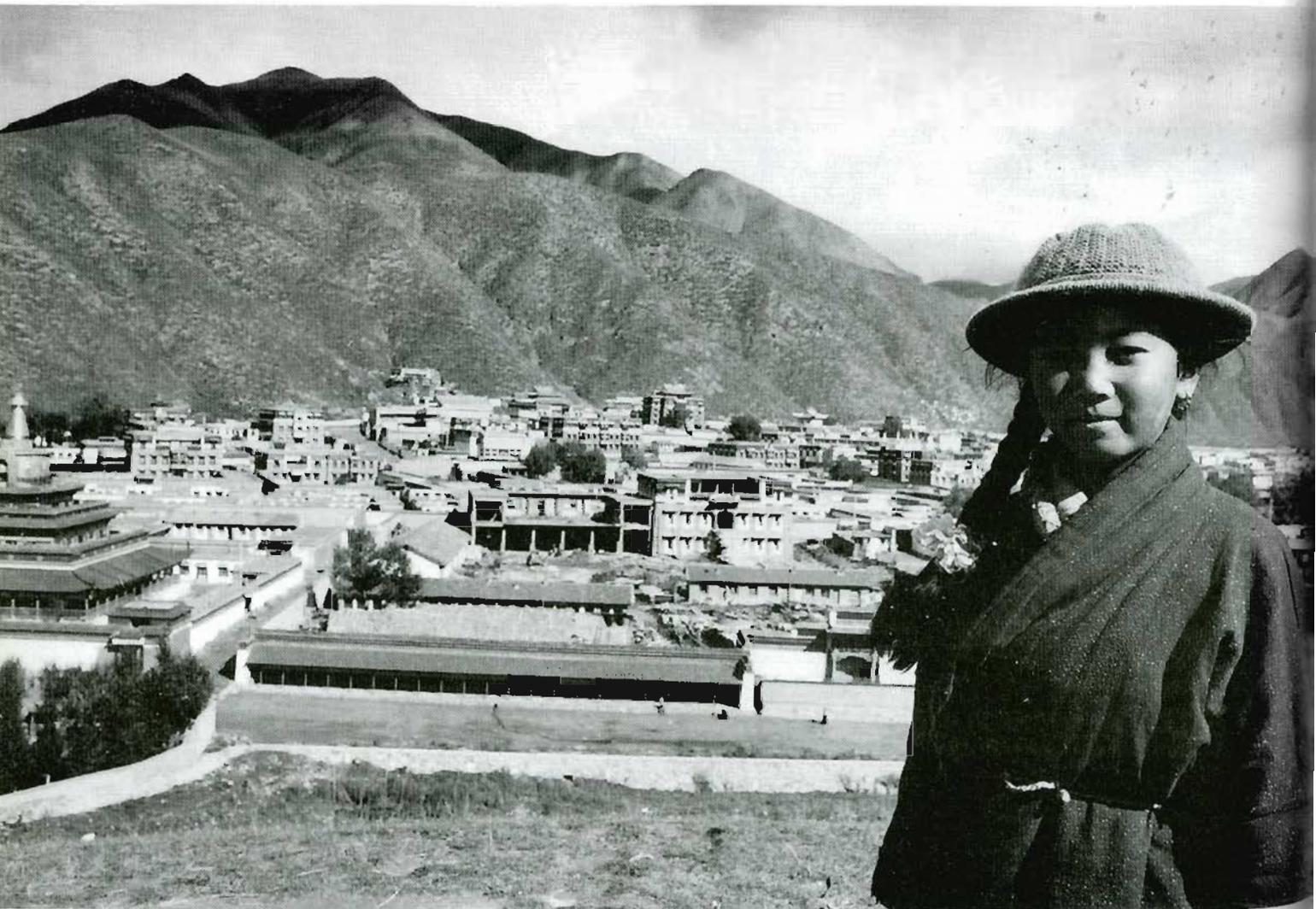
Stupa, Aba, Sichuan, China, 1996

In traditional Tibetan pastoral society, large monasteries often controlled vast estates of grazing land. There were often detailed, written prescriptions for the management of rangelands which allowed for adjustment of livestock numbers and their distribution or reallocation across the monastic estate, based on grazing conditions and changes in herd sizes. Records were also maintained of livestock numbers and animal production. Although many of these written records were lost in the upheaval that took place during the Cultural Revolution in the 1960s and 1970s, those records that survive can be a valuable source of historical information on livestock distribution and nomadic production parameters that would make for interesting comparisons with present day livestock practices.



In the late 1960s, when the Cultural Revolution swept China like a firestorm, the pastoral way of life for Tibetan nomads was torn apart. Overnight, pastoral systems that had been in place for centuries were stamped out. Almost all aspects of pastoral production and nomads' social lives became rigidly fixed by central government policies. Communes were established, nomads' livestock and assets were seized, and nomads were given specific jobs related to certain aspects of collectivised livestock production. In many areas, overall pastoral production fell and nomads' standards of living declined as a result of forced sales that had to be made to the government. In 1981, the commune system was abolished in Tibet and the communes' assets were allocated to individual nomads. Pastoral production soon returned to what it had been prior to collectivisation, although an administrative structure was now in place to provide social services and to try to regulate livestock numbers to prevent overgrazing.

**Tibetan girl and Labrang monastery, Xiahe, Gansu, China, 1996**



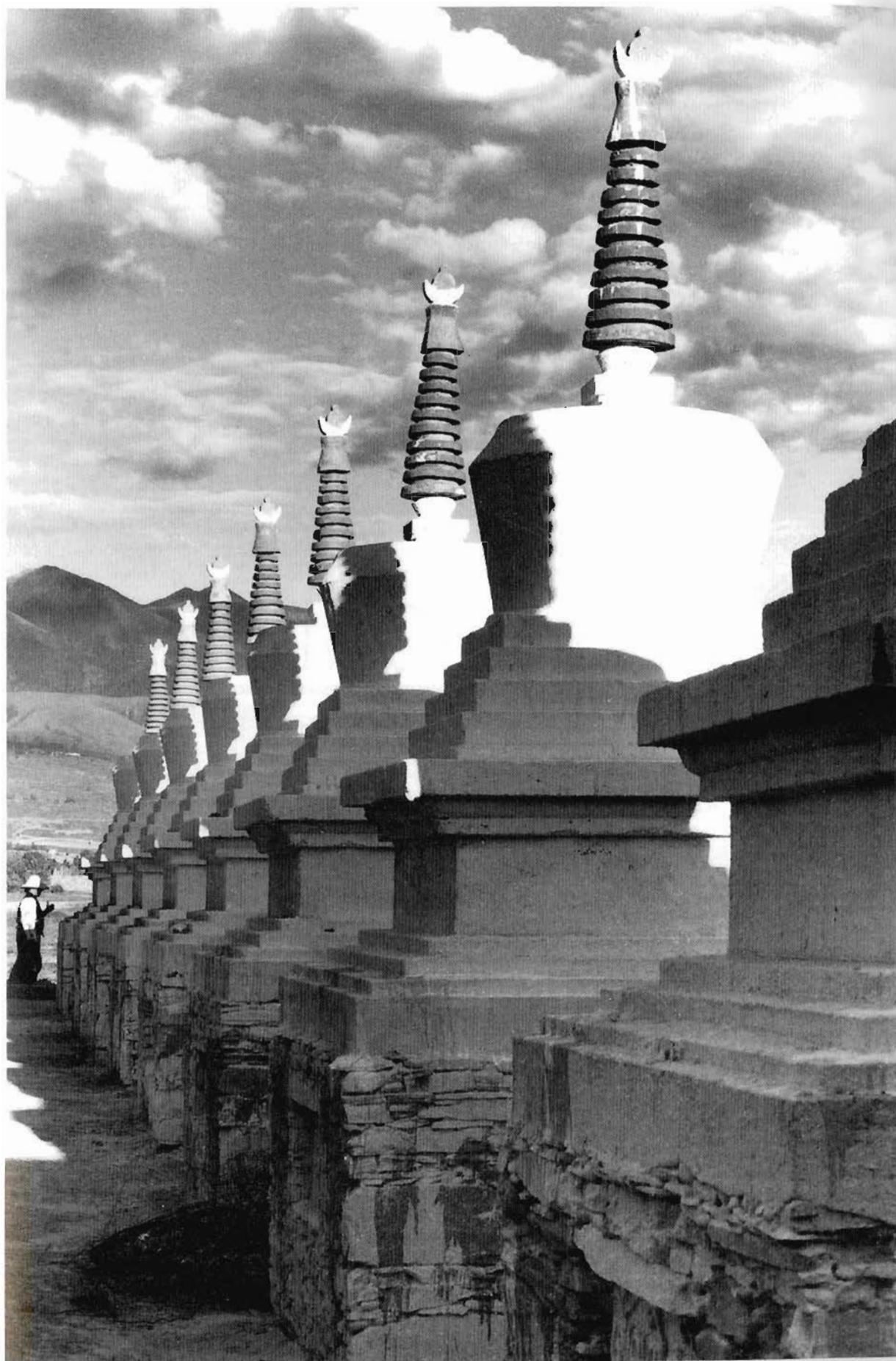
**D**uring the Cultural Revolution, thousands of monasteries were destroyed in Tibetan pastoral areas. In recent years, many monasteries have been rebuilt and nomads are again free to practice religion. Tibetan Buddhism is a significant factor on the lives of the nomads today, as it has been for centuries. Just as Buddhism has endured in Tibet, pastoralism is also likely to continue to thrive in the future on the high elevation grazing lands of the Tibetan Plateau. Nomads are likely to become more oriented towards commercial livestock production and they will be more closely linked to the market economy, but they will still practice nomadic pastoralism and move with their animals across the grasslands.

**Monk and monastery, Hongyuan, Sichuan, China, 1986**





Stupa, Zamtang, Sichuan, China, 1998



Stupa, Dawu, Sichuan, China, 1996