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Beiheft 5 zum Jahrbuch der
Geographischen Gesellschaft
von Bern – 1978

GEOGRAPHICA BERNENSIA G8

Simen Mountains – Ethiopia
Volume I

Cartography and its Application for Geographical and Ecological Problems

Edited by B. Messerli and K. Aerni

Maps

P. Stähli and M. Zurbuchen: Two Topographic Maps 1:25 000
"Simen Mountains National Park", Ed. 1977
"Debark", Ed. 1977

P. Stähli: "Changes in Settlement and Land Use in Simen, Ethiopia, from 1954 to 1975", 1:17 500

R. Nägeli: "Debark – Functional Structure of an Ethiopian Market Town", 1:2000

"Debark – Growth of Settlement and Forest between 1964 and 1976", 1:5000

H. Hurni: "Soil Erosion, Upper Jinbar Valley, Simen-Ethiopia", 1:25 000

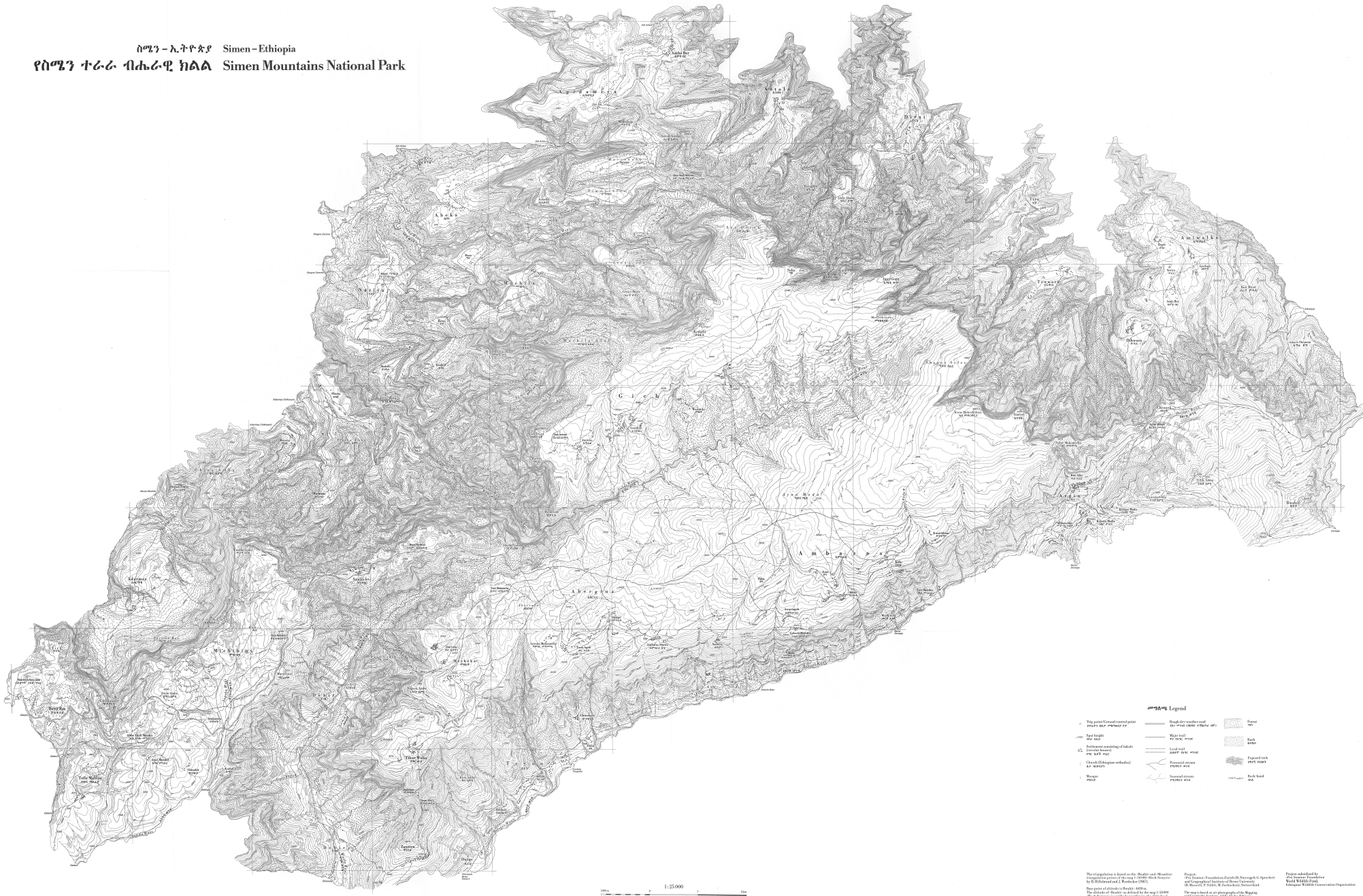
K. Aerni: "Simen (Ethiopia) – Panorama Imet Gogo 3926m"

Contribution of the Commission on Mountain Geoecology (International Geographical Union)

Geographisches Institut der Universität Bern 1978

ስሜን – ኢትዮጵያ Simen – Ethiopia

የስሜን ተራራ ብሔራዊ ክልል Simen Mountains National Park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Tekur Walda
Tsebel
Tsetse Mariam
Hoshet Bar
Kaamos
Dagna
Dagna Arq
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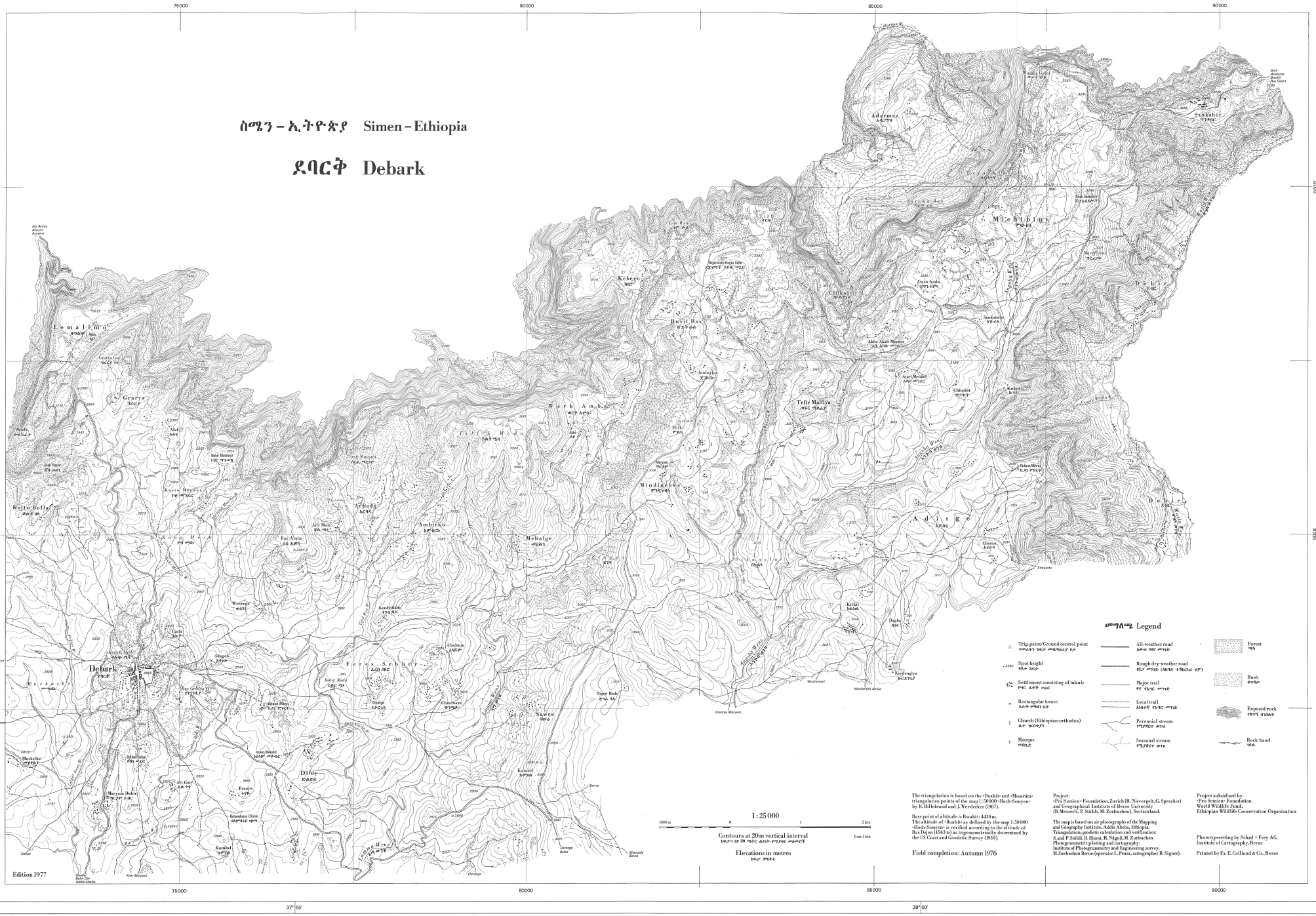
Tsemaro
Arqura
Dibwana
Beshit

ስሜን – ኢትዮጵያ Simen – Ethiopia

ደባርቅ Debark



መግለጫ Legend

- Trig. point/Ground control point
- Spot height
- Settlement consisting of tukuls
- Rectangular house
- Church (Ethiopian-orthodox)
- Mosque
- All-weather road
- Rough dry-weather road
- Major trail
- Local trail
- Perennial stream
- Seasonal stream
- Forest
- Bush
- Exposed rock
- Rock-band

1:25000

Contours at 20 m vertical interval

Elevations in metres

The triangulation is based on the «Buahit» and «Mesarira» triangulation points of the map 1:50000 «Hoch-Semyen» by H. Hillebrand and J. Werdecker (1967).

Base point of altitude is Bwahit: 4430 m.
The altitude of «Buahit» as defined by the map 1:50000 «Hoch-Semyen» is verified according to the altitude of Ras Dejen (4543 m) as trigonometrically determined by the US Coast and Geodetic Survey (1959).

Field completion: Autumn 1976

Project:
«Pro Semien» Foundation, Zurich (B. Nievergelt, G. Sprecher) and Geographical Institute of Berne University (B. Messerli, P. Stähli, M. Zurbuchen), Switzerland.

The map is based on air photographs of the Mapping and Geography Institute, Addis Abeba, Ethiopia.
Triangulation, geodetic calculation and verification: S. and P. Stähli, H. Humi, R. Nägeli, M. Zurbuchen
Photogrammetric plotting and cartography: Institute of Photogrammetry and Engineering survey, M. Zurbuchen Berne (operator L. Pessa, cartographer R. Signer).

Project subsidised by
«Pro Semien» Foundation
World Wildlife Fund,
Ethiopian Wildlife Conservation Organization

Phototypesetting by Schad + Frey AG, Institute of Cartography, Berne

Printed by Fa. E. Collioud & Co., Berne

CHANGES IN SETTLEMENT AND LAND USE IN SIMEN, ETHIOPIA, FROM 1954 TO 1975

Buildings
- built

Cultivated Land
- cultivated – before 1954 in the eastern part of the map (Argin, Amiwalka, Dihwara, Truwata, Tija)
- – before 1964 in the western part of the map (Gich, Abergina, Ambaras)

Increase
- built — cultivated land added 1954 to 1964
- built — cultivated land added 1964 to 1975

Decrease
- removed — abandoned 1954 to 1964
- removed — abandoned 1964 to 1975
- built removed — land cultivated 1954 to 1964 and abandoned 1964 to 1975

Location of settlements and cultivated land

1954 | 1964 | 1975

eastern part

western part

- Settlement consisting of tukuls (circular houses)
- Church (Ethiopian-orthodox)
- Mosque
- Major trail
- Local trail
- Perennial stream
- Seasonal stream
- Forest
- Bush
- Grass-steppe
- Exposed rock
- Rock-band
- National Park boundary

1:17 500

0 — 1 km

Contours at 20 m vertical interval.
Elevations in metres

This map is based on:
– the topographical map 1:25 000 Simen Mountains National Park, Geographical Institute of Berne University. (Fieldsurvey 1975: H. Hurni, P. Stähli)
– air photographs (1964) of the Mapping and Geography Institute, Addis Abeba, Ethiopia
– terrestrial photographs (1954) of J. Werdecker, Geographical Institute of the TH Darmstadt, Germany.

Project: P. Stähli

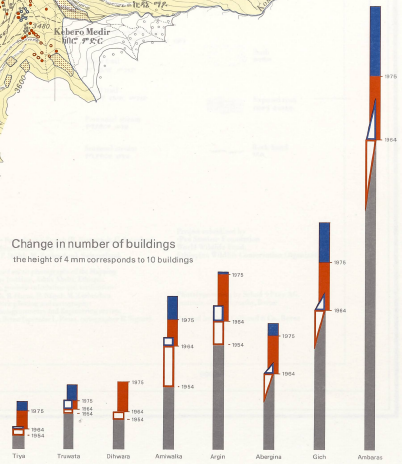
Cartography: Th. Baumann

© 1977 Geographical Institute of Berne University

Printed by Fa. E. Colliaud & Co., Berne

Change in number of buildings

the height of 4 mm corresponds to 10 buildings



KEY FOR TOPOGRAPHIC SITUATION

- Fence of brushwood or tin
- Minor Road or Path (schematically surveyed, no classification)
- Perennial Stream
- Seasonal Stream
- Eucalyptus-Forest
- Contour, Interval 10 metres

SIMEN-DISTRICT (AWRAJA) – ETHIOPIA

DEBARK – Growth of Settlement and Forest between 1964 and 1976

1 : 5000

Ruedi Nägeli · Institute of Geography · University of Berne · Switzerland

N

KEY FOR VARIATIONS OF SETTLEMENT AND FOREST

- Rectangular or round Houses existing in 1964
- Houses constructed between 1964 and 1976
- Houses broken down between 1964 and 1976
- Eucalyptus-Forest existing in 1964 and 1976
- Eucalyptus-Forest cleared between 1964 and 1976
- Eucalyptus-Forest afforsted between 1964 and 1976

Scale 1 : 5000

0 100 200 300 400 500 m

SOURCE MATERIALS

Topographic situation after an aerial photograph of The Mapping and Geography Institute (Addis Ababa, 1964), based on a triangulation by P. and S. Stähli and H. Hurni, a photogrammetric interpretation by The Institute of Photogrammetry and Engineering Survey M. Zurbuchen, and a complete verification and revision in the field at the scale 1 : 2000 in 1976 by R. Nägeli.

Variations of settlement and forest after a comparison of the aerial photograph of 1964 and the field survey of 1976.

Cartography by R. Nägeli and M. Zurbuchen

Phototypesetting by Schad + Frey AG, Institute of Cartography (Berne)
Printed by Fa. E. Collioud & Co. (Berne)

The field work has been supported by The Theodor-Schenk-Foundation (University of Berne) and The Popularis Travelling Agency (Berne).

N. B. Because of the dense covering through forest in several parts of the aerial photograph, probably some houses have not been identified for the situation of 1964.

SIMEN-DISTRICT (AWRAJA) – ETHIOPIA

DEBARK – Functional Structure of an Ethiopian Market Town

1 : 2000 – Field work 1976

Ruedi Nägeli · Institute of Geography · University of Berne · Switzerland

KEY FOR TOPOGRAPHIC SITUATION

- Fence of brushwood or tin
- Minor Road or Path (schematically surveyed, no classification)
- Perennial Stream
- Seasonal Stream
- Eucalyptus-Forest
- 2840 — Contour, Interval 10 metres

SOURCE MATERIALS

Topographic situation after an aerial photograph of The Mapping and Geography Institute (Addis Ababa, 1964), based on a triangulation by P. and S. Stähli and H. Humi, a photogrammetric interpretation by The Institute of Photogrammetry and Engineering Survey M. Zurbuchen, and a complete verification and revision in the field at the scale 1 : 2000 in 1976 by R. Nägeli.
Construction and function of houses surveyed by R. Nägeli.
Cartography by R. Nägeli and M. Zurbuchen

Phototypesetting by Schad + Frey AG, Institute of Cartography (Berne)
Printed by Fa. E. Colliaud & Co. (Berne)

The field work has been supported by The Theodor-Schenk-Foundation (University of Berne) and The Popularis Travelling Agency (Berne).

N. B. The distribution of buildings and the different functions change over short periods of time, so that the situation shown here for 1976 does not necessarily prevaile today.

N

Scale 1 : 2000

0 50 100 150 200 m

KEY FOR FORMAL AND FUNCTIONAL IDENTIFICATION OF HOUSES

Construction

Chika-House, single or serial.
Usually made of wood and clay. Sometimes with foundation of stones, faced with tin or painted. Corrugated iron roof.

Gimb-House,
made of stones, bricks or cement.

House under construction

Tukul, made of wood and clay. Grass-roof.

Empty house

Functional Classification

Trade and Market

- Retail-Shop or Kiosk
- Store of Wholesaler
- Periodic Weekly Market
- Daily Market

Crafts

- Tailor
- Weaver
- Smith
- Butcher
- Barber
- Laundry
- Grinding-Mill

Hotels and Taverns

- Hotel
- Lodging
- Eating-House
- Tea-House
- Bar or *Arakî*-House
- *Tej*-House
- *Talla*-House

Public Services and Supply

- Public School
- MS Muslim School
- PRS Preparatory School
- P Post Office
- T Telecommunications
- H Health Station
- Mosque
- Power Station
- G Gasoline Station
- Public Well in use, out of use

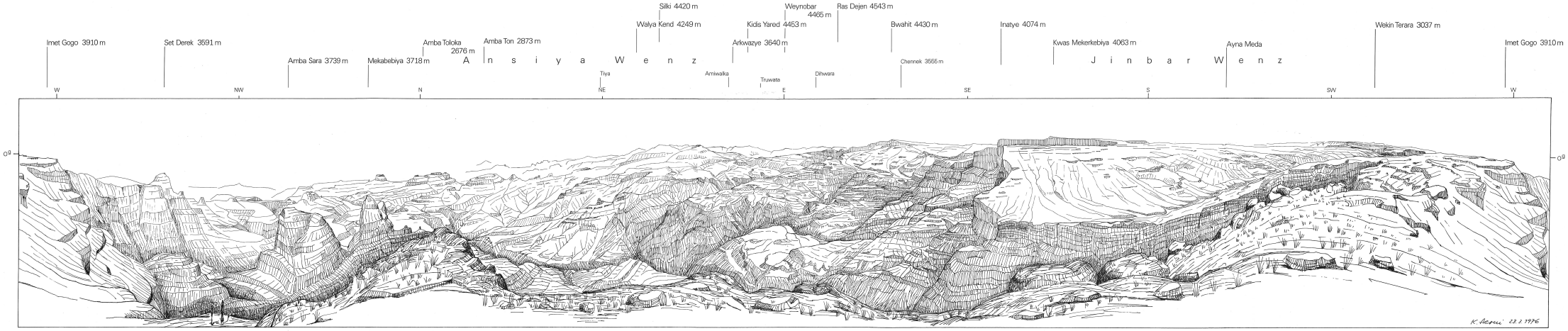
Administration

Administration Offices

1. Ministry of Education
2. EPID – Ministry of Agriculture
3. Ministry of Finance
4. Ministry of Land-Reform
5. Veterinary Department
6. District Governor
7. District Police
8. Subdistrict Governor
9. Subdistrict Court
10. Eastern Local Community
11. Western Local Community
12. Weaver Association
13. Ethiopian Wildlife Conservation Organization (Store)

Living and Various

Living-House, usually with kitchen.
These units may include some functions which cannot be surveyed correctly, such as basket-making, spinning, temporary store, temporary stable etc.



SEMIEN (Äthiopien) – PANORAMA VOM IMET GOGO 3926 m

Standort: 38° 9' östl. Länge, 13° 17' nördl. Breite

SIMEN (Ethiopia) – PANORAMA IMET GOGO 3926 m

Soil Erosion

1:25000

Upper Jinbar Valley
Simen – Ethiopia

Hans Hurni
Institute of Geography
University of Berne

Cartography:
Ingrid Haack
Department of Cartography
Swiss Federal Institute of Technology Zurich

Field completion: 1974

Imet Gogo
3926.0

Kedadit
3759.7

Gich Camp
3588.1

Gich

Gidir Got
3427.5

Jinbar

Wenz

4063.0
Mekerkebiya

Damaged spots

- Rock completely denuded
- Soil horizons mixed through ploughing (not shown in extremely damaged areas)
- Accumulations

Spots damaged by cattle

- Eroded paths
- River crossings damaged down to the brown horizon
  - Surface < 200m²
  - Surface > 200m²
- River crossings damaged down to the rock
  - Surface < 200m²
  - Surface > 200m²
- Watering place
  - damaged down to the brown horizon
  - damaged down to the rock

Gullies

Gullies on convex or straight slope forms
- into black horizon
- to rock

Gullies on concave slope forms
- into black horizon
- to rock

Barley fields

Damage dimensions of soil erosion

Percentage of a unit area with intermixed and/or eroded soil horizons

- greater than 60% : extremely damaged
- 40–60% : heavily damaged
- 20–40% : moderately damaged
- less than 20% : lightly damaged (Black horizon depth is sufficiently coherent to be presented areawise)

Depth of the black horizon in woods and grassland and in lightly damaged barley fields

- < 40 cm
- 40–60 cm
- 60–80 cm
- > 80 cm

Woods and Grassland

- Uncultivated areas (without severe soil erosion)

Black horizon depth at sample points (soil in natural equilibrium)

- < 40 cm
- 40–60 cm
- 60–80 cm
- > 80 cm

Ideal profile (Andosol)

- Black horizon
- Brown horizon
- Basaltic rock

[cm]
0 – A–horizon
70 – Boulders. Erosion surface
B–horizon. (Stones and boulders in matrix)
95 – Locally heavily weathered basaltic rock