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Changes in Settlement and Land Use in Simen, Ethiopia, especially from 1954 to 1975

By P. Stähli*

Table of contents

—	List of figures and tables	33	6.	Changes in settlement since 1954 or 1964 respectively	59
—	Summary	34	6.1.	Explanations of the map 1 : 17 500, changes in settlement and land use in Simen, Ethiopia, from 1954 to 1975	59
	Zusammenfassung	34	6.2.	Changes in settlement in the highlands	60
	Résumé	35	6.2.1.	Gich	60
1.	Problem and scope	35	6.2.2.	Ambaras	62
2.	Basic work	36	6.2.3.	Abergina	62
2.1.	The topographic map 1 : 25 000 (1975)	36	6.2.4.	Argin	63
2.2.	The aerial photographs (1964)	36	6.2.5.	Changes in settlement in the neighboring highlands	63
2.3.	The terrestrial survey for the map 1 : 50 000 "Hoch-Semyen" (1954)	37	6.3.	Changes in settlement in the lowlands	64
2.4.	Selection of the section	37	6.3.1.	Amiwalka	64
2.5.	Older sources	37	6.3.2.	Dihwara	65
3.	The colonization of Simen	38	6.3.3.	Truwata and Tiya	68
3.1.	The old province	38	6.4.	Differences between the development of the highland and lowland settlements	68
3.2.	The rule of the Felashas	39	—	Bibliography	69
3.3.	Islam and Christianity	39	—	Enclosure: map 1 : 17 500, Changes in settlement and land use in Simen, Ethiopia, from 1954 to 1975	
3.4.	Old trade routes	43			
3.5.	The settlement conditions, end of 18th century up to beginning of 20th century	43			
3.6.	Compilation table of the most important sources referring to the colonization before 1930	44			
4.	The present situation of the settlements in Simen	50			
4.1.	Terminology	50			
4.2.	Altitudinal zones	50			
4.3.	Virgin and cultivated land	51			
4.4.	Areas of settlements	52			
4.4.1.	Altitude	52			
4.4.2.	Location of the dwelling places	52			
4.4.3.	Topographical situation of the cultivated land	54			
4.5.	Construction of the house and structure of the dwelling place	54			
4.6.	Ownership and cultivation of soil	56			
5.	The natural population increase in Simen	56			
5.1.	Scope and area of investigation	56			
5.2.	The Gich census end of 1974	57			
5.3.	The natural population increase in Gich	58			

List of figures and tables

Fig. 1	Extent of subdistrict-boundaries in Simen	40
Fig. 2	Distribution of the three religions in Simen	41
Fig. 3	Important caravan routes through Simen	42
Fig. 4	Altitude of settlements	51
Fig. 5	Survey of main areas of settlements in Simen	53
Fig. 6	Increase in population of the hamlet of Minmana	55
Fig. 7	Size of households in Gich	58
Fig. 8	Area of intensive investigation	59
Fig. 9	Altitude of recent settlements on the highland plateau	63
Fig. 10	Changes in numbers of buildings from 1964 to 1975	66
Fig. 11	Movement of population 1964–1975	67

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Tab. 1	List of basic material used for the map 1 : 17 500	38
Tab. 2	a) The 7 districts of Beghemdir Province . . . b) The 5 subdistricts of Simen	38 39
Tab. 3	The most important explorers in Simen, end of 18th up to beginning of 20th century . . .	44
Tab. 4	Changes in numbers of buildings from 1954 to 1975 in the limited area	61
Tab. 5	Changes in numbers of buildings and persons from 1964 to 1975 in part of Simen	65

Annex Gich, census 1974

Summary

The verification and complementary works for the topographic maps 1 : 25 000 (STÄHLI, ZURBUCHEN 1978) made us conscious of great changes in the natural scenery of Simen. We tried to emphasize the dynamic process in this high mountain area on a thematic map. As basic data we used the reports of the explorers of Simen from the end of the 18th to the beginning of the 20th century and, in particular, for the thematic map 1 : 17 500, we had the original terrestrial photographs of 1954, used for the map "Hoch-Semyen" 1 : 50 000 (WERDECKER 1967), the American and Ethiopian aerial photographs of 1964 and our own field survey of 1975.

During the 18th and 19th century High Simen formed a province of its own and was, with its high mountain passes and trade routes between the old imperial town of Gonder and the northern provinces of Tigre and Eritrea (Aksum, Adwa, Red Sea), of great strategical importance and therefore hotly contested. According to reliable travel accounts, in those times in Simen the high plateaus of the upper Dega zone (3200 to 3500 m) were more densely populated than the lower situated area of the lower Dega (2700 to 3200 m), Woyna Dega (2000 to 2700 m) and Kolla (below 2000 m).

The area of special investigation includes the highland settlements on the plateaus and high valleys and the lowland settlements on terraces which at the present are inhabited by Ethiopian orthodox Christians and Moslems. For the period from 1954 to 1975, in the eastern part, and from 1964 to 1975, in the western part, the changes in the location of the buildings and that of the cultivated and natural landscape could be accurately recorded. The following results were obtained (table 4):

In the highlands the number of buildings increased during 11 years by 186 from 617 in 1964 to a total of 803 in 1975. The resulting annual increase rate of 2.4 % corresponds barely to the natural increase of 2.5 %–3.0 %. Within the single settlements a distinct shift of dwelling places from the old location at the upper edge of the valley slope (3200–3600 m) to the higher zones on the plateau (up to 3750 m) is observed. Parallel to it goes the obtaining of new farmland, so that the upper limit of cultivation climbed since 1964 around 100 m in certain places up to 3750 m just below the ground frost limit. The only remaining reserves of farmland in the highlands are situated in climatically unfavorable zones above 3500 m or partly on the steep slopes of some valleys. There are signs permitting

one to deduce a slight emigration from the highland plateaus towards the bottom of the highland valleys and perhaps even towards the terrace of the lowlands.

In the lowlands the number of buildings increased during the first 10-year phase by 56 from 133 in 1954 to a total of 189 in 1964. In the second 11-year phase it increased by 77 to a total of 266 in 1975. The resulting annual increase rates of 3.58 % (1954–1964) and 3.16 % (1964–1975) indicate immigration. Yet the origin of the immigrants could not be precisely established. New farmland could be obtained solely on the extremely steep slopes above or below the terraces. Contrary to the highlands the relative large area of abandoned farmland in the lowlands indicates that here the conditions in the settlements are still less critical today.

But it became clear that the natural population increase in Simen will use up in a few years the last remaining reserves of land and that with unchanged agricultural methods the demand for food cannot be met.

Zusammenfassung

Die Verifikations- und Ergänzungsarbeiten zu den topographischen Karten 1 : 25 000 (STÄHLI, ZURBUCHEN 1978) brachten sehr grosse Veränderungen des Landschaftsbildes in Semien zu Tage. Mit einer thematischen Karte wurde versucht, die dynamischen Prozesse in diesem Hochgebirgsraum sichtbar zu machen. Als Grundlagen dienten die Berichte der Forschungsreisenden in Semien von Ende 18. bis anfangs 20. Jahrhundert und – im speziellen für die thematische Karte 1 : 17 500 – die terrestrischen Originalphotos von 1954 zur Karte "Hoch-Semyen" 1 : 50 000 (WERDECKER 1967), sowie die amerikanisch-äthiopischen Luftaufnahmen von 1964 und die eigenen Feldaufnahmen von 1975.

Mehrere Forschungsreisende des 18. und 19. Jahrhunderts erwähnen, dass nach ihnen zugänglichen Quellen Hoch-Semien seit etwa tausend Jahren besiedelt ist. Als erste Besiedler Semiens werden die äthiopischen Juden (Felashas) genannt. Deren Vorherrschaft unter der sagenhaften Königin Judith (um 900) wurde später abgelöst durch das äthiopisch orthodoxe Christentum und möglicherweise zum Teil auch durch den Islam (16. Jahrhundert und später). Es ist der Unwegsamkeit und der durch Tektonik und Erosion bedingten starken Kammerung des Gebietes zuzuschreiben, dass in Semien bis heute Siedlungen aller drei Religionsgruppen erhalten geblieben sind. Im 18. und 19. Jahrhundert bildete Hoch-Semien eine eigene Provinz und war mit seinen Hochgebirgspässen und Handelsrouten zwischen der alten Kaiserstadt Gonder und den Nordprovinzen Tigre und Eritrea (Aksum, Adwa, Rotes Meer) strategisch äusserst wichtig und dementsprechend umkämpft. Nach den Reiseberichten waren in Semien damals die Hochplateaus der oberen Dega-Stufe (3200–3500 m) dichter besiedelt als die tiefer liegenden Gebiete der untern Dega (2700–3200 m), Woyna Dega (2000–2700 m) und Kolla (unterhalb 2000 m).

Das engere Untersuchungsgebiet umfasst Hochland- und Tieflandsiedlungen, die heute von äthiopisch orthodoxen Christen oder Moslems bewohnt werden. Für den Zeitraum von 1954 bis 1975 (im Ostteil), beziehungsweise 1964 bis

1975 (im Westteil), konnten die Veränderungen der Gebäudestandorte und der Kultur- und Naturlandschaft genau erfasst werden. Die Einwohnerzahl der auf dem Hochplateau gelegenen Moslemsiedlung Gich nahm von 619 (Mitte 1968) um 123 auf 742 (Ende 1974) zu. Daraus wurde eine natürliche jährliche Bevölkerungs-Wachstumsrate von 2.8 % ermittelt. Da im selben Zeitraum für den Zuwachs des Gebäudebestandes der gleiche Wert resultierte, durfte an Hand von Zu- oder Abnahme der Gebäudezahlen, auf Verschiebung der Bevölkerung geschlossen werden. Seit 1954 bzw. 1964 ergaben sich im Untersuchungsgebiet folgende Resultate:

Im Hochland nahmen die Gebäude in 11 Jahren von 617 (1964) um 186 auf 803 (1975) zu (Tab. 4). Die daraus resultierende jährliche Zuwachsrate von 2.4 % entspricht nur knapp dem natürlichen Zuwachs von 2.5–3.0 %. Innerhalb der einzelnen Siedlungen sind deutliche Verschiebungen der Wohnplätze von den alten Standorten an den oberen Talhangkanten (3200–3600 m) in immer höhere Plateaulagen (bis 3750 m) festzustellen. Damit geht auch die Gewinnung des neuen Kulturlandes einher, so dass die obere Anbaugrenze seit 1964 um ca. 100 m bis stellenweise auf 3750 m, knapp unterhalb der frostbedingten Anbaugrenze, angehoben wurde. Die einzigen verbleibenden Kulturlandreserven im Hochland liegen heute in den klimatisch ungünstigen Lagen über 3500 m oder zum Teil an den steilen Hängen einzelner Hochtäler. Es sind aber auch Anzeichen vorhanden, aus denen eine leichte Abwanderung der Hochplateau-Bewohner in die Talgründe der Hochtäler und möglicherweise auch auf die Terrassen des Tieflandes geschlossen werden kann.

Im Tiefland nahmen die Gebäude in der ersten 10jährigen Phase von 133 (1954) um 56 auf 189 (1964) und in der zweiten 11jährigen Phase um 77 auf 266 (1975) zu. Die daraus resultierenden jährlichen Zuwachsraten von 3.58 % (1954–1964) und 3.16 % (1964–1975) lassen auf Zuwanderung schliessen. Die Herkunftsorte konnten jedoch nicht eindeutig ermittelt werden. Neues Kulturland konnte ausschliesslich an extrem steilen Hängen ober- oder unterhalb der Terrassen erschlossen werden. Im Gegensatz zum Hochland lässt aber im Tiefland relativ viel aufgelassenes Ackerland darauf schliessen, dass hier die Siedlungsverhältnisse heute noch etwas weniger prekär sind.

Es wird deutlich, dass in Semien der natürliche Bevölkerungszuwachs in wenigen Jahren die letzten noch vorhandenen Landreserven aufbrauchen wird, und bei gleichbleibenden Anbaumethoden der Nahrungsbedarf nicht mehr gedeckt werden kann.

Résumé

La vérification et les compléments apportés aux cartes topographiques 1 : 25 000 (STÄHLI, ZURBUCHEN 1978) font état de très grandes modifications du paysage de "Simen". Par une carte thématique on a voulu démontrer les processus dynamiques dans cette région de haute montagne à l'aide des rapports d'explorateurs allant de la fin du 18ième au début du 20ième siècle. Pour la carte thématique 1 : 17 500 on a utilisé les photographies terrestres de 1954 servant à la réalisation de la carte "Hoch-Semyen" 1 : 50 000 (WERDECKER 1967), les vues

aériennes américaines de 1964 et les relevés personnels de 1975. Au 18ième et 19ième siècle les hauts plateaux du "Simen" formaient une province indépendante avec les cols de la montagne et les liaisons commerciales entre la ville impériale de Gonder et les provinces du nord, Tigre et Eritré (Aksum, Adwa, mer rouge) d'une très grande importance stratégique et en conséquence très convoitée. Selon les rapports des voyageurs dignes de foi, la densité de la population sur les hauts plateaux de la couche Dega-supérieur (3200–3500 m) était plus grande que dans les régions moins élevées de Dega-inférieur (2700–3200 m), Woyna Dega (2000–2700 m) et Kolla (au-dessous de 2000 m). La région destinée aux recherches limitée en soi, comprend la montagne (plateau, hautes vallées) et les habitants de la plaine et des terrasses où logent des chrétiens orthodoxes éthiopiens ou des musulmans.

Pour la période de 1954–1975 (dans la partie est) et de 1964–1975 (dans la partie ouest) le déplacement des bâtiments et des limites de terrain a pu être déterminé avec exactitude. Dans la montagne le nombre de bâtiments a passé en 11 années de 617 (1964) à 803 (1975) donc de 186 (Tab. 4). L'accroissement annuel de 2.4 % qui en résulte, correspond pour ainsi dire à l'accroissement naturel (2.5–3.0 %). On constate d'autre part un déplacement prononcé des habitations du bord des terrasses (3200–3600 m) aux plateaux supérieurs (3750 m), ce qui empêche l'acquisition de nouvelles terres arables. La limite supérieure d'exploitation a été élevée de 100 m (1964), par endroits jusqu'à 3750 m, juste au-dessous de la limite du gel. Les seules réserves de terrains arables dans la montagne se trouvent aujourd'hui dans les régions défavorisées, au-dessus de 3500 m ou sur des pentes raides. Il y a toutefois d'autres indices qui nous permettent de déterminer une petite émigration des habitants de la montagne vers le fond des vallées et probablement aussi sur les terrasses de la plaine. Dans la plaine le nombre de bâtiments a augmenté au cours de la première période de 10 ans de 133 (1954) à 189 (1964) donc de 56, et dans la deuxième période de 11 ans à 266 (1975) donc de 77. L'accroissement annuel de 3.58 % (1954–1964) et 3.16 % (1964–1975) qui en résulte, dénote une immigration. L'origine des personnes immigrées n'a toutefois pas pu être déterminé avec certitude. De nouvelles terres arables n'ont pu être mises en exploitation que dans les pentes extrêmement raides au-dessus ou au-dessous des terrasses. Contrairement à la montagne, de grandes surfaces de terres arables dans la plaine, laissent supposer qu'aujourd'hui les conditions d'habitation y sont moins précaires.

Il est évident qu'au "Simen" l'augmentation naturelle de la population absorbera les dernières réserves de terre. Ainsi en utilisant les mêmes méthodes actuelles d'exploitation, les besoins en nourriture ne seront plus garantis.

1. Problem and scope

During the verification work of the two map sheets 1 : 25 000 Simen Mountains National Park and Debark we were confronted with the fact that in the years before the area around the national park

had undergone changes which were difficult to be grasped. Above all the forests and houses of the aerial photographs (see STÄHLI, ZURBUCHEN 1978) no longer corresponded to the situation 11 years later. Dozens of hectares of forest and bush had been cleared, hundreds of new houses erected, but many had been torn down as well. One would rather have expected that with the proclamation of the Simen Mountains National Park in 1969, a stabilizing effect would have been reached, not only inside the park boundaries, but on the surrounding land as well. In spite of a system of surveillance of the whole area by local game-wardens, it was obviously impossible to avoid the destruction of the landscape or at least to retard this process. The main cause is the age-old agricultural tradition of clearing the land by burning and the lack of understanding on the part of the native farmers and the local public authorities of the ecological problems (see STÄHLI 1975; MESSERLI, STÄHLI, ZURBUCHEN 1975: 27).

The precise aim of the foundation "Pro Semien" is to restore the ecological balance but it seems to be too early to propose definitive solutions as long as basic understanding is still missing. Therefore the purpose of the Swiss presence in Simen since 1968 was first and foremost to collect scientific data. The article "Changes in settlement and land use in Simen, Ethiopia" should be understood as an integral part of this effort. It aims to answer the following questions:

1. To which extent was the landscape in Simen altered during the last 20 years?
2. How significant is the population increase? Are there any shifts of population within the settlements, from one settlement to another, between the high- and lowlands?
3. For what reasons are these changes taking place?
4. Can one view these recent changes in settlement and land use in relation to the older, long dated developments of the landscape?

Starting from single, provisional surveys we tried to reproduce on a thematic map the changes which took place in the last 20 years, so as to enable us to see the dynamics of the process taking place in this mountain area. The existing technical material (see chapter 2) allowed us to map the changes of every single building as well as the use of the land within a representative area, up to a quarter of a hectare's precision (see fig. 8). Because of technical printing problems the topographic map Simen Mountains National Park had to be enlarged. The choice of a scale 1 : 17 500 was a compromise, so that the exact details of single buildings and plots of land could immediately be grasped and the format of the map remained handy.

2. Basic work

2.1. *The topographic map 1 : 25 000 (1975)*

With the conclusion of the fieldwork in the spring of 1975 for the map sheet 1 : 25 000 Simen Mountains National Park we had the first up-to-date record of the area in and around the national park. I finished most of the corresponding fieldwork in February and March 1975; the verification of the so-called Dirni terrace (region of Dirni, Tiya, Truwata, Dihwara and Amiwalka settlements) was concluded by H. Hurni in May/June of the same year. The topographic map 1 : 25 000 depicts all the existing buildings, forests and bush areas as well as single groups of trees, but does not indicate the subdivision of the virgin and cultivated land (see chapter 4). This subdivision could later be well established for the thematic map 1 : 17 500 from the revised proof sheets and field notes. The boundaries of the Gich settlement were taken from the erosion map of HURNI (1978). Those in the area of the settlement Ambaras and Argin were completed in the field by H. Hurni.

On purpose we omitted differentiating the open farmland from occasional farm and fallow land. This was beyond our scope and would have hindered the readability of our map.

2.2. *The aerial photographs (1964)*

The necessary aerial photographs for the topographic map 1 : 25 000 (see STÄHLI, ZURBUCHEN 1978) show the situation of the area in the spring of 1964. Comparing them to the map of 1975 allowed me to register all the visible changes between 1964 and 1975. The difference between virgin and cultivated land could be clearly and precisely seen on the aerial photos, as the ploughed and fallow land contrasted with the natural grass steppe. Some difficulties arose with the aerial photos in the identification of houses due to their traditional method of construction (see chapter 4.5.). They are as difficult to recognize in the photographs as in the landscape itself. In addition to this, there is a great resemblance between the houses and the straw heaps which are scattered all over the ground after the harvest (from December to April). For this reason an accurate photographic survey on the total of existing structures in the year 1964 was limited. Nevertheless with a stereoscopic view and the experience gathered during the fieldwork, I could in most cases clearly identify the houses as such. This was: on all high areas of the highlands, on the open terraces of the lowlands and on all the slopes with no trees.

However, it was not possible to see and identify the houses clearly in wooded valleys (as Debir) and on the low lying terraces and slopes, which were partly covered with trees growing up to 10 meters or even more (as Nariya). Naturally in these cases, larger groups of houses or whole villages could also be identified as such on the photos, but the number of houses could not be evaluated within a margin of error of $\pm 5\%$.

2.3. *The terrestrial survey for the map 1 : 50 000 "Hoch-Semyen" (1954)*

The map 1 : 50 000 "Hoch-Semyen" was realised on the base of terrestrial photogrammetric photos taken in spring 1954 (WERDECKER 1968: 34, and HILLEBRAND 1967: 120). As the eastern part of the map 1 : 25 000 Simen Mountains National Park overlapped with the map 1 : 50 000 "Hoch-Semyen" a unique possibility arose, to record a third, even older situation. The map 1 : 50 000 "Hoch-Semyen" could not be used for the above purpose because it had been partly brought up to date during later journeys (WERDECKER 1968: 36). Also its scale was too small to be able to record each single building on it. For that reason I had to use the original photographs, which were put at my disposal by J. Werdecker. Similar reservations to those already mentioned about the identification of buildings on aerial photographs have to be kept in mind regarding the terrestrial survey. On one hand the terrestrial survey has certain advantages compared to aerial photos due to the shorter distance of photography, on the other hand the obstructed visibility on plateaus and terraces hinder the exact counting of the houses (see STÄHLI, ZURBUCHEN 1978: nnn).

2.4. *Selection of the section*

The goals set in chapter 1. required a representative section of Simen. In the chosen area it had to be possible to survey accurately the forests, farmland and buildings. The areas mentioned in chapter 2.2. had to be left out for lack of precision. Furthermore I had to make use of the advantage that for a certain part of the area I had at my disposal, along with the terrestrial photographs from 1954, the aerial photographs from 1964 and the map of 1975, that is, three inventories made at approximately equal intervals. With the selected section of the map 1 : 17 500 "Changes in settlement and land use in Simen, Ethiopia, from 1954 to 1975" I could consider in the best possible way the three mentioned conditions. The map comprises settlements:

- a) on highland plateaus (Gich, Ambaras, Abergina),
- b) in a highland valley (Argin),
- c) on lowland terraces (Amiwalka, Dihwara, Truwata, Tiya).

Besides large settlements such as Ambaras (1975 with 353 buildings and about 25 km² of arable land) the smaller ones are also recorded such as Tiya (1975 with 35 buildings and about 3 km² of farmland). Settlements belonging to both main religions of Simen are represented: Ambaras, Abergina, Argin are inhabited by Christians belonging to the Ethiopian orthodox church; Gich, Tiya, Truwata, Dihwara and Amiwalka are inhabited exclusively by Moslems.

The farmland boundaries as well as the location of single houses could be recorded for all of the three mentioned years. Indications about the number of buildings belonging to particular dwelling places have an error rate of less than $\pm 5\%$.

In order to show the changes of the dwelling sites clearly, the scale used to represent each single house had to be enlarged, as the 5 to 8 m of the actual diameter of a house corresponds, when drawn on a scale of 1 : 17 500, to only 0.3 to 0.5 mm on the map. Therefore larger dwelling sites have been greatly exaggerated at the expense of the represented cultivated land, in spite of the fact that in reality they cover a much smaller space with their crammed houses.

With the terrestrial photographs, the aerial ones and the own survey I had three inventories (1954, 1964 and 1975) in the eastern section of the map. For the western section, where no terrestrial photographs had been taken, I had two inventories (1964, 1975; see table 1 and fig. 8).

2.5. *Older sources*

Italian studies

According to the natives' accounts, Simen was the goal of several military-geographic expeditions during the Italian occupation 1936–1941. The western main connecting road Asmera–Addis Abeba built under the Italians crossed the western part of Simen over Wulkifit Pass (Lemalimo) and Debark. In Debark on the flat hill south of the Krar Maryam church there was a small airport and a garrison was stationed there. Smaller outposts were located in the capitals of the subdistricts: in Adi Arkay (like Debark on the important connecting road) as well as in Derasge and Dilibza inland in High Simen. The Italian records, in so far as they are not lost, are today in the "Istituto Geografico Militare" in Florence. However, the area of the present national park was of secondary interest to the Italians, as their attention was concentrated on

Table 1: List of basic material used for the map 1 : 17 500

Source material	Date of photographing	Time interval
Topographic map 1 : 25 000 / Simen Mountains National Park, completed by further field work by H. Hurni and P. Stähli	February to May 1975	11 years
Aerial photographs of the US Coast and Geodetic Survey, Geography Institute, Addis Abeba. Numbers of the photographs: 6455–6459 / 6499–6505 / 6540–6543 8337–8340 (see also STÄHLI, ZURBUCHEN, 1978: 16, Fig. 2)	February 2, 1964 March 8, 1964	
Terrestrial photographs for the map 1: 50 000 “Hoch-Semyen” by J. Werdecker and H. Hillebrand. Numbers of the photographs: 1 A/B normal, 1 A/B 30 Grad rechts, 1 A/B 30 Grad links; 2 A/B n, 30 r, 30 l; 43 A/B n, 32 l; 44 A/B 7 r; 47 A/B n, 30 r; 48 A/B 32 l; 52 A/B 30 l; 103 A/B n, 35 l; 105 A/B n, 35 r; 142 A/B n, 35 r; 143 A/B 10 r, 20 r; 144 A/B n, 35 l	February 6 to March 12, 1954 (WERDECKER 1968: 34)	10 years

the area along the main road and also partly on the Ras Dejen, the highest mountain in Ethiopia. For the present work I had to do without consulting the Italian records.

Reports of expeditions

During the whole of the 19th century and the beginning of the 20th century, Simen was travelled by several European scientists, most of them giving detailed accounts of their expeditions with extremely interesting information on the conditions of the settlements in the investigated areas (see chapter 3.6.). The oldest publication at my disposal concerning the area of today's Simen dates from the year 1770 and was written by the Scott BRUCE (1790) who on his journey to rediscover the sources of the Blue Nile, took the old route Adwa–Aksum–Gonder, and after having negotiated the difficult Wulkifit Pass, camped in the neighborhood of Debark. In those times Debark together with Debat belonged to the province of “Wogera” and not to Simen. The first detailed information concerning the area around the national park dates from 1832 by RÜPPELL (1838, 1840) who lived for several months on the high plateaus around Bwahit.

Original Ethiopian sources

According to several sources, Simen had been inhabited for more than 1000 years: TAMISIER (1838, vol. 3: 56) refers to Ethiopian sources concerning the legendary Judith as queen of Simen around the year 900. Thus it should be possible to find material from old sources in Ethiopia and

eventually even in Simen itself. Material could be found in places with century old churches and law court traditions such as Derasge but also Sonna and Barna. The task of tracing and evaluating these should be an Ethiopian research project.

A general view of the most important sources concerning the conditions of the settlements in Simen follows in chapter 3.5. and 3.6. Extracts of the references to publications marked with * are reproduced and compiled in chapter 3.6.

3. The colonization of Simen

3.1. The old province

The present district (Awraja) of Simen is in the northernmost part of Beghemdir and includes the five subdistricts (Wereda) of Jannamora, Beyeda, Tellem, Dip Bahir and Debark (see table 2 and fig. 1). Up and into the 20th century Simen was an independent province with its own ruler (Dejazmach, Ras). This old Simen, called by RÜPPELL (1838: 418) the “real Simen”, comprised only the

Table 2a: The 7 districts of Beghemdir Province

District (Awraja)	Capital
Gonder	Gonder
Gayint	Nefas Mewuleta
Debre Tabor	Debre Tabor
Libbo	Addis Zemen
Chilga	Iykal
Weghera	Dabat
Simen	Debark

Table 2b: The 5 subdistricts of Simen

Subdistrict (Wereda)	Capital	Area
Debark	Debark	western plateau (previously together with Dabat formed the "Wogera" Province)
Jannamora	Derasge	southwestern highlands with Mesheha valley (heart of the old Simen Province)
Beyeda	Dilibza	eastern highlands (with Ras Dejen)
Tellemt	Addis Selam	northeastern lowlands with Silki and Walya Kend
Dip Bahir	Adi Arkay	northwestern lowlands between the escarpment and the Tekeze with the high plateau of Sonna/Lori

highland regions between Ras Dejen and Sankaber, which is essentially the area of today's subdistrict Jannamora, in addition the high plateau of Sonna which belongs today to the subdistrict of Dip Bahir and the southern highlands of today's Tellemt. Debark, up to Sankaber together with Dabat and the whole western high plateau belonged at the time to the old "Wogera" province. Beyeda, together with the areas east and south of the upper course of the Tekeze river (with Lalibela), belonged to the "Lasta" province. The lowlands in the north of the escarpment up to the Tekeze (which already then formed the border to Tigre) included their own less important provinces and subprovinces, for example: "Wulkefit, Walduba, Adi Arkay and Tellemt" (RÜPPELL 1838: 418; TAMISIER et COMBES 1838, vol. 1, map).

3.2. The rule of the Felashas

The sources name, as the first inhabitants of the highlands of Simen, the Ethiopian Jews, the Felashas, who at the time, sought refuge up in the mountains from the Christian Aksumitic kingdom (FERRET et GALINIER 1847: 297*). Under their legendary ruler, Judith, the Simen Felashas defeated the rest of the Aksumitic kingdom and murdered the princes of the royal family at Debre Damo (TAMISIER et COMBES 1838, vol. 3: 55/56*). Around the end of the 12th century, the Simen Jewish dynasty was taken over by the Christian dynasty of Zagwe from Lasta, with the town Lalibela named after its most famous ruler.

Even today, the occasional Felasha settlements in the heart of the Simen mountains testify to the former Jewish supremacy (see fig. 2). One cannot find reliable references to indicate which areas and altitude zones were occupied by the Felashas from the 10th to the 12th century. I suppose that it was mainly the plateau and terraced land north of Mesheha valley, as well as the southern highlands of today's Tellemt. Mention of the legendary "rock of the Jews" reemerges in several travel accounts (BRUCE 1790, vol. 3: 189/190; ROSEN 1907: 449/450). On his way from Mesheha valley to Arkwazye (area of today's Dibil?) RÜPPELL (1840: 1/2*) was shown rubble heaps by his native guide. These were supposed to be the vestiges of the former residence of the Felasha kings. With the rise of the Zagwe dynasty the main power and principal interests shifted towards the lower situated region around Lalibela in the southeast of High Simen. There are no accounts as to whether the Simen Felashas were chased away or if they were freely or by force converted to the Ethiopian Christian orthodox faith (RÜPPELL 1840: 1/2*). It can be assumed that at least some single Felasha settlements, in the heart of their old land, remained as such. Yet it is not known if the Felasha settlements around Gonder were established by Felashas migrating from Simen.

3.3. Islam and Christianity

The Ethiopian orthodox Christians were forced to convert to the Islamic faith in the 16th century, in the course of the conquest of Ethiopia from the south by Ahmed ibn Ibrahim Gran. Although in 1534 Gran reached the northern province of Tigre (ULLENDORFF 1965: 73) it is not certain if this occupation forced all the inhabitants of Simen to convert to Islam, or if the Christians and Jews hidden in the nearly inaccessible high valleys, plateaus and terraces held out against Islam. Thus, the majority of Simen's population having converted to Islam in the 16th century may well have reconverted in the 17th and up to the 19th century, under the influence of the Christian emperors of Gonder, leaving some small Moslem communities behind. In fact today followers of all three religions live more or less peacefully side by side, as a rule in different settlements with no noticeable ethnic differences. Unfortunately while on the spot, it was not possible to find out if the ancestors of the inhabitants of the various religious divisions had been converted, or when and from where they had immigrated.

The fact that the majority of the population of Simen belongs to the Christian faith (see fig. 2) reflects the predominant position that the Ethi-

Fig. 1: Extent of subdistrict-boundaries in Simen

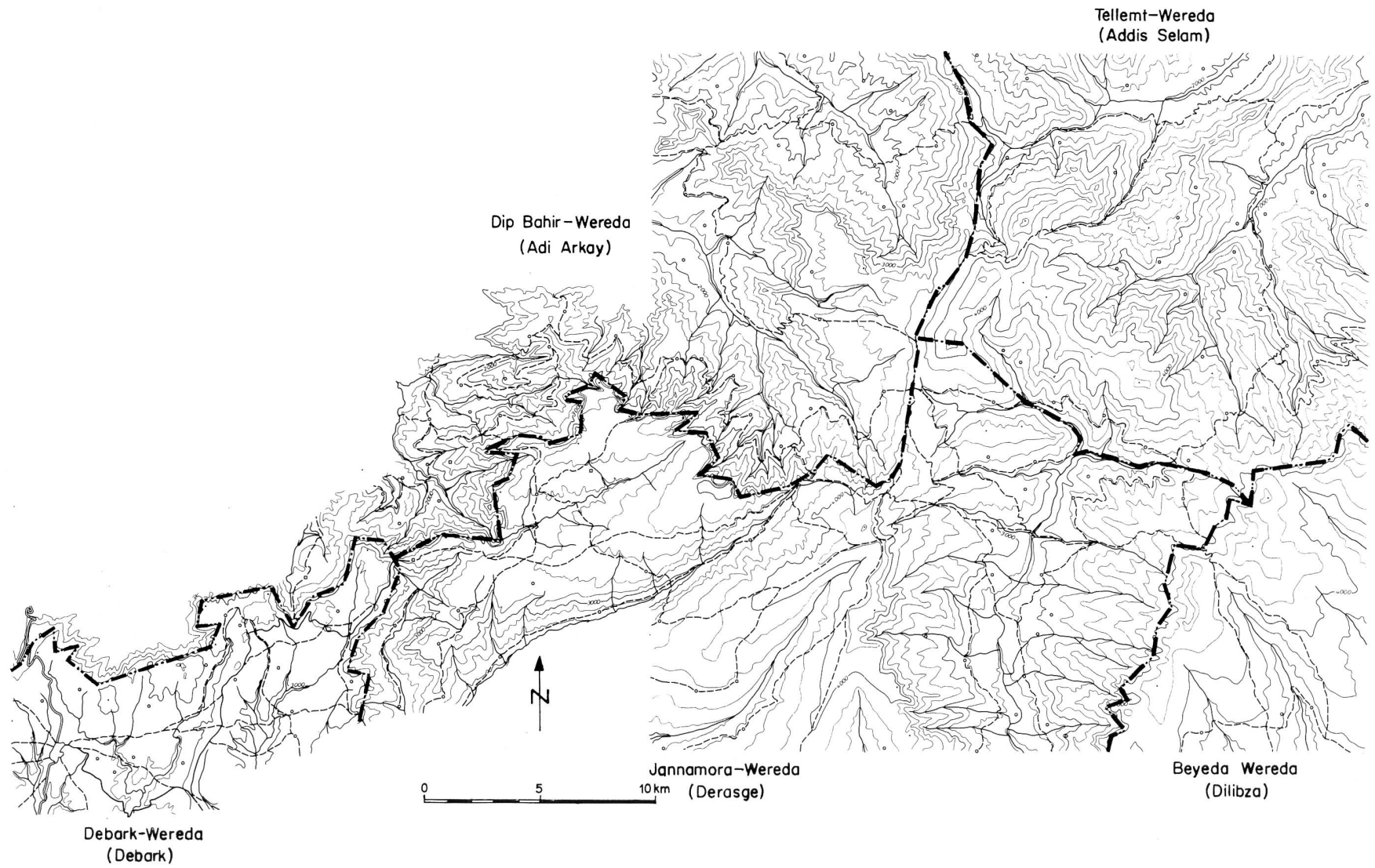


Fig. 2: Distribution of the three religions in Simen

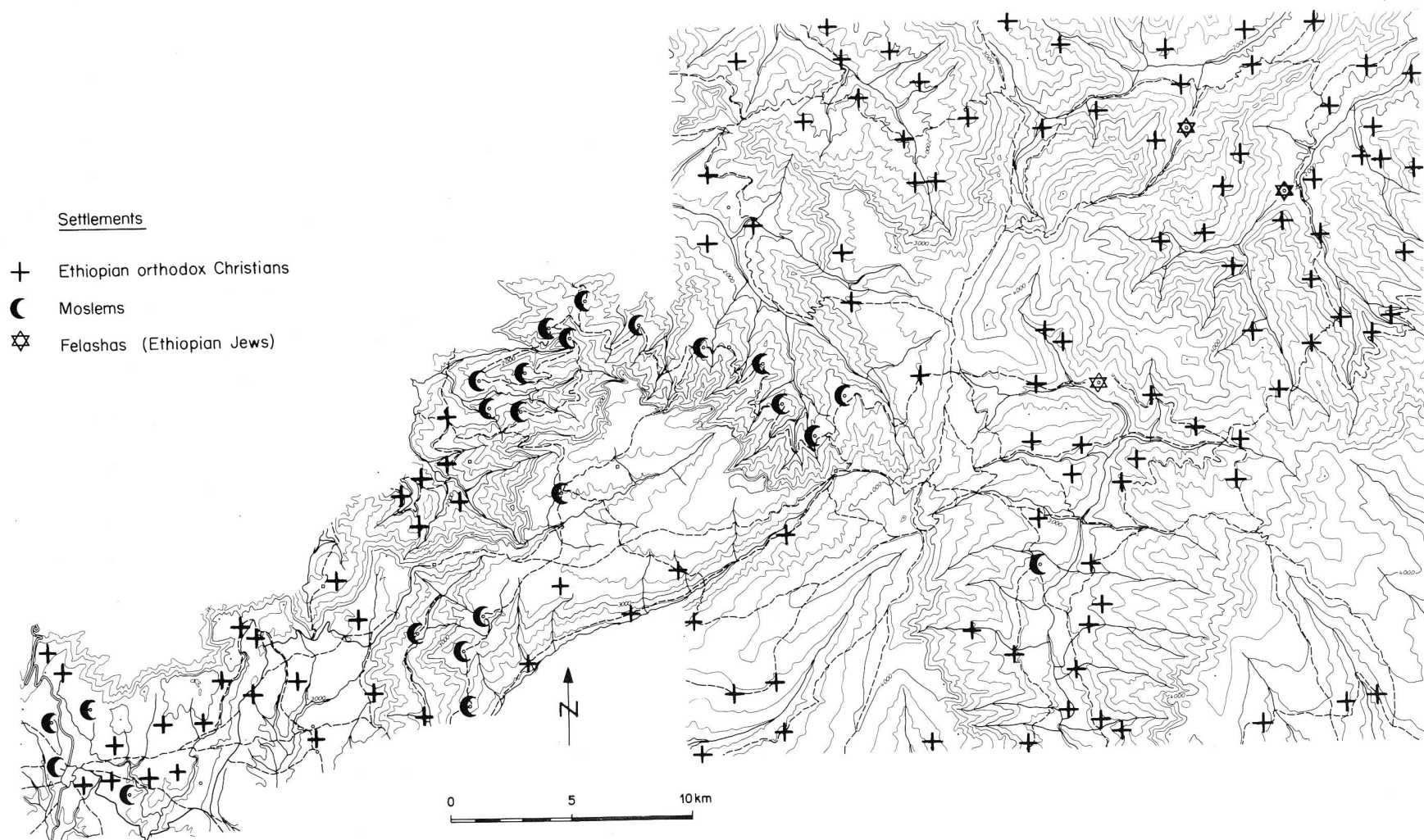
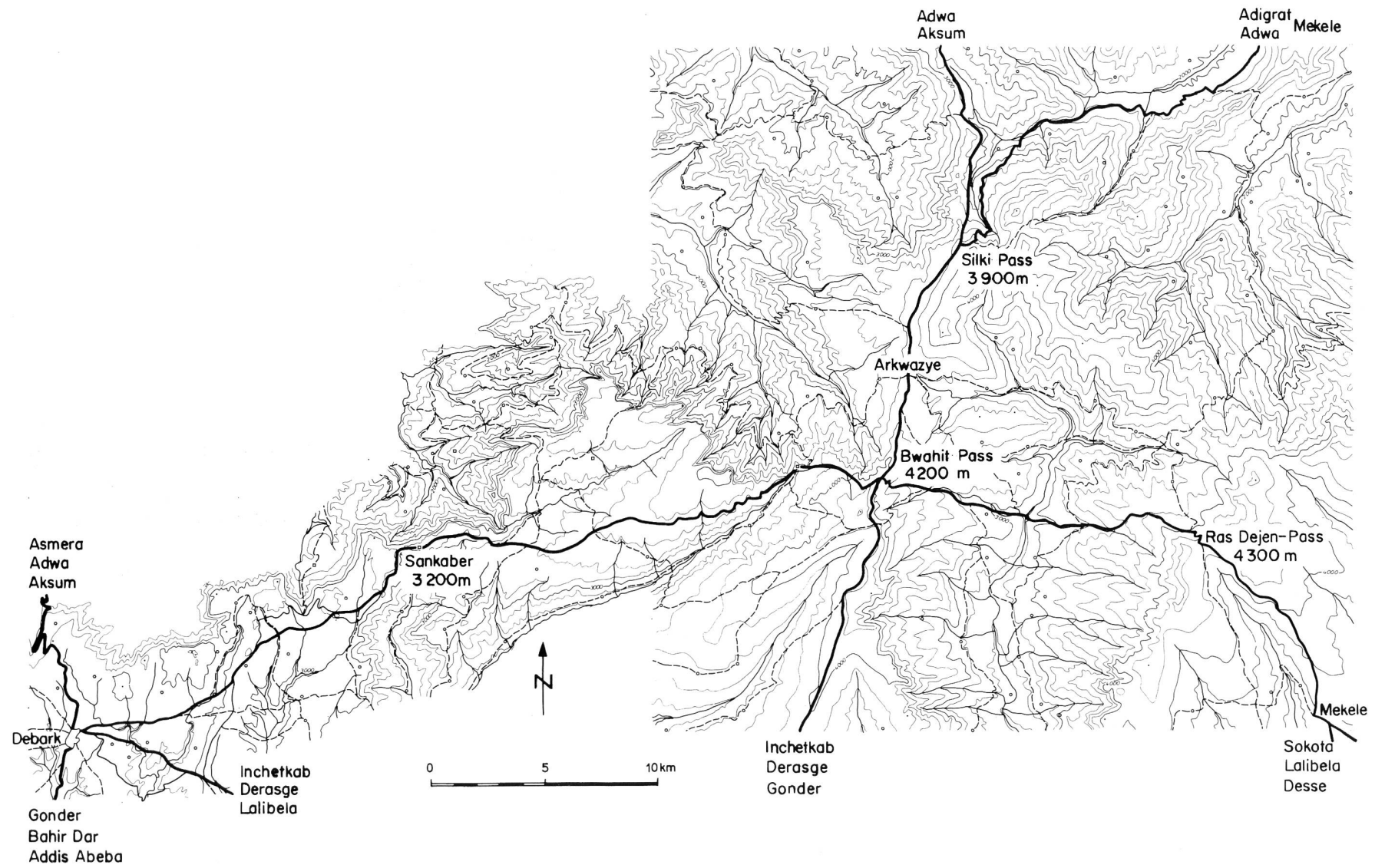


Fig. 3: Important caravan routes through Simen



opian orthodox church, as the official state church, held from the 17th century up to the abdication of emperor Haile Selassie in 1974. The tenacious Moslem population as well as the still existing Felasha settlements in Simen indicate how this remote and inaccessible region welcomed and protected these minorities.

3.4. *Old trade routes*

Simen is located between the old centres Aksum/Adwa in the north, Gonder in the southwest and Lalibela in the southeast. The most important trade routes between these centres crossed Simen (see fig. 3). The routes were repeatedly mentioned and used by the travelling explorers:

- The western caravan route led from Aksum/Adwa over Adi Arkay, Debark to Gonder, closely following the course of today's main road built by the Italians. The main obstacles were the crossing of the Tekeze, and in the north of Debark the negotiation of the escarpment ("Limalmon, Wulkifit"). It is not surprising that on this site, Debark should develop as a customs post and a significant market place. LEFEBVRE (1845, vol. 2, appendix: 105–107) considered the market of Debark to be one of the 60 most important in the whole of Ethiopia (see also NÄGELI 1978).
- The eastern trade and travel route crosses the highest regions of Simen. The two routes from Aksum and Adwa join at the Silki-Pass at an altitude of 3840 m and together cross the high plateau, below the Beroch Wuha, and the saddle of Arkwazye. At the Bwahit (altitude of the pass 4200 m) the routes separate again. Until the beginning of the 20th century the route leading to the old centres of Simen, Inchetkab and Derasge, with an extension continuing towards Gonder or Lalibela, was more important than the second one via Ambaras/Sankaber to Debark. On this eastern trade route, as well as between the two passes on the saddle of Arkwazye (3700 m) far away from any settlement, markets developed and are maintained up to the present day.
- As a connection between these two north-south caravan routes a third very important trade route for Simen crosses from Debark over the Bwahit (4200 m) and Ras Dejen (4300 m) eastwards to the significant old towns Mekele (incense, salt), Sokota (grains), Desse (salt) and Lalibela (place of pilgrimage). It is this route which became the main route to the market place of Debark for the highland population of the subdistricts of Beyeda, east of Ras Dejen, and Jannamora, around Bwahit.

3.5. *The settlement conditions, end of 18th century up to beginning of 20th century*

Although BRUCE had not travelled in the actual highlands of Simen, he is the one to give the first interesting accounts about the settlements in this area and the inhabitants' way of life. Later on the Englishman PEARCE at the beginning of the 19th century was the first to travel several times up into the Simen highlands. Following him, we have some very detailed reports in the first half of the 19th century from the German RÜPPELL, the Frenchmen GOBAT, TAMISIER et COMBES. D'ABBA-DIE, FERRET et GALINIER and LEFEBVRE. Their valuable accounts were continued in the second part of the 19th century by the German HEUGLIN and the Frenchman RAFFRAY. Finally at the beginning of the 20th century the German ROSEN and the Englishman MAYDON crossed the region between Debark and Ras Dejen. Travel routes, dates and length of stay of these most important explorers of Simen are given in table 3. A selection of the most important quotations from these sources with indications about settlements, number of houses, vegetation conditions and the cultivated land, population density and its variations in and around the explored area, that is the region concerning the present study, are compiled in the following chapter 3.6.

As related in the travel accounts, in the 18th and 19th century Simen was a strategically very important province, being situated close to the imperial town of Gonder. The culmination of this period was without doubt the battle near Dibil, about 8 km northeast of the Bwahit, with the subsequent coronation in Derasge of the victor as emperor Tewodros II of Ethiopia (HEUGLIN 1868: 271*). This period was marked by ravages of interminable war throughout the whole of Ethiopia. These wars frequently devastated whole regions, the populations were mercilessly plundered and those who did not flee were massacred. It took decades for these charred regions to more or less recover (BRUCE 1790, vol. 3: 192/193*; RÜPPELL 1840: 4–6*; HEUGLIN 1868: 201*).

A probable consequence of these ruinous wars in and around Simen was the colonization of very remote areas. On the small high situated plateaus, scarcely accessible terraces at the foot of the escarpment, the settlements and people were safer than on easily accessible plains and bottoms of valleys (RÜPPELL 1838: 419*). The isolated but safe life in the climatically and agriculturally unfavorable Dega zone was preferable to the more precarious one in the fertile Woyna Dega. Furthermore they were spared such tropical illnesses as malaria, due to the high altitude of the Dega region (FERRET et GALINIER 1847: 218*).

Table 3: *The most important explorers in Simen, end of 18th up to beginning of 20th century*

Author	Travel route and sejour in Simen
BRUCE 1790	Aksum – Adi Arkay – Lemalimo (Wulkifit Pass) – Gonder February 1770
PEARCE in SALT 1814	From east (Wollo) over the Tekeze and Mesheha to Inchetkab and back. October to December 1807
PEARCE 1831	Wulkifit Pass – Shewada – Inchetkab – Mesheha – Tigre April 1814
GOBAT 1834	Ataba valley – Silki Pass – Lori – Chennnek – Sankaber – Debark March 1830
RUEPPELL 1838	Ataba valley – Silki Pass – Bwahit – Inchetkab – Debark – Gonder July to October 1832 (with sojourn in Inchetkab from the 7th of July to the 8th of October)
RUEPPELL 1840	Gonder – Debark – Ambaras – Bwahit – Mesheha – Sonna – Adi Arkay May 1833
TAMISIER et COMBES 1838	Silki Pass – Lori – Ambaras – Sankaber – Debark July 1835
D'ABBADIE 1873	Feres Sebber (Debark) – Belegez valley – Chennnek – Lori – Silki Pass July 1838
FERRET et GALINIER 1847	Ras Dejen – Bwahit – Sankaber – Feres Sebber January 1842
LEFEBVRE 1845	Gonder – Debark – Lemalimo – Adwa June 1842
HEUGLIN 1868	Silki Pass – Lori – Chennnek – Sankaber – Debark January 1862
RAFFRAY 1876	Gonder – Debark – Aksum January 1873
ROSEN 1907	Debark – Shewada – Inchetkab – Timirk – Bwahit – Silki Pass (according to his descriptions of the journey, Rosen mistook the Belegez valley for the southern Serekaba valley) April 1905
MAYDON 1925	Debark – Sankaber – Gich – Chennnek – Lori – Debark December 1923 to February 1924 Debark – Shewada – Inchetkab – Beyeda – Ras Dejen – Bwahit – Gich – Debark February/March 1924

It can be presumed that since the Middle Ages, Simen was a preferred settlement area. Within Simen, especially the high plateaus of the Dega, the terraces on the slopes of the deeply cut highland valleys and parts of the scarcely accessible lowland terraces at the foot of the escarpment were principal settlement areas for a population seeking security.

3.6. *Compilation table of the most important sources referring to the colonization before 1930*

Colonization in the Middle Ages (Felashas)

TAMISIER et COMBES (1838, vol. 3: 55, 56):
6th century

“Depuis que la famille royale s’était convertie au christianisme avec une grande partie du peuple, les Juifs, qui avaient conservé leur foi, étaient gouvernés par un roi indépendant qui résidait sur les hautes montagnes du Sémén. Une fille de Gédéon, Judith, qui régnait vers l’an 900, et que l’on appelle aussi Esther, ou A-Sat (le feu), était mariée à un chef du Lasta habité aussi par les Juifs. Cette femme ambitieuse résolu d’exterminer les descendants de

Salomon; elle groupa autour d'elle un parti très puissant; et, s'étant emparée de la montagne de Déora-Damô "(Monastery of Debre Damo in Tigre)", où les membres de la famille royale se trouvaient relégués depuis Makéda, elle les fit tous égorger."

FERRET et GALINIER (1847: 297):

"Cependant les Juifs établis sur les montagnes du Samen n'abjurèrent pas leurs anciennes croyances. Fidèles à la loi de Moïse et au culte de leurs pères, ils formèrent au milieu des états de l'empereur une province à peu près indépendante. Un moment même, ils se crurent assez forts pour anéantir le christianisme et dominer tout le royaume. C'était vers les premières années du dixième siècle. Ils avaient alors une reine nommée Judith."

RÜPPELL (1840: 1, 2):

up to 16th century

"Dass Simen's gebirgige Gegenden bis gegen das Ende des sechzehnten Jahrhunderts vorzugsweise von Juden bewohnt waren, diese aber später nach und nach ganz vertilgt, oder wenigstens zum Religionswechsel gezwungen wurden, berichten die historischen Annalen des Landes; allein man findet in ihnen keine näheren Details über diese Religionskriege, und weiss nur so viel, dass durch den Fanatismus verschiedener Statthalter seit hundert Jahren alle Spuren der früheren israelischen Glaubensgenossen verschwunden sind." (since the first half of 18th century?!)

ROSEN (1907: 450):

"In unserer älteren Literatur wird Semien gewöhnlich der Judenstein oder Judenfels genannt; im engeren Sinne bezeichnet dieser Name eine fast unzugängliche Plateauscholle, welche den Juden in Kriegszeiten als natürliche Festung diente, jedenfalls die grosse Amba Huà, die etwa 20 km lang und über 4000 m hoch ist" (northeast of Ras Dejen), "sie trägt noch Reste alter Verschanzungen."

Military expeditions and wars in Simen

RÜPPELL (1840: 4):

"Selasse" (from Tigre) "wendet neuerdings, im Februar 1814, seine Waffen gegen Ras Gabire" (from Simen), "forciert den wichtigen Gebirgspass Sanka-Ber, erobert und verbrennt die Hauptstadt von Simen, Entschetqab" . . .

PEARCE (1831, vol. 1: 246):

1814

"Next day we marched to Shoadar" (Shewada), "whence the Ras" (Weled Selassie from Tigre) "had marched to Inchetkaub; and on the day following we joined the Ras's army, encamped without that town, to which they had just set fire, and were waiting to see the best parts of Ras Guebra's premises consumed to the ground; these were reckoned the most extensive buildings belonging to any governor in Abyssinia."

RÜPPELL (1840: 5):

May 1827

"Ras Imam" (from Beghemdir) "kam mit grosser Kriegsmacht, verheerte die Provinz Woggera, schlug Ubi's" (from Simen) "Truppen, und äscherte viele Ortschaften in Simen ein."

RÜPPELL (1840: 6, 15):

1830

"Ubi erlitt an dem Ufer des Bellegas-Stromes, im District Shoadar, eine blutige Niederlage" (against Ras Maria from Beghemdir; in spring 1830), "in Folge deren das ganze benachbarte Land grausam verheert wurde."

1833

"Der vorerwähnte Kriegszug des Ras Maria hat den Wohlstand der Bewohner dieses Thales sehr zerrüttet; und noch" (i.e. 3 years later) "steht die Zahl der Viehherden in gar keinem Verhältnis mit den herrlichen Weiden."

HEUGLIN (1868: 271):

1855

"Im Januar 1855 zog Dedsasmats Kasa" (from Beghemdir) "nochmals mit grosser Heeresmacht über Wogara nach Semién, wo sich ihm Ubié aus Enderta" (in Tigre) "kommend gegenüberstellte. Ersterer lagerte am östlichen Fuss des Buachitgebirges und bei strenger Kälte und Schneegestöber wartete man wochenlang auf eine Entscheidung, da anfänglich keiner der Feldherren seine feste Stellung verlassen wollte. Endlich ergriff Ubié die Initiative, in drei Kolonnen führte er alle seine Streitkräfte gegen Kasa, der sich nun ebenfalls in Bewegung setzte. Beim Dorfe Debela" (Dibil, northeast of the Bwahit) "kam es zur kurzen entscheidenden Schlacht, die mit Gefangennahme Ubié's und gänzlicher Versprengung seiner Truppen endete. Zwei Tage später krönte Abuna Salama den Sieger in der Kirche zu Deber-Eskié" (Derasge) "mit dem Tronnamen Theodor II zum Negus von Äthiopien."

General remarks concerning the conditions of the settlements

RÜPPELL (1838: 419):

1832/33

"Nur das eigentliche Simen ist, im Verhältnis zu seiner felsigen Beschaffenheit, gut bevölkert, und die meisten des Anbaus fähigen Stellen desselben werden als Ackerland benutzt. Der Grund davon ist in der gebirgigen Beschaffenheit dieses Districtes zu suchen, wesswegen derselbe selten ein Schauplatz der verheerenden abyssinischen Bürgerkriege ist, während Woggera trotz seinen fruchtbaren Flächen beinahe entvölkert ist, und jetzt grossentheils nur von wenigen eingewanderten nomadischen Hirten bewohnt wird. Die Terrassen-Landschaft von Talemt in der Nähe des Takazzé-Thales ist gleichfalls stellenweise als Ackerland bebaut, aber auch sie hat nur eine geringe Zahl von Einwohnern."

RÜPPELL (1838: 421):

1832/33

"Keiner Ansiedlung in ganz Simen kann man den Namen einer Stadt geben; überall finden sich nur Gruppen von zwanzig bis dreissig Hütten, wovon aber öfters mehrere ziemlich nahe beisammen liegen, wie zum Beispiel in Angetkat" (Inchetkab), "wo sechs verschiedene, von einander weit entfernte Parteen von Hütten eine einzige Ortschaft bilden, deren Gesamt-Bevölkerung achthundert Köpfe beträgt."

RÜPPELL (1838: 418):
1832/33

“Ein auffallender Mangel an Bäumen charakterisiert fast jede Landschaft in Simen; nur um die Kirchen und in einigen Thälern finden sich schattige, hochstämmige Baumgruppen; in den meisten Theilen von Woggera” (Weghera) “gibt es sogar auch fast gar kein niederes Gehölz, während sich die niederen Districte Talment und Adarga” (today’s subdistricts of Tellemṭ and Dīp Bahir) “durch eine Menge von Dornesträuch und verkrüppeltem Buschwerk auszeichnen.”

RÜPPELL (1840: 30):
1832/33

“Über den Ackerbau und die Besteuerung in Simen erhielt ich folgende Auskunft. Jedes Ackerfeld liegt immer ein Jahr um das andere brach; künstliches Düngen kennt man nicht. Das Brachfeld wird nach dem Ende der Regenzeit (Mitte September) mit dem Pflug gestürzt, und das es bedeckende Unkraut untergearbeitet; hierauf wird es im Monat Mai zum zweiten Mal umgeackert, und dann nach erfolgten wiederholten Regengüssen, Anfangs Juni meistens mit Gerste besät.”

FERRET et GALINIER (1847: 281):
1842

“... presque toujours ont-ils bâti leurs villes et leurs villages sur le sommet des montagnes, ou du moins sur des plateaux élevés; ils y trouvent l’avantage de se défendre facilement en cas d’attaque, de dominer le pays et de se soustraire aux fièvres qui font ordinairement séjour au bord des grandes rivières.”

RAFFRAY (1876: 129):
1873

“Il n’y a donc pas lieu d’être surpris que les habitants d’un pays essentiellement montagneux, isolés les uns des autres par des précipices infranchissables ou des escarpement inaccessibles, sans routes d’ailleurs et privés surtout de cette activité commerciale qui ne connaît point d’obstacles, aient, sous l’influence de climats divers, subi, dans la suite des siècles, de profondes modifications.”

The Weghera plateau (surroundings of Debark)

BRUCE (1790; vol. 3: 188):
1770

Surroundings of Debark: “... we were much surprised to find there a large plain, part in pasture, but more bearing grain.” ... “They plow, sow, and reap here at all seasons; and the husbandman must blame his own indolence, and not the soil, if he has not three harvests.” (?!) “We saw, in one place, people busy cutting down wheat; immediately next to it, others at the plough; and the adjoining field had green corn in the ear; a little further, it was not an inch above the ground.”

In this case BRUCE has probably made a wrong deduction from his observations. Three harvests in different seasons seem very improbable from today’s point of view. Today in Simen the farmers

- plough: during the entire dry season from December to April,
- sow: before the rainy season in April/May,
- harvest: at the beginning of the dry season, November to January, according to the altitude.

BRUCE (1790, vol. 3: 192/193):
1770

On the way from Debark to Dabat: “The country here is full of people; the villages are mostly ruined, which, in some places, they are rebuilding. It is wholly sown with grain of different kinds, but more especially with wheat. For the production of this, they have everywhere extirpated the wood, and now labour under a great scarcity of fuel. Since we passed Lamalmon” (Lemalimo) “the only substitute for this was cows and mules dung, which they gather, make into cakes, and dry in the sun.” ... “Not only the country was now more cultivated, but the people were cleaner, better dressed, and apparently better fed, than those in the other parts we had left behind us” (i.e. in the lowlands between the Tekeze and the escarpment) ... “Indeed, there was not a foot, excepting the path on which we trode, that was not sown with some grain or other.”

GOBAT (1834: 155):
1830

On the way from Debark to Dabat: “Je n’ai vu qu’un seul village à notre gauche, appelé Arona, à environ trois lieues S.-S.-O. de Debârec. Ensuite nous avons traversé plusieurs collines et vu les restes de plusieurs villages ruinés par le rās Gougsa” (Galla-ruler from the south), “il y a environ vingt cinq ans.”

BRUCE (1790, vol. 3: 182, 184–188):
1770

Climbing Wulkifit Pass: encounter with marketeers from “the market of Dobarke” (Debark).
Sejourn in “Lamalmon” (Lemalimo): “customhouse”.

RÜPPELL (1840: 69):
1833

... “Flecken Dobark” (Debark), “welcher ausschliesslich von Mohammedanern bewohnt ist, und wo von allen durchziehenden Handelsleuten ein Zoll erhoben wird” ...

GOBAT (1834: 154):
1830

“Le marché de Debârec est un des plus considérables de l’Abyssinie; il se tient le mercredi, et toutes les semaines il y vient une caravane de Gondar, composée d’environ douze à quinze cents personnes, pour chercher du sel qu’elles échanget principalement contre leur bétail et leurs toiles.”

GOBAT (1834: 149):
1830

“Faras-Sabar, Kedous-Georgis” (Feres Sebber Giyorgis) mentioned as a settlement.

TAMISIER et COMBES (1838: 358):
1835

“Nous arrivâmes bientôt au grand village de Daouarik Faras-Saber” (Debark Feres Sebber), “précédé de sa belle église dédiée à saint George” (Giyorgis) ...

FERRET et GALINIER (1847: 216–218):

1842

Sejour in Feres Sebber: “En temps ordinaire la population est de 2000 âmes.”

HEUGLIN (1868: 201):

1862

“Zwei und eine halbe Meile im NW von Faras-Saber liegt auf einem Hügel die einstige Hauptstadt Wogaras, Dobarek-Kitane-Mährit” (Debark Kidane Mihret), “mit berühmter Kirche, in der neuern Geschichte Abessiniens bekannt durch die Hinrichtung von 17–1800 Rebellen, die Negus Theodor in der Schlacht gegen den Schefta” (robber) “Geret in Gola Wogara” (Kolla Weghera: lowlands bordering the high plateau in the east) “gefangen genommen hatte, dessen Bande kurz vorher den englischen Consul Plowden bei Gondar tödlich verwundet und den Engländer J. Bell an des Königs Seite erschossen hatte. Noch decken Haufen von Gebeinen der Erschlagenen den Marktplatz von Dobarek.”

GOBAT (1834: 152):

1830

mentions the settlement “Amberco” (Ambriko, northeast of Debark).

GOBAT (1834: 148):

1830

mentions the settlement “Belli-Guebs” (Mindigebsa).

FERRET et GALINIER (1847: 216):

1842

... “village d’Adde-Sguié” (Adisge)

Sankaber

GOBAT (1834: 147):

1830

“Sancaber est un assemblage d’environ trente petites baraques habitées par les soldats. C’est un fort.” ...

RÜPPELL (1840: 242):

1833

... “quer über den Weg eine Art Verschanzung.”

TAMISIER et COMBES (1838: 357):

1835

“La porte de Sancaber, qui s’élève au milieu de ce grand chemin, a été construite pour arrêter les commerçants qui voudraient esquiver la douane et passer en contrebande.”

FERRET et GALINIER (1847: 216):

1842

“On y voit aussi quelques travaux de fortification, c’est à dire des palissades.”

HEUGLIN (1868: 200):

1862

“Quer über den schmalsten Theil des Gebirgs, das grossentheils baumlos ist, laufen mehrere Reihen jetzt theilweise zerstörter Pallisaden von Haide, mit Zweigen und Dorn-

gebüsch verflochten, dahinter ein Schanzgraben und Reste einiger alter Wachthäuser” ... “Der Boden von Sanka-Ber ist sehr fruchtbar, jedoch wenig bebaut.” ...

Southern high plateaus (Inchetkab)

PEARCE (in SALT 1814: 25–28):

1807

Sejour in “Inchetkaub”: Capital of Simen and residence of Ras Gabriel.

GOBAT (1834: 146):

1830

mentions “Antchateab” as the capital of Simen and the residence of Ras Wube.

RÜPPELL (1838: 410):

1832

“Ich brachte später fünf Monate in Angetkat” (Inchetkab), “dem Hauptort der Provinz Simen, zu, welcher 9700 französische Fuss über der Meeresfläche” (around 3150 m), “an der äussersten Grenze der von Menschen bewohnten Höhen liegt,” ...

ROSEN (1907: 441, 442):

1905

“Wir hatten bei 3028 m den Rand des Plateaus von Intschatbab erreicht, ein nach Osten wellenförmig ansteigendes Hochland ohne Baum und Strauch.”

RÜPPELL (1838: 415):

1832

“die beiden grossen Ortschaften Sakatali und Berna” (Seketati and Barna on the high plateau between the Belegez and Serekaba rivers).

ROSEN (1907: 442):

1905

above the “Dörfchen Temirk”: “Uns gegenüber gewahrten wir wieder die ungeheuren Plateaus des Buahit, der bis hoch hinauf einzelne Dörfer und Äcker trägt; wir konnten die auf freiem Feld gelegenen Dreschplätze zählen” (settlements of Barna and Seketati).

The Sonna/Lori high plateau

GOBAT (1834: 143, 144):

1830

... “le grand village de Sona, où les gouverneurs de Semène ont souvent leur résidence.” ... “village de Lori”

RÜPPELL (1838: 404, 405):

1832

“Flecken Sauana”

“Wir beschlossen daher einige Tage hier zu verweilen, da doch ein kleiner Durchgangszoll zu berichten war, und die Nachbarschaft einiger volkreichen Ansiedlungen in den südlichen und westlichen Thälern uns einigermaßen zum Ankauf der nöthigen Lebensmittel Aussicht gab.”

RÜPPELL (1840: 249):

1833

“Dieser auf der Abdachung einer vorspringenden Höhe gelegene Ort besteht, obgleich er für eine der gewöhnlichen Residenzen der Statthalter von Simen angesehen werden muss, aus nicht mehr als hundert und fünfzig Strohhütten.” (150; probably for Lori and Sonna together).

TAMISIER et COMBES (1838: 344):

1835

“M. Gobat s’est trompé lorsqu’il a prétendu que les gouverneurs du Sémen venaient souvent établir leur résidence à Soana, qui n’est qu’un misérable hameau composé de mesquines chaumières mal fermées au vent et à la pluie. Lorsque le chef de cette froide province descend des hauteurs au dessus desquelles est perché Enchetcab, il vient habiter le beau village de Nori qui, sous tous les rapports, offre bien plus de ressources que Soana.”

D’ABBADIE (1873: 359):

1838

... “village de Luari: 40 huttes.”

HEUGLIN (1868: 191):

1862

“Bis zu dem 2 1/2 Stunden vom Selki-Pass entfernten Dörfchen Nori oder Lori ist das Hochland nur gegen den Abfall des Gebirges hin etwas kultiviert an Stellen, wo sich vielleicht der Einfluss des benachbarten wärmeren Tieflandes mehr geltend macht.”

HEUGLIN (1868: 192):

1862

“Oberhalb Nori, am Bahit-Pass liegen die Gehöfte von Kosso und Arquosié” (Arkwasye).

ROSEN (1907: 448):

1905

“Ein paar unbewohnte Hütten tragen den Namen Arkasie” (market stalls of Arkwasye).

Mesheha valley

PEARCE (in SALT 1814: 24):

1807

uses “Mishekka” as a regional term for the settlements in the Mesheha valley between Ras Dejen and Bwahit.

RÜPPELL (1838: 411):

1832

from Bwahit Pass: “Was wir von dem Maschaha-Tal übersehen konnten, zeigte keine Spur von Strauchvegetation; in der Tiefe derselben aber erblickte man einzelne terrassenförmige Vorsprünge, welche schon zum Anbau von Gerste benutzt werden.” (Settlements of Katama, Dibil, Atgeba)

FERRET et GALINIER (1847: 211):

1842

“un village nommé Tcherobba” (Chir Weleba east of Bwahit)

Lowlands north of the escarpment

BRUCE (1790, vol. 3: 164/165):

1770

“Hauza” (east of Adi Arkay), “which seems a large town formed by a collection of many villages . . .”

“It is chiefly inhabited by Mahometan merchants, is the entre-pot between Masuah and Gondar, and there are here people of very considerable substance.”

BRUCE (1790, vol. 3: 179/180):

1770

“village Shahagaanah” (north of Adarmaz): “. . . in this territory are several considerable villages; the people are much addicted to robbery, and rebellion, in which they were engaged at this time.”

RÜPPELL (1840: 256):

1833

The tract between Debark and Adi Arkay via Wulkifit Pass is described by a companion of Rüppell as follows: “Der Weg ging über vulkanische, mit Strauchwerk bedeckte Hügel: nirgends war eine Cultur des Boden’s sichtbar, und die Bevölkerung dieses Striches an Zahl höchst unbedeutend.”

RÜPPELL (1840: 254):

1833

On the way from Sonna to Ansiya, in the region of the upper Ansiya valley: “Auf dem ganzen Weg kamen wir nur an einigen wenigen Ansiedlungen vorbei; nirgends war eine zur Cultur benutzte Stelle zu sehen.”

References concerning the settlement conditions in the investigated area for the map 1 : 17 500

The sources of the 19th century mention as principal settlement areas:

- The southern high plateaus of Derasge and Inchetkab (with the capital of former Simen) which with their heights just above 3000 m had a more favorable situation for agriculture compared to the northern and higher plateaus of Barna and Ambaras.
- The whole of the Mesheha valley with Segonet, the temporary second residence of the then rulers.
- The high plateau of Sonna/Lori which, situated on the important road to Tigre, was occasionally a second residence of the rulers of Simen as well.
- The western plateau of Weghera with Debark and Feres Sebber.

The investigated area lies on the periphery of the then settlement region but most of today’s common names for the settlements are repeatedly mentioned in the sources.

Highlands

GOBAT (1834: 145)
1830

... "nous avons encore marché trois heures sur la montagne d'Aina" (Ayna-Meda), "jusqu'à Ambaras, où on ne voulait d'abord pas nous recevoir."

RÜPPELL (1840: 243):
1833

"Für die Nacht suchten wir in dem abwärts im Shoathale" (Belegez valley) "gelegenen Dorfe Ambaras ein Unterkommen, fanden aber erst nach langem Wortwechsel Aufnahme, welche indessen unerwarteter Weise eine ziemlich gastfreie war."

TAMISIER et COMBES (1838: 353, 355):
1835

... "nous suivions depuis quelques heures le cours de Bélégnet du haut de l'une des chaînes qui le dominent: nous aperçûmes quelques hameaux non loin de nous" (Kiflo?), "et nous jugeâmes qu'il était prudent de nous en approcher. Le premier que nous atteignîmes était presque désert, la plupart des habitants avaient suivi le convoi d'un prêtre, et un laboureur que nous rencontrâmes dans son champ nous conseilla d'arriver jusqu'à Amba-Ras, qu'on découvrait à une quart d'heure de distance, et qui servait, nous dit-il, de résidence au choum" (chief of the settlement) "des quelques hameaux circonvoisins."

"La chaîne de montagnes parallèle à celle que nous parcourions était belle et unie; on apercevait sur son large dos, en face d'Amba-Ras un grand village appelé Choa." (Scheynu, on the plateau south of the Belegez river)

RÜPPELL (1840: 243):
1833

On the march from Kaba Wenz over the high plateau to Ambaras: "Nirgends war ein Gesträuch zu sehen" (height around 3250 m), "und nur in ferner Tiefe erblickte man einige Gerstenfelder."

HEUGLIN (1868: 196):
1862

On the way from Ayna Meda to Kaba Wenz: "Noch einmal geht es steiler aufwärts, dann folgt fast strauchlose weite Ebene mit Spuren von Bodenkultur, die sich stetig nach NW. einsenkt gegen eine tiefere weite Thalschlucht, Gaba" ... "dahinter im NO. ist noch ein schmales, hügeliges Stück Hochland, der nördlichste Rand des Amba-Ras mit einigen Dörfern des kleinen Distrikts Gidsi" (Gich).

MAYDON (1925: 88–90):
1923/24

camped in Gich, most probably near Amiako: "Geech is an inclined plateau some eight miles long by four miles broad, sloping down from the precipice on the north-west to the valley separating it from Ambarass. It is a rolling desolate country, with a cluster of miserable huts at the southern end, whose owners maintain a hand to mouth existence by growing a few fields of barley and raising scanty herds of sheep and cattle."

Belegez valley

RÜPPELL (1840: 65):
1832

"Shoada" (area around Shewada in the Belegez valley): "An den Ufern des Stromes selbst ist kein Ackerbau, da es von unzersetzten vulkanischen Felsgeröllen gebildet ist; aber die abgelagerten Terrassen längst der Thalwand werden zum Gerstenbau stark benutzt; übrigens schien mir die Zahl der Bewohner dieser Landschaft sehr gering."

ROSEN (1907: 440):
1905

"Endlich erreichten wir die Talsohle von Schuada" (2066 m) "die nur wenige hundert Meter breit war. Zu unserer Überraschung fanden wir hier zwischen Hochgebirge und Steinwüste pflügende Bauern auf gutangelegten Äckern. Eine einfache Wasserleitung ermöglichte eine ausgiebige Berieselung der Felder."

D'ABBADIE (1873: 359):
1838

– "Amsafaj" (Settlement in the valley of the Wasla Wenz just before the confluence with the Belegez Wenz: area of today's Christian Debir).

– 4 settlements in the Belegez valley: "30 huttes; 10 huttes; 2 villages" (although called Ambaras, it must designate 4 settlements in the area of today's Durge and Tsyon Maryam).

– "village de Argil" (Argin): "30 huttes".

It is remarkable that D'ABBADIE on his journey along the right bank of the Belegez river did not mention any dwelling places between Tsyon Maryam and Argin in his generally very precise accounts. Therefore it can be presumed that the dwelling places of today's high valley settlements of Ash, Werk Azla and Tere Mender did not exist in 1838.

Lowlands

GOBAT (1834: 148):
1830

Observations from Sankaber: "La nuit dernière, tout le pays était illuminé par les feux qui brûlaient sur les montagnes au-dessous de nous. Comme la saison des pluies approche, on met maintenant le feu à l'herbe sèche qui est restée depuis l'année passée."

HEUGLIN (1868: 192):
1862

The terrace of Amiwalka-Dihwara-Truwata-Tiya: "An den Steilabhängen des Bahit" (Bwahit) "und Amba-Ras" (Inatye to Shayno Sefer) "noch 7–800 Fuss über Nori, an gegen die eisigen Winde geschützten Punkten zeigen sich noch kultivierte Felder, so dass man die Höhengrenze des Weizens und der Gerste für diese Gegend zu 11500" (ca. 3750 m) "anschlagen kann, vielleicht noch höher."

From these quotations one can deduce that the investigated area was quite densely populated 100 to 150 years ago. In the highlands all larger

settlements, such as Argin, Ambaras and Gich already existed. The following three reasons may illustrate why Abergina has not been mentioned by any traveler:

1. It actually did not exist.
2. As it was not visible from the caravan route Chennék—Sankaber, it was, unlike Ambaras, not discovered and visited.
3. The dwelling sites of Abergina were assumed to be part of the Ambaras settlement.

I consider the second and third possibilities more probable than the first one.

A remarkable fact is that in 1833 RÜPPELL (1840: 243*) had not noticed any cultivated land while travelling on the caravan route above Abergina and Ambaras. HEUGLIN (1868: 196*) observed the first traces of agriculture in 1862. Today this high plateau with an altitude up to 3600 m is completely cultivated on both sides of the caravan route above Abergina (see map 1 : 17 500). As none of the travelers visited the terraces of the lowlands along the escarpment, we lack information about these settlements, but it can be presumed from the observations obtained from the highlands that some single settlements already existed (Amiwalka, Dihwara and probably Truwata as well).

4. The present situation of the settlements in Simen

4.1. Terminology

Settlement is used here as a geographical term and includes both the dwelling site and the cultivated land, according to SCHWARZ (1966).

Where no natural boundaries separate the various settlements from one another it is difficult to establish the precise limits of the settlements, because nearly all over Simen the cultivated land of one settlement is interconnected with the next without any landmarks or existing plans (see chapter 4.5.). Likewise the transition from cultivated land to virgin land lacks distinction. Clearly defined as cultivated land can be:

- The open arable land (ploughed and fallow land).
- The few private pastures, of lesser importance in size, close to the dwelling sites.
- The rare eucalyptus plantations near the dwelling sites.

Between the virgin and cultivated land are situated the mountain steppes, some of which are intensively used as common pasture, others lightly wooded with trees and scrub. Although the natural vegeta-

tion shows considerable damage and changes in certain places (KLÖTZLI 1975a: 18), I do not consider these pastures as cultivated land in the following study.

Real virgin land in Simen is considered to be only those parts of the escarpment which are inaccessible to man and cattle, and all the area situated above the altitudinal limits for vegetation.

4.2. Altitudinal zones

For further detailed information about the vegetation in the whole of Ethiopia I refer to the work of PICHI-SERMOLLI (1938, 1957) and to the study of KLÖTZLI (1975b, 1977) which concerns Simen in particular.

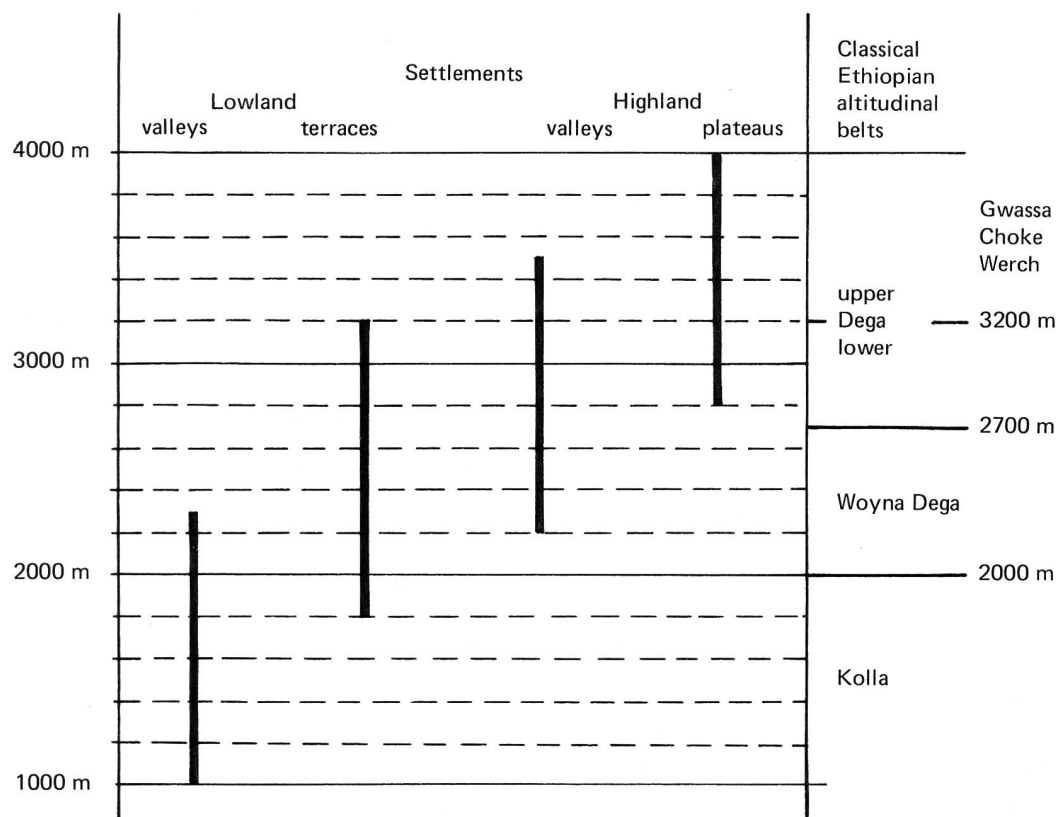
The classic division of Ethiopia into the three altitudinal zones (see fig. 4)

- Dega, over 2700 m
- Woyna Dega, from 2000 to 2700 m
- Kolla, under 2000 m

corresponds to a classification, both of altitude and climate, as well as to vegetation and produce. The district (Awraja) of Simen comprises all the three altitudinal zones, the real Simen highlands being in the upper Dega zone. The areas represented on the map section 1 : 17 500 go from 2700 m, which is the lowland terrace of Tiya, up to 4074 m, the Inatye peak north of Argin, covering practically the entire Dega zone up to the limit of vegetation on Bwahit at about 4300 m. According to KULS (1963: 13ff.), the cultivation limit of the white tef forms the upper limit of the Woyna Dega. The dark tef is cultivated even higher to about 2800 m so, for example, on parts of the terraces and the slopes of the valleys of the Simen lowlands. In the Dega the tef is replaced by wheat and in higher areas by barley, which is the predominant cereal of the Simen high plateaus and valleys.

In the whole of Ethiopia's highlands the Dega is used for agriculture up to high altitudes. STITZ (1974: 58) divides the Dega in two, a lower zone up to about 3200 m and a higher one (see fig. 4). In Ethiopia the upper Dega is called "Gwassa" in the provinces of Shewa and Wollo, "Choke" in Gojjam and "Werch" in Beghemdir. STITZ (1974: 57) records that in Shewa and Wollo the upper Dega zone is, as a rule, uninhabited and uncultivated. Contrary to his report, this limit is at present being pushed upwards in the entire Simen highlands, as the maps 1 : 17 500 and 1 : 50 000 "Hoch-Semyen" show. In 1954 WERDECKER (1968: 38) had already located in the eastern part of Simen the highest farm with the highest fields in all of Ethiopia, at nearly 4000 m in "Atär" (southeastern corner of the map 1 : 50 000 "Hoch-Semyen"). That this extreme altitude per-

Fig. 4: Altitude of settlements



mits barley cultivation is probably due to a special situation and very favorable conditions for solar radiation. In general, the highest limit for barley cultivation corresponds to the limit of forest and scrub (*Erica arborea*, *Hypericum revolutum*). According to KLÖTZLI (1975b: 139), this line is not an abrupt one: "The High Simen natural landscape is marked between 3400 and 3900 m up to 4000 m by a gradual thinning out of the trees. From 3600 m this process is even more accelerated due to edaphic and climatic conditions" (in favor of the open mountain steppes). In the region chosen for the thematic map 1 : 17 500 the cultivation of barley reached, in different settlements of the high plateaus, the following altitudes:

- Above Gich, on the south slope up to 3560 m and on the north slope 3610 m.
 - Above Ambaras, on the south slope up to 3740 m.
 - Above Argin, on the south slope up to 3780 m.
- Undoubtedly, these altitudes do not reach the extreme limits of cultivation due to the ground frost. Up to the present, there exist no studies on the highest possible cultivation limits in Simen.

4.3. Virgin and cultivated land

MESFIN WOLDE MARIAM (1972: 67/68) estimates that up to the present day 85 % of Ethiopia's original forests have been destroyed, which means that today only 5 % of the total surface of the country is covered with forests. Every visitor in Ethiopia, and especially in Simen, is impressed by the extreme scarcity of the forests. Only isolated groups of trees around churches and Moslem tombs testify to the existence of former forests. In the Mesheha valley, between Bwahit and Ras Dejen, the firewood has to be carried from far away places at half a day's walking distance. Yet there have been serious efforts made in Simen for reforestation. The eucaliptus, which was imported from Australia, has replaced the vanished original forests in many towns and villages along the main roads, but inland these fast growing trees are planted only here and there by a few wealthy farmers. Furthermore, first attempts at planting eucaliptus trees in the upper Dega zone have had very bad results, with up to 90 % losses in the first two years (KLÖTZLI 1975b: 141).

The reason for this forest scarcity lies no doubt in the fact that the population has increased and expanded very quickly, and is dependent on more new farmland. This land is obtained exclusively by clearing forest and steppes by burning. It was this progressively fast destruction of the forest, linked to the decimation of the gamestock, that finally compelled the Ethiopian authorities to protect the last virgin land left in Simen through the creation of the Simen Mountain National Park. Nevertheless, since the proclamation of the park in October 1969 the progressive destruction of forest in the park area remains the main problem for the Ethiopian and Swiss park wardens (see MÜLLER 1972, STÄHLI 1975, HURNI 1976). It is not astonishing that the national park area today represents the only available reserve of farmland in Simen. As real forest regions which could be considered as potential farmland, there are remaining:

- The area of the Gich plateau, the upper reaches of Jinbar Wenz with about 720 hectares.
- The floor of the upper Wasla valley, that is Kaba Wenz with about 500 hectares.
- Scattered isolated terraces at the foot of the escarpment between Adarmaz and Dihwara with a total of about 1100 hectares.

In addition there are strips of forest in the gorges and in the escarpment area, which cannot be used for agriculture. The mountain steppe above the forest limits can only be conditionally considered as virgin land as it serves the highland farmers as common pasture for their cattle.

4.4. *Areas of settlements*

4.4.1. *Altitude*

Simen can be divided in three typical tectonically occasioned landscapes (MESSERLI, STÄHLI, ZURBUCHEN 1975: 29).

1. The Simen highlands, designated as Simen mountains as well.
2. The so-called lowlands in the north and north-west.
3. The escarpment which separates the highlands from the lowlands.

The plateau type of terrain in the highlands and the richly fluvially structured hills and terraced landscape of the lowlands, form the main areas of settlements (see fig. 5). Although clearly separated by the escarpment, there are, due to the many trails, a diversity of relations between the inhabitants of the highlands and lowlands in trade, family relationships and land ownership. In each of the zones separated by differences in altitude one can differentiate two settlement areas:

- 1a. Settlements of the highlands on the high plateaus, that means on the plateau type, flat mountain ridges and slopes.
- 1b. Settlements in the highland valleys, that is the real floor of the valleys and valley slopes.
- 2a. Settlements of the lowlands on the terraces along the escarpment, as well as on the flat hills in the foreland.
- 2b. Settlements of the lowland valleys at a certain distance from the escarpment.

As figure 4 shows, the four settlement areas created by tectonic and erosion overlap one another in altitude. Although within one settlement the dwelling place is, as a rule, located in the middle of the cultivated land belonging to it, it has to be noted that the above division into four areas is adequate for the location of the dwelling place but not always for the cultivated land belonging to it.

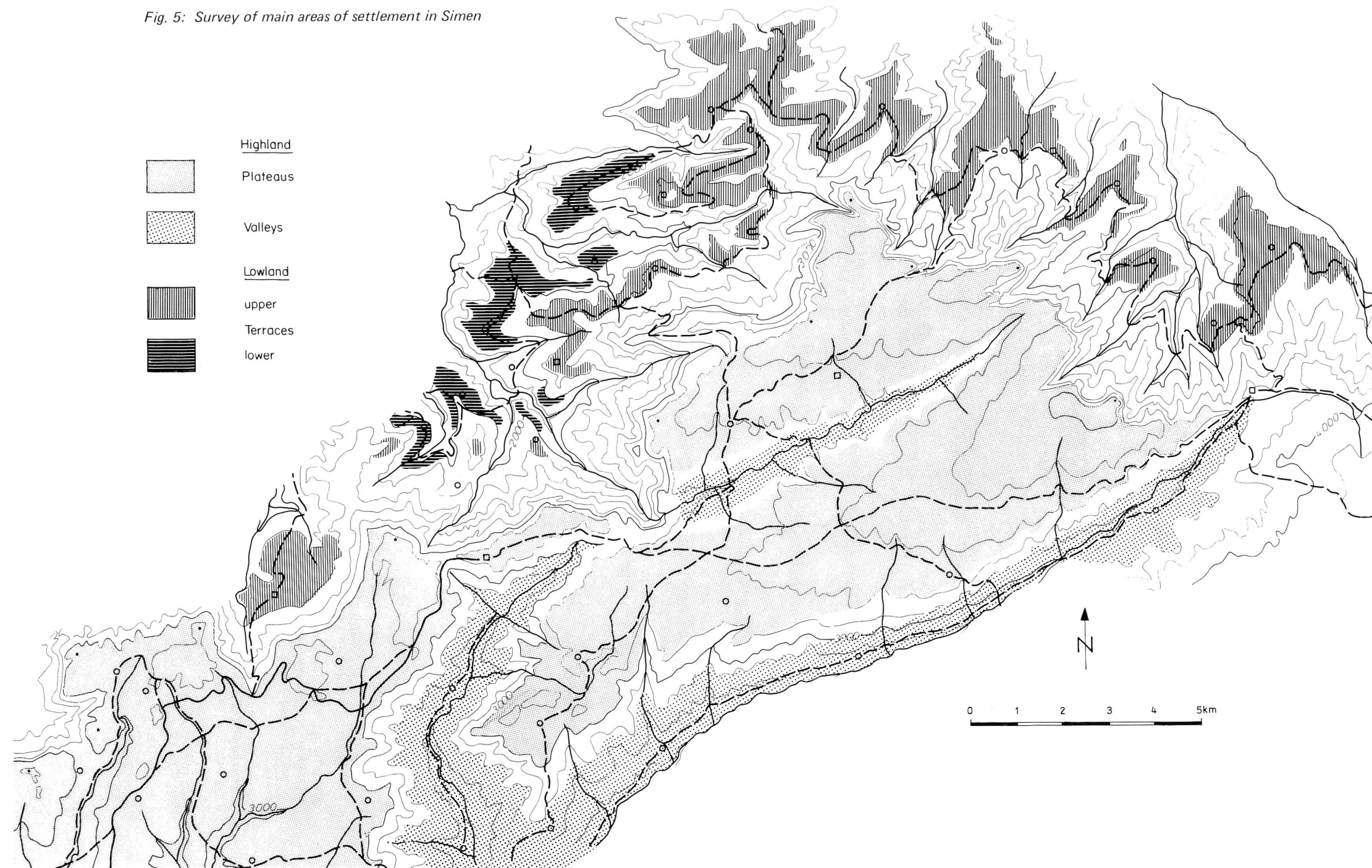
4.4.2. *Location of the dwelling places*

Within the four settlement areas the location of single dwelling places is determined according to the special local geological, geomorphological and climatic conditions.

1a. *Dwelling places of the high plateaus*

In the explored region all the dwelling places are found on the south side of the mountain ridges. This is mainly due to basalt layers of the Trap series (MESSERLI, STÄHLI, ZURBUCHEN 1975: 29; MOHR 1971: 123–147) which here descend by 5 1/2 degrees towards the southwest. This generates on these very highly-situated south slopes, in contrast to the north slopes, stratification sources which, even in the driest season (February to April), offer just about enough drinking water. For instance, the two churches, Abergina Giyorgis and Ambaras Mikael, as well as the Gich dwelling places, are located near sources which do not dry up. The Gich camp location was likewise chosen near a perennial stream. The dwelling places are located on and above the upper edge of the valley slopes, that is, in the place where the V-shaped deeply-cut part of the valley changes, going into the flatter slopes of the plateaus, forming the highlands. The average angle of gradient of the Belegez valley is from 30 to 40 degrees, that of the high plateau in the area of the dwelling places is from 10 to 15 degrees. Directly above the upper edge of the valley ridge ascending from west to east are situated the following hamlets:

Fig. 5: Survey of main areas of settlement in Simen



– Ambaras Shewa	3300 m	$\left\{ \begin{array}{l} \text{Just above, follow the} \\ \text{market place and ham-} \\ \text{let Awustageb at 3400 m} \\ \text{as well as the church and} \\ \text{hamlet Mikael at 3500 m} \end{array} \right.$
– Semaya	3300 m	
– Gebere Mender	3300 m	
– Kiflo	3500 m	
– Kunichbaza	3600 m	

Similarly, the dwelling places of Gich are located over the Jinbar valley, even though there is not such a clearly visible edge there, as in Ambaras and Abergina. The climatic conditions, although bearable, are especially hard on the people in the upper Dega villages and hamlets, because the average yearly temperature is between 12 and 7 centigrades. For all the climatic indications I refer to following articles (in preparation).

1b. Dwelling places in the highland valleys

In the surveyed area it is noticeable that the dwelling places are neither located in the proximity of the rivers nor in the real valley floors, but on both sides of the valley slopes 10 to 50 m or even up to 300 m higher up on flat ledges. On one hand, this choice undoubtedly reduces the danger of flooding which occurs because the river's water content varies greatly between the dry and the rainy season. On the other hand, the cultivated land belonging to these hamlets is situated up to the top of the valley slopes.

2a. Dwelling places in the lowland terraces

Along the foot of the escarpment there are distinct ribbon-like terraces which are separated from each other by the numerous descending gorges. There are two different types of highly-situated terrace zones to be distinguished. The first higher one is about 300 to 400 m above the lower one. They both go upwards following the Trap basalt layers from west to east (see fig. 5). The dwelling places of the settlements Tiya 2800 m, Truwata 2900 m, Dihwara 3000 m and Amiwalka 3100 m are located on the higher terrace. The lower one is cartographically represented on the sheet 1 : 25 000 Simen Mountains National Park only by the area of Flasha – Nariya – Abeka. As the maps show, both terrace zones are inhabited or at least used for agriculture.

2b. Dwelling places in the lowland valleys

In the proximity of the escarpment the gorge-like valleys can neither be inhabited nor can the slopes be cultivated. At a certain distance from the mountains, the valley slopes are cultivated and the dwelling places are located on the above-situated terraces.

4.4.3. Topographical situation of the cultivated land

In Simen today, in all the regions mentioned in chapter 4.4.1., it seems that the land is cultivated without any regard for the steepness.

1. Highlands: The change from softer and harder Trap basalt layers (MOHR 1971: 121–147) produces on most of the valley slopes a natural step-like appearance. Because of this the average inclination of the valley slope, which in fact is from 30 to 40 degrees, is somewhat reduced to an angle of less than 25 degrees favoring the possibility of farming. All accessible places, even the narrowest strips of only a few meters between two ledges of rock are cultivated. In the same way the whole of the high plateau is used as farmland right up to the upper limit of cultivation. The only reserve left is the higher situated land up to the last cultivation limit caused by the frost.

2. Lowlands: The terraces belong to the flattest type of land in Simen and are particularly favorable for agriculture. The main part of it is used for cultivation but around the dwelling places parts of these terraces are used as common pasture. As the surface of the terraces is too small to provide for today's population, the higher accessible slopes, almost all the way to the escarpment, are ploughed. The only arable land reserve is formed by the extreme steep slopes as well as a couple of terraces situated within the national park.

4.5. Construction of the house and structure of the dwelling place

In the investigated area I did not notice important differences in the way the houses were built or in the structure of the dwelling places, neither between high- and lowlands nor among the various religious groups. The house is a traditional round-house (Tukul) with a diameter of 5 to 8 m, a height of 2,5 to 4 m, and a central supporting trunk. The tukuls are built with trunks and branches from the available trees and bushes growing at that altitude, while the foundation is made partially or entirely with big stones set one on top of the other. The conical roof consists of the central supporting trunk and beams going radially to the wall, connected to each other with several concentric rings of branches, covered with grass. In rare cases some of the rich peasants have oval-shaped houses with two or more supporting trunks. Debark, like all Ethiopian towns and ribbon-built villages along the main roads, has rectangular houses. Since the Italian occupation, several rectangular buildings, most of them covered with corrugated-iron were erected in the neighborhood of Debark. At a distance of half a day's journey from the main road, such rectangular houses with or without corrugated-iron roofs are scarce, although to possess one here, would be a status symbol. Normally the tukul serves as a living, eating, sleeping and storage room, as well as a

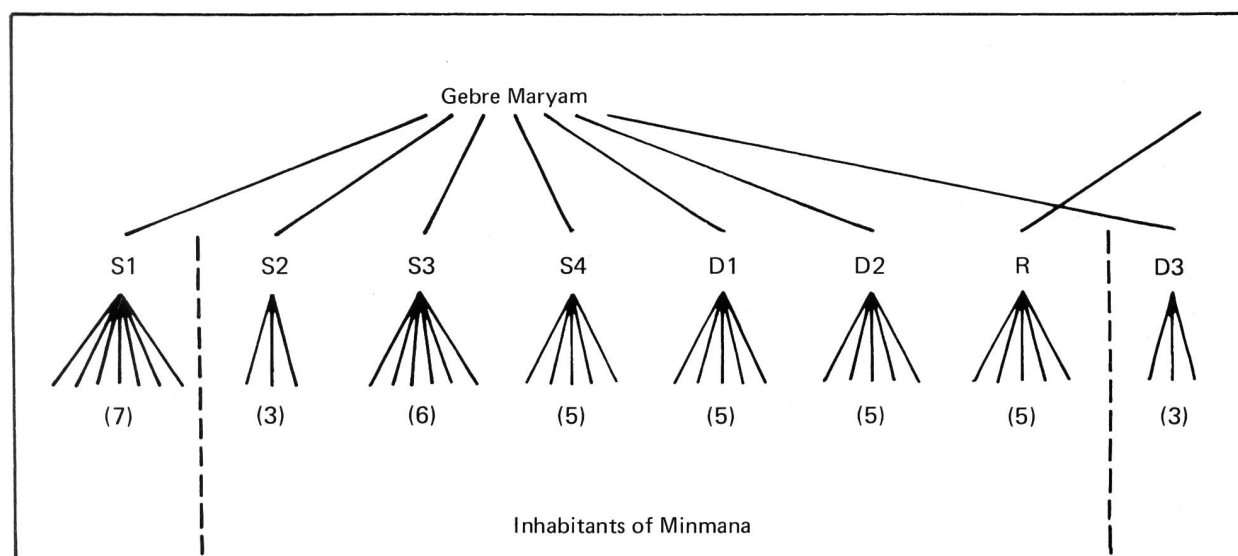
stable for all the domestic animals. Only well-to-do farmers own separate stables and storage buildings.

The exact meaning of the Amharic “Mender” is the dwelling place, but is used in the following context for hamlet or village. The hamlet consists of several houses built very closely together forming the basic unit. Even today it is considered too risky to live in an isolated house, due to the existence of bandits (Shifta). Initially these hamlets might have been occupied by members of the same family or clan but were later expanded by the arrival of new acquaintances (see example Minmana, fig. 6). Even today the names of some of these villages testify to this: for instance Abba Akali Mender: the hamlet of Abba Akali (proper name); Lewute Mekemecha: the seat of Lewute. Some hamlets have grown quickly into villages, or several hamlets standing closely together have fused into a village. Several hamlets and villages in an area, generally with natural boundaries, form a larger settlement under a common name. The Amharic “Ager” approximately means home-land or native place and is used in the following context as a common name for several dwelling places of a settlement (see

STÄHLI, ZURBUCHEN 1978). The areas of each particular settlement vary greatly and adapt themselves to the natural boundaries of the terrain. Thus Ambaras covers the whole area from Ambaras-Shewa to Kunichbaza and from the height of Ayna Meda all the way down to Belegez Wenz. Even the parts of the left side of the valley below a high rock ledge are included (a total of about 25 km²). On the other hand, Tiya covers only the terrace and slope between Tilik and Tiya Wenz (about 3 km²).

It remained unclear to what extent such larger settlements under a common name have political rights, though it seems probable that they enjoy such privileges. During the parliamentary elections, before the overthrow of Emperor Haile Selassie, some ballot boxes were placed by the churches of the bigger settlements such as Ambaras Mikael. The subdistrict (in Amharic Wereda, see table 2 and fig. 1) clearly appears to be the administrative unit of a wider area with numerous settlements. The subdistrict is the first unit to have a capital with official central services such as a subdistrict governor, administration offices, a court of law and a official police force.

Fig. 6: Increase in population of the hamlet of Minmana (Example of the increase in the population of a clan settlement)



	Parents	Children	Houses
1st generation ca. 1940	2	7	1
2nd generation ca. 1970	12	29	6
3rd generation ca. 2000	ca. 50	ca. 120	ca. 40

Gebre Maryam, who was about 65 years old in 1975, came to Minmana around 1930 and built his house here. Of his

four sons and three daughters, the eldest son (S1) and the youngest daughter (D3) moved into the neighbouring settlements. After their marriages two sons and two daughters built their houses in the near vicinity of the parents' house, one son erected his house at a distance of 200 m further. Around 1960 a nephew of one of the daughters-in law (R) came to Minmana and settled there with the permission of the others. The eldest of the third generation, who was about 18 years old in 1975, declared that he would marry in a few years and build his house in Minmana.

4.6. *Ownership and cultivation of soil*

In order to have a general overview of the agriculture in Ethiopia, I refer to MESFIN WOLDE MARIAM (1972: 79–128). In Simen, apart from the road going from Gonder – Debark – Aksum and outside the subdistrict and district localities, nearly 100 % of the population work in agriculture. Most of the clergy, in addition to their usual duties, also work as farmers. The agricultural produce from the different altitudinal zones is exchanged at the weekly markets (see NÄGELI 1978). Inns are inconceivable due to the great traditional hospitality of the Ethiopian rural population. The preservation of law and order, as well as mediation in local disputes lie in the hands of the leading and powerful men of the settlement concerned.

Clarifying the exact ownership situation as well as studying the land laws in Simen, would be a very complicated task – a delicate, but certainly highly interesting one. A detailed study has been proposed within the agricultural and forestry project (PRO SEMIEN 1976: 15–18). My official position as a park warden did not allow me to make intensive inquiries in the above-mentioned field. Therefore, only some basic assumptions can be made:

- Feudal-type large estates did not exist in Simen before 1974.
- As a rule each farmer (each family) owns the land he works.
- There are families who do not own land and who, for their daily food, clothing or money, have to put to the disposal of well-to-do farmers their working potential. This is particularly the case of descendants of former slaves (Barya) or of impoverished newcomers.
- As a rule the land belongs to one person and women are also allowed to own land. After the death of the owner, the land is divided among the sons and daughters. This is the cause of much quarreling among relations, and murderous vendettas are not uncommon.
- Because of this, the land of a farmer can be widely scattered; often one of his inherited fields lies at more than a day's walking distance from the dwelling place. In March 1975 farmers from Dirni (lowlands) were ploughing on the opposite slopes of Gich Camp (highlands).
- New land (virgin land) is cleared by burning and ploughed by the common agreement of the settlement's community. Richer, more powerful farmers have the right to plough more new land than the poorer ones.
- The farmer's wealth and power is measured by land and cattle he owns. As a rule the wealth is

inherited, as the sons and daughters marry almost exclusively within their social group.

- Generally the ploughing is done several times from January to April by the men in each family with oxen and a hoe-plough. The extremely steep slopes are worked with a hand hoe.
- Even slopes with an inclination of 30 degrees or more are cultivated. The steepest cultivated field I measured had a gradient of 43 degrees. The slopes are not terraced, stones and boulders are not taken away.
- The lower Dega zone is sown with some wheat but mostly with barley. In the upper Dega barley is sown exclusively, now-a-days usually alternating with a one year period of fallow ground. In the old times, according to the information gathered from the natives, they left the fields fallow for a two year period. Today the population increase, scarcity of land, erosion and diminution in crop already demand, in certain areas, ploughing of the same field every year.
- The harvest takes place according to the altitudinal zone, in November–December by means of a sickle. The work is done by each family or by the community of a hamlet or village. One field after the other is harvested in common, the crop remaining in the possession of the family.
- Threshing is done in the fields on a flat surface. On the stamped ground the grain is spread out, then the oxen and cows are driven in circles over it, until the grain separates from the ear. With the help of the wind the chaff is separated from the wheat or barley.

For further particulars about the use of land and the first crop yields, I refer to KLÖTZLI (1975c: 40); for studies of the soil structure see HURNI (1978) and FREI (in preparation).

5. *The natural population increase in Simen*

5.1. *Scope and area of investigation*

Before considering in detail the development of single settlements, eventual changes in their structure and the reasons (e.g. migration), we should first examine the importance of the natural population increase in Simen. From this natural population increase we can assume that a natural increase in the number of houses in Simen would result. Undoubtedly the number of people and the number of houses (except in certain later mentioned reservations) are directly proportionate. As there are no precise population censuses for Simen, the changes have to be determined by the clearly visible and countable houses in the basic documents (see chapter 2). If in this study I later

conclude from the changes in the number of buildings that the population has increased or decreased, I do this knowing the special problems of this method:

In Simen the tradition is to abandon old houses after the occurrence of infectious diseases or fatal illnesses. The survivors build new houses generally within the same settlement, but on a completely different site, without immediately demolishing the old houses. These can remain empty for years, avoided by everyone. In such cases there is an increase in the number of buildings, and from aerial photographs one could assume an increase in population. In reality, however, there is a population decrease due to the deaths. The population increase and the number of houses within one family do not run parallel but occur in stages. In this way the second generation builds its houses 20 to 30 years after the first generation. In the case of a census at an interval of 10 or 20 years, some of the families can grow without any changes in the number of the houses (see e.g. Minmana fig. 6). Deductions about population development within a single hamlet are therefore only possible with the above considerations. It can be assumed, however, that within a relatively large settlement the different effects compensate for each other, and that therefore the changes in the number of buildings in the interval of 10 or 11 years respectively, corresponds to the change of the population.

The Moslem Gich settlement proved to be the most favorable research area for this study, as its living sites were situated completely within the boundaries of the Simen Mountains National Park. Since the founding of the park in 1967, the wardens had to seriously face the problems of Gich settlement. Thanks to this it was possible for the first time in Simen to get a more precise idea from the inside, over several years, about the way of living and especially about the development of this community. As the other settlements which appear in the mapped area do not, in principle, differ from Gich, this settlement can be accepted as a representative one. The differences between Moslems and Ethiopian orthodox Christians are only their religious practices. In house construction, structure of the dwelling place, size of clan and family as well as the number of children, they are similar.

5.2. *The Gich census end of 1974*

Commissioned by the Ethiopian Wildlife Conservation Organization, the gamewardens began carrying out a census in December 1974. In the Gich settlement people and cattle were counted. I observed this counting on the spot and it was not carried out without problems.

1. Since the foundation of the park there have been rumors about the evacuation of the population from the Gich settlement, something which the majority of the inhabitants tried to oppose by all means.
2. After the overthrow of Emperor Haile Selassie by the military coup in Addis Abeba, in September 1974, the majority of Simen people was very skeptical and opposed any instructions coming from the capital. For instance during the census they feared that the new regime would impose new taxes.
3. With very few exceptions, all the inhabitants are incapable of reading, writing or counting. Because of this they have no understanding of such a statistical investigation.
4. In Simen the community group is the family consisting of the two parents and their children. Sometimes children of earlier marriages¹ single relations, servants, and the still living but dependent grandparents are added. In the case of well-to-do families, descendants of former slaves (Barya)² are included.

In spite of the above-mentioned difficulties, we can assume that the results of the census are very close to reality. The number of houses and heads of family and the number of the households are very accurate. Very precise too, are the number of other household members, as the gamewardens, through their daily contact with the farmers, knew their

¹ In Simen, as in the whole of Ethiopia, for the Moslems and Christians, marriage is based exclusively on common interest and common ownership of property. It is not uncommon that a woman, especially if she comes from a poor family, lives with her "husband" as a paid maid with a small salary, and has his children (see ULLENDORFF 1965: 178–180). Such employment, as well as the marriage, can be dissolved without problems, through common agreement of the two families. The children of such separated couples stay, as a rule, with their mother up to the age of about five, and afterwards join the house of their natural father. The divorced wife returns to the house of her parents and can later remarry. Often a man supports one or several women in other settlement and their children. After a certain time, the children will go to the house of their father.

² Although slavery has been forbidden in Ethiopia for over 30 years, the descendants of former slaves live in Simen almost under the same conditions. These Baryas mostly originate from the Sudan and clearly differ in colour and facial and body structure from the Amharics. They still have almost no rights, they possess no land and do not have the possibility to acquire any. They can be happy to work for a rich farmer, because in this way they can secure housing, food and clothing for themselves and their families. One hears even today in Simen, that the Baryas are traded illicitly between farmers who are on close terms.

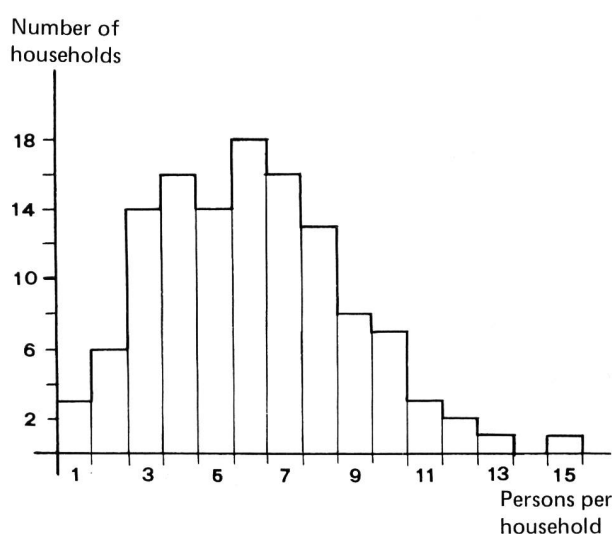
situation very well. The number of horses, mules, donkeys (riding and draft animals) and the oxen (plough draft animals) can also be considered quite exact. The most significant calculation inaccuracy lies in the number of cows, sheep and goats, as they indicate, together with the number of oxen, the wealth of a farmer. In this case the two points 1 (evacuation) and 2 (change of government, therefore new taxes) played a role in influencing the census, each point playing against the other. An exact control was not possible during the 1974 census as these animals stayed as common herds on the pastures during the day and partly overnight as well. Annex 1 gives the detailed results of the December 1974 census. Summed up we have the following numbers:

Number of families (households) . . .	122
total number of people	742
of which adults	290
of which children	452
of which boys	229
of which girls	223
living houses	141
horses / mules	99
donkeys	198
oxen	181
cows	597
sheep/goats	1490

— Size of households

Figure 7 shows the systematic distribution of the household size. A total of 742 people live in 122 households or farms. From this results an estimated average of 6.08 people per household or farm. This number is higher than the household size of 5 to 5.5 indicated in the literature (GAMST 1970:

Fig. 7: Size of households in Gich



318) for northern central Ethiopia and 4.41 for the province of Beghemdir (CENTRAL STATISTICAL OFFICE 1971). STITZ (1974: 137–147) indicates from his analysis of household size for the north Shewa an average of 4.47 *persons per household*. Based on his studies, he concludes that the households located in the higher situated Dega area include more people than those of the lower situated Woyna Dega and Kolla. The relatively high average from Gich compared to the one of Beghemdir and north central Ethiopia could therefore be explained by the extremely high altitude of the settlement.

— Number of inhabitants per home

As it can be seen in Annex 1, each household consists in most cases of a house (tukul) which serves as sleeping quarters and in most cases as a stable too. In rare cases where there is a second home, it is used for older children, not yet married sisters, dependent parents or for Baryas.

For Gich there are (1974):

104 households with one home
17 households with two homes
1 household with three homes

122 households with 141 homes

With a total of 742 persons living in Gich, it results in an average of 5.26 *persons per home*. Not mentioned in the 1974 census statistics for Gich are all the buildings which are uninhabited, such as mosques (a total of 4 in Gich) abandoned houses, separate stables and storage buildings (a total of 35).

— Number of inhabitants per mapped building

On the two topographic maps 1 : 25 000, all the buildings with a diameter over 3 m are represented. Only small storage huts and shelters for shepherd boys were omitted. On the sheet Simen Mountains National Park Gich has, without the houses of Gich Camp belonging to the park, a total of 178 buildings (March 1975). As two new houses have been built after the December census, Gich had, at the time of the census, 176 buildings. This results in an average of 4.2 *persons per mapped building*. It is this value which has to be used for all calculations of the number of inhabitants based on mapped buildings (see table 5).

5.3. The natural population increase in Gich

A first census took place in Gich in June 1968 under the supervision of C. Nicol, former park warden. The total of the population was then 619 (NICOL 1972: 270).

Population of Gich — Middle 1968	619 persons
— End 1974	742 persons
Increase in 6 1/2 years	123 persons

The increase in population, shown by the two censuses, is due only to a growth in the birth rate. Since 1967 Gich has been under the control of the park officials and no immigration has been permitted. Equally no emigration to other settlements was registered. For these reasons it is possible to calculate from the above censuses the natural population increase in the test area of Gich. It results in an annual natural population growth rate of 2.83 %¹. As precise surveys for other areas in Simen are missing up until now, for the time being the above mentioned growth rate must be used for the entire territory. The relatively high percentage is a result of the large number of children, which in spite of a high child mortality rate² indicates a large increase in births.

$$^1 \quad Z = e^{\frac{(\ln P_{74} - \ln P_{68})}{d}} - 1$$

Z: annual increase rate

P₇₄: population status end of 1974

P₆₈: population status middle of 1968

d: interval between the two censuses (in this case 6.5 years)

² Susanne Stähli took a poll among the elderly women (that means estimated age over 30 years) who visited a

6. Changes in settlement since 1954 or 1964 respectively

6.1. Explanations of the map 1 : 17 500, changes in settlement and land use in Simen, Ethiopia, from 1954 to 1975

In accordance with the basic work described in chapter 2, the changes of the dwelling places up to each single house and the cultivated land up to 1/4 of hectare in the selected area, are accurately mapped. For the settlement Argin, Amiwalka, Dihwara, Truwata and Tiya in the eastern part of the map with the three surveys from 1954, 1964 and 1975 there are two changing phases. For Gich, Abergina and Ambaras settlements, in the western part with the two surveys from 1964 and 1975, only the recent changing phase is mapped. In order to clearly represent the dynamics of these changes, the increase in the number of buildings and new land clearance are represented in red, and their decrease and the abandoned land in blue. With

medical outpost in the Gich Camp from 12.7.1974 to 22.2.1975. The results were the following: The 60 questioned women had all together given birth to 333 children; of these 119 died in childhood. That gives a 37.1 % child mortality rate. This rate is probably too low because not all the children were grown up at the time the poll was taken.

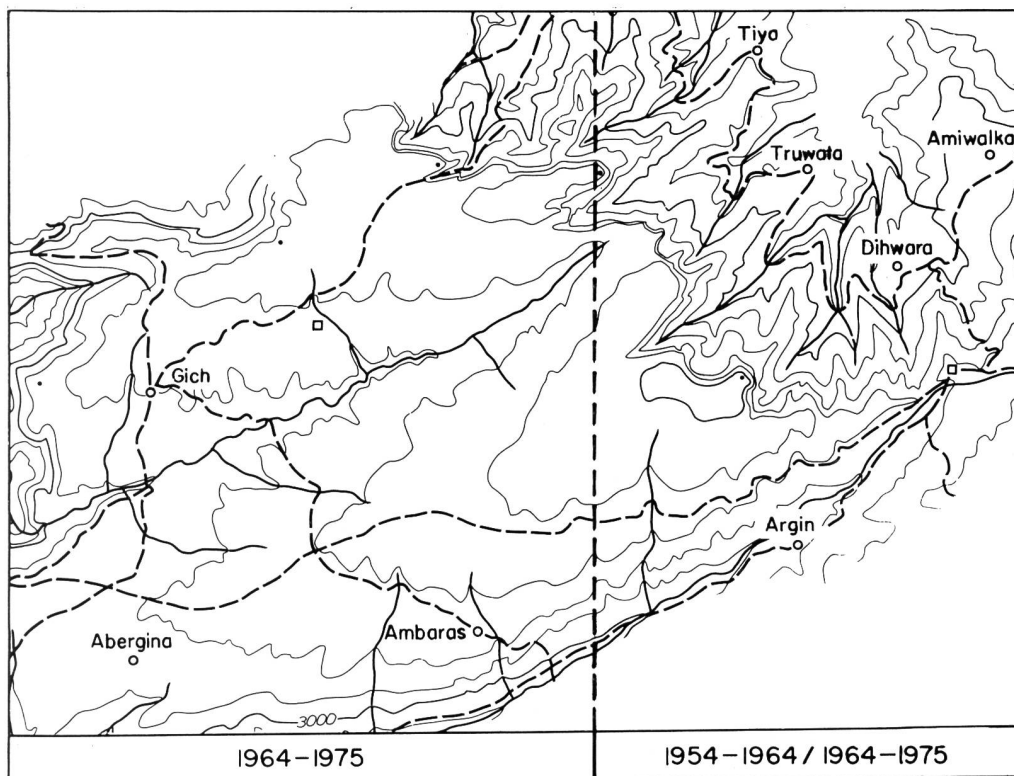


Fig. 8:
Area of intensive
investigation

different map symbols in both colours, the two phases of the changes are clearly distinguishable.

	Buildings	Cultivated land
1st phase 1954–1964	circle	dot screen
2nd phase 1964–1975	filled circle	line screen

All the land which until 1975 was ploughed at least once is coloured in yellow ground shade. The areas which were cultivated before 1954 in the eastern part and before 1964 in the western part, and remained so up to 1975, are represented only in yellow. In accordance with the above, all the buildings which were erected before 1954 or 1964 respectively and kept up to 1975 are represented with filled circles in the ground shade of the map (grey). However, the newly erected buildings could be represented as such provided that they were built in a different place. On the other hand, it was not possible to recognise and record the newly-built houses if they were erected on the previous site, or in its very near proximity, or if renovation work on old houses, such as a new roof, had been done.

Through the chosen colours and map symbols the changes have priority over the recognition of a certain phase of the settlement (e.g. 1964). In spite of that, each settlement phase can be read on the map with the aid of the table “Location of settlements and cultivated land”. Furthermore, the state and the change in the number of buildings of single settlements are represented by bar graphs. For Gich, Abergina and Ambaras the value of the first phase 1954–1964, which was not recorded here, is only deduced from the second phase. It is indicated with diagonal border lines. The following analysis of the changes in settlement is based on the division into settlements of the highlands (plateaus and valleys) and lowlands terraces according to chapter 4.4.

6.2. Changes in settlement in the highlands

6.2.1. Gich

The annual increase in the number of buildings in the second phase 1964–1975 of 2.75 % (see table 4) for Gich corresponds rather well with the results of the annual natural population increase of 2.83 % (see chapter 5). Both values do not differ in a significant way, considering the possible precision which could be expected from the basic available material. An annual increase in the number of buildings of 2.5–3.0 % can be considered a natural growth of the dwelling sites and reflects a natural increase of the population. The annual increase in the number of buildings in Gich can surely be

considered as a natural one because, since 1967 when the first park control started, new houses could only be erected by local residents and only with special permits given by the park or law court officials mainly in cases of marriage. Within the settlement of Gich we have to consider for the single hamlets and villages the following points:

- With the exception of the newly founded settlement Wezahila all hamlets show an increase smaller than 2.5 % which amounts to a relative decrease (2.5 % to 0 %).
- The hamlet Amiako scores an absolute decrease in the number of buildings.
- The decrease in all the hamlets existing in 1964 is not due to emigration from Gich settlement but only due to a change of location of the dwelling sites (to Wezahila).

According to the official park records of the Gich Camp as well as the verbal information from NIEVERGELT and MÜLLER the colonization of Wezahila occurred as follows:

- Up to February 1969, date of the departure of NIEVERGELT from Simen, there were no buildings in Wezahila.
- In October 1971, date of arrival of MÜLLER in Simen, Wezahila had its first five houses. These were the two highest groups of buildings at 3500 m. Three of these buildings belonged to Ali Mohamed and two buildings to the brothers Suleyman and Hussen Makonnen. The three of them had left their old houses because of typhus and death within their families (Ali Mohamed in Sheh Ardman, Suleyman and Hussen Makonnen in Gundiya centre). After a complaint from the park authorities, the court in Debark decided in the beginning of 1972 that the new houses could serve as provisory accommodations. In the beginning of 1975 it was finally decided that these five new houses belonging to the three families in Wezahila would be properly inhabited in case the old houses could not be used for health reasons or were demolished. Following the court decision the three families demolished their old houses immediately. Accordingly these houses are recorded on the map as demolished between 1964 and spring 1975.
- Most of the other buildings in Wezahila were constructed during autumn and winter 1972–1973, the dry season, and afterwards in winter 1974–1975. All these new buildings were constructed, not because of health reasons as the first five between 1969 and 1971, but because several farmers had demolished their old houses in Amiako, Sheh Ardman and Gundiye, to settle down in a new more favorable place. For all the new buildings of Wezahila, as for all those in the other hamlets, the court gave permission in spring 1975, in spite of the request of the park

Table 4: Changes in numbers of buildings from 1954 to 1975 in the limited area

Settlement	Height in m	Number of buildings			Change				Annual rate	
		54	64	75	1954–64		1964–75		54–64	64–75
					–	+	–	+		
Gich			132	178			38	84		2.75
Sheh Ardman	3370		9	10			8	9		0.96
Amiako	3380		36	34			13	11	–	0.52
Gundiye west	3400		16	18			4	6		1.08
centre	3420–80		43	54			5	16		2.09
east	3460		28	31			8	11		0.93
Wezahila	3460–3500		0	31				31		
Abergina			71	108			12	49		3.89
Lewute Mekemecha	3270		5	9			0	4		5.49
Tana Ageb	3220–3320		30	46			0	16		3.96
Giyorgis west	3300–3360		11	22			0	11		6.50
east	3260–3340		25	31			12	18		1.97
Ambaras			293	353			68	128		1.71
Ambaras Shewa	3300		24	31			4	11		2.35
Semaya south	3300		10	10			0	0		0
north	3400		9	18			2	11		6.50
Awustageb west	3420		24	14			11	1	–	4.78
east	3400		21	17			7	3	–	1.90
Daba	3520–3610		3	35			0	32		25.02
Gebere Mender	3320		25	25			1	1		0
Mikael west	3500		21	27			0	6		2.31
centre	3480		21	14			7	0	–	3.62
east	3450–3560		29	16			14	1	–	5.26
Jona	3460–3500		29	42			7	20		3.42
Kiflo south	3490		26	28			1	3		0.68
north	3600–3740		25	38			7	20		3.88
Kunichbaza	3620–60		7	12			2	7		5.02
Werk Azla	2940–3000		12	13			5	6		0.73
Tere Mender	3000		7	13			0	6		5.79
Argin		99	121	164	16	38	3	46	2.03	2.80
Kay Afer	3370–3500	37	48	61	0	11	2	15	2.64	2.20
Medhane Alem	3280–3380	26	25	28	6	5	0	3	– 1.00	1.04
Kebero Medir	3360–3540	34	38	54	10	14	1	17	1.12	3.25
Kidane Mado	3600–3760	2	10	21	0	8	0	11	17.46	6.98
Amiwalka		59	97	121	9	47	24	48	5.10	2.03
Zeger	3030–70	18	31	33	4	17	7	9	5.59	0.57
Azadege	3150–80	26	34	45	5	13	3	14	2.72	2.58
Soriya	2960–3050	4	10	20	0	6	2	12	9.50	6.50
Amja Ber	2980–3050	11	22	23	0	11	12	13	7.18	0.40
Dihwara	2950–3000	27	35	64	0	8	0	29	2.63	5.64
Truwata	2860–3020	34	38	46	9	13	15	23	1.12	1.75
Tiya	2780–2860	13	19	35	2	8	9	25	3.87	5.71

authorities opposing to this. In March 1975 all the new buildings were already inhabited with the exception of the isolated lowest house in the forest. The newly-married man had built this house in 1975 hoping that others in the vicinity would follow suit. When this did not happen he was afraid to live there all alone with only his wife and preferred to stay for the time being in his father's house in Gundiye. In March 1975 there were negotiations going on to demolish this new house and to rebuild it in Gundiye or in the neighborhood of the other houses in Wezahila.

– Finally, in February 1975 the planned and partially-started construction of about two dozen new houses in the near neighborhood of Wezahila was prevented, stopped in fact by the park authorities, with the agreement of the governor of Debark (see STÄHLI 1975).

The new settlement of Wezahila shows clearly the motivations and desires of the local population to enlarge the old settlement area according to their needs. The setting up of new dwellings on the outskirts of the settlements manifests the desire of the farmers for an expansion of cultivated land as

opposed to the policy of the park officials. Only the strictly enforced prohibition of ploughing new land within the national park could prevent, for the time being, the inhabitants of Wezahila from clearing the forest here.

As the map 1 : 17 500 and the erosion map of HURNI (1978) plainly show, all the land reserves of Gich lie either in the north above the dwelling places or mostly on the climatically better situated valley slopes of the Jinbar Wenz in the east.

Based on the signs of strong erosion in the region of the hamlet Amiako, one can deduce that the colonization of Gich started here at the west end of the plateau and continued eastwards up the valley. The newest dwelling place Wezahila is situated about 100 m higher than Amiako, probably the oldest one.

The relatively low expansion of the cultivated land during the period 1964–1975 compared to the increase in population (see map 1 : 17 500) is due to the special location of Gich, which lies entirely within the national park. The farmers of Gich do not compensate this imbalance with better farming methods on the old land, but disregard the one-year fallow rhythm and start ploughing single plots of land two to three years in a row, a custom which greatly increases the erosion.

6.2.2. Ambaras

Ambaras is the largest settlement in the area of our investigation. The average annual increase rate of 1.71 % for buildings since 1964 is below the rate of 2.50–3.00 % stipulated as the natural rate of growth. This means that since 1964 a slight emigration from the area of Ambaras can be presumed to have taken place. The relative decrease for the second phase of 11 years amounts in 1975 to 44 buildings and 185 persons. Within Ambaras the individual hamlets show different rates of growth, from – 5.26 % for Mikael east up to 25.02 % in Daba. The latter practically corresponds to the foundation of a new settlement, comparable to the one of Wezahila. The following facts are to be mentioned:

- The hamlets located on the edge of valley slopes (see chapter 4.4.) show a clear emigration, exceptions being two hamlets of Kunichbaza in the east with + 5.02 % and Ambaras Shewa in the west with 2.35 %, both lying on the extreme periphery of the area. The highest emigration rate is found in Mikael east. Here in the lower parts more than half of all the buildings still existing in 1964 disappeared and were not replaced by new houses. This is not astonishing as the humus of the entire slope of this settlement has been eroded nearly everywhere down to the underlying basalt rock.

- On the other hand, all the hamlets in the higher plateau zones have increased in number. Within Ambaras we see a clear tendency of the settlements to shift up the slope, towards climatically and agriculturally unfavorable areas. This indicates a space and land shortage in the original lower and more favorable zone. Thus, new dwelling places were created 100 to 200 m above the old hamlets located on the upper edge of the valley slope. The highest situated buildings are already at 3750 m in the immediate proximity of the borders of the national park and the upper limit of cultivation (see fig. 9).
- The hamlet Tere Mender, which lies just above the bottom of the Belegez valley, also shows signs of immigration.

On the whole, there is within Ambaras a shift of the dwelling places from the old original dwelling sites Mikael and Awustageb towards the periphery of the settlement area, while the penetration into the higher regions is the most outstanding feature. As the higher accessible parts of the slopes of the Belegez valley have been incessantly cultivated for a long time, a large part is already destroyed by erosion or is in its last stages of complete destruction. Because the existing cultivated land borders the one of Abergina and Argin, the sole possibility left to obtain new farmland, is to expand into higher plateau zones. Since 1964 some farmers from Ambaras have ploughed new land on the left side of the Jinbar valley opposite the slope of the Gich Camp. Although this area lies within the national park and the park administration has done everything in its power, it did not succeed in stopping the ploughing of new land.

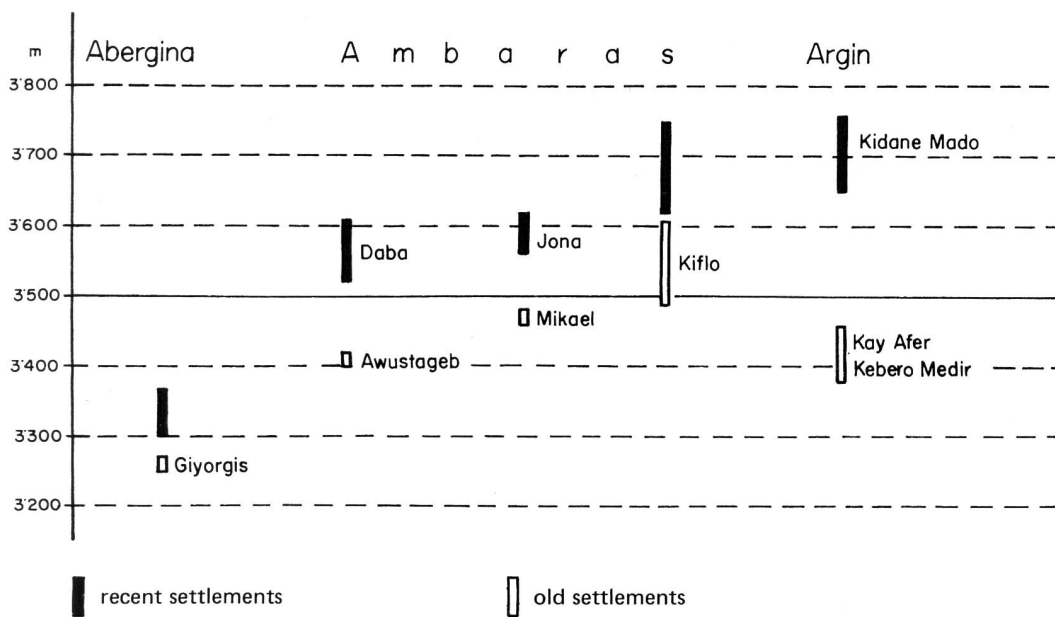
Besides the advance towards higher and higher plateau zones one can see a shift towards the lower zones of the Belegez valley. So the valley settlement Ash, below Ambaras, has an annual increase rate of 3.9 % (see table 5 and fig. 10, fig. 11).

6.2.3. Abergina

From the annual increase rate of 3.89 % it can be deduced that in Abergina a considerable immigration has taken place since 1964. Some of the emigrants from Ambaras settled in the Abergina area which lies in the west of the same plateau. Two young farmers confirmed this during my field work in Tana Ageb. They declared that the houses of their parents were in Ambaras.

In contrast to Ambaras, in Abergina not only were relatively more new houses built, but fewer were abandoned (see table 4). This can mean that the Abergina area was colonized at a later date than that of Ambaras. Unfortunately I could not get any reliable information about the founding of the two churches, but it seems that Ambaras Mikael is

Fig. 9: Altitude of recent settlements on the highland plateau



the more important one and is richer in tradition. Within Abergina one can notice similar changing tendencies, although not as clearly as in Ambaras. The new dwelling places are situated 50 to 100 m above the old ones. Their altitude of 3350 m is nevertheless about 300 to 400 m lower than that of the highest houses of Ambaras.

The cultivated land of Abergina reaches partly up to the left side of Jinbar Wenz valley and borders that of Gich. Along the caravan route Sankaber—Chennek at the altitude of 3500 and 3600 m, the farmers of Abergina have secured new farmland since 1964 at the expense of the mountains' steppe which served as common pasture. In this way the herds of cows and sheep from Abergina had to go further westwards, where the main pastures of Ambaras lay (Ayna Meda).

6.2.4. Argin

In Argin it is possible to observe two changing phases. While during the first phase (1954–1964) the annual increase in the number of buildings was, at 2.03 %, below the natural increase rate of 2.5 to 3.0 %, the growth-rate of the second period (1964–1975) corresponds at 2.80 % to a natural rate of growth. In this context it is interesting to note that a hamlet in the immediate western proximity of the Medhane Alem church, which consisted of 5 houses in 1954, had completely disappeared in 1964. So did the group of three buildings between the two streams north of Kebero Medir. The complete abandonment of whole ham-

lets or groups of houses points to infectious and fatal disease. In this way one can explain the relative loss of about 9 buildings in Argin during the first phase. The survivors may have built new houses outside of the existing dwelling site under the pressure of the population, most probably further down in the valley. Within Argin it is possible to discern the following developments:

- Key Afer was expanded during both phases so that the original hamlets of 1954 merged into one village.
- The same can be said for Kebero Medir. In addition we have here during both phases an expansion into higher zones. This is evident from the fact that new buildings were erected in Kidane Mado at 3600 m and up to 3750 m.
- The concentration of the Argin population in the two main dwelling sites Kay Afer and Kidane Mado is contrary to the development towards the periphery in Ambaras. The natural narrow space of the settlements in the highland valleys, in contrast to the open space of the high plateaus, might be responsible for this development.
- The expansion of the farmland took place in both phases going up the slope in already extreme altitudes, up to nearly 3800 m.

6.2.5. Changes in settlement in the neighboring highlands (see table 5 and fig. 10, fig. 11)

The two Moslem settlements Mecheke and Tikur Wuha, situated on the western edge of the highland

plateau, show clear signs of emigration. Both settlements have had no more land reserves on the plateau for a long time, so that only the possibility for expansion towards the upper Wazla valley remains. In effect Debir (Moslem) distinctly registers an immigration. It can be assumed that this tendency will continue in the future and that the still-existing forest of this valley will be cleared. Together with the already-mentioned less obvious emigration from Ambaras to the valley settlements Ash and Tere Mender, a general shift from highland plateaus towards highland valleys results for this high plateau during the period 1964 to 1975. It seems, though, that this shifting into the valley only began after an expansion towards higher zones of the high plateau became impossible due to climatic reasons. This observation confirms those from 19th century sources, and indicates that the high plateaus of Simen are preferred settlement areas. Moreover, there have been settlements in the valleys for several centuries as some examples show: Argin and Tsyon with beautiful old churches belonging to this type. For the plateau west of Sankaber there are, for the different settlements, a great variety of developments: The large settlements of Minigebssa and Adisge show emigration, all others partly show large immigration. The high annual increase-rates of Kebero (18.8 %) and Michibiny (7.8 %) prove that they must be relatively recent settlements, which is astonishing, as this plateau, with an altitude of 3000 m, has a much better climatic condition compared with that of Ambaras. The late colonization can be attributed to the fact that this area in the vicinity of Sankaber is part of a contested border region between the old Simen and "Wogera" (see chapter 3.6.) in which the passing warriors left their traces. The neighborhood of Sankaber was known as a place for bands of robbers and brigands until well into the 20th century. To live in their proximity might have been too risky.

6.3. Changes in settlement in the lowlands

6.3.1. Amiwalka

According to the size of the terrace, Amiwalka is, with its 121 buildings in 1975 the largest lowland settlement in the area covered by the present study. The following changes can be noticed for Amiwalka:

From 1954 to 1975 the number of buildings has doubled; this high increase has taken place in the first phase. The high annual growth-rate of 5.10 % in the first phase can only be interpreted as a result of an immigration. The growth-rate of 2.03 % in the second phase lies somewhat below the natural increase-rate. From this, one could deduce a slight

emigration. However, one should not neglect the fact that the generation following the immigrants of the first phase will build their houses 20 to 30 years later. This second wave, in this case would take place in the years 1975 to 1985. A total of 9 buildings which were constructed during the first phase were demolished during the second phase. If one presumes that the houses served in the beginning as provisory accommodations and that their owners later settled definitively in another part of the settlement, it results for Amiwalka, after the high increase of the first phase, in a natural growth-rate for the second one. But it could be possible as well, that the builders of the 9 houses, under the pressure of the already-settled farmers, had to leave the area of Amiwalka, which could explain the relative loss in the increase during the second period. Only an inquiry on the spot could clarify which of the two versions corresponds to reality. Unfortunately there was no possibility to do it.

All the dwelling places of Amiwalka show in both phases important changes concerning the demolition and new construction of buildings. All the new dwelling places were built on the terrace itself, and the location for new sites tended to be, for the most part, chosen outside the older compact hamlets of Zeger and Azadage. The different dwelling places show different developments. For instance, Zeger and Amja Ber generally developed at the same rate as the whole settlement of Amiwalka. Azadage has, in both phases, a natural increase-rate. Soriya has, in both phases, the strongest increase-rate; three new groups of buildings were added in the second phase. The number of buildings in the first original dwelling sites in the west more than doubled during the first phase.

It is astonishing that the mapped increase of the cultivated land hardly corresponds to the high population increase. It should be noted that a large part of the farmland is situated on that part of the terrace which stretches eastwards and on the slopes above it. In the mapped part of the terrace the boundaries of the farmland have not expanded since 1964, but the steep slopes within the terrace have been additionally ploughed. Striking is the fact that the northern part of the terrace has been kept as common pasture; this shows clearly that in this settlement communal agreements were taken and respected. Since 1954 new farmland has only been able to be gained on the steep slopes above or below the terrace. It seems that in Amiwalka the abandonment of cultivated land on slopes leading towards the escarpment were compensated by the newly gained farmland on the lower situated valley slopes.

6.3.2. Dihwara

Due to the narrowness of the plateau, which is between the two ravines of the streams Dihwara Wenz and Jib Wetmed Wenz, Dihwara developed up to 1975 into a compact village. Nevertheless, a new hamlet was founded on that limited space. Contrary to all other settlements, there were no demolished houses to be mapped from the aerial photographs in Dihwara. That must be due to its density. Old houses had to be renovated on the same spot, as the space on the small terraces was limited.

The number of houses in Dihwara, which was 27 in 1954, has more than doubled and was 64 in 1975. Contrary to what occurred in Amiwalka, the high increase took place during the second phase. After a natural increase of 2.63 % between 1954–1964 followed, during the period of 1964 to 1975, an annual increase-rate of 5.64 % for which immigration can be assumed. It seems as if here in Dihwara the wave of immigration of the first phase of

Amiwalka has continued. Up to now it has not been possible to trace the origin of the emigrants. Only Moslem settlements in the near vicinity, which show distinct signs of emigration, could be considered. This would point to Mecheka, Tikur Wuha from the highlands and Muchila from the lowlands. Among all the Moslem settlements of the highlands and lowlands there are family relationships, facilitating the immigration from another settlement area.

In Dihwara, as in Amiwalka, part of the terrace in the near proximity of the dwelling sites remained as common pasture. The cultivated land of Dihwara is partly situated on the terrace and on the adjacent slopes, partly further west on the slopes north of the Inatye. The newly-cultivated plots of land since 1954 are situated here, below or above Dihwara on extreme steep places, where the erosion is very pronounced. The abandonment of the largest part of farmland can be attributed to the advanced erosion and the resulting decrease in the crop.

Table 5: Changes in numbers of buildings and persons from 1964 to 1975 in part of Simen

Nr. ¹	Settlement	Position ²	Buildings		Persons ³		Increase		Annual rate in % ⁴
			1954	1975	1964	1975	Build.	Pers.	
1	Mindigebsa	hp	103	116	433	487	13	54	1.1
2	Kebero	hp	3	20	13	84	17	71	18.8
3	Buyit Ras	hp	48	68	202	286	20	84	3.2
4	Tefir Malfiya	hp	20	34	84	143	14	59	4.9
5	Adisge	hp	134	163	563	685	29	122	1.8
6	Michibiny	hp	48	110	202	462	62	260	7.8
7	Debir (Christ.)	hv	43	62	181	260	19	79	3.4
8	Debir (Moslems)	hv	27	49	113	206	22	93	5.6
9	Tsyon	hv	93	122	391	512	25	121	2.5
10	Ash	hv	25	38	105	160	13	55	3.9
11	Zantera	hp	41	47	172	197	6	25	1.2
12	Tikur Wuha	hp	48	37	202	155	– 11	– 47	– 2.3
13	Mecheka	hp	66	74	278	311	8	33	1.0
14	Gich	hp	132	178	554	748	46	194	2.75
15	Abergina	hp	71	108	298	454	37	156	3.9
16	Ambaras	hp	293	353	1231	1483	60	253	1.7
17	Argin	hv	121	164	508	689	43	181	2.8
18	Amiwalka	lt	97	121	407	508	24	101	2.0
19	Dihwara	lt	35	64	147	269	29	122	5.6
20	Truwata	lt	38	46	160	193	8	33	1.8
21	Tiya	lt	19	35	80	147	16	67	5.7
22	Dirni	lt	49	67	206	281	18	75	2.9
23	Antola	lt	35	43	147	181	8	34	1.9
24	Amba Ber	lt	41	54	172	227	13	55	2.5
25	Agidamiya	lt	60	78	252	328	18	76	2.4
26	Abeka	lt	30	41	126	172	11	46	2.9
27	Muchila	lt	50	41	210	172	– 9	– 38	– 1.8
28	Nariya	lt	50	68	210	286	18	76	2.8

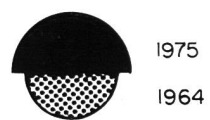
¹ The numbers correspond to those of figure 10

² hp: highland plateau lt: lowland terrace hv: highland valley

³ The number of people is calculated by multiplying the number of buildings with the factor 4.2 (see chapter 5.3.).

⁴ Annual rates of growth of 2.5 to 3.0 % correspond to a natural increase, higher rates indicate immigration, lower ones emigration.

Fig. 10: Changes in numbers of buildings from 1964 to 1975



1 mm² corresponds to 1 building

Numbers acc. to tab. 5

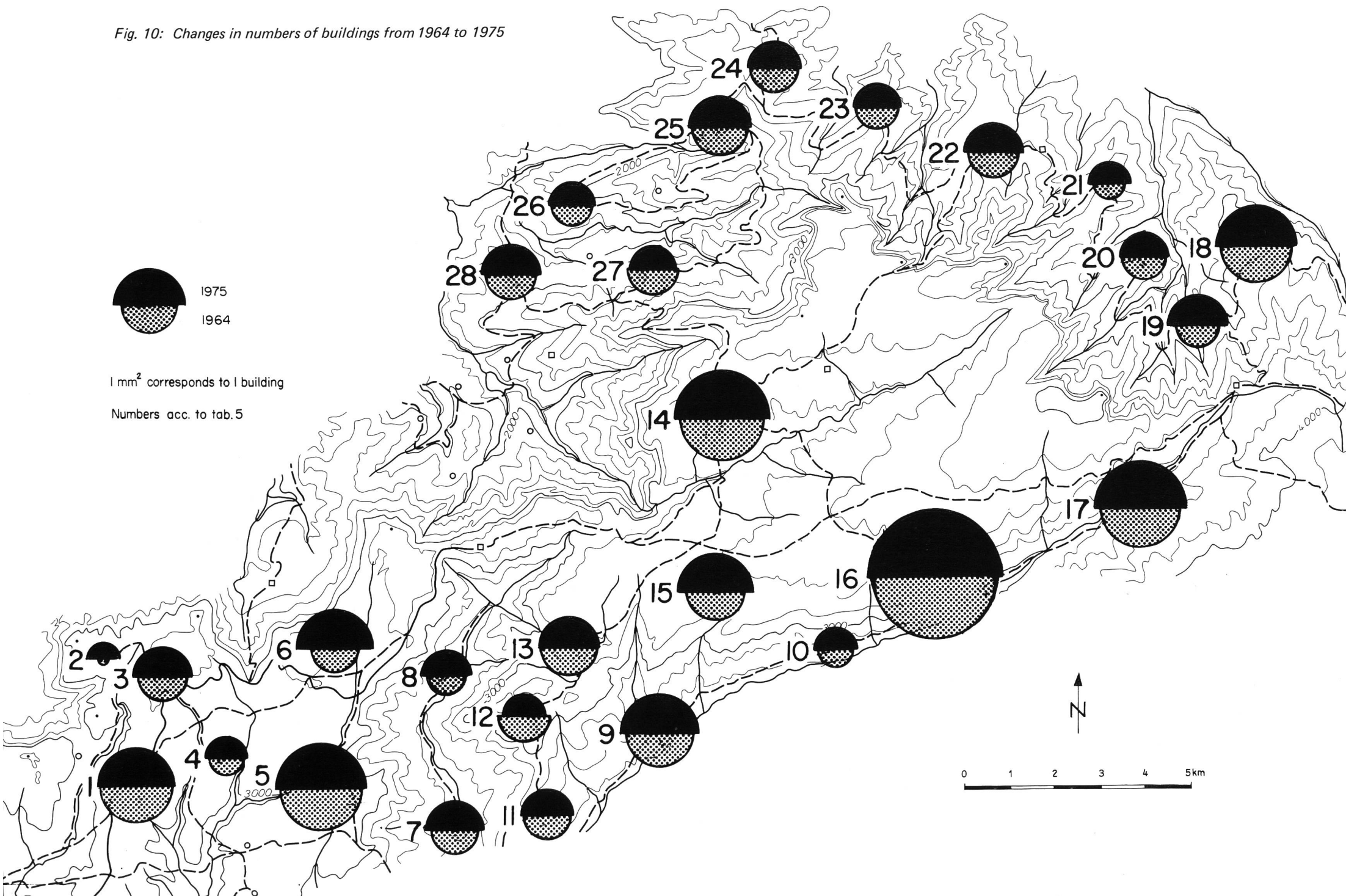
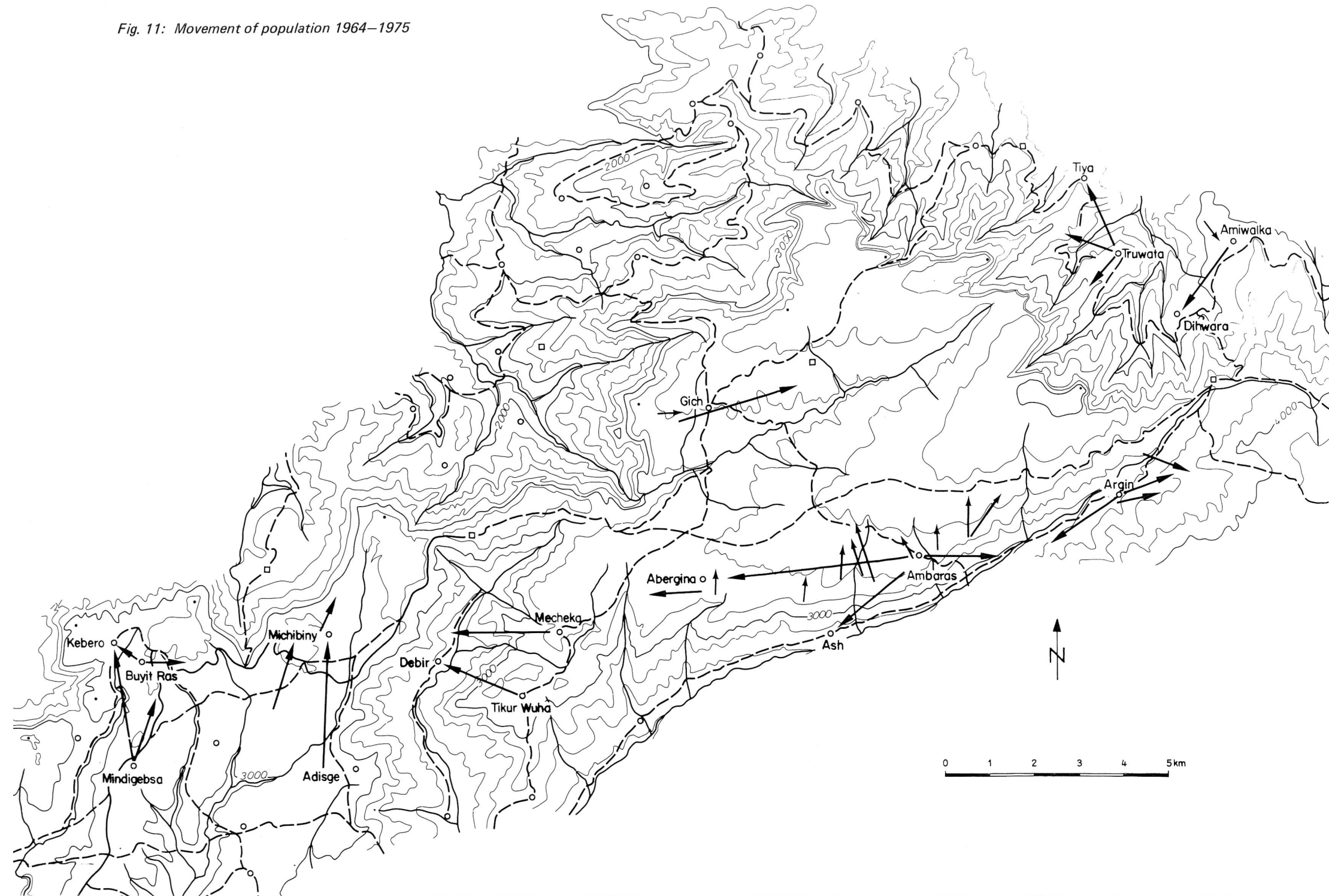


Fig. 11: Movement of population 1964–1975



6.3.3. Truwata and Tiya

In both phases there are for Truwata below-average increase-rates of 1.12 % or 1.75 % respectively and for Tiya above-average increase-rates of 3.85 % or 5.71 % respectively. From the fact that the two terraces are adjacent and from the location of the newly ploughed land in this area, it can be deduced that this difference in the increase-rate results from a population migration from Truwata to Tiya and is not due to an immigration from the outside. This assumption is reinforced by the annual increase-rate of 2.63 % since 1954 for both settlements taken together.

In a different way than in Dihwara, the original dwelling site on this equally small terrace did not develop into a compact village, but here old dwelling sites dissolved and small hamlets were founded in many new places. Until now I could not discover any reason for this, other than the possibility of epidemic disease or quarrels among the inhabitants. In both settlements most of the

new dwelling places are no longer located on the terrace itself, although there is enough room, but on the slopes above.

New farmland is, to a great extent, obtained in a similar way during both phases. While in Truwata, as in Dihwara and Amiwalka, part of the terrace is kept as common pasture, this is not so in Tiya, where all of the cleared terrace is cultivated. There still exists a strip of forest on the northern part of the terrace of Tiya which could be used as pasture, but the dwelling places of Tiya are too scattered, so that a common pasture is not needed. This essential difference in the other three lowland settlements forces me to conclude that the colonization of Tiya took place too suddenly and at random, without agreements between the few local inhabitants and the immigrants. In this way the number of the buildings increased within 21 years from 13 in 1954 to 35 in 1975, nearly three times the initial number. Contrary to Amiwalka, Dihwara and Truwata, Tiya is probably a relatively new settlement.

6.4. Differences between the development of the highland and lowland settlements

Highlands

Lowlands

Annual increase rate

Corresponds generally to the natural population increase with exception under that value (Ambaras).

Shows a great variation between the different settlements and phases, with an accent on high values.

For Gich, Abergina, Ambaras and Argin there is a total value of 2.42 % (1964–1975).

For Amiwalka, Dihwara, Truwata and Tiya there is a total value of 3.58 % (1954–1964) and 3.16 % (1964–1975).

No immigration from the outside, rather slight emigration towards the highland valleys and the lowlands.

Immigration from outside (lowlands and highlands in different shifts).

Movement within the area of a settlement

Towards the periphery of the settlement. Most of the new dwelling sites are located 100 to 200 m higher than the old ones, just below the actual cultivation limit.

The new dwelling sites are located on the terraces as the old ones (exception Truwata).

Farmland changes

No abandoned farmland (exception in Gich ordered by the park authorities).

Much abandoned farmland on the slopes (probably only for a fallow period of several years after a longer period of cultivation with a one year fallow).

The newly won farmland is situated mainly over 3500 m on the high plateau, occasionally some on the slopes of the highland valleys.

The newly won farmland is situated on extremely steep slopes above or below the terraces.

Reserves of farmland

On the plateau between the actual and the absolute climatic limit of cultivation. Relatively flat terrain; unfavorable climate.

On the slopes above or below the terraces. Extremely unfavorable gradient of slope (up to 45 degrees); favorable climate.

On individual places on the highland valley slopes (mostly inside the national park). Unfavorable gradient of slope (up to 30 degrees); climate rather favorable.

On single terraces or terrace like ledges (almost completely within the national part). Flat terrain; favorable climate.

Pasture

Mountain steppes, above the present limit of cultivation in relatively great distances from the dwelling sites. The winning of new farmland is at the expense of the pasture.

Special reserved parts of the terraces in the neighborhood of the dwelling sites. The new farmland does not touch the pasture in general (exception in Tiya).

The difference in the annual increase rates indicate, on one hand, a generally slight shift of the population from the highlands to the lowlands during the past 21 years. On the other hand, from the comparison table it can be deduced that the natural increase of the population alone, will use up the last still-existing land reserves. Yet the situation in the highlands is worse than in the lowlands. This can be demonstrated by the fact that in the investigated highland area no land can be left fallow for more than one year, as is apparently still possible in the lowlands. Based on the census and the calculated total number of the population, as well as on the mapped cultivated area, it shows that in the past 10 years 1.0 to 1.2 hectares of cultivated land were needed per person in Simen. In normal years this was sufficient for self-support. Today only a minimal number of land reserves still exists in Simen. The population increase, the progressing erosion and the maintenance of the traditional unproductive methods of agriculture will diminish the surface and crop necessary for one person. This will lead inevitably to a catastrophe which can be delayed only by short-sighted measures, such as giving up the one-year period of fallow land, which has already occurred, or colonizing the last natural landscape, which will surely take place later. As emigration towards unsettled areas outside Simen does not seem possible or realistic, the only solution which remains is the promotion of agriculture by containing erosion and improving methods of cultivation (e.g. crop rotation). Therefore, in Simen an absolute priority should be given to the development of an agriculture and forestry project. Until the realization of such a project, one must expect in the lowlands as well as in the highlands of Simen an increased pressure on the last remains of the natural landscape.

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ANNEX: Gich, census 1974 (November/December)

	Head of household	Persons Total	Child- ren		Build- ings	Oxen	Cows	Horses and mules	Don- keys	Sheep and goats
			♂	♀						
	Ali Mesele	13	4	5	2	4	10	3	5	30
	Ali Mohamed	12	4	6	3	4	20	3	4	50
	Hussen Makonen	10	4	4	1	3	10	5	4	45
	Yasin Mohamed	10	3	5	2	2	10	1	2	30
	Suleyman Makonen	11	5	4	1	4	15	6	5	40
	Imer Seyd	9	4	3	1	2	2		1	15
	Seyd Mohamed Seyd	10	5	3	2	4	10		3	50
	Suali Seyd	8	3	3	1	2	4		2	20
	Abdekader Suali	5	1	2	1	1	4			15
10	Ali Suali	5		3	1	2	4		1	6
	Besher Saudi	6	3	1	1	1	3	1	1	24
	Fantay Hassan	8	4	2	2	2	8	1	3	20
	Abderhiman Seyd	2			1	1	3		1	5
	Seyeb Ibrahim	10	6	2	1	1	3		4	10
	Saudi Ireta	6	1	3	1	1	4	4		15
	Biota Nurusse	10	6	2	1	3	3		3	20
	Keman Mohamed	7	2	3	1	2	3	1	1	10
	Atani Fantay	7	2	3	1	2	2			20
	Mohamed Gebiyawu	9	3	4	2	4	15	2	3	25
20	Ismayl Wuassihun	8	3	3	1	1	3	1		10
	Amane Ibrahim	11	4	5	2	1	1		1	70
	Mohamed Aman	9	2	5	1	1	6	1	1	5
	Ahmede Hussen	5	1	1	2	2	4		1	15
	Ahmed Besher	6	1	2	1	4	10	2	2	20
	Abdella Suleyman	8	4		1	1	5		1	20
	Adem Takele	7	3	2	1	2	7		2	10
	Yussuf Mohamed	7	2	3	1	2	5	2	2	4
	Daud Hassan	5	2		1	2	5		3	5
	Abdekader Ibrahim	3	1		1	1	2			10
30	Hassan Mohamed	6	2	2	1	2	3	1	1	
	Besher Mohamed	4	1	1	1	1	3	1	1	
	Fatima Hassan	5		3	1		2			
	Siman Imer	4	1	1	1	1				10
	Besher Hassan	3	1		1	1	2		1	
	Ibre Abera	8	1	3	1	3	8	3	2	20
	Issa Takele	9	4	2	1	2	4		3	18
	Isman Ibrahim	7	3	1	1	3	9	3	4	20
	Mebrat Ahmed	6	2	2	1	1	3	1		10
	Mohamed Suali	10	3	4	1	3	1	2	2	20
40	Yemal Saudi	4	1		1					15
	Ahmede Suali	8	5		1	1	1		1	
	Ubet Suali	6	3		1	2	2	2		4
	Mahamud Takele	7	3	1	1	2	5		2	8
	Ihre Takele	3		1	1	1	3			8
	Mohamed Imer	3			1	2	3	2	2	10
	Hawu Wondemayu	4	1		1	1	4		2	10
	Setey Imer	3			1	1	2			5
	Yasin Ahmed	7	2	2	1	2	3	2	3	20
	Agenu Bicha	6	3	1	1		3			10
50	Ingedeytu Worku	4		1	1	1	2		1	3
	Tirfye Ferede	6	2	1	1	1	5	2	1	7
	Tahar Feleka	5	2	2	1	1			1	5
	Adane Deboch	6	2	2	1	2	3			20
	Yessuf Mohamed	4	1	1	1	1				10
	Seyd Yessuf	5	1	2	1	1	2		2	5
	Seyd Deboch	6	1	3	1	2	6		3	7
	Saudu Fantay	3		1	1	1	2			
	Yenus Yessuf	8	3	3	1	1	5		1	5
	Ismayl Hassan	9	4	4	1	2	12		5	20
60	Ahmed Mohamed	8	2	4	1		6		1	5
	Indris Yessuf	4	1	1	1	1	2			

Head of household	Persons Total	Chil- dren		Build- ings	Oxen	Cows	Horses and mules	Don- keys	Sheep and goats
		♂	♀						
Tesfu Teyim	15	8	5	2	4	20	8	5	60
Abdela Tesfu	2			1	2	4	2	1	12
Desse Makonen	4		2	1	1	3		1	10
Assiya Makonen	4	2	1	1	1	6			
Mohabu Makonen	3		1	1	1	3		1	
Mumina Musere	3	1	1	1	1	5			10
Ametenur Musere	2	1		1		2			5
Adem Wube	5		3	1	2	15	1	4	20
70 Abderahim Feleka	7	3	2	1	2	10	1	3	10
Mohamed Seyd Aman	8	5	1	2	2	7		3	20
Merima Worku	1			1					
Mohamed Lemlem	5	1	2	1		2		3	10
Ahmed Imamu	3			1		4			10
Wusen Lemlem	3	1		1		3			3
Workeneh Aman	4		2	2	1	6		1	8
Ahmed Aman	9	4	3	2	1	3		2	6
Biwota Mohamed	7	3	2	1		2		1	1
Ali Mohamed	4	1	1	1		6		1	1
80 Adane Bicha	5	2	1	1	2	7		2	
Tewoda Fantay	4	1	2	1		1			4
Mulu Lake	2	1		1		2			2
Aman Motbeynur	6	2	1	1	1	1			6
Nure Motbeynur	6	1	3	1	2	7	3	3	20
Suali Motbeynur	5	1	2	1	2	8	3	3	34
Fentanesh Motbeynur	4	1	2	1		3			6
Wussihun Adem	6	2	2	1		6		2	3
Hawu Fulate	4	2	1	1	1	7	1		4
Gobese Wube	6	2	1	1	2	2		2	4
90 Umer Ibrahim	2			1	1				
Mulu Suleyman	1			1		3			
Imana Mossa	4	1	1	1	1	3		2	
Nurelin Sirach	4	1	1	1		2		2	
Hassan Fantay	3		1	1		4		2	2
Ahmete Kerim	3	1		1					
Ahmed Wondemayu	7	2	3	1	1	4			1
Mohamed Abera	7	3	2	1	2	5		2	
Yessuf Ibrahim	8	2	4	2	4	15	7	5	20
Hassan Yessuf	6	1	3	1	2	5	3	2	5
100 Abdela Belete	11	5	4	2	1	4			25
Abdekader Fantay	7	1	2	1	3	5	2	2	17
Ali Melkamu	5	2	1	2	1	2		1	10
Dubale Wube	8	3	1	1	4	10	2	6	10
Wube Suleyman	5	2	1	1	1	3		1	5
Atalele Ishetye	6	3	1	1	1	4	1	2	10
Hassan Mohamed	7		1	1	2	4	2	2	10
Ahmede Mohamed Aman	9	1	1	2	3	10	2	3	18
Alemu Hassan	7	2	2	1	2	4	1	2	20
Mohamed Ishetye	7	2	3	1	1	3	1		5
110 Adem Ishetye	10		2	2	2	10		3	15
Biadgilin Suai	3		1	1	2	6		3	8
Ali Worku	6			1	1	2		1	8
Mohamed Takele	6	3	1	1	1	1		2	6
Mutari Seyd	5	1	2	1	1	5		1	2
Asanu Seyd	7	3	2	1		3			
Habib Golentaw	9	3	4	1	3	15	1	3	40
Hussen Hassan	12	3	4	2	5	11	5	9	70
Anja Adela	1			1	1	2			11
Biwota Kebede	2			1	2	8		4	4
120 Ferede Habib	3		1	1		3			
Ibre Laka	8	3	2	1	2	3		2	5
Yenus Kassa	7	2	3	1	2	6	1	3	15
Total 122	742	229	223	141	181	597	99	198	1490