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Basutoland: A Historical Journey into the Environment

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ABSTRACT

Reconstructing the environment of Lesotho in order to assess soil erosion at different time scales, highlights conflicting views about the initiation of accelerated erosion. Indigenous agricultural practices were sensitive to the fragile environment and aimed to ensure a protective vegetative cover. The imposition of colonial conservation techniques overlooked local wisdom regarding soil erosion prevention, was often ineffective, and arguably accelerated soil erosion. Loss of flat fertile land to the Boers, changes from indigenous agriculture to commercial cultivation, concentration of population on steep slopes, were among causes that contributed to accelerated erosion, and to indigenous agricultural systems becoming less effective.

KEYWORDS

Soil erosion, historical sources, colonial conservation, indigenous knowledge, environmental reconstruction, vegetative cover

INTRODUCTION

The universe is made of stories, not atoms.

Muriel Rukeyser [1913-1980]

The aim of this essay is to assess the evidence for environmental degradation in Lesotho, using a wide range of historical sources. There are conflicting views about the origin of accelerated erosion in Lesotho. While much of the historical material used has limitations with regard to 'objectivity' (as will be explained below), these documents are nonetheless a valuable record from the past and help in the reconstruction of the landscape of Lesotho in the last century and early this century. Different aspects of the environment (e.g. climate, vegetation and erosion) will be considered from documentary sources for the precolonial and the colonial period in separate sections of this essay.

Sources

The historical sources employed include missionary recordings in the form of diaries, memoirs, drawings, letters and photographs; colonial documents in the form of official publications and letters; and oral history and interviews and photographs. Much of the French missionary records, as well as the colonial records used, are based on archival research both in Lesotho and in Cambridge. It is worth noting one source of very valuable information on the observations and experiences of French missionaries contained in 'Chronicles of Basutoland' by Robert Germond, the grandson of missionary Paul Germond who arrived in Basutoland in 1860 (Germond, 1967). However, the first to write about Basutoland were the European missionaries who arrived in 1833. These missionaries belonged to the Paris Evangelical Mission and their perceptions of the environment of Basutoland would have been strongly influenced by their own home environment, where they grew up, in rural France (which was forested). The latter would have acted as an 'environmental norm' against which they viewed the semi-arid landscape of Basutoland. It is quite evident from the following statement that comparisons with France were inevitably made:

... This country, the appearance of which has more than once recalled to me that of the Basses Cévennes, contains a population much inferior to that what it might support...¹ (Arbousset and Daumas, 1852, p. 107)

Since the historical recordings rely heavily upon the earliest French missionaries, it is appropriate to say a little about the missionaries themselves. Eugene Casalis (1812-1891) is considered to this day to have been the founder of the Basutoland mission (see Figure 1). He was born in Orthez (close to the Pyrenées) of Huguenot parents. His grandparents on both sides were Huguenots and had backgrounds in farming. As Huguenots, his family were victims of the persecutions after the Revocation of the Edict of Nantes and it was in this climate that Eugene Casalis was born. In his early years, his grandfather served as an inspiration to him and in his own words, we are informed: 'I had there under my eyes the spectacle of manners and of the piety of a Huguenot of the old times' (Casalis, 1889, p. 10). He was schooled in Orthez and studied in Paris for three years before leaving on a missionary career for southern Africa. He was in fact busy preparing to set out for Algeria (colonised by France in 1830), when the news arrived in May 1831 that he would be sent to the Cape of Good Hope, and that they would need to go 'a long way beyond the missionary settlement founded by Moffat at Kuruman in the north-eastern Cape' (Casalis, 1889, p. 49). It was his first mission abroad and he agreed to go firstly out of duty, and secondly because he was also interested in studying the manners and customs of the 'primitive tribes' (*ibid.*, p. 15). He started learning Dutch and read everything he could find about the Hottentots and other natives of South Africa. He came to Lesotho at the age of twenty and belonged to the Maison des Missions.



FIGURE 1. Eugene Casalis, French protestant missionary and founder of the first mission station in Lesotho

Casalis set out for southern Africa together with Thomas Arbousset (1810-1877), a Frenchman and colleague of his from Paris, and an artisan missionary, Constant Gosselin (a Catholic who joined the Paris Evangelical Mission to help with carpentry, masonry, publishing, drawing etc.). The three missionaries arrived in Basutoland in 1833 to meet King Moshoeshoe I, and subsequently set up the first mission station at Morija (Figure 2).

The first Catholic mission station was set up in Roma around 1860. Relevant environmental history recorded by the Roman Catholic missionaries was obtained from the Vatican archives and Propaganda Fide missionary archives in Rome. Much valuable information was

obtained from old letters sent by missionaries and kept at the station in Roma. Additional recordings were made through interviews with present and retired missionaries based in Lesotho and abroad.



FIGURE 2. French protestant mission station established in Morija, from a sketch by Gosselin, dated 1848. (Source: Morija archives)

Interpretation of Sources

It is important to be cautious when using historical sources as evidence of environmental change. Hooke and Kain (1982) highlight some of the major concerns in using historical sources in general, and these are considered below.

- i) Contemporaneity of documents. This issue is concerned with the length of time between an event and the document in which it was recorded. The seriousness of this is evident when reconstructing (for example) climatic characteristics, since peoples' memories of an extreme event may either fade or, in recalling an event which has long passed, they may exaggerate the event.
- ii) Propinquity. This is concerned with whether the document was written from first-hand experience. As 'stories' are passed from person to person, they have a tendency to get distorted, understated, or exaggerated.
- iii) Extent of generalisation in the records. This is particularly relevant to some of the historical recordings for Lesotho, where certain observations of the landscape may be generalised to include the entire country, when in fact only a very small area may have been seen and recorded.
- iv) The purpose for which the document or report was written. This will influence the tone in which the document is written, and the contents may vary depending on the anticipated readership.

Even missionaries themselves had to rely on secondary sources, and Ellenberger² and MacGregor (1912, p. xi) illustrate their own dilemma as follows:

...many and various are the versions of events in the distant past, and how difficult it is to select the right one. There are no written records or books of reference to which the historian may refer for the elucidation of a disputed point. Oral tradition is the sole authority, and when, as in the case of the Basuto, each tribe has kept its own independently, disputed points are many and frequent...

Having taken into consideration the above factors, these missionary reports and other historical documents remain the few available records which give access to past knowledge of the area. Again, Ellenberger and Macgregor (1912, p. xii) point this out:

Careful and conscientious study of the information given by the informants who have long passed away, who related what they had seen themselves, and what they had heard from their fathers, at a time when tribe tradition was still a living thing ...as such it may safely be...not only as the best authority on the subject it deals with, but the best that is ever likely to be forthcoming, owing to the ever changing condition of the Basuto.

It is crucial to understand the background of the writer, which in turn will influence the perception and attitude presented in a document. Further, it is important to view the historical writings within a broader context, for it is certain that both attitudes and later policies were influenced by international trends, as well as the events in the Cape colony. Another factor which needs to be considered is the scientific *Zeitgeist* of the middle of the last century. The publication of two important books, *Principles of Geology* by Lyell in 1832 and *The Origin of Species* by Darwin in 1859 provoked further pressure, via the scientific community, on colonial governments to introduce laws for the protection of indigenous faunal and floral species (Grove, 1992). Interestingly, religious thinking and the changing lines of intellectual thought in the scientific community, whilst often in conflict (for example in the theory of evolving species), were increasingly merging and this is clearly reflected in the early writings of the missionaries of the Cape Colony, notably John Croumbie Brown and his predecessor Robert Moffat (Grove, 1989). While both Moffat and Brown were based in the Cape Colony, their writings and ideas influenced official policies of the Colonial administration and many policies on the environment were later transferred to the other colonies such as Southern Rhodesia, Basutoland and Bechuanaland. In order to explain the reasons for desertification without attributing such an environmental horror to God, Moffat blamed the natives and their sinful habits (e.g. rain-making rituals). Thus in his reasoning, Moffat saw the drought as a sort of punishment of the non-Christian natives. Later, using the reasoning advocated by the changing scientific philosophy (e.g. ideas from emerging publications by Lyell and then Darwin), the concept of climatic change was proposed by Moffat and later adopted by Brown, and the arguments portraying the native as the environmental destroyer were made more sophisticated. Desiccation and desertification were shown to be the result of vegetation removal. This argument was not purely coincidental; in Europe the effects of forest clearance for agriculture had already been observed and written about (Humboldt, cited in Grove, 1989). There were, however, contradictions in embracing a purely scientific reasoning which introduced a timescale irreconcilable with Genesis (Grove, 1989). It is important to note, therefore, that precisely because drought was seen as a direct consequence of native indigenous land-use practices (thereby removing blame from the European settler) rather than a natural (therefore 'God-controlled') phenomenon, the ideas of Moffat and Brown were readily accepted by the State. These ideas were used by the Colonial administration to legitimise their 'control' over natives by employing discriminatory laws.

Following centuries of land conflict and increasingly harsh legislation, the Land Acts of 1913 and 1936 were designed to confine the black population of South Africa onto a mere thirteen per cent of the land, thereby denying them access to natural resources. In 1939 a policy of 'betterment planning' was

introduced in a misguided attempt to completely restructure rural black areas with a view to improving agricultural production. In order to give effect to the policy, hundreds of thousands of people were relocated from their dwellings to closer settlements, while arable land and commonage were arranged into larger, contiguous units. There are records of bitter struggle and opposition to these betterment schemes (e.g. McAllister, 1989). It will be illustrated later how the concept of 'betterment schemes' was exported to other colonies in southern Africa, including Lesotho.

THE PRECOLONIAL ENVIRONMENT

The first to inhabit Basutoland, and indeed most of southern Africa, were the San (referred to as Bushmen). The Bushmen, who were hunter-gatherers, roamed freely in the eastern Cape and Basutoland hunting wild animals, feeding on roots and wild plants, and therefore would have altered the environment very little. The cave paintings of the Bushmen bear testimony to their presence in many areas of southern Africa, including Lesotho, Orange Free State and the Drakensberg. With regard to their presence in Lesotho, Stow and Theal (1905, p. 191) point out that

the walls were at one time covered with paintings depicting the history of the aboriginal inhabitants of the mountain, their manners and customs; but these alas! have now been destroyed by the goats and cattle of the Basuto and the Boers, who have turned the ancestral abode of the Bushmen into a cattle and sheep kraal.

It is probable that the Bushmen, prior to the arrival of the Bantu clans (referred to as tribes), had lived in undisturbed possession of the land for thousands of years (*ibid.*). When Europeans first encountered the Bushmen in the seventeenth century, they were impressed with their ability to kill animals from a distance using poisoned arrows with great skill. When the first Bantu tribe arrived, there was no conflict with the Bushmen, for the underlying doctrine was that land could not belong to anyone, and that everyone was free to use it. As long as the agricultural practices of the Basuto did not interfere with the hunting of the Bushmen, all was peaceful and land disputes were unknown (Ellenberger and MacGregor, 1912). The first Basuto clan is believed to have arrived in Lesotho around 1750 (Theal, 1910). Casalis (1861) confirms that there was proof that at least five generations had lived in Lesotho by the mid-nineteenth century. The Basuto are comprised of at least six clans, of which the principal is the Bakuena (The Men of the Crocodile). It is not surprising that the forefathers of the Basuto initially settled along the fertile plains of the Caledon. The Basuto were known for their agricultural skills, and were well organised in their settlements, indicating an advanced society (Stow and Theal, 1905).



FIGURE 3. Thaba Bosiu mission, established in 1837. The drawing is from a letter by missionary Mabile, and is dated 1869. Notice the romantic way in which the village is depicted. (Source: Morija archives)

Following conflict with the Boers and cattle thefts, they favoured the plateaus which were conveniently flat-topped with steep sides making them natural fortresses. The grazing of animals posed a problem since the slopes provided rich pasture, yet presented the risk of theft.

All three of the first French missionaries travelled widely in Lesotho, with Arbousset discovering the source of the Orange River in the Blue mountains. Their writings and those of other missionaries are discussed (as far as possible in chronological order) to enable as clear a picture as possible to unfold of the state of the environment in Lesotho in the last century. The descriptions made by the missionaries as they entered Basutoland reflected the French Romantic tradition in their writing (Grove, 1989). Figure 3 depicts Thaba Bosiu in a romantic way. It is quite evident that the European missionaries were impressed by the lushness and beauty of the country. It has to be borne in mind that in order to reach Basutoland from Cape Town, they would have spent much time travelling through the dry and barren Karoo and hence the contrast is sharpened (Figure 4) and this is clearly evident from the following:

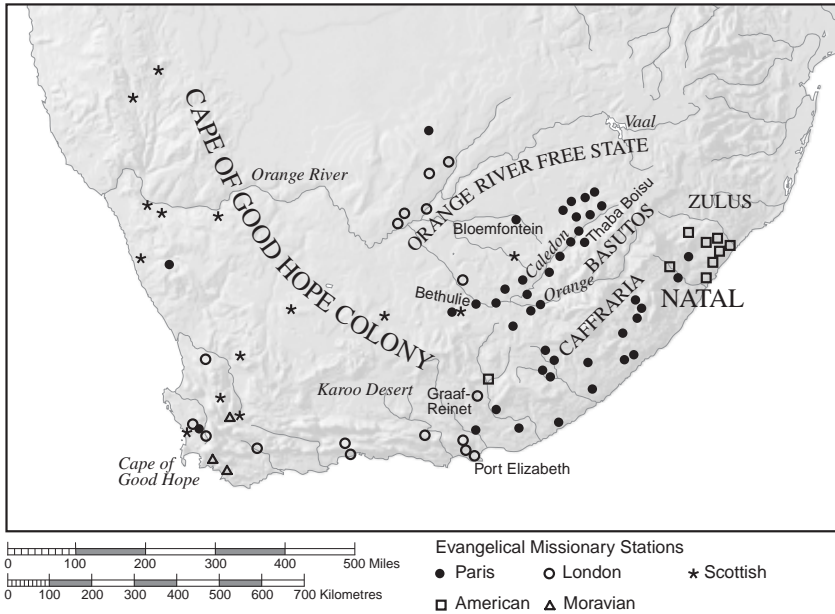


FIGURE 4. The first French missionaries travelled from Cape of Good Hope through the Karoo via Graaff-Reinet and Bethulie, and finally to Thaba Bosiu. (Source: Casalis, 1861)

The waters of the Saule are good, clear and transparent, and, in several places, deep. We never wearied of admiring this scene, whose charming aspect contrasted so vividly with many a depressing and monotonous prospect the sight of which had afflicted us in our peregrinations. Here on the contrary, everything is big, everything lively and animated... (Arbousset in Germond, 1967, p. 28)

For convenience, this section will be divided according to descriptions of the landscape (both lush and barren), vegetation, agriculture (including types, tenure and practices), climate and erosion (with special reference to gullies).

Landscape

In this section an attempt will be made to reconstruct, using quotations from historical documents, the landscape of the early nineteenth century when the first missionaries arrived.

Since our entrance into this country of the Basuto we had encountered springs and little streams almost at every step, and were able to quench our thirst super-abundantly as well as to wash and refresh ourselves.³ (Casalis in Germond, 1967, p. 23)

They had a preconceived view (e.g. according to the maps prepared in Paris) of the landscape. Instead they were pleasantly surprised:

The scene forced from us a cry of admiration. The next thing was to laugh at the Paris maps, and the resemblance of the scene before us to the 'barren and desert plains' they had led us to expect. (Casalis, 1889, p.170)

In general, the view expressed by the missionaries upon their arrival in the country is one of fascination, and there is an ever-present urge to compare with Europe. It is nonetheless interesting to note their observations of details in the landscape, especially certain details which are absent today. A feature of Morija which the missionaries found, and which is absent today, is indicated by the following (see also Figure 5):

When I arrived at Morija with my two friends in 1833, there was every indication that the locality had been a swamp for a long period. A small lake existed in a depression, in which waterfowls and heron played, and where otters and a good many water snakes were to be seen. The water which came down from the mountain was strong enough and its flow sufficiently continuous to collect at the bottom of the valley, where it fed a number of very clear pools and charming brooks. So pleasant did we find it that we named it Lerato (Love).⁴ (Casalis in Germond, 1967, p.26)

Mention is made of the bogs between Grahamstown and Basutoland:

we have had the rain on which we reckoned, plus the bogs which we had not thought of...⁵ (P. Germond, 1874 in Germond, 1967, p. 461)

It seems, however, that *vleis* or marshes were observed in other places as well: for example Arbousset and Daumas during their travels in 1836, observed:

See these vast depressions fed by the Tikoana, they are always full of good water for the cattle... The area is a vast plain which is, properly speaking, nothing less than a great natural hollow...there are a great number of natural depressions which we are assured are full of water the whole year round ⁶(Arbousset and Daumas in Germond, 1967, p. 64)

The fact that then there were lakes, marshes and *vleis* indicates conditions of reduced infiltration in valley bottoms. This could have been due to either the nature of the soil (e.g. rich in clay) or a substantial vegetative cover on the surrounding slopes to promote infiltration and the maintenance of a high water table. The fact that these swamps no longer exist, could provide an important indicator of changed surface conditions, or climatic factors (more detailed discussion is contained in Singh, 1994).

Vegetation

According to an informant of Stow and Theal (1905), who was a descendant of the Batlapin (Men of the Fish) which is the closest tribe to the Bakuena (Men of the Crocodile – the tribe from which Moshoeshe descended), the Batlapin apparently claim that in ancient times the rainfall was great and the land much greener. Mention is made of giant trees and forests, and impassable rivers where hippopotami played. According to Stow and Theal, at the time of Moffat's arrival (in the early nineteenth century) he saw evidence of what must have been more fruitful years, since he found:

an immense number of roots and stumps of enormous trunks of the *Acacia Giraffe*, which requires an age to become a tree. Some of the trunks met with were of such enormous size that he supposed if the time were calculated necessary for their growth, as well as their decay, one might be led to conclude that they must have been in existence several thousand years. 'Now,' said Moffat 'one is scarcely to be seen raising its stately head above the shrubs'. (from Stow and Theal, 1905, p. 418)

The observations of the missionaries and travellers, from the Cape to Basutoland, have the unifying theme of astonishment and admiration for the vegetation changes they found:

Small trees and brushwood, neither of which had been seen in any quantity, since leaving Graaff-Reinet, began to clothe the ravines and breaks in the hills, whilst Proteas and a variety of other dwarf trees skirted the bases...⁷ (Sauer and Theal, 1883, p. 8)

This theme of admiration is again reflected in the following:

The country through which we travelled on the first day of our march is crossed in every direction by green hills of varied and elegant shapes, intersected by immense lateral spurs of the neighbouring mountains, from the flanks of which numerous torrents descend impetuously. In spring it is covered with grass so tall as to reach a horse's breast. These prairies rival the most magnificent of our European pastures in richness and vastness. After the general conflagration which the natives kindle in their fields in order every winter to fertilize the soil, when abundant rains have caused the new grass to sprout, it is thither that the shepherds of Morija and the surrounding villages bring their flocks to pasture.⁸ (Arbousset in Germond, 1967, p. 28)

An early sketch by Gosselin depicts the area around Morija somewhat as a marsh, and very idyllic (Figure 5). Interestingly, the description of the mountain side in Morija is exactly the same today, with the exception of the wood.

The wood was situated on a mountain side, together with a great many fallen rocks, some isolated and standing on edge against shattered obelisks...⁹ (Casalis in Germond, 1967, p. 26)

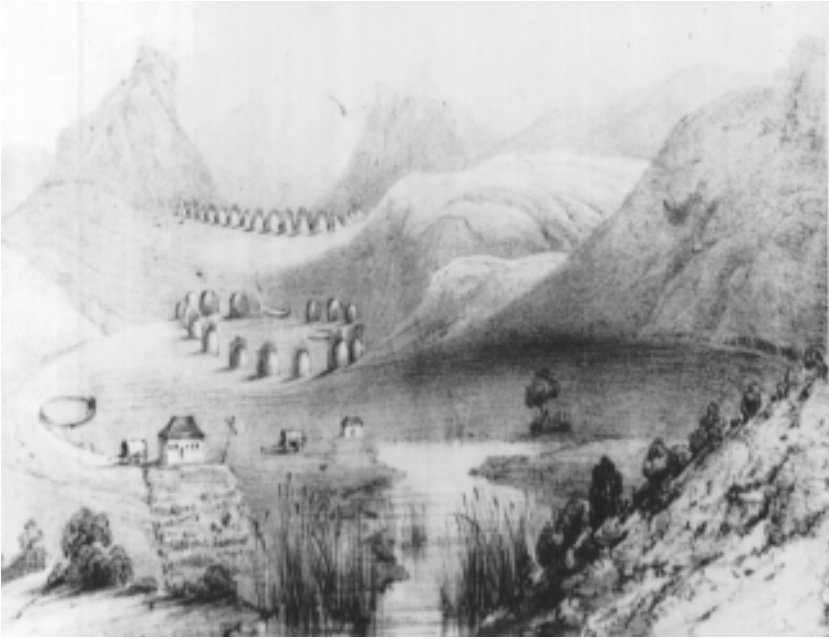


FIGURE 5. Drawing by Gosselin in which a marsh dominates the foreground at Morija, also showing the church and traditional village. Drawn ca. 1840. (Source: Morija archives)

For the missionaries arriving from Europe, the grassland vegetation of Basutoland could have appeared somewhat different. They were not, however disappointed by what they saw, and this is clearly evident from the following:

The area which is traversed, before reaching what geographers call secondary ranges consists of a succession of undulations which gradually increase in height and are ringed by fertile hills and little valleys carpeted with the most dazzling verdure.¹⁰ (Arbousset in Germond, 1967, p. 33)

The Search for Wood

It was not purely by chance that the traditional Basuto house was constructed with mud walls and floors and a grass-thatched roof, both materials being abundant in the surroundings. Figure 6 depicts a typical scene from early last century while a modern mud house may be seen in Figure 7. An early reference spells out clearly the cultural differences which the missionaries faced, and the fact that their own cultural habits dominated their view of the new reality in which they found themselves:

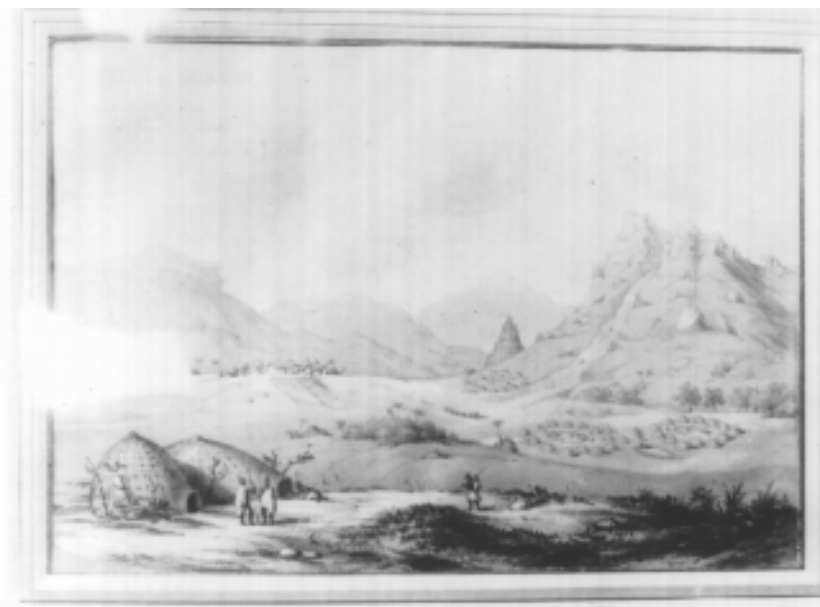


FIGURE 6. Life as it was early last century in Thaba Bosiu. Notice the grass houses and the arrangement of the dwellings. (Source: Morija archives)



FIGURE 7. Modern house constructed with mud in Tloutle.

We must have a site where we could build houses and cultivate the ground according to our own ideas and habits. Our buildings and plantations would also serve as a model for the Basutos, whom we regretted to see dwelling in huts, and living in a manner so precarious and so little worthy of the intelligence with which they were gifted. Thaba-Bosiu did not appear to offer us the advantages which we desired. Wood for building was lacking in it.' (Casalis, 1889, p.183).

Without trying to adapt to local conditions (e.g. experimenting with new types of building material, such as stone or straw), and not understanding the reasons why the Basuto did not chop trees for building purposes, the Europeans held onto old traditions, even when realising the practical shortcomings. Maeder, a missionary and professional carpenter made the following comment with regard to the suitability of the wood for building purposes:

The wood which is to be found in these places is of four species, namely the wild olive, the willow, the stinkwood and the kraaihout, which resembles our alder. None of this wood is suitable for building purposes; besides its inferior quality, it is small and twisted.¹¹ (Maeder in Germond, 1967, p. 54)

Even though the missionaries were aware that wood was scarce, they still chopped trees for building purposes, retaining a need to live in European style houses. This however, was often done with some regret.

I have often admired the wild olive tree, with its small dark leaves and its far-spreading branches. It is fond of growing in the crevasses of our mountains. Nowhere does it thrive better than on stony ground, in the chaotic confusion of mighty boulders thrown into disorder by the headlong rush of flood waters and often piled up one on top of the other. The beauty of these trees fascinates and holds the attention when one is all too familiar with the sight of semi-arid mountains with no other covering than a sprinkling of grass. And yet, after enjoying the cool shade of these groves, and admiring their beauty, I have no choice but to apply the destructive axe to the tree trunk and to bring it down; for necessity converts this act into a duty. It must needs be dragged to the house in company with other trees which are suitable for my purpose and the names of all of which have not yet been registered in the forestry lists of the civilised world.¹² (*ibid.*, p. 55)

We noticed – and not without anxiety – that most of the trees of this country tend to develop the most fantastic embranchments and protuberances, rather than to adopt the vertical habit. Nevertheless, we managed to find a fair number of the younger trunks to meet our requirements.¹³ (Casalis in Germond, 1967, p. 52)

Daumas founded a new mission station at Mekoatleng around 1836 and describes the site.

About an hour later we reached a spot which we more especially noticed on account of the beauty of the situation. It has wood in abundance..there is plenty of firewood

in the neighbourhood; as for timber, it is very easily obtained from the Caledon which is only six to seven leagues away...we went down to the river to cut our load of wood. We felled more than we could load on our wagon.¹⁴ (Daumas in Germond, p. 52)

In 1837, Gosselin describes the situation at Thaba Bosiu:

Prepared the wagons to fetch trees suitable for making beams. In this country the trees grow on the mountain slopes; it is very difficult to find specimens of sufficient length and even more difficult to transport them. They have to be rolled from rock to rock until within reach of the oxen, after which they are hooked to a chain and dragged to the wagons. (Gosselin in Germond, 1967, p. 52)

Mention is made of the lack of trees in Thaba Bosiu:

In spite of the total absence of trees and shrubs, it is a magnificent range ... the landscape was green, and the whole presented a picture of freshness and vitality almost impossible to describe.¹⁵ (Mabille in Germond, 1967, p. 456)

After meeting the King at Thaba Bosiu, he proposed that the missionaries establish the first mission station at the base of the Makhoarane mountain. The site at Morija was chosen because of the advantages it offered. Early photographs depict the rich tree growth close to the river/marsh (Figures 8 and 9).

After a prolonged search, we fixed upon a spot which seemed to offer every desirable advantage, water in abundance, a fertile soil, firewood, timber, and a picturesque situation.¹⁶ (Casalis in Germond, 1967, p. 26)

The extent of tree cover in Basutoland in the last century appears to be a point of contention. Scientific evidence from the first ecological study in Lesotho (Staples and Hudson, 1938) concludes that there is no evidence of trees having ever existed at high altitudes.

The following observation was made by Arbousset three years after he arrived in Basutoland, when he and Daumas undertook a journey to ascend the summit of the Blue mountains. (cf. map showing the route they travelled)

Plenty of water, rich pasture, and abundance of game, these are the three sources of prosperity offered to new inhabitants by the country of which I speak. The blacks seldom seek for more; it would have been an advantage however, if there had also been a little wood... (Arbousset and Daumas, 1852, p. 195)

Documentary evidence is often conflicting, and a possible explanation for this could be the local differences in wooded and non-wooded areas. The following quotation makes reference to a wood in the Roma valley, opposite the Catholic Mission Station (where the village of Maphotong is situated now) where missionaries and Basuto sought refuge during the Boer invasions. Figures 10 and 11 depict the valley close to the mission station. Whereas last century there was a wood, by the 1950s the landscape appears quite barren with prominent gullies. Today the area is an expanding village with some trees, and

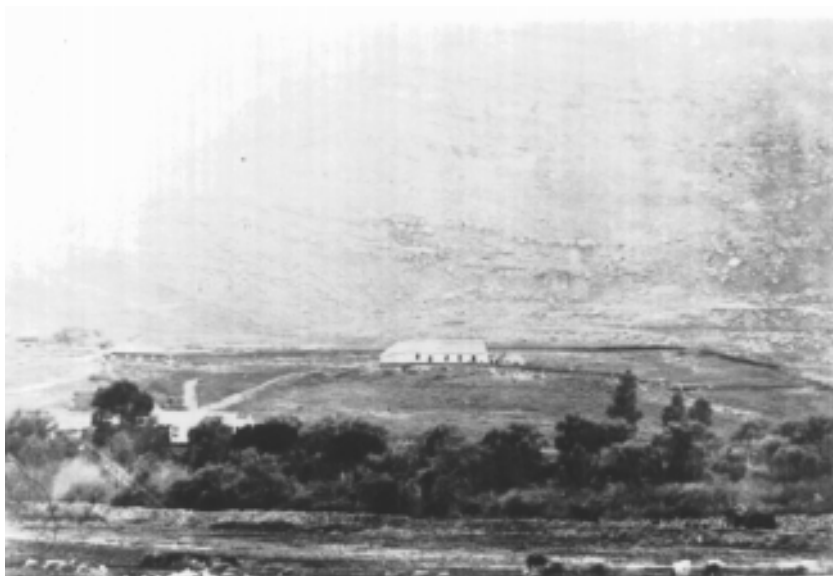


FIGURE 8. Morija late last century. Notice that the trees grew only along the river course.



FIGURE 9. Morija this century. Notice the spread of trees around the mission and even on the slopes. (Source: Morija archives)

the gullies appear to have healed, but there is still nothing close to the description of a wood.

Several motives had made us consider as the more prudent decision to leave for a time the mission and hide ourselves, just as the Basutos, in a neighbouring wood, in which are scattered enormous rocks that would render it impassable to an army...the detachment stopped at the entrance of the small valley where stood the wood which had given refuge to our people...After having carried off three or four thousand heads of cattle, the detachment coming back from the mountains began to shoot from above the wood, in order to drive away from it the cattle and to kill the Basutos that were hidden therein.¹⁷ (Letter of Father Gerard, dated 6 November 1865, Roma).

From the various accounts, as well as from scientific evidence (e.g. Staples and Hudson, 1938; Acocks, 1953; Schmitz-Ruch, 1984; Dowson, 1988; Hall, 1988) it would seem that for the Holocene at least, but since the 15th century for certain, Lesotho has been covered with sweet and mixed veld, with forests being confined to the warmer river valleys. In reconstructing the environmental history by tracing vegetation changes for the Nyika Plateau in Malawi, Meadows (1984) concluded that the present vegetation pattern of patchy islands of montane forest in a sea of grassland, predated human occupation and possibly extended to around 12000BP. Over the centuries the veld types have changed, especially since the middle of last century, and the pockets of wooded areas have shrunk. In his review of changes in African vegetation, Gilliland (1950) emphasised the climatic fluctuations of the Quaternary by pointing to shifting vegetation patterns from forests to grasslands and shrubs, and suggested that there has been a trend towards increasing desiccation and this would have had a profound effect in decreasing the forest cover and accelerating the advance of desert vegetation, with the aid of poor land-use practices in the last few centuries in particular.

Agriculture

The visitors to Basutoland were astonished to see flourishing, cultivated lands, and were impressed by the skills of the Basuto in agriculture:

Rich and fertile valleys meet the eye on every side, with fields of millet and maize and numerous herds of cattle and sheep tended by young shepherds.¹⁸ (Arbousset in Germond, 1967, p. 30)

The following quotation is very relevant since it provides evidence for the state of the environment in western Lesotho (an area which today resembles a semi-arid landscape) around the middle of last century:

On the following day we proceed to inspect the neighbourhood of the village. It is studded with fertile contiguous hills, enlivened and animated by herds of native cattle. There is abundant grazing everywhere; the rich slopes are watered by natural springs; there is low-lying arable land on every side, much of which is under cultivation; there



FIGURE 10. Maphotong photographed in the 1950s. Despite this photograph not being very clear, the woods mentioned by Father Gerard are not very thick. Instead, a gully network dominates the foreground. (Source: David Ambrose)



FIGURE 11. Maphotong photographed in 1989, shows a marked recovery of vegetation and disappearance of the gully despite denser settlement.

are a few wild olives and other kind of firewood towards the mountain tops; lastly the Caledon river which passes nearby, has enough willows on its banks to satisfy the customary building requirements of this country.¹⁹ (Arbousset in Germond, p. 47)

The following quotations need no explanation; there is a clear admiration of the agricultural abilities of the Basuto, and the conviction that Basutoland is a fertile country and capable of yielding good crops and lush pastures.

The whole of Basutoland is suitable for agriculture, for there is good soil everywhere. For the greater part of the year, the mountains and plains present a scene of pleasant verdure. The inhabitants reap wheat and millet in abundance. Besides, they have fields of maize, of sugar cane, potatoes, beans, and various other vegetables of lesser value. Tobacco, of which they are very fond, also grows in their country. A great part of their time is devoted to agriculture and, as it is only exceptionally that they employ the plough, and they are still reduced to turning the sod with the hoe, they have a great deal of labour to perform. They are now beginning to plant fruit trees and the vine everywhere.²⁰ (Maeder in Germond, 1967, p. 453)

Even in 1863, there are still documents which re-affirm this general approval, although it has to be pointed out that there are already elements of missionary influence (for example, the planting of fruit trees):

The country is magnificent. From the summit of the mountains to the bottom of the valleys, Basutoland is nothing but a carpet of verdure. Yesterday I accompanied Mr. Maitin to escort Mlle Dumas who was returning home from a visit to Thaba Bosiu. Although we were on horseback our legs were drenched half-way up by the dew-moistened grass. The garden of Berea is most beautiful, the peaches litter the ground. The maize field resembles a forest; we have measured a number of stalks which are no less than ten to eleven feet in height.²¹ (Duvoisin in Germond, 1967, p. 460)

They cultivated native grain (*holcus sorghum*) and sweet reed (*sorghum saccharatum*), pumpkins, kidney beans and watermelons (variety of the *cucumis caffè*). Maize was unknown to them, and was introduced from the east coast (Portuguese settlements) through the Matabili invasion. (from Stow and Theal, 1905, p. 418)

In the last century (particularly the first half), fertile fields were still plentiful, and much of the wisdom of ancestral agricultural practices was still respected. When the missionaries first arrived in Lesotho they observed the reluctance of the Basuto to change from their ancestral traditions (Stow and Theal, 1905), but conceded that the Basuto were skilled at agriculture.

Climate

It is important to note that during the first three decades of the nineteenth century southern Africa experienced a drought. This is supported by scientific data

recorded from tree rings, and a few eye witness accounts of travellers which point to a significant drop in precipitation throughout much of southeastern Africa (quoted in Ballard, 1986, p. 368; Nicolson, 1981). Figure 12 depicts the trend of increasing desiccation in southern Africa since the beginning of last century. Either Lesotho was unaffected by the drought or Lesotho appeared relatively lush compared to the other areas the missionaries travelled through.

It would be impossible to find in this whole country a more fertile district and finer waters than this territory of Botha Bothe and the streams which water it. The severity of the climate, poor communications, and the scarcity of wood are the only drawbacks to this locality. (Arbousset in Germond, 1967, p. 32)

In the missionary documents there is frequent mention of extremes in the weather. For example during the attack by Boers on the village of Morija (1858), from Cochet (cited in Germond, p.238) many people who had to take refuge in the mountains suffered in the cold, and there is mention of heavy snowfalls making it 'impossible to go out'.

Droughts were also not uncommon in the last century, with frequent dust storms similar to those of the present:

We have not had a single shower for the last six months. Instead of rain we have whirlwinds of dust... the sand accumulates in drifts, as would the snow under our European climes. ²² (Lemue in Germond, p. 459)

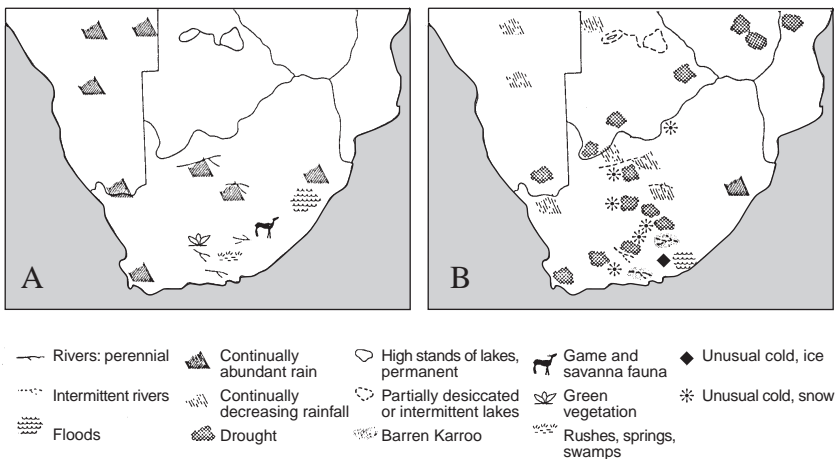


FIGURE 12. Comparison of climate and environment in Southern Africa: (A) ca. 1790–1810; (B) ca. 1820–1840. (After Nicholson, 1981)

In Morija, where today tornados are known not to occur commonly, there was a devastating tornado in the last century:

A tornado such as had never been seen in these parts passed over Morija and destroyed the roof which had but recently been placed on the church, at the cost of so great an effort and so much expense²³ (Duvoisin in Germond, 1967, p. 460)

There is mention of a serious drought and famine in Basutoland in which Morija was severely affected.²⁴ Dyke in 1898 writing about a certain Mr. Jacottet, who had not the time enough to travel around Morija, says:

...had he done so, he would have told us of the total destruction of the maize and millet crop by the drought. (in Germond, p. 476)

The rivers were often in flood and the scene during flood time can be most dramatic (even today):

If we observe the Caledon in the month of January, we are amazed at the volume of water which it carries. It is a spectacle at the same time interesting and cruel. These trees, which lent such charm to the river-side, are gradually submerged by the waters until they disappear. If an occasional tree-top still succeeds in dominating them, it is soon decapitated by those which float in large numbers by the waters. Sometimes all these trees become entangled ... But at last the violence of the flood overcomes the obstacle and then the river is strewn with scattered branches and tree trunks, or confused masses which float away in the current...More ominous sounds may be heard: banks of soil which the water has undermined collapse into the river, or rocks, which are loosened by the same process, yield to the current and tumble noisily into the water, to be borne away by the flood.²⁵ (Maeder in Germond, 1967, p. 54)

Lesotho clearly suffered from extremes in weather, and the accounts of droughts are as numerous as those of floods. In this respect, the present weather pattern would appear to be no different from that of the last century.

Erosion

In reconstructing the environment as it was in the last century, the aspect of greatest interest for this research is evidence of the presence of gullies and other forms of erosion. There is much controversy about when gullies actually originated (Germond, 1967; Nordström, 1988; Schmitz, 1980; Showers, 1989). Gullies may be defined as ephemeral channels with steep walls and flat floors, often occurring in secondary sediments rather than in bedrock. Below are some quotations by missionaries which are proof that some gullies (at any rate) had been present since ancient times, even before the arrival of the Basuto. The earliest mention of gullies²⁶, albeit indirect, found in archival sources is the following description:

...long before Moshesh's time... the Bushman chief was very old, and died a few years afterwards in a small cave in a neighbouring *ravine*.²⁷ (from Stow and Theal, 1905, p. 191)

In ancient times gullies served an important function, as we learn from an account of wartimes that the gullies

were the secret recesses of their fastness, which they termed hidden war-paths that during the wars had afforded a secure retreat for all the women and children and captured cattle, and that no colonial force had ever attempted to enter...²⁸ (*ibid.*, p. 191)

The following scene was observed in 1833 when the first three missionaries arrived in Basutoland and reached the village of Thaba Bosiu to meet the King.

This wide and densely peopled plain was completely surrounded by a border of huge perpendicular rocks, which appeared to make access impossible. But as we drew nearer we saw, at one of the angles of the mountain, a line winding serpent-like round it from the top to the bottom. This must be, and, as we saw a little later, was in fact, a path, or rather a ravine serving as a path. I can compare it to nothing better than to the longitudinal furrow we sometimes see in the rind of an over-ripe pomegranate.²⁹ (Casalis, 1889, p. 175)

In 1860, Mabile (in Germond, 1967, p. 456) wrote with an obvious reference to gullies and pipes (similar to gullies, except they occur in a pattern of networks within sodic soils as a direct result of a chemical process):

...the grass of this country often conceals from view holes and narrow paths...

Travel was often hindered by gullied land:

The terrain is so crevassed in this country that we were unable to proceed in ox-wagon to reach a couple of Zulu or Matebele kraals...consequently we were obliged to reach them on foot.³⁰ (Arbousset in Germond, 1967, p. 62)

For the first time there is mention of the presence of piping which hindered travel:

At one o'clock we had in view, to the south-east, a fine mountain, with a wide fringe of hills, in the midst of which a fairly large stream of water meandered but, further on, lost itself in *holes* which it encountered in its path ... At about two o'clock in the afternoon, we reached the edge of a deep ravine which barred the way. The wagon was halted in order to allow us to search for a ford, but all our investigations were in vain and we had to resign ourselves to crossing the ditch.³¹ (Casalis in Germond, 1967, p. 62)

The following indicates that gullies were not found only along conventional roads:

For six hours we rode over lofty hills and high plateaux, between the crevasses and bogs which are always to be found in the neighbourhood of the mountains....The journey from Makokoane to Botha Bothe was accomplished with difficulty, over high valleys and across hollows intersected by numerous ravines.³² (Arbousset in Germond, 1967, p.63)

The missionaries often referred to gullies by the term sloots. For example Pfrimmer, who had recently arrived in Lesotho and was travelling in the vicinity of Mekoatleng:

Scarcely had we travelled for two hours when our wagon was stopped by a slood in which there was hardly any water, but the banks of which had been completely softened by the rains.... After walking for an hour and a half, on a path intersected by crevasses and numerous ravines over which we had to jump, we reached the spot where the wood was to be found.³³ (Pfrimmer in Germond, 1967, p. 65)

We receive a possible explanation of their formation:

The waters which descend impetuously from the mountain tops had eroded a deep ravine and undermined the road.³⁴ (*ibid.*, p. 486)

Casalis who was writing some twenty-three years later, confirms the erosive effect of the rains:

As we neared (Mekoatleng).....the diluvial rains of this year have scoured ravines everywhere and the country-side has been converted, as it were, into a vast sponge. It often happens that, all of a sudden, the wagons sink in ground which did not seem damp, and there is no other alternative but to unload the vehicle.³⁵ (Casalis in Germond, 1967, p. 461)

Seventeen years later there is more evidence of the devastating effect of rains on erosion:

We march by starlight, across country, as the road is repeatedly intersected by ravines eroded by rains.³⁶ (Marzoff in Germond, 1967, p. 464)

Still some seventeen years on, the gullies are present and the rains erosive:

The earth drinks to its heart's content, the ravines are torrents, the rivers full to overflowing...there are two torrents which descend from the plateau and plunge into the abyss. All we can see of the first is a mass of red water...³⁷ (Dieterlen in Germond, 1967, p. 474)

Inadvertently, perhaps, Maeder is providing a purpose for gullies:

This country is intersected by deep ravines which lead to the Caledon which is even deeper. These high terraces which guard all the approaches to the river are undoubtedly disagreeable and dangerous when it is necessary to negotiate them with the wagons; nevertheless, they are most useful for, if the river was not hemmed in by such

high embankments, vast areas would be flooded in the rainy season and the waters would play havoc with our homes and fields.³⁸ (Maeder in Germond, p. 54)

Maeder's observations above suggest that the Caledon is deeply incised and perhaps this is a cause of gully erosion. Germond (1967, p. 71) concludes that 'erosion as we know today was non-existent.' This point may, however, be debated. True, today we are witnessing erosion on a scale probably never experienced before in Lesotho. This does not mean, however, that erosion (in the form of the notorious dongas) did not exist in the last century, or indeed in geological times. In order to examine the validity of Germond's and others arguments, it is necessary firstly to keep in mind the picture of the state of the natural environment when the Basuto themselves arrived in Lesotho, and secondly, to examine carefully indigenous land-management practices of the Basuto prior to the arrival of Europeans.

INDIGENOUS TRADITIONS

It has been claimed by the missionaries (above) that the Basuto were careful agriculturalists. It will therefore be of great interest to examine the land management practices of the Basuto and understand how they had survived for at least two centuries before they were recorded in missionary writings.

The Question of Land Tenure

It is appropriate to begin with Casalis's observation of an ancient Basuto tradition (the importance of which will be illustrated later).

The sale or transfer of land is unknown among these people. The country is understood to belong to the whole community, and no one has a right to dispose of the soil from which he derives his support. (Casalis, 1861, p. 159)

The King used the biblical story of the judgement of Solomon to illustrate his feelings about dividing land for the Settlers.

You my friends, who are strangers, you think it quite natural that my ground should be cut. I, who am born here, I feel my soul revolt at the thought. No; I will not cut it! Better to lose it altogether! (in Casalis, 1861, p. 157)

Some fifty years later this is again mentioned by others:

For the general belief of these primitive peoples was, that all possessed an equal right to the soil, the water and the light of the sun... land disputes were unknown... (Ellenberger and Macgregor, 1912, p. 14)

All the sentiments expressed above conjure an image of the sacredness of land, and a repugnance to the idea of land as a commodity. Land was divided into

either communal or individual land-use for cultivation, both being allocated and administered by chiefs. Grazing of animals was done on communal land, following strict rules of common property regimes. Whilst in cultivated areas the natural vegetation had to be cleared to make way for fields, the grazing areas depended on natural vegetation (sweet and sourveld) for their survival.

Cultivation

Cultivation was done on individual plots, whilst grazing and collection of wood occurred on communal land. There was very careful planning with regard to the suitability of different crops for different locations.

The natives have sufficiently observed the nature of the soil, to know how to choose that which is most suitable for different objects of cultivation. (Casalis, 1861, p. 163)

Using their perceptions based on experience, the Basuto cultivated maize close to rivers, and in low lying areas where they could easily be irrigated, while the sorghum was grown away from the river beds where the marshy land could delay growth (Ashton, 1952, p. 122). No fertilisers were used, but

when a piece of land is observed to be exhausted or *grown old* as the natives say, they clear another piece by the side of the former, to which they return when it has *grown young again*. (Casalis, 1861, p. 164)

Hence, the land was never continuously cultivated, and furthermore, there was mixed cropping with rows of maize interspersed with beans. Much of the cultivation was done by women, while men ploughed the fields and tended the animals. The Basuto were careful to avoid exposure of large, cultivated fields to the rains and they left grassy, uncultivated areas in between. When crops were ready, for example maize, the whole plant was never removed; the stalks were left and during winter animals fed on them (Ellenberger and MacGregor, 1912). Whilst one missionary was impressed by the abundant production of crops, he was careful to notice the lack of order and control he was accustomed to seeing on European farms.

They do not bother to give the fields a regular shape. They plough in patches here and there, in the most disorderly fashion. In spite of the imperfection of their work, the earth is turned. It yields in abundance millet and maize, the stalks of which sometimes reach a height of seven to eight feet.³⁹ (Arbousset in Germond, 1967, p. 30)

The missionaries also wrote about frequent fires:

We travelled through an area which had been entirely scorched by those fires which the Bechuanas are in the habit of kindling in winter. During this period when the veld grass is dry, they often set fire to it, and spreading right and left, the flame sweeps over immense areas and blackens them.⁴⁰ (Fredoux, 1856 in Germond, p. 454).

The Basuto did not cultivate wheat for their own consumption, but it became a commodity greatly demanded first by the missionaries themselves, and later by the mining communities which suddenly sprang up in South Africa later in that century. The missionaries recognised the importance of wheat as an export commodity.

The Basuto will never reach the desired degree of civilization unless they take to the cultivation of wheat. They are passionately fond of growing millet which has the advantage that it will succeed without irrigation. But this commodity is unmarketable...⁴¹ (cited in Germond, 1967, p. 66)

Wheat did not thrive under drought conditions but the Basuto soon learnt the locations in which it was best to cultivate it:

The agricultural genius of the Basuto leads them to the choice of these damp and sheltered valleys.⁴² (Casalis in Germond, 1967, p. 444)

The picture which emerges confirms the success of the Basuto farmer even in the face of a harsh and extreme climate with both droughts and floods. Whilst some of the cultivation practices of the Basuto came under the criticism of the missionaries, there is still an impression in the literature of the general awe with which the missionaries regarded the Basuto as agriculturalists.

Spareveld and Grazing

The other aspect of agriculture, namely grazing, also followed strict codes which respected certain areas with special grasses. The concept of *Maboella* (spareveld) defines the careful use of natural vegetation by the Basuto (Staples and Hudson, 1938; Casalis, 1861). The highest form of *Maboella* are trees and it was considered a sacrilege to kill a living tree. People were allowed to remove dry wood or trees destroyed by inclement weather. The second class of *Maboella* included grasses and reeds and dual-purpose spareveld, with human needs taking priority over animals. This included grasses used in the construction of wind shields and for thatching roofs. Finally the last type of *Maboella* is true spareveld which is found on deep soils adjacent to cultivated fields where animals may graze in winter only, though the grass remains green for most of the year. The choice of keeping strips of good grazing grass adjacent to cultivated fields, also served to arrest animals which broke free at night, thereby protecting the crops. Once fields had been reaped, animals were let in to graze on the stalks. However, even the admission of animals was done with careful consideration, with first the milch cows being let in, followed by cattle, and lastly by sheep and goats (since the latter thrive well on highland grazing). It is evident that the care attached by the Basuto to the control of grazing by animals, and to the preservation of grasses to ensure their long-term use, would have also helped to protect the land against soil erosion.

Much of the veld vegetation was often removed in fires :

The savages are in the habit of setting fire to the grass with the object of fertilizing the soil and thereby improving the quality of the pasture. The slightest breeze is enough to spread the conflagration to a considerable distance and the traveller is often forced to march for days on end over the scorched earth, with nothing whatever to feed his team.⁴³ (Arbousset in Germond, 1967, p. 63)

The habit of veldfires is by no means exceptional to Lesotho, nor the Basuto people. It has been practiced all over Africa and parts of Europe in the belief that it enriches the soil, destroys unwanted species of weeds and unpalatable grass, thereby improving the future crop which emerges from the burnt ground (Schmitz-Ruch, 1984). There has been some concern expressed by palaeoecologists (e.g. Meadows, 1993) that in southern Africa, the Bushmen often set fire to the mountain slopes which resulted in the disappearance of trees and their replacement by grass.

THE COLONIAL PERIOD

Clearly the picture changed with the arrival of Europeans and the adoption of new techniques and ideas. The greatest change having a profound impact on the environment, was the switch from subsistence to commercial cultivation. It has been pointed out earlier that a large number of indigenous trees were destroyed by Europeans which, it must be emphasised, contrasted sharply with the previous Basuto treatment of the highest form of *Maboella*. The colonial period, however, has witnessed afforestation projects with a vengeance. Whilst Lesotho appeared barren and eroded towards the end of the last century, the mission stations were oases embellished with a variety of fruit trees and vegetables for consumption, hoping to serve as an example to the villagers (Germond, 1967). Figure 13, which shows a view of Qiloane from Thaba Bosiu, clearly depicts the 'garden' landscape with fruit trees and contrasts with the pre-colonial landscape of Figure 3.

Agriculture

Whereas before the arrival of Europeans, the Basuto managed to maintain a delicate balance between cultivation and grazing, with the advent of new ideas and techniques, and the changed needs, there began to be signs of conflict between these two activities. As the demand for wheat increased and the market grew, more and more land was turned over to cultivation at the expense of previous grazing land. Consider the following comment from 1873 as contrasted with some of the observations of the early travellers in Basutoland in the 1830s:



FIGURE 13. View from Qiloane from Thaba Bosiu. Note the fruit trees in the foreground. Compare with landscape in Figure 3. Photograph taken in the 1950s. (Source: Morija archives)

The most striking thing to anyone travelling through this country, is to find innumerable fields of grain extending in every direction.⁴⁴ (Maeder in Germond, 1967, p. 321)

Animals were pushed increasingly onto marginal areas for grazing as pastures were ploughed up for increased cultivation. This meant that the steeper slopes which were originally reserved for summer grazing were being grazed all the year round, thereby abandoning the policy of *spareveld* (*Maboella*) which was one of the safeguards to environmental protection under indigenous agriculture.

The Basuto are rapidly enriching themselves; their produce finds a ready market...their every thought and every effort is concentrated on agriculture, so much so that there is a tendency to complain of excessive encroachment on the pasture.⁴⁵ (in Germond, 1967, p. 462).

Many crops, including potatoes, were introduced into Basutoland by the missionaries:

The rainy season which has already been two months over, was one of the best under these latitudes, as throughout southern Africa in general. Our garden has yielded an abundant crop of vegetables, which has enabled us to supply the majority of the

inhabitants of Morija with the seeds of various European plants, more especially the potato.⁴⁶ (Arbousset in Germond, 1967, p. 437)

The first attempt at afforestation was made by Colonel Griffith (first magistrate of Basutoland) in 1876 (Germond, 1967, p. 51). It became customary for the governor of the protectorate to meet once a year with the chiefs to discuss matters of general interest. In October 1876, at such an assembly, Colonel Griffiths raised the issue of afforestation. He was reported as saying:

Prizes will be offered to the natives who plant and take care of the largest number of trees. The tree which is thought the most desirable to propagate, is the eucalyptus globulus which is a fast grower and can be put to many purposes.⁴⁷ (Preen in Germond, 1967, p. 56)

There are no reports on the success of this project or how widespread it was. Today we are aware of the dangers of using eucalyptus as a conservation measure for soil erosion (for results of erosion measurements on an experimental plot, see for example Singh, 1994), as well as the aversion people have to its use as fuel and fodder. By the turn of the century the availability of trees as a supply of fuelwood had become quite an acute problem. Severe droughts, followed by exceptionally cold winters in 1897, 1902 and 1903 took their toll on the people and vegetation. Trees were desperately sought for fuel during the cold months, and could scarcely be found. The lack of trees for fuel was significantly noticed, and an understanding of Basuto adaptability to adverse conditions was finally acknowledged, as is evident from the following:

It is lacking in wood or forest of any description; between its denuded mountains, there is nothing to be seen but a yet more denuded country-side. The absence of wood forces the Mosuto to use more dried cattle dung for fuel. It is perhaps in the difficulty of procuring wood in Basutoland that we must seek the reason for which this tribe inhabits huts which are mainly composed of thatch grass.⁴⁸ (Jousse in Germond, 1967, p.449)

The land was continuously cultivated and periods of fallow decreased. There was a noticeable absence of wood and dung was increasingly being used for fuel, thereby further reducing the soil fertility. There are increased reports of soil erosion towards the latter part of the nineteenth century.

Climate

Whereas previously the careful retention of a vegetative cover was assured thereby minimising the harmful effects of a harsh climate, the increased cultivation and subsequent removal of a protective cover meant that the land was more vulnerable to the effects of the weather. Reports of wind erosion and dry rivers are common at the end of last century.

BASUTOLAND

...the beds of the Caledon and its numerous tributaries were completely dry, a thing which had never been seen in living memory.⁴⁹ (Lemue in Germond, 1967, p. 459)

It had frequently snowed and accounts of severe weather are plentiful in the missionaries' reports. In Morija for example, during the conflict between the Boers and Basuto, Arbousset had to flee with his family into the mountains and suffered greatly from the terrible cold and snow:

While the Boers continued their work of destruction the fugitives searched for a refuge in the mountain. We found them gathered together in a den under the shelter of a huge boulder. There were 55 women and children there, exposed to the bitter cold...During the next two days it snowed and it was impossible to go out.⁵⁰ (in Germond, 1967, p. 240)

From Arbousset's journal (1858), he confirms the severe weather:

April 29th (1858): We have searched for and found a better cave. No sooner settled then a heavy snow fall which lasts all day. April 30th: Snow all day long. May 1st: Everything is white with snow. (in Germond, 1967, p. 241)

Changes in the Landscape and Human Activity

According to missionary reports the Boers contributed to the disappearance of wildlife, as is evident from the following:

But what silence! No more gazelles, no more roaring lions, not even the yelping of the jackal to break the monotony of the desert. The Boers have altered all that. Here and there a farm without movement or life. ⁵¹(Lemue in Germond, 1967, p. 458)

It was apparently not only the wildlife which had been destroyed by the invading Boers, but often peasant farmers were uprooted from their fields:

The harvest of mabele and wheat of last year which our Basuto could not carry away when fleeing before the enemy, became the booty of the Boers. This year our Natives have been able to sow only part of their fields and they are threatened with seeing the pending harvest destroyed by their enemies.⁵² (Letter of Bishop Allard, 16 January 1866)

The problem was further exacerbated by the agreement between the colonial administration and the Boers in Orange Free State to cede a substantial part of the fertile lowlands to the Boers. The most obvious effect was a sudden concentration of people in the already overcrowded lowland area.

An increase in population is apparent. The mountain portion of the district is fast filling. (Colonial Annual Report: 1893, No. 89, p. 37)

The country is circumscribed, the population is growing, the land suitable for cultivation is all allotted and taken up, and the rising generation of men are no longer able to support themselves upon it. (Letter from Resident Commissioner Lagden to High Commissioner in Cape Town in Colonial Annual Report, 1895, No. 152, p. 5-6)

Although the Basuto had previously sparsely inhabited the mountains, they had never cultivated on steep slopes. They enjoyed the fertile lowlands (most of which was ceded to Orange Free State), and those who did cultivate in the mountains, used the plateau or fertile valleys. Thus the Basuto lacked a tradition of cultivating on steep slopes and contour ridges or terraces were not part of indigenous agriculture.

By the end of the last century Basutoland, which had been referred to as the granary of South Africa (Murray, 1981), was reduced to poverty as it plunged into a deep economic and environmental crisis. Gold and diamonds had been discovered in South Africa and the sudden increased demand for wheat boosted the export of Basuto grain. The completion of a railway line from Cape Town to Kimberley meant a sudden halt to the import of Basuto wheat by South Africa.

Ellenberger explains:

There is no longer the same demand for Basutoland wheat as formerly, because both in the Colony, the Free State, and the Transvaal, the Whites have set about cultivating the soil themselves. Hence the wheat remains stacked at home.⁵³ (Ellenberger in Germond, 1967, p. 470)

The price of wool fell and the rinderpest, swarms of locusts, the spread of poisonous weeds, and drought added further to a deteriorating situation. The fluctuating weather affected the production accordingly, and this is recorded for each year. The situation is appropriately summed up by the following:

Basutoland has become impoverished.⁵⁴ (P. Germond in Germond 1967, p. 470)

Figure 14 depicts the Roma Valley when intensive and continuous market-oriented cultivation had rendered the landscape devoid of trees and grass by the 1950s. Figure 15, taken more recently, shows how the vegetation has recovered and conservation woodlots have added to the lush appearance of the landscape. A similar trend has been observed also in Kenya (Tiffen *et al.*, 1994).

Erosion

Kruger⁵⁵ (in Germond, 1967, p. 407) describes his observations on gullies, their formation and rate of growth.

These fissures, at the bottom of which flows a tiny trickle of water, are more often than not deeper than wide, sometimes two metres in depth, at others eight to ten. Fifty years ago these ravines were extremely rare and almost unknown... today they are found in



FIGURE 14. The Roma valley photographed in the 1950s when intense and continuous cultivation was practised since early this century. Note the bare landscape with visible erosion.



FIGURE 15. The Roma valley photographed in 1989. Notice the woodlots and denser settlements.

every direction.... and the rate of their growth is terrifying. Behind the station of Berea the children of the first missionary generation remember how they used to jump over a little brook... today there exists at the same place a ravine thirty six to forty five feet wide; the walls are perpendicular; at the bottom of the gully a new crevasse is forming, six feet wide and three deep. It is there that the puny rill continues to flow, a tiny trickle which, when swollen by storm waters, is converted into a turbid torrent and continues its career of devastation.

As the delicate balance was disturbed the effects of an unpredictable and harsh climate became more accentuated. During the constant conflict with Boers who increasingly entered Basutoland, the people at Thaba Bosiu sought refuge at the top of the slopes on the plateau. They abandoned their fields and pastures on the lower slopes and close to the river, and moved with their animals onto the plateau. The effect of confining a population to a very restricted area of land had an extreme effect on the land and the once fertile plateau was converted into dune fields not different from a desert scene (Pers. com. Rev. Brutsch) (Figure 16).

One of the most vivid accounts of gully formation and expansion found in the historical documents was propounded by a missionary who had spent no more than three months in Lesotho:

Almost everywhere in Basutoland certain gardens are in danger of being swallowed up by numerous crevasses which constitute one of the most characteristic features of the South African landscape. They are due to the combined ravages of stock and torrential rains...sheep in particular, wherever they multiply to excess in a given area, ultimately strip off the soil...uprooting with their teeth the carpet formed by the interwoven roots of the grasses. Let torrential rains beat upon the ground thus prepared, and runlets will appear which rapidly deepen into gutters and finally develop into gulleys twenty five to thirty feet deep or more, and continue to grow until bedrock is reached. These crevasses are bounded by vertical banks generously carved out of the clay and forming precipices which gradually collapse as the gully widens. And so the organic soil is swept away by the storm waters, roads and paths are intersected, fields thrown into confusion and the cultivable area steadily reduced.⁵⁶ (Bianquis in Germond, 1967, p. 410)

Passing statements about the weather, usually in connection with the destruction of roads, were made in the Colonial Annual Reports between 1886 and 1934. The first mention of soil erosion in official reports was made in the 1911-1912 Colonial Annual Report (Number 729) where it is stated that an officer to supervise agricultural work should be appointed. His duties would include

work in connection with the prevention of dongas, and tree planting. The erosion of the soil, which has been gradually getting worse and worse, is a serious feature in the agricultural development of the country, and the fact that Basutoland is completely devoid of trees and undergrowth renders the soil an easy prey to the torrents of water that pour over its surface in the rainy season. (Colonial Annual Report: 1911-12, No. 729, p. 100)



FIGURE 16. Desert scene on Plateau at Thaba Bosiu last century. (Source: Morija archives)

The conservation work done was purely experimental and this is conceded in the official reports:

Work done during the year has been mainly in the direction of donga prevention, and tree planting for that purpose is therefore to a large extent experimental. (Colonial Annual Report, No.769 for 1912-13, p. 189)

Most of the trees planted around dongas were reported to have died due to droughts (*ibid.*). It is clear, however, that often the state of the environment and soil erosion in particular was described according to the crop productivity in that period. Where the crop productivity for a particular year was good, there was usually a favourable picture presented, with no mention of erosion; when the productivity was low, however, all possible explanations were put forward including mention of locusts, droughts, rains, erosion, frost etc. Nonetheless accelerated soil erosion had been set in motion, and it appeared serious enough to warrant conservation programmes, yet official opinion was often swayed by commercial crop yields. This is evident from the following:

Referring back for a moment to that most important of all cereals – wheat – the figures and comparisons recorded absolutely disprove the theory which is sometimes propounded that the wheat lands in Basutoland are ‘washed out’. The quantity harvested in 1919 was far and away the largest on record, proving beyond question that, given seasonable rains, this land will, and can, give generous returns. (Colonial Annual Report, No. 1045 for 1919-20, p. 35)

The first official survey of soil erosion as being a problem in Lesotho was made in a report on the Financial and Economic Position of Basutoland, compiled by Pim (Report of the Commissioner appointed by Secretary of State for Dominion Affairs: January 1935). Pim had arrived in Cape Town on 24 September 1934 and visited Johannesburg and Pretoria for official meetings with the High Commissioner of South Africa. Together with Milligan (the representative of Empire Cotton Growing Corporation in South Africa) they eventually arrived in Lesotho on the 3 October 1934. In a letter to the Secretary of State, Pim sets out the objectives of his report and he specifically mentions that the chapter on soil erosion and agriculture was written almost entirely by Mr. S. Milligan who had recently arrived in South Africa after completing his career in India. They started their tour on 7 October 1934 and spent one month travelling in the country with Milligan, and another two months completing the report before leaving Lesotho. The dates are extremely important, since it would reflect the time of year and hence the season. In addition, from the rainfall records we are able to ascertain that one of the worst droughts in living memory had occurred in the preceding years between 1932 and 1933 (for interviews and oral history collection in Lesotho, see Singh 1994; Reports from Commissioners, Inspectors and Others, 1934-35, p. 360). With the rains falling late in 1933, the erosive effect of the rains following a prolonged drought, was enhanced and dramatic gullies are known to have been initiated then. By the time that Pim and Milligan visited Lesotho, the vegetation would have recovered sufficiently to deceive the unaccustomed eye. They visited the Herschel district in South Africa to inspect the anti-erosion works there and it is interesting to note that much of the conservation works to follow were based directly on the Herschel model. So impressed were Pim and Milligan with the achievements in Herschel that their plan to import a similar project in Lesotho would take '10 years to complete if conditions are favourable' (Pim, 1935, p. 499). Ironically, the failures of the Herschel conservation project (forced terracing even when inappropriate, controlled grazing, loss of communal lands, eucalyptus for erosion control etc.) were thus repeated in Lesotho (Beinart, 1984; Showers, 1989). Other places visited by Pim and Milligan included the mission stations of Roma, Morija and Masite; the leper settlement at Botsabelo, and in Orange Free State they visited Hobson's Farm⁵⁷ where they inspected the 'ingenious and valuable pioneering work against erosion' (Pim's Report: 1934-35, p. 359). What follows is a summary of their findings.

They found erosion to be variable in the places that they travelled through, noting gully erosion and sheet wash, as well as deep fertile soils and lush pastures. Hence, erosion was not ubiquitous at this time. They noted that 'the character of the people and the growing pressure of population, coupled with the failure to check overstocking and the haphazard cultivation of hillsides, has, however, resulted in the production of conditions which now menace the whole future of the country and not of Basutoland alone' (Pim's Report: 1934-35, p.

365). There was evidence of widespread ploughing of pastoral areas for cultivation, and overgrazing was leading to the replacement of sweetveld by inedible weeds and 'chrysocoma' (Bitter Karoo). Cattle tracks, bridle paths and footpaths were seen to be destructive in that they led to the formation of gullies. There was an absence of terraces on steep slopes, and of trees in general.

On the basis of these observations and more importantly, having been impressed by the anti-erosion works in the Herschel district, Milligan proposed the following measures. There should be compulsory lateral division of fields in the mountain areas. Grazing should be controlled and the number of stock reduced. All vaguely defined borders which encourage communal grazing should be redefined. Areas which have been badly affected by erosion should be abandoned to allow pastures to recover. An anti-erosion project should be supervised by experienced ecologists. Afforestation projects should begin by planting poplars, eucalyptus and pines. According to Milligan who had recommended poplars and eucalyptus, 'the success of this was enough to prevent further research' (Pim, 1935, p. 525). Mr. Thornton (newly appointed Director of Agriculture in Basutoland) would be responsible for estimating the costs of the anti-erosion works, since he had been responsible for the works in Herschel, the Union of South Africa and elsewhere. The concern was to halt sheet erosion, and therefore lateral terraces would be constructed. It was recognised that donga erosion also existed, but 'there was no evident runoff and the loose sandy soil had greater absorptive power and therefore will be easier to check by local effort' (Pim, 1935, p.500). Milligan sensed Basuto opposition to the division of fields, which would be a challenge to communal grazing and indigenous forms of land tenure. This apprehension and need of enforcement is reflected in the following statements: 'It is essential to retain control of the anti-erosion operations in European hands...the success of the Glen Grey system has been effective in introducing individual tenure in Transkei and Ciskei...' (Milligan in Pim, 1935, p. 530). It is worth noting that the notorious Glen Grey Act of 1894 restricted farm ownership of Black South Africans to parcels of not more than 3ha of land, and represented one of the earliest laws of disenfranchisement.

CONCLUSION

Indigenous Basuto agriculture was well adapted to climatic and weather fluctuations, and maintained a good vegetative cover which protected the soil from accelerated erosion. Gullies did exist from the earliest records, but they expanded and increased in number towards the end of last century. The conversion from indigenous agriculture to commercial cultivation had the greatest influence in altering the cover and rendering the land more vulnerable to soil erosion. It is important to note that wheat was introduced by the missionaries and commercially produced due to a demand from South Africa and the white administration

in Lesotho. The Basuto themselves did not eat wheat, and being a winter crop, it took up the space previously reserved for winter grazing. This represented a departure from indigenous methods and provides a possible explanation for the lack of recovery of fields and overgrazing of certain areas, all with the resultant increase in erosion. Indigenous species of trees were depleted and together with the removal of veld, contributed to changes in the hydrological balance (lowering of the water table, increase in runoff) and the effects of droughts became more acute. The loss of much arable land to the Orange Free State, together with natural increase in population of people and animals led to settlement and cultivation on slopes not usually worked. Under conditions of reduced land, steeper slopes and confinement of the population and the animals, the careful indigenous systems were no longer as effective or sustainable. It has to be noted that cultivation on steep slopes was inconsistent with the principles of previous indigenous agriculture and both the colonial authorities as well as the Basuto were experimenting in conservation. The imposition of conservation measures upon an unconsulted peasant farming community was at best unsuccessful and at worst harmful to the environment, as evidence (e.g. Chakela, 1983; Singh, 1994) points to the increase in erosion where terraces served to concentrate flow and initiate gullies.

NOTES

The author gratefully acknowledges funding for this research from SIDA.

¹ Thomas Arbousset (1810-1877) was born and died in France, spending 28 years in Lesotho, mainly in Morija where he had founded the Church of Basutoland together with Casalis and Goselin. The quoted statement was made by Arbousset in his recordings of a trip with Daumas, exploring the Caledon valley from March to May 1836.

² D. Frederic Ellenberger (1835-1920) was born in Switzerland and arrived in Basutoland in 1861. During the Boer advance he fled his mission home at Bethesda and sought refuge in a cave which he discovered in Masitise. He lived with his family in the cave for the rest of his career, and did outstanding research on the customs and traditions of the Basuto, which he published in 1912.

³ An extract from the memoirs of Eugene Casalis, dated June 1833.

⁴ The description of Morija, which was founded in 1833, was made by Casalis in 1883.

⁵ Description of travel from Grahamstown to Basutoland, made by P. Germond (grandfather of R. Germond) in April 1874.

⁶ From a report by Arbousset describing his trip with Daumas, dated March 1836.

⁷ Extracts from the report of the expedition for exploring Central Africa from Cape of Good Hope, dated 1836.

⁸ Dated March 1847, between Morija and Qeme.

⁹ Dated July 1833, Morija.

¹⁰ Dated 1847, the description refers to Arbousset's trip to the Maloti.

¹¹ Maeder was writing from Beerseba Mission station, dated October 1842.

BASUTOLAND

¹² Maeder was writing from Morija, dated December 1850.

¹³ Dated July 1833, Morija.

¹⁴ F.Daumas (1812-1871) spent all 34 years of his missionary career at Mekoatleng, and undertook the famous expedition with Arbousset in 1836.

¹⁵ A. Mabille (1836-1894) came from Switzerland and spent 35 years in Lesotho until his death in Morija, where he was the founder of the Bible school and Morija Printing works. The quotation is dated March 1860, Morija.

¹⁶ Dated July 1833, Morija.

¹⁷ In addition to many letters, a book based on translations of his diary, *The Diary of Father Gerard at Roma Mission, from December 1864 to February 1875* remains one of the most valuable documents on the history of the Catholic church in Lesotho.

¹⁸ Dated 1847, Makokoane.

¹⁹ During a visit to found the mission station at Hermon in western Lesotho, dated April, 1847.

²⁰ F. Maeder (1811-1888) came from Germany and spent time in Morija where he helped to build the church together with Arbousset. The quote is taken from a report by him dated 1855, Morija.

²¹ L.S. Duvoisin (1835-1891) was born in Switzerland and spent 30 years as a missionary in Berea, Lesotho until his death. During the Boer war he often had to flee. The quotation is dated 1863, Berea.

²² P.Lemue (1801-1970) spent time in Kuruman, South Africa together with Roland and Robert Moffat of the London Missionary society. He settled in Carmel and collaborated closely with Moffat in biblical translations. The quotation was made in 1863.

²³ Dated 1863, Berea.

²⁴ H. Dyke (1817-1898) was English and went to Lesotho in 1836 with Casalis when the latter married Dyke's sister. He was employed by the London Missionary Society, but later worked for the PEMS in Thaba Bosiu, Hermon and Morija. The quotation is dated 1898, Morija.

²⁵ Maeder's description of the Caledon in flood, dated October 1842.

²⁶ A gully may be broadly defined as a steep-sided incised ephemeral channel.

²⁷ Italics are my emphasis.

²⁸ The reference is to the Bushmen/San who hid in gullies when attacked.

²⁹ Dated 1833, the description refers to Casalis's arrival at Thaba Bosiu.

³⁰ Letter from Arbousset, dated June 1833, in the vicinity of Thaba Nchu.

³¹ Letter from Casalis, dated July 1833, Morija; my emphasis in italics, a reference to pipes.

³² Letter from Arbousset, dated March 1836.

³³ J-A. Pfrimmer (1814-1886) spent only 4 years in Lesotho. The quotation was taken from a letter dated 29 January 1841, and refers to travel in the vicinity of Mekoatleng.

³⁴ Ibid, dated 6 February 1841.

³⁵ Dated July 1864, Morija.

³⁶ H.Marzloff (1854-1912) arrived in Lesotho in 1879 and had a very disturbed career due to the Boer war, having to flee several times. The comment was made during a trip from Kokstad to his mission station in Matatiele, dated July 1881.

³⁷ H.Dieterlen (1850-1933), spent 45 years in Lesotho during which time he was arrested by the Boers during the Boer war, directed various mission stations including Morija, Hermon, Leribe, Botsabelo and Likhoele. Having studied in Strasbourg and Paris, he has

been described by Germond as a 'prolific writer in both French and Suto'. The quotation is dated January 1898, Leribe.

³⁸ Dated October 1842, in which Maeder describes the Caledon in flood.

³⁹ Quotation dated 1847, referring to the trip by Arbousset and Daumas.

⁴⁰ J.Fredoux (1823-1866) spent 21 years in Lesotho until his early tragic death, before he could complete a publication of a Bechuana dictionary which he had been compiling. The quotation is dated August 1856, Mothetho.

⁴¹ The quotation is taken from an annual conference of the Paris missionaries at Thaba Bosiu, dated May 1844.

⁴² Letter from Casalis, dated January 1844, Thaba Bosiu.

⁴³ From Arbousset's journal dated July 1833.

⁴⁴ Dated January 1873, Masitise.

⁴⁵ Extract taken from the annals of the P.E.M.S. in Basutoland, dated 1874.

⁴⁶ Dated June 1836, Morija.

⁴⁷ J. Preen (1841-1924) went to Senegal first and due to ill health he was appointed to assistant missionary in Basutoland, where he taught at the school in Morija, and later took charge of the mission station at Mafube.

⁴⁸ T. Jousse (1823-1890) was a French missionary who decided to join Casalis in Lesotho in 1850. He was initially stationed at Motito and later at Thaba Bosiu until 1882. He published a book *La Mission Francaise au Sud de l'Afrique*, during his position as interim director of the Mission Society. The quotation is dated 1852, Motito.

⁴⁹ Lemue quoted in a Paris document dated February 1863.

⁵⁰ From a Paris newsletter dated 28 April 1858.

⁵¹ The quotation was made by Lemue during a trip with his wife from their station in Carmel to visit Daumas in Mekoatleng, where he lived. It is dated December 1861, Carmel.

⁵² From an old collection of letters, translated for me from French by Father Mairot: Roma Catholic Mission.

⁵³ Dated October 1887, Masitise.

⁵⁴ Dated 1888.

⁵⁵ Undated, but according to Germond (1967) probably around late 1882 or early 1883.

⁵⁶ J. Bianquis (1853-1935) was first General Secretary and later the director of PEMS, and spent three months in Lesotho in 1908 on the occasion of the 75th anniversary of the founding of the Basutoland mission. The quotation is dated 1909, Paris.

⁵⁷ More detail about the conservation work at Hobson's farm is contained in Singh, 1994.

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