

# Kaleidoscope of Swiss Cartography

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# KALEIDOSCOPE

of Swiss Cartography



# KALEIDOSCOPE

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## of Swiss Cartography

by Markus Oehrli

translated by Juliana Neumann  
edited by Stefan Räber



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The original German edition was published in October 2017 as “Kaleidoskop der Schweizer Kartografie” by Cartographica Helvetica, Murten, Switzerland.

An earlier version of the German text appeared on the “Map of the Week” blog, one of the Swiss contributions to the International Map Year 2015–2016.



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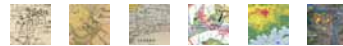
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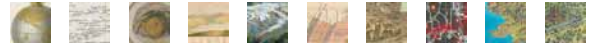
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# Swiss Society of Cartography SSC

The Oxford Dictionary's definition of the Kaleidoscope is "a constantly changing pattern or sequence of elements" and its origins are "early 19<sup>th</sup> century: from Greek *kalos* 'beautiful' + *eidōs* 'form' + *skopē*". These are, I believe, perfect definitions of the wonderful publication which Markus Oehrli has lovingly put together for us. It is both a constantly changing journey through the history of Swiss cartography as well as a beautiful collection of 70 maps running from before the year 900 right up to 2019.

The interesting history of this publication can be found on the title page and is well worth a read as it places the origins firmly within the International Map Year 2015–2016 and as part of the Swiss celebrations of this event.

But back to this publication. When I was first invited to write a foreword, as newly elected SSC president, I was greatly honoured that both Markus and Stefan Räber (the editor) would value my humble opinion enough to include it within the English edition of this publication which is now to be part of our 50<sup>th</sup> anniversary celebrations.

Browsing through the publication one can not help but being drawn into each and every map as they are not only artistically attractive but also utterly captivating, especially to a map lover as myself. Though again you don't have to be a cartography or even a map lover to gaze in awe over these wonderful depictions. As the famous saying goes "A picture is worth a thousand words" and although there is a clear and interesting text to accompany each of the maps, the centre of attention remains firmly with the map itself.

I first thought I would select my favourite three maps and write why I had selected these, but I soon had to give up this idea completely as after an hour of carefully contemplation and deliberation I had not even managed to select a single map. The whole hour had disappeared, and I was just going backwards and forwards from map to map enjoying the skills of the authors and admiring the cartographic techniques they had chosen and masterly applied.

Perhaps the best way to enjoy these masterpieces, though certainly not the only way, is to sit down and relax with a glass of your favourite tippie, good lighting and just enjoy map after map. Whether it be the strangeness of the T-O map from pre-900, depicting Asia, Europe and Africa or the beautiful hill shading from the famous Eduard Imhof from 1982. A further firm favourite of mine must be the bird's-eye view of Basel from 1642, working in the modern-day GIS world we have recently been swamped with the "new" 3D craze and yet here is a wonderful 3D depiction of the city of Basel with all its individual buildings and amazingly detailed individual trees. So much for 3D being *new*!

Let's now take a closer look at water features, I love water features. It's again a joy to scroll through the publication and view how the depiction of hydrological features changes from map to map from the beautiful river depiction in the colonial map of Virginia from 1737 to the handsome water lines shown in the district map of Montreux from 1877 were the lines give a water ripple effect almost remnant of waves and to think that these were all drawn by hand.

Well, I could just go on and on about various other features such as the labelling, which has often obviously been hand drawn, the colours used, or the symbol depictions, but I am only holding you back from turning the page and breathing in these wonderful maps for yourself.

So, without further ado I will restrain myself and wish you as much pleasure as I had when looking through this wonderful collection. Thank you, Markus, for once more bringing this carefully chosen collection of maps to our attention and let us all once more enjoy these wonderful pieces of art.

I wish you all every enjoyment and if you would like to meet the author, editor or myself and exchange your own thoughts about any of the maps, then we would love to see you at any forthcoming SSC event, you're all more than welcome.

— Mark Wigley, SSC President

# The Kaleidoscope of Swiss Cartography

### About This Publication

National and international awareness regards Switzerland as a veritable map country. Since Konrad Türist drew Switzerland's first map in 1495/97, it is estimated that tens of thousands of map titles have been added. These include unique, hand-drawn works of art as well as everyday maps printed in large quantities. There are large-format wall maps and small infographics in book margins, monochrome and multicolored maps, topographic and thematic maps on almost every aspect of human knowledge. Iconic maps, frequently depicted and quoted, stand next to a plethora of completely forgotten works.

A selection of 70 such cartographic documents from Switzerland was presented on the blog "Map of the Week" between August 2015 and December 2016. This blog offered interested amateurs as well as experts a profound and sometimes surprising look at Swiss cartography. The public's response to this campaign by the Swiss Society of Cartography (SSC) was gratifying. Simultaneously, several of the objectives of the International Map Year were achieved: to present various cartographic products and map types, to show the development of map technology and to talk about maps, cartography and their utilization.

In October 2017, Cartographica Helvetica published and printed an updated and revised edition with the title "Kaleidoscope of Swiss Cartography". As this edition (as well as the blog) was published in German, the SSC decided to have all entries translated into English. You are holding the result in your hands. It is of no coincidence that the publication year is 2019: it is the year the SSC celebrates its 50<sup>th</sup> anniversary and in July 2019, the international cartographic community will meet at the General Assembly and Conference of the International Cartographic Association ICA. And so we come full circle as it was the ICA that initiated the International Map Year four years ago.

### Selection Criteria

70 cartographic documents that are either by Swiss authors or were released by a Swiss publisher are presented. Among the map authors are public authorities, universities, cartographic companies, map publishers, and engineering companies as well as non-cartographic organizations and institutions. In addition to trained cartographers, a pastor, a spy and an artist, among others, make an appearance. The oldest map dates back to the 9<sup>th</sup> century and the newest is from 2019.

Another selection criterion was the regional balance. Each Swiss canton is represented at least once. In order to document the worldwide network of Swiss cartography, approximately one third of the presented maps show an area outside of the country's borders. Subterranean and extraterrestrial maps and even imaginary places are presented as well. With regard to map types, the spectrum ranges from topographic to various thematic maps and map-related representations.

In general, not only "map monuments" with comprehensive literature are presented. Instead, less common maps, which can also be seen as examples typical of their time, are also introduced. However, the selection of maps is ultimately random and subjective. Therefore, the relatively small sample cannot provide a complete history of Swiss cartography but should rather be seen as a kaleidoscopic picture that reveals new patterns at each turn. In this issue, the maps are sorted by topic and therein in chronological order.

### Commentaries

Each map is not only displayed, but also self-contained and briefly explained. There is no continuous narrative. A complete historical classification and elaborate cross-references are also not to be expected in this context. For this reason it is also not necessary to read the texts in a certain order to be able to understand them. Each text provides an insight into the world of mapmaking. Some commentaries try to question the current understanding of maps and cartography. And where it is appropriate, a funny or absurd detail is highlighted and should not

be taken too seriously. The narrative technique also provides amusement: in addition to descriptive texts, there is, for example, a recipe for a relief map and letter to a groundbreaking map author. Thanks to a “stream of consciousness” you are right in the middle of all the action during the national cycling race of 1950.

Technical map details are shown in the captions. These include: complete title proper and other title information, statement of responsibility, edition statement, map scale, place of publication, publisher, date of publication or date of manufacture. The copyright holder is identified for new maps and the possessing institution and call mark are named for older maps. Where available, a link is given to a repository or the portal where the map can be found. The map ratio is only noted if the map is not shown at the original scale. For general geographic orientation, a small location map is shown at the top right of each page.

Although the comments do not claim to be scientific, they have been researched to the best of our knowledge and conscience. For this edition, all texts have been reviewed, complemented and updated. A maximum of three references per map can be found at the back in the chapter “Further Reading”. All URLs were last checked on June 30, 2019.

■ Further Reading: page 78

## Acknowledgements

- Stefan Räber, longstanding and thus well networked secretary of the Swiss Society of Cartography. He was the initiator of the blog “Map of the Week” 2015–2016 and is the editor of this English edition.
- Juliana Neumann, cartography engineer. She has superbly mastered this demanding translation.
- Mark Wigley, current president of the Swiss Society of Cartography. He has kindly written the spirited foreword.
- Hans-Uli Feldmann and Thomas Schulz, former presidents of the Swiss Society of Cartography. They strongly promoted the 2017 German edition.
- Jost Schmid, Head of the Maps and Panoramas Department at the Central Library, Zurich. Most of the old maps shown here come from this map collection, one of the largest in Switzerland.
- All cartographers who produced the maps presented here and actually made this kaleidoscope possible.
- All cited researchers upon whose documentations the author was able to build. It goes without saying that the author assumes responsibility for all errors and mistakes, should any remain in the text.

## About the Author

Markus Oehrli is a cartographer and librarian. He has published various works on the history of cartography including “German War Maps of Switzerland, 1939–1945” (Murten 2014). He was a co-organizer of the 22<sup>nd</sup> International Conference on the History of Cartography, Bern 2007.

[d-nb.info/gnd/136328075](https://d-nb.info/gnd/136328075)



## The World Isn't Flat

Once upon a time after the great Flood: according to the Bible, Noah sent his three sons out to settle in the three continents: Shem went to Asia, Ham to Africa and Japhet to Europe. They lived there for many years, were fertile and multiplied. Now let's jump to the early 5<sup>th</sup> century. It was during this time that Bishop Augustine of Hippo wrote "The City of God" in which he described the exact size and location of the continents. Asia filled half of the world and was located in the east. The other two continents, Europe in the northwest and Africa to the southwest, consisted each of a fourth. Surrounding everything was a big ocean. In the 7<sup>th</sup> century, another bishop, Isidore of Seville, collected ancient knowledge. With "The Etymologies" he created one of the most read and quoted texts of the Middle Ages. He appropriately inserted a schematic map of the world for clarification. The three continents are separated by a T-shaped body of water formed by the Don and Nile rivers and the Mediterranean Sea. The big ocean is in the shape of an O. This is why this type of map is known as a T-O map. There are many medieval copies of Isidore's text and map. One of the copies was made in the second half of the 9<sup>th</sup> century in the Abbey of St. Gallen. In the 14<sup>th</sup> chapter there is also the map of the world which abides to the authorities Isidore, Augustine and ultimately the Bible. Unfortunately, it isn't known which monk of the abbey made the drawing. Nevertheless, this map is one of the oldest existing maps that was produced on Swiss soil. Yet, many experts hesitate to call this depiction a map at all as this representation is obviously neither conformal nor equidistant or equivalent. It is also obvious that geographical knowledge is shown in a very generalized manner. Also: even in the supposedly dark Middle Ages the world wasn't flat even though the T-O map suggests this. However, the monks lacked knowledge of projection theory and drawing in perspective. Both techniques weren't known to central Europe until several hundred years later.

■ Further Reading: page 78



[T-O map]. [Drawing by an anonymous monk of the Abbey of St. Gallen]. [Second half of the 9<sup>th</sup> century]. (St. Gallen, Stiftsbibliothek, Cod. Sang. 236, p. 89. Also online: [e-codices.unifr.ch/en/csg/0236/89](http://e-codices.unifr.ch/en/csg/0236/89). CC BY-NC). Figure 50% reduced.



## Vive La République!



Plan des communes d'Hermance et Corsier. Levé par J.R. Mayer; Lith. de Spengler & Cie. 1:15 000. In: Plans des communes de la république et canton de Genève. Genève: chez J. Barbezat & Cie. imprimeurs libraires, 1828–1831. No. 19. (ZBZ, Atl 4009, No. 19). Figure (left) 10% reduced, whole map (top) 85% reduced.

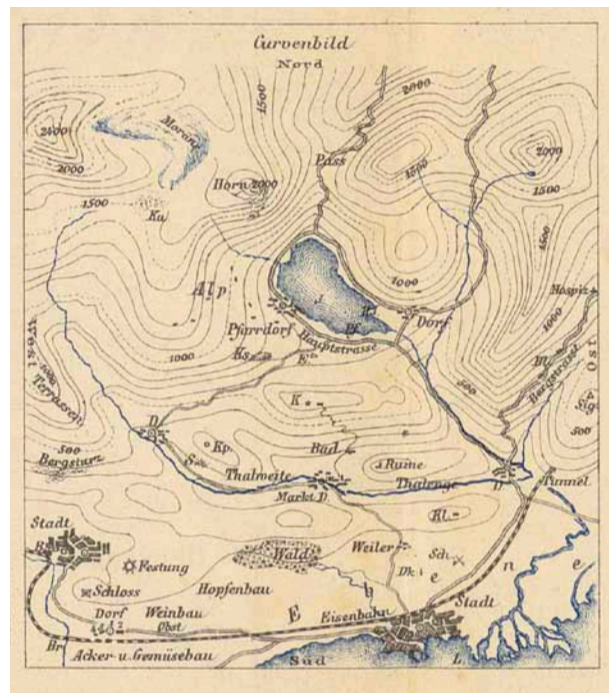
Have you heard of the Hermance peninsula north of Geneva? On the outermost point lies the tranquil fishing and farming village of the same name. Today, the coast on the left side of the map is lined with villas all the way to Geneva's city limits where diplomats and wealthy people from all over the world reside. The other coast with its charming bays is, on the other hand, not at all coveted because ...

Well, there is no coast, and Hermance isn't a peninsula although the map seems to depict just that. Only after looking at the whole map is it possible to clear the misconception: the bordering municipalities and territories were colored in order to differentiate them. Unfortunately, the anonymous colorist chose the same blue tone for the lake and the bordering country. He thereby violated the cartographic rule of treating same things equally but different things differently. The unintentional

result created the Hermance peninsula. In contrast to the colorist, the surveyor Jean-Rodolphe Mayer (1805–1882) was a master of his trade. Both his father and grandfather surveyed on behalf of the Geneva authorities. But then world history intervened. After Napoleon's final defeat in 1815, France and Sardinia-Piedmont adjudicated numerous villages and hamlets, amongst them Hermance. As a result, the canton finally controlled a contiguous territory and a land connection to the Swiss Confederation. A comprehensive topographical survey became inevitable for which young Jean-Rodolphe Mayer was hired. Between 1828 and 1831, he resurveyed all municipalities within the canton. Mayer drew 25 detailed maps and a general reference map which were reproduced and bound into an atlas. The canton of Geneva thus possessed a very representative and useful overview of the new borders.

## Are You Game?

What are you currently reading? Or said differently: Which characters is your reading material made up of? If you break this text down into its individual parts, only letters and punctuation remain. But every day you “read” many other things, too, e.g. numbers, symbols, pictograms, pictures, faces. Maybe you can also fluently read musical notes or maps. Are you unsure about reading maps? Reading maps is easier than you think even though the cartographic “alphabet” easily includes over a hundred different characters or symbols. We recommend consulting the legend first. Symbols for lakes, forests, large cities, etc. are easy to understand. You can almost bet that a lake is represented on maps as a blue area — worldwide. This is simply because water is more or less blue in people’s minds. The linear elements are also easy to grasp. Blue lines, obviously, often stand for rivers and streams, double black lines are for example streets while lines with a larger curve radius are railroad lines. Depending on the type of soil contours are representing, they can be brown, black or blue. Point symbols on topographic maps which represent smaller objects are the most difficult to interpret. Examples are small circles with a dot in the middle (churches), crosses (cemeteries), jagged arrows (antennae), and blue rectangles (swimming pools). There is no limit to the imagination which makes the design of comprehensible and logical symbols an art in itself. Today, map symbols are usually shown in a simple list, but there have been repeated attempts to design the legend as a small, separate map. The geography teacher Johann Sebastian Gerster (1833–1918) took it one step further on his maps used in schools. At the bottom of each map he placed three small representations: a bird’s-eye view, a contour map (Figure) and a map with hachures. Gerster thus succeeded in creating a miniature introduction to map reading. The city lies naturally at the edge of a large lake. Various types of villages with parish churches and markets are in the surrounding areas. There are also single objects such as a castle, a fortress and a guesthouse. A forest, a landslide and a glacier are also included. The fictive map certainly invites you to add further details. Several cartographers attribute their choice of profession to the blissful drawing of fictive maps during elementary school. And some continue to draw maps of fantasy worlds to this very day!



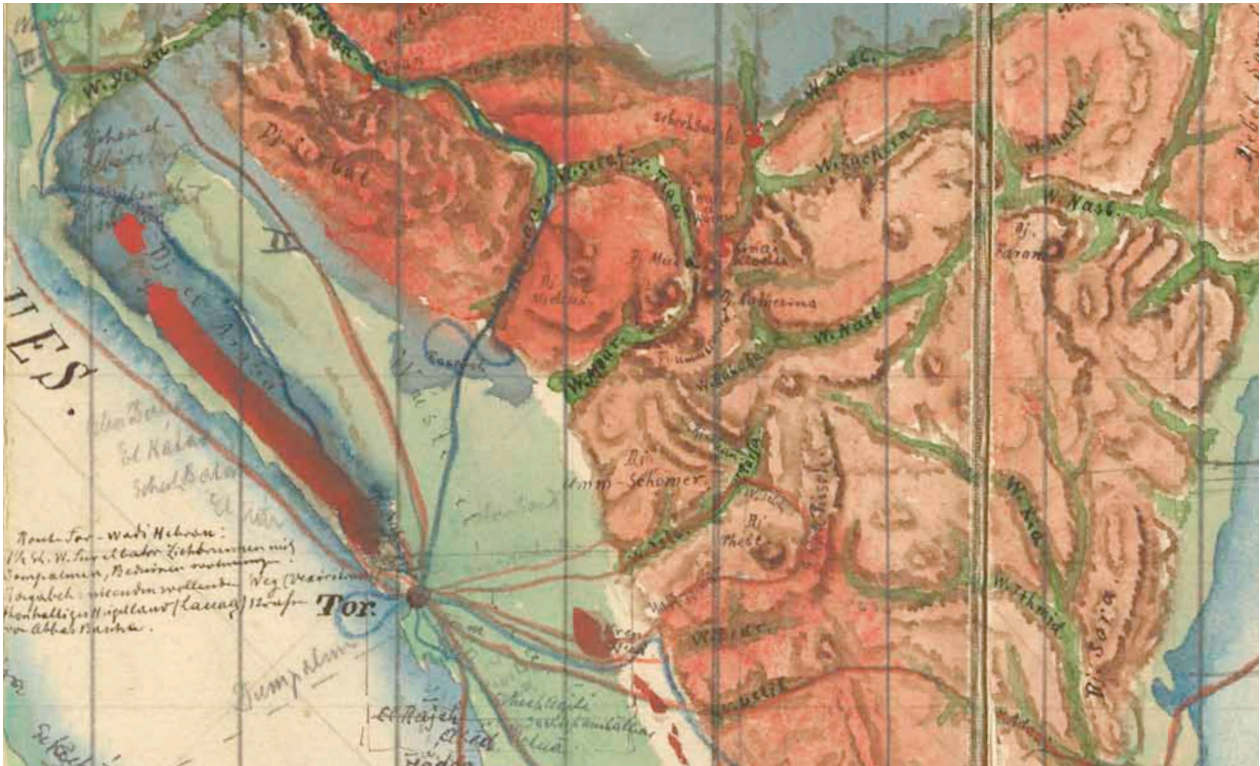
*Curvenbild. In: Schüler-Handkarte des Kantons Solothurn. Von J.S. Gerster. 1:200 000. Zürich: Hofer & Burger graph. Anst., 1886. (ZBZ, 16 Jo 06: 1. Also online: [doi.org/10.3931/e-rara-33684](https://doi.org/10.3931/e-rara-33684)). Figure 10% enlarged.*

■ Further Reading: page 78





## 40 Years in the Desert



*Orientirungs-Karte vom Sinai. [Author:] A. Kaiser. 1:770 000. [c. 1887]. (ZBZ, MK 2225. Also online: [doi.org/10.7891/e-manuscripta-16054](https://doi.org/10.7891/e-manuscripta-16054)).*

Today, hardly anyone remembers Alfred Kaiser (1862–1930) from Arbon on the southern shore of Lake Constance. There isn't even an article about him in the Historical Encyclopedia of Switzerland despite the fact that he was one of the most important European researchers of the Sinai peninsula. Between 1886 and 1927, Kaiser traveled often and sometimes for months through Sinai. He literally collected everything he could lay his hands on. 615 sheets contain geological notes, Sinai place names were written on 98 sheets, historical information fills five fat notebooks and several folders, and data on flora and fauna is nearly unfathomable. Kaiser also made numerous sketch maps and panoramas. Thanks to lectures and publications his reputation grew rapidly. At the turn of the century, Kaiser, only 30 years old, was considered an expert on the history and geography of the peninsula. Unfortunately, he wasn't able to publish the planned comprehensive monograph of Sinai. The remaining sketch maps and diaries provide a

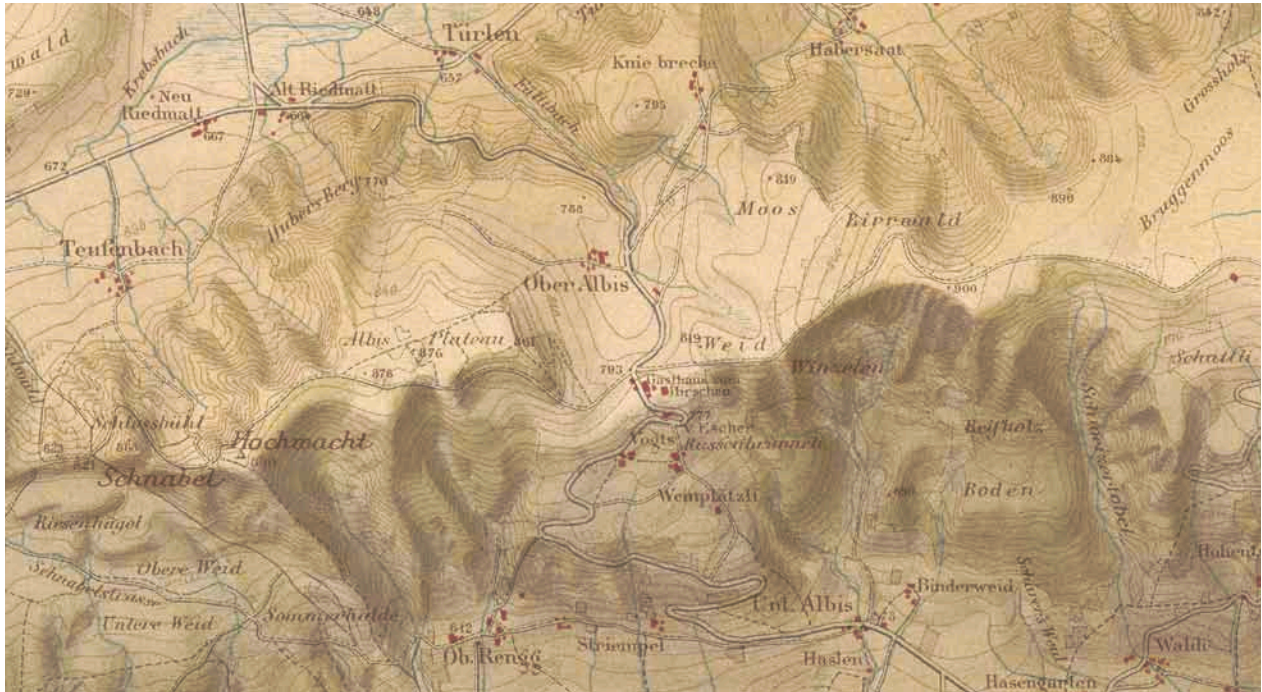
good idea of what Kaiser's travels looked like. His most important base on the peninsula was the city of at-Tur. From there he was able to reach Mount Sinai and the famous Saint Catherine's Monastery. While traveling Kaiser repeatedly sketched panoramas, noted place names, and collected plants and insects. He also made sure to know about papers written and maps drawn by his predecessors. In order to be able to communicate with the locals, Kaiser learned Arabic and for practical reasons converted to Islam. When he wasn't busy in Sinai, he could be found in Egypt, Sudan, Abyssinia, British East Africa or even Cameroon. Kaiser left behind sketches from all of these places. A biography about this extraordinarily versatile natural scientist is long overdue. There is no shortage of information: in the Central Library in Zurich the material consists of eight running meters.

■ Further Reading: page 78





## Let There Be Light!



Reliefkarte der Albiskette: vom Uetliberg bis Albishorn. Bearbeitet ... mit Nachträgen 1889; entworfen v. F. Becker. 1:25 000. Zürich: Hofer & Burger, 1889. (ZBZ, 4 Kg 06: 1 Expl 2. Also online: [doi.org/10.3931/e-rara-26827](https://doi.org/10.3931/e-rara-26827)).

Fridolin Becker (1854–1922) wanted clarity. The tools used to make a good and comprehensible map should be obvious. His forte was terrain representation. As an employee at the Swiss Topographical Bureau, he campaigned for better rock representation in the “Siegfried” map series. Where some colleagues only saw rocks, he recognized pinnacles, needles, pulpits, walls, slabs and more. Such elements should be recognizable and individually represented. Becker’s ideas were good and the word spread. At young age he became a professor at the Polytechnic Institute in Zurich. Now he was able to train the next generation for his purpose and work on his own projects. He began by tending to relief maps. One example is the relief map of the Albiskette, published in 1889. The source of light seems to come from the upper lefthand corner. It caresses various terrain forms, breaks sharply at the edges and enhances plateaus and slopes. The reason given for the incidence of light from the top lefthand corner is usually that light from the opposite direction causes a so-called relief inversion: valleys seem to be mountains and vice versa. Every cartographer wants

to avoid this. The result is a light direction from the north-west which of course never occurs naturally in Switzerland. What does Becker do? He orients his map to the southwest. The upper lefthand corner is no longer north-west but rather south. Due to this trick Becker achieves two things: He doesn’t risk a relief inversion and at the same time the light source corresponds to natural sunlight at noon. Still, the artist and aesthete was probably not completely satisfied with the result. The fine, green color of the forested areas can’t compete with the dominant, brownish terrain representation. Shortly thereafter the same author published a map of his home canton of Glarus in which the two map elements harmonize better. At the same time Becker returned to orienting his maps to the north, well aware that a light source coming from the “wrong” direction was more likely to be accepted than a “wrongly” oriented map. In retrospect Fridolin Becker is regarded as a forerunner of appealing relief cartography.

■ Further Reading: page 78



## A Greek Drama



[Plane table survey sheet no. 2 of the *Carte du Mont Olympe (Thessalie)*]. 1:20 000. [1921]. (ZBZ, MK 507: 2).

Figures 25% enlarged.

Marcel Kurz (1887–1967) was a dazzling personality. Trained as a topographer he mostly traveled restlessly through the Alps and Himalayas as an alpinist, book and map author. His readers loved him, his colleagues were wary of him. If Kurz wasn't satisfied with a new publication, he could become very explicit. The drama concerning the Mount Olympus map even ended in court.

Act 1: In 1921, Kurz traveled to the Olympus mountain range. The highest mountain in Greece wasn't very accessible and hadn't been properly mapped until then. Kurz and a colleague surveyed and photographed the entire range. Back in Switzerland, the stereo images were restituted. After these procedures, lengthy detail work filled in the white spaces between the survey points.

Act 2: Kurz employed the topographer and cartographer Charles Jacot-Guillarmod (1868–1925) to finish the map and add the rock drawings. Jacot-Guillarmod, a difficult person in his own right, independently interpreted the task and the photos. For unknown reasons, the contour



*Carte du Mont Olympe (Thessalie)*. Dressée par Marcel Kurz; levé stéréophotogrammétrique (2–11 août 1921) par H. Bickel et M. Kurz; rochers par Ch. Jacot-Guillarmod; gravé au Service topographique suisse; gravé par A. Sommer et Ch. Bauer. 1:20 000. In: *Le Mont Olympe (Thessalie): monographie*. Paris: Éditions Victor Attinger, 1923. Annexe no 2. (ZBZ, 5 Dg 07: 1).

lines he drew in ink deviate strongly from the pencil guidelines. Here we show two of the many examples: Point 64 in the terrain depression is where Kurz had determined the height to be 2564 m above sea level. Jacot-Guillarmod drew the contour line with the elevation 2520 m above that spot height. It's easy to compare the inked lines with the pencil lines. Similarly, the contours for 2580 and 2600 are directly below and above Point 31 (2631 m) which is of course complete nonsense.

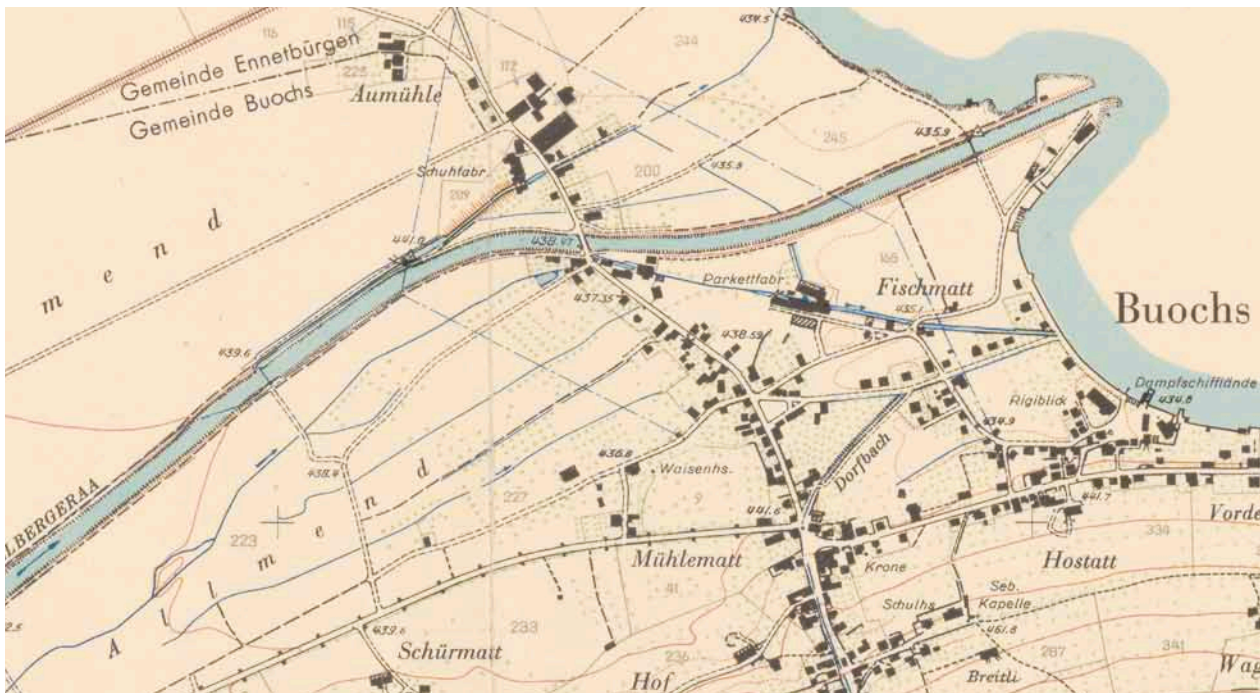
Act. 3: The new and strongly shifted contour lines appeared on the map printed in 1923. Most of the elevation points are missing on the final map. A map reader who wasn't familiar with the topography wouldn't notice anything amiss. Kurz, however, was beside himself and sued Jacot-Guillarmod. But the defendant died before the verdict was read.—It is said that Mount Olympus is the seat of the gods and from there Zeus hurls lightning towards mortals.

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## Clear as Day



*Gemeinden Ennetbürgen und Buochs: Übersichtsplan. Originalmesstischaufnahmen J. Schwarzenbach; photogrammetrische Aufnahmen: Eidg. Vermessungsdirektion; photogrammetrische Auswertung: M. Zurbuchen und R. Helbling und E. Lips; Zeichnung und Redaktion: Jul. Schwarzenbach; photomech. Reproduktion und Druck: E. Aerni-Leuch. Nachgeführt bis Ende Dez. 1937. 1:10 000. [Stans]: Kantonale Vermessungskommission Nidwalden, 1937. (Schweiz. Grundbuchvermessung). (ZBZ, 5 Jr 07: 2).*

This map has many fathers. Two of them aren't even mentioned on it. One is the legislator who established the civil code in 1907, and therefore the legal basis for the general cadastral map as a product of topographical surveying. The other is the Swiss Army, which began building the Buochs airfield in 1937. For this project precise maps were needed. Now to the names which are mentioned on the edge of the map: The Federal Directorate of Cadastral Surveying systematically took aerial photographs; the leading photogrammetry offices of Max Zurbuchen (1888–1974), Robert Helbling (1874–1954) and Edwin Lips (1894–1947) restituted these; the local surveyor Julius Schwarzenbach (1881–1942) made some additions at the plane table, was in charge of the cartography and the final editing; the Surveying Commission of the canton of Nidwalden acted as publisher; the company Aerni-Leuch was responsible for the reproduction and printing. The fact that three offices were in charge of

the photogrammetry suggest an unusual urgency. Normally it wasn't particularly pressing. In 1909, the production period of the general cadastral map of Switzerland was estimated at 50 years, i.e. until 1959. In 1923, the Federal Council extended the period to 1976. However, in 2016, approx. 11% of the country still hadn't been surveyed to meet the federal cadastral standard. There are many reasons for this: decades of insufficient financing, unforeseen population growth and construction from the mid 20<sup>th</sup> century onwards, constantly increasing demands for accuracy and last but not least digitalization with new technical requirements. After World War II, monochrome general cadastral maps replaced multi-colored ones. The official cadastral survey data model was declared a standard in 1998. It allows any number of variations of the base map to be produced.

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# Shadows on the Moon



*Der Mond = The moon =  
La luna = La lune. 1:5 000 000.*

*Bern: Hallwag, 1967.  
© Hallwag Kümmerly + Frey.*

Due to the US space program, interest in maps of the moon boomed during the 1960s and 1970s. In Switzerland, the Hallwag company served this growing market by publishing a lunar map with a diameter of 69 cm. The selected map projection shows the moon as it is seen from earth. The edge of the moon is highly distorted and the backside isn't shown at all. Several hundred of the largest craters are labeled. From the early 17<sup>th</sup> century, these names were chosen by astronomers and cartographers, in which they proceeded to immortalize colleagues (and themselves). For example, the large crater *Ptolemæus* is named after the astronomer and cartographer Claudius Ptolemy (c. 100–180) and the much smaller crater *Rhaeticus* is named after Georg Joachim

Rheticus (1514–1574) from Feldkirch, Austria. Rheticus was a student of Nicolaus Copernicus and also a cartographer. On the map it is also possible to find the selenographic prime meridian which intersects with the moon equator southwest of the crater *Bruce* in the Central Bay (*Sinus Medii*). A note about the artistic presentation: The light for the relief shading comes from the west. At the same time, the map simulates a full moon: at the prime meridian it is noon, and at the crater *Bruce* the sun is in the zenith—thus shadows cannot be found there. In fact, this contradiction is not a mistake, but rather intentional. In comparison: Swiss topographic maps are illuminated from the northeast which never occurs in reality but which makes the maps easier to read.





# Alpenglow

Here is Professor Eduard Imhof's (1895–1986) recipe for a natural-looking relief map of Switzerland. Take lightfast and high-quality watercolors in the following shades: for the darkest shadows ultramarine with rose madder, for the medium and lighter shadows ultramarine, cobalt blue and cerulean, maybe with a little Paynes gray mixed in, for the flatter areas Rembrandt blue, on the highlighted side at the top a bright cadmium red, otherwise cadmium yellow, for firn fields and glaciers a pure opaque white and finally for all lakes cerulean with a touch of crimson. The topographic basis should have contours in light blue so fine they will kill your eyes and which have been copied onto thick true-to-size watercolor paper. These should be on four slightly overlapping sheets, dividing Switzerland into quarters. The same contours are also needed printed in black onto sheets of paper on which the thresholds of the hypsometric layers (400, 800, 1200 and 2000 meters above sea level) are marked. The tools needed are the finest watercolor brushes and a decent magnifying glass. A bright light can't do any harm, either. Let's begin: First, carefully add faint shadow tones. This should be repeated, but only as long as the fine blue contours can still be seen. If the overall picture is correct, use a suitable chemical to remove the contours. Don't worry, the watercolor won't smear. Now accentuate the main ridges, merge large forms together and apply a light blue haze here and there as atmospheric perspective suggests you do. Take care not to destroy the fine transitions between light and shadow and the halftones in the flatter areas. The tips of the bright sides are touched with a pretty sunset red, making sure these blend from lighter to darker according to the hypsometric layer. Carefully add a layer of cadmium yellow over the entire painting. Finally, garnish the glaciers with opaque white and the lakes as uniformly as possible with undiluted cerulean. The masterpiece is finished! Up to this point you can count on a several 1000 hours of work. Tip: In order to make this painting pleasing to the eye of the public, produce photographic color copies and have them skillfully joined in the overlapping areas. Professionals should be commissioned to engrave the rivers, the national border and add the inscription on the map border. It is encouraged to print the artwork with six colors. The relief map is shown to its best advantage framed and hung on a wall.

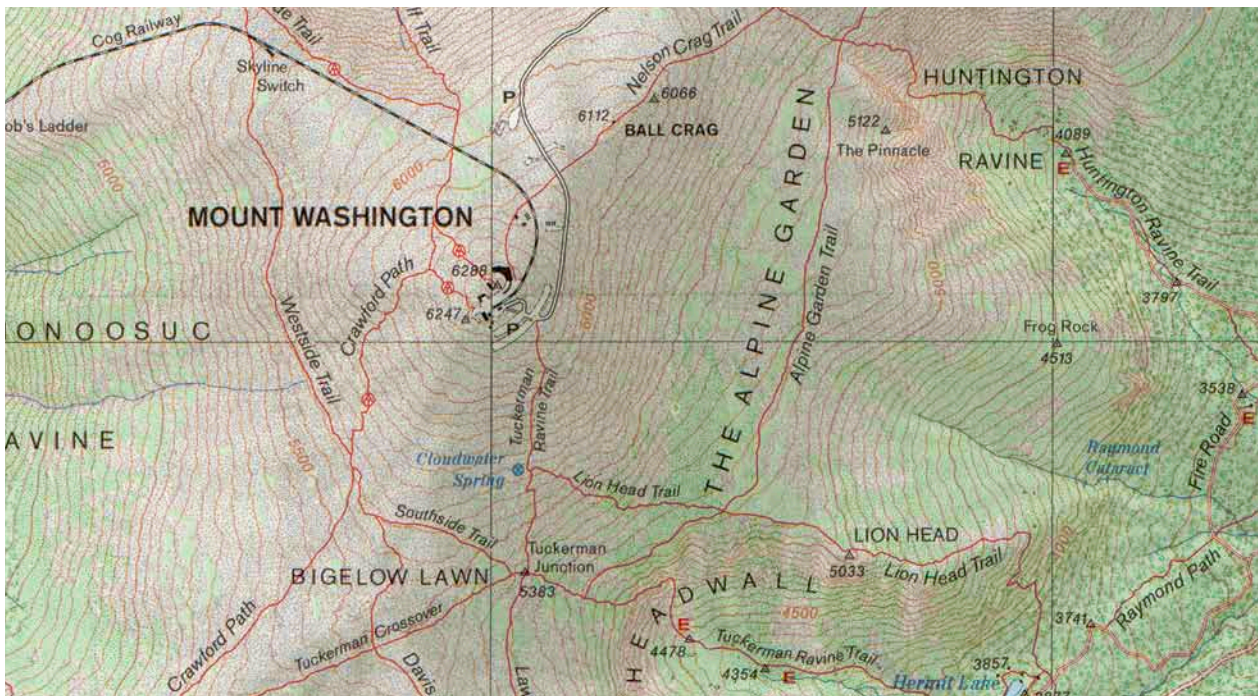


*Relief der Schweiz = Relief de la Suisse = Rilievo della Svizzera. Kartengemälde von Eduard Imhof. 1:300 000. Wabern: Bundesamt für Landestopographie, 1982. © Swisstopo. Figure 20% reduced.*

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## The Unknown Brother



*Mount Washington and the heart of the Presidential Range, New Hampshire. Surveyed and edited, 1978–1987, by Bradford Washburn; with the extraordinary assistance of Barbara P. Washburn [...] and over 100 other volunteers; photogrammetry and cartography by Swissair Photo & Surveys Ltd.; produced by Boston's Museum of Science; prepared for the Appalachian Mountain Club and the Mount Washington Observatory; printed by Orell Füssli & Co. 1:20 000. Boston, Massachusetts: The Appalachian Mountain Club, 1988. © Museum of Science, Boston.*

Mount Washington in New Hampshire is, cartographically speaking, Mount Everest's, Mount McKinley's and the Grand Canyon's unknown brother. Swiss made topographic maps exist for all four areas. This is no coincidence, but rather due to the American museum director and mountaineer Bradford Washburn (1910–2007). It is somewhat of a mystery why three of the maps became world famous while the fourth is scarcely known even amongst experts. Could it be the modest height of the mountain at only 1917 m above sea level? Is it the total lack of sheer cliffs, and resulting absence of rock representation, that leaves Swiss mountaineers indifferent? Or did the map get overlooked in the hype caused by the Mount Everest map which was also released in 1988? As a matter of fact, Mount Washington poses plenty of technical challenges. Its prominent position in the surrounding area acts as a notorious meteorological divide which is often the cause of extreme storms. When aerial

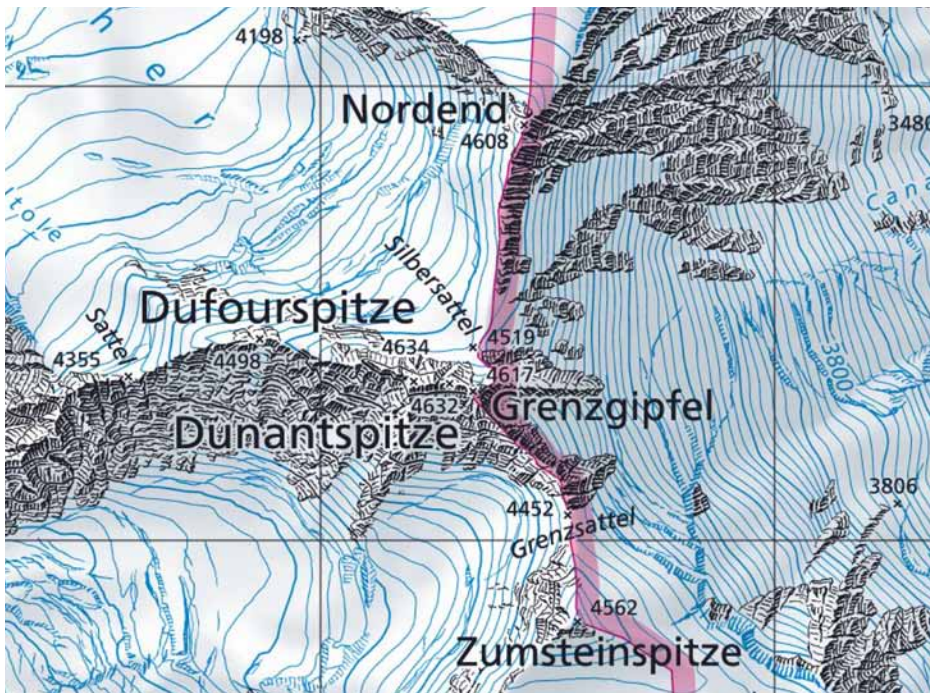
photographs are needed, such weather is of course a curse. These images can only be made at noon when the shadows are short and during calm and clear weather. For this reason, the preparation work for the map of Mount Washington lasted almost a decade. As with all of his projects, Washburn had exact notions as to the end result. In his youth, he became acquainted with the Swiss Alps and maps which he highly appreciated. Since then, he was convinced his maps must be made in the Swiss style. Therefore, the photogrammetry and cartography were appointed to the Swiss company Swissair Photo & Surveys Ltd. in Zurich. Orell Füssli, also based in Zurich, was responsible for the printing of the map. Although the map was met with little response in Switzerland, it was a huge success in the United States. It was even necessary to reprint it twice within a year.

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## The Highest Peak



Zermatt: Breithorn – Gornergrat – Dufourspitze.  
Stand des Karteninhaltes: 2015. 1:25 000. Wabern: Bundesamt für Landestopografie, 2017. (Landeskarte der Schweiz 1:25 000 Blatt 1348). Also online: [map.geo.admin.ch](http://map.geo.admin.ch).  
© Swisstopo. Figure 50% enlarged.

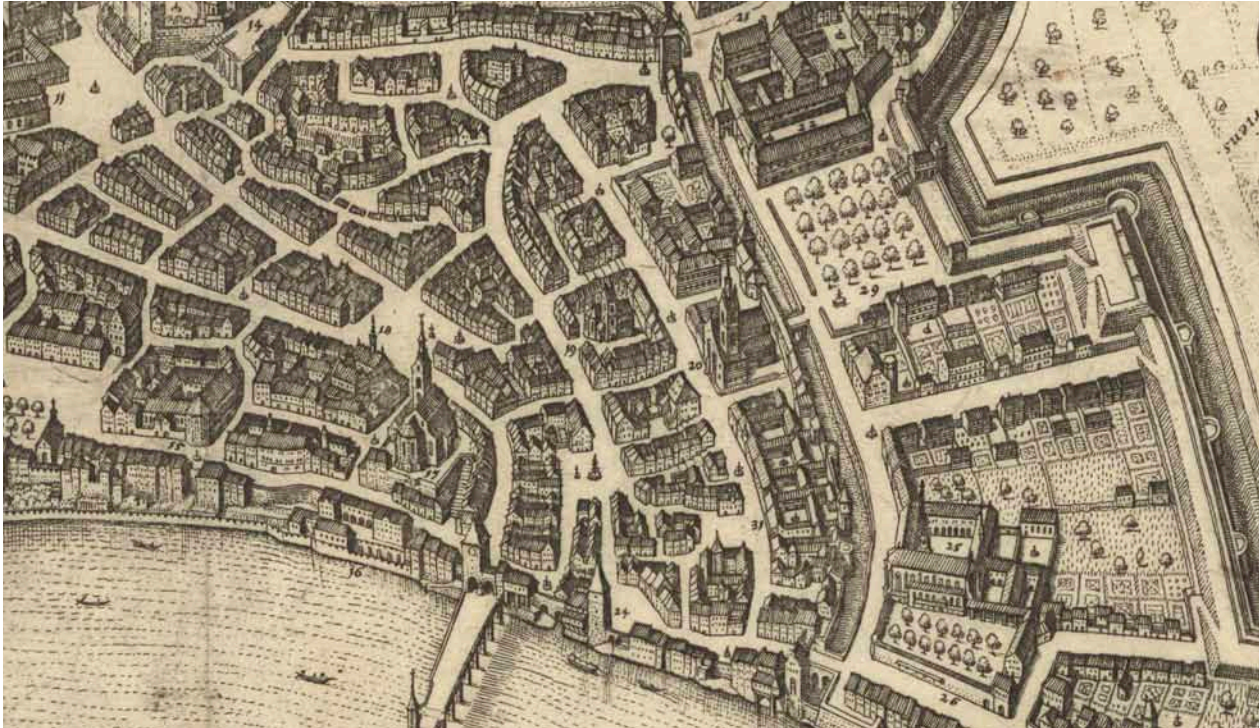
Until the mid 19<sup>th</sup> century it wasn't clear where the highest point in Switzerland was and which name it had. The mountain in question in the Monte Rosa massif on the border to Italy has two peaks with practically the same height. General Dufour's surveyors determined around 1860 that the peak to the west was the highest point, two meters higher than the peak to the east. Not even the local experts were able to clearly answer the question on the name of the peak. In order not to delay the publication of map sheet 24 of the topographic map series of Switzerland, the General decided to have the temporary name "Highest Peak" engraved in the copper printing plate. The printing ink was barely dry when prominent citizens petitioned to the Federal Council to name the highest peak "Dufour Peak" (Dufourspitze) in honor of the General and creator of the map. The government approved the request with unusual swiftness on January 28, 1863. Dufour was not only a general and engineer, but together with Henry Dunant co-founded the International Committee of the Red Cross in 1864. "This set the ball rolling that was to become a mountain", said the President of the Swiss Confederation 150 years later. To commemorate Dunant's important deed to world history, the municipality of Zermatt, the canton of Valais and the

federal government decided on October 6, 2014, from then on to name the previously unnamed eastern peak "Dunant Peak" (Dunantspitze). In order to underline the importance of the tribute, the Federal Office of Topography didn't wait the usual six-year cycle to map update. Before the end of the year 2014, an updated version of the map appeared on the federal geodata portal and we began to mull over it. Our first impression was this: The label "Dufourspitze" belongs to the spot height 4498 or maybe to 4634. Likewise, the label "Grenzspitze" could belong to the spot heights 4617 or 4632. But then, what is the height of the "Dunantspitze"? This is very confusing. Wouldn't it have been possible to sacrifice some of the less important spot heights and names in order to clarify the situation? Yes, if one doesn't mind the subsequent outcry due to the loss of important landmarks. Or would it be possible to use a smaller font size to indicate the lesser height of the "Dunantspitze"? Granted, this would lack all political tact. What a dilemma. It would be so easy for cartographers and map readers if the answer to the question "What is Switzerland's highest peak?" were simply "Highest Peak"!

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## The Ideal City



It is the year 1642, and Basel presents itself peaceful and fortified. Each house has a garden to cover the daily needs, traffic on the river brings in customs duties, the university and churches provide spiritual nourishment and thick walls protect belongings. But it is deceptive. It doesn't show people or animals, the stench in the alleyways, the fear of refugees, or the horrible war outside the city gates (which will be soon called the Thirty Years' War). Not all who live in Basel see doom in the future. The glass painter and etcher Matthäus Merian (1593–1650) for example can't complain. He runs a publishing house in Frankfurt am Main that is prosperous. The most important piece is the historical work "Theatrum Europaeum" with richly illustrated descriptions of the current course of war which satisfies people's need for news. In the meantime, Merian works on an even larger project, the "Topographia Germaniae". This is a 16-volume geographical description of the Holy Roman Empire which is to contain about 1700 drawings and bird's-eye views. One of them is the masterful bird's-eye view of Merian's home town, a smaller version of his large bird's-eye view published in 1615. For many smaller towns, the drawings in the "Topographia Germaniae" are the first published

*Basilea = Basel. [Author: Matthäus Merian]. 1:6000. In: Topographia Helvetiae, Rhaetiae et Valesiae: das ist, Beschreibung und eigentliche Abbildung der vornehmsten Städte und Plätze in der hochlöblichen Eydgnoßschafft, Grawbündten, Walliß, und etlicher zugewanten Orten. [Frankfurt am Main]: in Truck gegeben u. verlegt durch Matthaem Merian, 1642. (Basel, University Library, Kartenslg Schw MI 5a. Also online: [doi.org/10.3931/e-rara-14012](https://doi.org/10.3931/e-rara-14012)).*

illustrations ever. Merian's detailed illustrations and the texts written by travel writer Martin Zeiller make this work the most important illustrated city inventory of the time. After Merian's death in 1650, his sons and grandsons expanded the project to 30 volumes, making it one of the most extensive publishing projects of the Baroque period. Today, it is of great cultural and historical value. Merian is remembered as a gifted artist and businessman. We can certainly count him in among the most successful Swiss cartographers.

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## This Side of Eden



*Eden in Virginia: von der Helvetischen Societet erkaufte 33400 Jucharten Land A°. 1736. 1:125000. In: Neugefundenes Eden: oder ausführlicher Bericht von Sud- und Nord-Carolina, Pensilphania, Mary-Land & Virginia: entworfen durch zwey in diese Provintzen gemachten Reisen, Reiss-Journal und ville Briefffen. [Bern]: in Truck verfertigt durch Befelch der Helvetischen Societät, 1737. Map 2. (ZBZ, 18.1956,1b). Figure 25% reduced.*

Swiss economic refugees flocked to America. In the 18<sup>th</sup> century alone, more than 25 000 Swiss emigrated with the whole kit and caboodle to what was then still the English colonies. Chroniclers noted the reasons for emigrating were poverty and religious or political intolerance on the part of Swiss authorities. Some adventurers also had patriotic, even utopian goals. They planned their colonies to be outposts of a better world or as a promise of new civilization. But starting out in the colonies was extremely difficult and this wasn't everyone's cup of tea. Letters and books praised the newly gained liberties. Typical for the 1730s was the paper "Newly Found Eden", printed in Bern, which included two maps. The first is a general map of North and South Carolina, Virginia, Maryland and Pennsylvania which used an English map as a template. The second map shows an area in southern Virginia near the confluence of the southern Roanoke River (now Dan River) and the Staunton River

(now Roanoke River). There, a group which called itself the Helvetic Society had acquired around 33400 Jucharts (120 km<sup>2</sup>) of land for the colony of "Eden". This grand area offered ample space for the planned settlements. Such a settlement is shown in an inset map. In order to whet the appetite of other potential settlers, the map also shows various farm and wild animals. The advertisement was probably unsuccessful. On current topographic maps there are no traces of old German place names. Even today the area is sparsely populated. The main village of South Boston is about 20 km to the west. The Roanoke River has been dammed and has become a popular recreational destination. Whoever owns one of the few vacations homes in the forest may have indeed found a piece of paradise.

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## Past, Present, Future



*Plan des alten u. neuen Glarus: nach den neuesten Aufnahmen u. dem Bauprojekte der Herren Architekten Simon u. Wolff. 1:2500. Winterthur: Topogr. Anstalt v. J. Wurster u. Comp., 1861. (ZBZ, 4 Jg 46: 1. Also online: [doi.org/10.3931/e-rara-34597](https://doi.org/10.3931/e-rara-34597)). Figure 10% reduced.*

“Fire! Fire!” During the night of May 10 to 11, 1861, a fierce foehn wind blew flames across Glarus. In the end, 593 buildings were in ruins and more than half of the population was homeless. Newspapers reported extensively that generous help from all over Switzerland had arrived via the newly opened railway line. But not only the authorities wondered how the entire capital of the canton of Glarus could be rebuilt within a reasonable time period. The architects Bernhard Simon (1816–1900) and Johann Kaspar Wolff (1818–1891) had the answer. Within a few short weeks they presented their plans for a city with a checkerboard pattern such as in New York or La Chaux-de-Fonds. The ruins of the small village would be turned into a real city, ignoring the current topography. For example, Tschudirain, a hill around 23 m high was to be removed and the material would be used to fill natural depressions. Public buildings such as the

Spielhof courthouse or the church were to be imposing. The west-oriented plan from the Topographical Institute Wurster & Co. illustrates the city planners’ proposal: the new housing blocks are shown in light red over the old town map. Even binding building lines for future town districts were provided. This map is one of the rare cartographic documents from the pre-digital age which strives to portray the past, present and future all at the same time. More than 150 years later Glarus is much larger than anticipated in 1861. Today’s city center is regarded as one of the most important achievements in urban development in 19<sup>th</sup> century Switzerland.

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## Between Concubinage and Marriage



Montreux et ses environs. J. Aubert comre. arpt.; Chles. Krausé lithogr. 1:25 000. In: Montreux. Texte par E. Rambert [and others]. Neuchâtel: Etabl. lith. et topogr. H. Furrer, 1877. (ZBZ, 4 Jt 06: 9. Also online: [doi.org/10.3931/e-rara-20972](https://doi.org/10.3931/e-rara-20972)). Figure 20% enlarged.

In retrospect, it seems so easy: in 1877, one should have bought land parcels in Le Châtelard and Les Planches on a grand scale. Both have great locations with lake views and financial potential. But no one could have foreseen the development of the third largest city in canton Vaud and the world famous resort. We're speaking about Montreux on the shores of Lake Geneva. What is seen today as a unit, had been a political concubinage since the Middle Ages. The municipality to the north of the River Baye was named after the Châtelard castle. In one of its largest villages, Vernex, there was a new train station. South of the river was the municipality of Les Planches with the jointly held church. Montreux's entertainment hall was built in 1881, in the southern municipality. When one of the municipalities built a representative building, the other had to follow suit. During the consolidation of the towns during the 20<sup>th</sup> century,

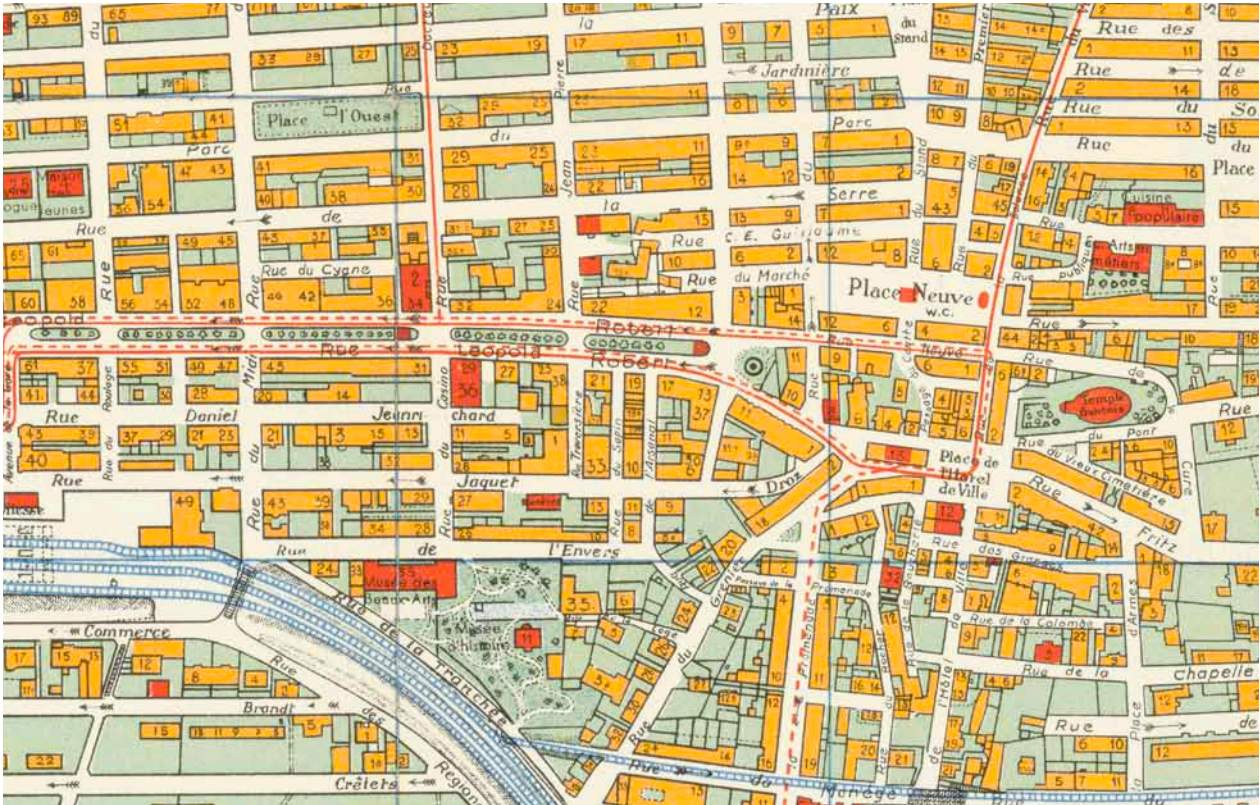
this situation became untenable. In 1962, marriage was risked. Some of the small vintager villages didn't survive the passage of time: Sâles is fighting for its identity in today's town center, half of Pertit was sacrificed to the highway, Vuarenes disappeared in the urban sprawl and also Le Trait was torn apart. Is this allowed to be called progress?

The map of Montreux at a scale of 1:25 000 depicts a tourist resort in the making. The commissioners of the map aren't known. Was it the joint district council that needed a new map for further city planning? Or the bustling citizen Eugène Rambert (1830–1886) who added the map to his book on Montreux? Little is also known about Henri Furrer's company in Neuchâtel which engraved the map. Its cartographic identification is a pretty skull with two crossbones as a symbol for a cemetery.





# Yes, We Can



Plan de La Chaux-de-Fonds. [Revised edition]. 1:5000. La Chaux-de-Fonds: Haefeli & Co. Arts Graphiques, 1950. (ZBZ, 4 JK 08: 1).

Map historians know very little about the cartographic achievements of the company Haefeli & Co. Why? As far as we know, they made only one city map and that isn't a way to gain fame in the cartographic world. Haefeli & Co. was in the same boat as other art institutions, graphical art companies and printers in the country. Such companies didn't employ cartographers and certainly not scientific map editors. Why should they when the day-to-day business focused on postcards, posters and reproduction of old masters? Perhaps the owner had the idea of opening up a new field of business or the city councilors approached the well-established company with the wish of immortalizing the city on a beautiful map. As the necessary lithographic presses had been installed in the building anyway, the production of a city map was feasible from a technical point of view. Haefeli therefore turned to the local surveying office and obtained up-to-date general cadastral maps. In order to make the new

city map easy to read, the best lithographers in the company were called together. Meanwhile, the assistants compiled lists of street names and public buildings for which room was left at the edge of the map. Last but not least, the printer was in charge of making sure the colors were correctly registered. The first edition of the city map of La Chaux-de-Fonds is undated but points to the early 1920s. A larger format was chosen at least twice in the following fifty years in order to accommodate new districts at the edge of town. It isn't known how many editions were printed in total. In retrospect, this city map was a product that sold well over a long period of time, but yielded too little to tempt the owner to pursue other cartographic adventures. A pity really because Haefeli's city map of La Chaux-de-Fonds needn't hide behind other contemporary works of its kind.

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## Get Your Bearings



Altdorf, Schattdorf, Bürglen, Flüelen, Seedorf, Attinghausen, Erstfeld, Silenen, Andermatt, Göschenen, Hospental, Realp, Gurtellen, Wassen: Ortsplan. [Revised edition]. 1:15 600. Teufen: Media Swiss, 2008. © Geomatic Ingénierie.

In the 1990s, many Swiss municipalities rejoiced: for the first time in history they received their own map. The originator was the company AFUAG in Teufen (canton of Appenzell Ausserrhoden), which was active in the advertising industry. In this business one is always thinking about new ways to advertise stuff. At one point someone had the idea to produce a city map with a multi-purpose use. This meant the map was financed through local businesses and was given free of charge to all households. AFUAG obviously wasn't the inventor of the idea, but no other company in Switzerland had implemented the concept as consistently and comprehensively as AFUAG. The magic word was standardization. They developed a distinctive legend with few symbols which could be used for a range of scales. But that was the extent of the standardization. Irregular map scales and random orientations were common and were only visible if the map was carefully studied. Either way, the

production of town maps exploded across the country. And a miracle happened: the maps were met with approval. Due to the great demand, updated versions were regularly printed. After 2002, the maps were published by Media Swiss, also in Teufen, using the tried and tested concept. With the advent of internet-based map services in the mid 2000s, the golden age of printed city maps which had been financed through advertising was over. In 2011, Gate 24 (also in Teufen) emerged from the Media Swiss company, but the end was near. The last of the familiar city maps were delivered in 2012. The copyright has been sold several times since, the involved companies split up and merged and they have changed their names, locations and employees. We have lost our bearings and can't follow the latest developments in the Swiss advertising industry anymore.





## You Are Mine and I Am Yours

On December 18, 2006, there was only one topic amongst Swiss cartographers: parts of the Lucerne company Endoxon had been bought by Google. Endoxon wasn't just any old company. In the industry, Endoxon was regarded as an innovative (and sometimes aggressive) developer of geographic information systems (GIS). It created digital structure plans for various cantons. As a by-product, it also printed aerial maps of Swiss tourist regions. Endoxon's core competence, however, was the integration of georeferenced and high-resolution satellite image data into dynamic and mobile internet services. That was exactly what Google needed. Google, then already one of the most powerful corporations in the world, had launched the map service Google Maps in February 2005. This was based on a concept developed by two Danish engineers. Simultaneously, the software Google Earth was released in June 2005, of which the first version had been developed by Keyhole Corporation. In the eyes of Google's managers there was still room for improvement. By purchasing Endoxon's GIS technology and taking over numerous employees, Google gained the necessary know-how and perhaps vital advantage over other internet companies with similar projects. The rest is an unequalled success story. Just as with the search engine, within a few years Google became a global market leader in the cartography business. Millions of SMEs around the world have integrated Google Maps into their websites. Billions of people take pleasure in virtually moving around the globe, exploring foreign landscapes and cities in 3D on Street View. Welcome to the ego-centric world view. According to Google's vice president responsible for the map service, this is "a pretty incredible Swiss army knife of a product". Whether or not the choice of words is a coincident, Google Maps actually *does* contain Swiss technology. Moreover, Google's Zurich headquarters is undoubtedly the country's largest cartography company. This is where for the past several years the company has been working on the map technology of the future. Whether or not we will one day see a replacement for the iconic but ugly Google pin will most likely be decided on in Silicon Valley, though.

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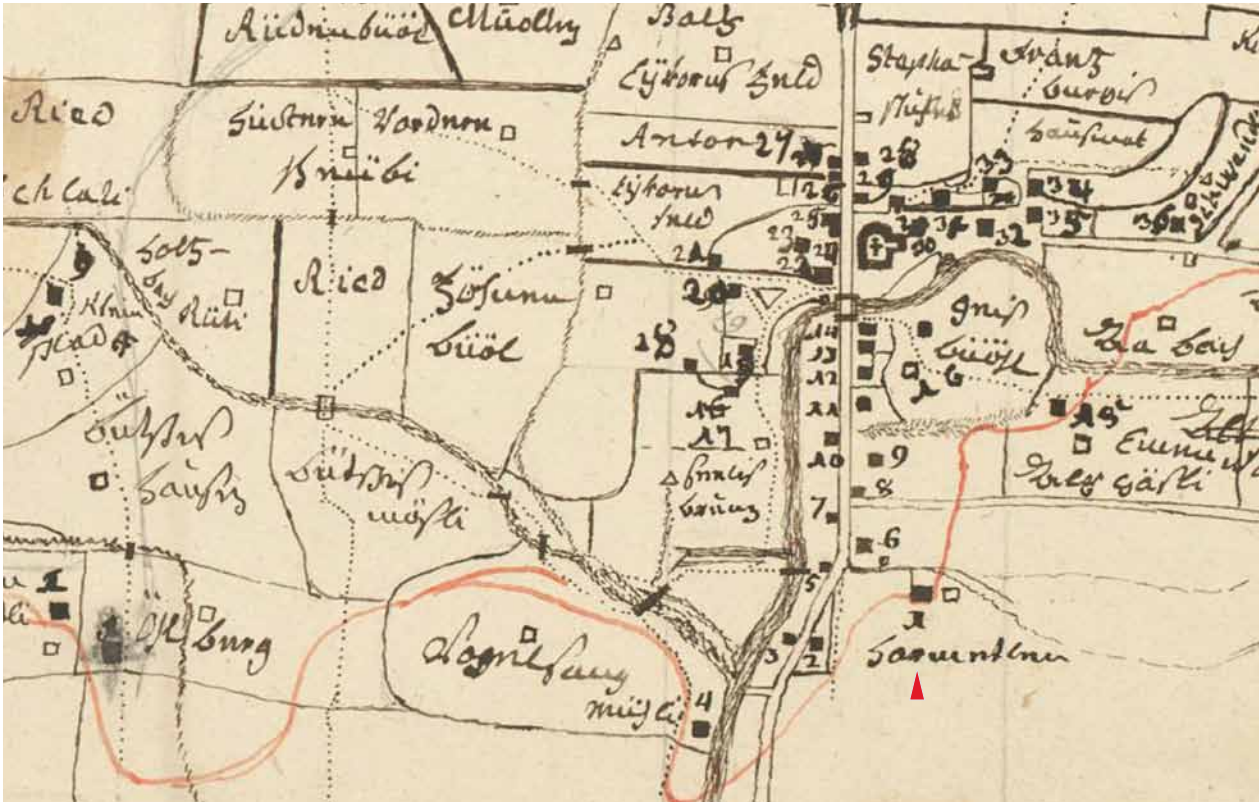


Google Maps. Version as of December 6, 2016, zoom level 16. Mountain View, California: Google, 2016.

Current version: [google.com/maps/](http://google.com/maps/).



# 'Till Here



Bergsturz von Goldau. [Author: Fidel Zay]. 1:8500. 1806. (ZBZ, MK 2138. Also online: [doi.org/10.7891/e-manuscripta-15748](https://doi.org/10.7891/e-manuscripta-15748)).

The red line is the most important element on this map. It marks the border between survival and death. Who and what lay beneath the rubble in the September 2, 1806, Goldau landslide had to be painstakingly reconstructed. The former priest Fidel Zay (1736–1809) from Arth and his nephew Karl Zay (1754–1816), a physician and politician, took on this sad task. It was necessary to have a reliable map of the area before the disaster as a basis for the statistics. Fidel Zay was commissioned to produce this map. He sketched a map of the village from memory, using the remaining houses and stables as reference points. He needed a good imagination while drawing because Goldau was covered in meters of rubble and the topography had changed fundamentally. Due to the lack of surveying, there were no previous maps in the archives one could have consulted. All survivors were therefore asked if the houses were correctly mapped and if all other details were accurate.

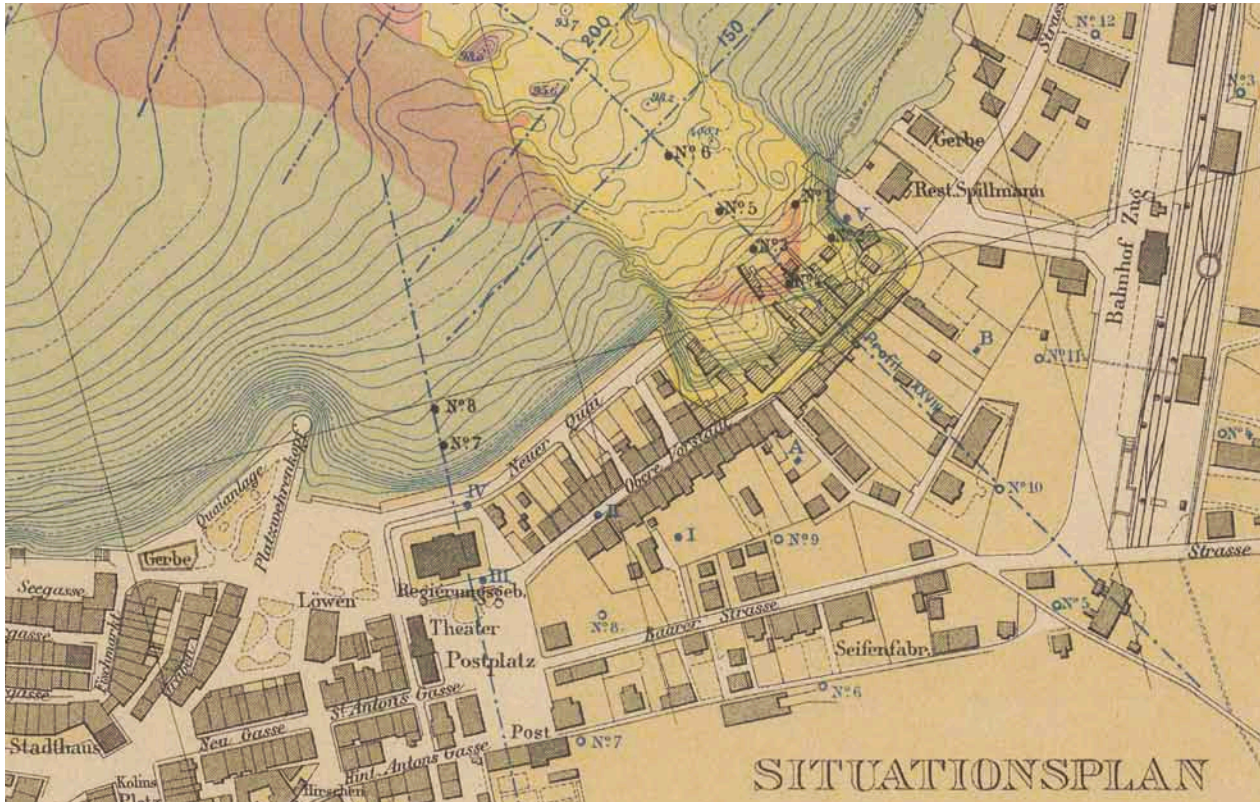
At the same time, the doctor Karl Zay compiled a list of the survivors and of missing people. The connection between the map and the list of missing people are the numbers of the buildings. The random numbers begin at the Harmettlen house which was barely touched by rubble and only slightly nudged aside. The ground floor was filled with soil but the upper rooms were left intact. All 11 residents survived. However, there was no escape from the village center. In 1807, Karl Zay published the names and place of residence of the 457 deceased in a report nicknamed the "Book of Rubble". Fidel Zay's map was scaled down and etched by Johann Heinrich Meyer (1755–1829) and enclosed in the report. The use of a publishing house in Zurich is probably the reason why the map sketch has been kept in Zurich ever since.

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## Sinking Hope



*Situationsplan von Zug und Umgebung: Rutschung in Zug vom 5. Juli 1887. Seegrundvermessung des eidgen. topogr. Bureau (aufgen. von Ing. Hörnlimann & Suter); [cartography]: Graph. Anst. Hofer & Burger. 1:4000. In: Gutachten über die am 5. Juli 1887 in Zug vorgekommene Rutschung. Verfasst von den Experten A. Heim, R. Moser und A. Bürkli-Ziegler; herausgegeben auf Veranlassung der Behörden von Zug. Zürich: Graph. Anst. Hofer & Burger, 1888. Plate 1. (ZBZ, 3 Jv 16: 1. Also online: [doi.org/10.3931/e-rara-34670](https://doi.org/10.3931/e-rara-34670)).*

The catastrophe was unexpected. On July 5, 1887, at 3:30 p.m. the first houses in Zug's suburbs slipped into the lake. At 7:00 p.m., an area several 100 meters wide collapsed. Two rows of houses disappeared into the water and caused much noise. Eleven people died and 650 became homeless. The reasons for this disaster had to be mercilessly investigated. The commissioned experts from Zurich found out that the strain on the new quay wall had become too great. Since 1873, Zug had generously been using fill material to create a new lake promenade in order to establish itself as a tourist destination. These hopes literally fell through.

The engineers from the Federal Topographical Bureau found out that the underwater alluvial fan was about

one kilometer long. Their findings were shown on a map at a scale of 1:4000. The engineers also drew a longitudinal profile and three transverse profiles of the landslide area as well as a diagram of the soil analysis. The survey report's fourth attachment was a project plan at a scale of 1:2000 for the redevelopment of the affected area. Of course, the city immediately issued a building ban on the lakefront. Several dozen adjoining buildings were even demolished in order to relieve the quay walls of pressure. The landslide area was not refilled and is still recognizable as a small bay on maps and in areal photos. If you care to have a look, the coordinates are: 47°10'11" North, 8°30'50" East (WGS 84).

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## More Than Rocks



*Topographische Karte der Stadtgemeinde Luzern. [Author: Franz Joseph Kaufmann]. 1:20 000. In: Geologische Skizze von Luzern und Umgebung. Von Franz J. Kaufmann. Luzern: Gebr. Räder, 1887. (Beilage zum Jahresbericht über die Kantonsschule und die Theologie in Luzern im Schuljahr 1886/87). (Zurich, ETH Library, Rar K 241. Also online: [doi.org/10.3931/e-rara-21641](https://doi.org/10.3931/e-rara-21641)). Figure 25% enlarged.*

The map title “Topographical Map of the City of Lucerne” is misleading: it is in fact a geological map. The author Franz Joseph Kaufmann (1825–1892) probably used an existing map as a basis for his map published in 1887. He added rocks using area colors which were grouped into six geological epochs. This is why the map appears to be calm and clear. Today’s geological maps show various types of rocks which calls for a finer mosaic of colors. For example: Kaufmann shows the early and late Miocene epochs. The current map shows 12 different types of sandstone, clay and conglomerate instead. The author reduced geological symbols to three main ones: “marine fossils”, “fresh-water fossils” and “plant fossils”. In comparison, around 20 different symbols are used in the current map. As an

expert, Kaufmann would have been able to go into more detail. For didactic reasons he decided to generalize the geological epochs. Whether or not the students were able to remember the epochs more easily remains unknown. But most will forever remember one event which took place during natural history lessons in school: a visit to the Glacier Garden (opened in 1873) to see its glacial pot-holes. In this respect one can ask why of all things these wonderful geological testimonies are missing from the map. They had namely been discovered by ... the map author himself.

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## Visiting Hades

The unwieldy map title is best described as: quantities of residual water. For example, the rivers marked in red carry less than 20% of the natural annual average amount of water. The green and blue ones carry more. A closer look at the map shows why many creeks and rivers in the Alps have deteriorated to a trickle: purple arrows schematically represent underground water pipelines which connect water reservoirs and headwaters to hydroelectric power stations further below. Although these underground galleries are approximately as long as all the train tunnels in Switzerland, they are practically non-existent in the minds of the public. More information on the subject is shown in charts and graphics on the back of the map. There is also a separate commentary in four languages.

The map is part of the Hydrological Atlas of Switzerland HADES which examines all questions related to water in Switzerland. It is published by the Federal Office for the Environment. The Institute of Geography, University of Bern is responsible for the cartography and editing of the map. After several years of groundwork the first atlas installment was published in 1992. And just in time, as it turned out. After 1999, there was a dense series of heavy flooding. Thanks to the knowledge shown in the atlas, hydrologists, insurance companies and politicians are able to understand such incidents better and can plan prevention procedures more efficiently. HADES is also a useful and concise reference source in the current discussion on climate change and the future percentage of hydroelectric power in the energy supply. Since 2016, it is published on an interactive atlas platform with extended analysis functions.

■ Further Reading: page 79.



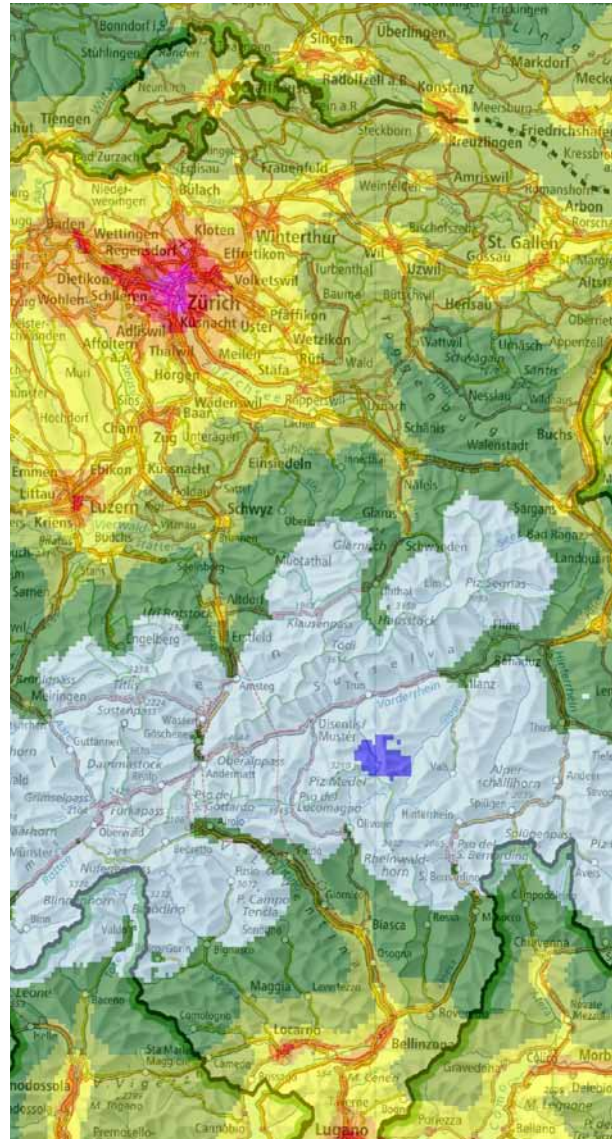
*Beeinflussung der Fliessgewässer durch Kraftwerke und Seen = Influence sur les cours d'eau des aménagements hydro-électriques et des lacs. Autoren: André Margot, Bruno Schädler, Rudolf Sigg, Rolf Weingartner; Redaktion und kartographische Bearbeitung: Geographisches Institut der Universität Bern – Hydrologie. Stand 1. Januar 1990. 1:500 000. In: Hydrologischer Atlas der Schweiz = Atlas hydrologique de la Suisse = Atlante idrologico della Svizzera = Hydrological atlas of Switzerland. Bern: Landeshydrologie und -geologie, 1992. Plate 5.3. © Federal Office for the Environment FOEN.*



# Twinkle, Twinkle Little Star

Today you are invited to join a competition. It's called "Counting Stars". Wait for a cloudless and moonless night and then count all the stars you can see with the naked eye from your balcony or garden. —If you can't wait, you can read the results from our four test people. Mr. A counts "around 9950" stars. Sorry, he must be fibbing. Did he use a telescope? Or did he include his neighbor's Christmas lights? Ms. B reports "3000 stars". Congratulations, she achieved a great result. As a Swiss Alpine Club hut warden, she also has the best conditions one can have in Switzerland. Her area suffers very little from light pollution. From here the milky way is a beautiful sight, isn't it? Mr. C sees "almost 1000 as well as Venus, Mars and Jupiter". He lives on the Swiss Plateau and unfortunately has no chance at all to see more. His place of residence is heavily polluted by light. The milky way and other planets are easier to see on the internet. Ms. D counts only "85 stars". In large cities that is about all you can see due to heavy light pollution. But the lack of a sky view is the smallest of her problems. Ms. D complains about wakefulness after sleep onset. She also knows that nocturnal animals and insects become confused. Last but not least, she considers the waste of light to be uneconomical. That is why she has been a member of the Dark-Sky Switzerland association since 1996. Its members are experts in astronomy, biology, biochemistry, electrical engineering and psychology as well as other interested people.

In 2016, Dark-Sky Switzerland published a new edition of the Swiss Light Pollution Map. It's based on satellite images which measured the intensity of the artificial "light cloud" over populated areas. This measurement (top-down) was converted into the artificial increase in brightness of the night sky (bottom-up). This correlates to the loss of star visibility. The map shows that the entire Central Plateau is already heavily to very heavily polluted (yellow, orange and red zones). Even the Alps are affected by light pollution (green and light blue zones). Only in the National Park and a few other small areas (dark blue zones) one may still enjoy almost natural darkness. — Tell me how many stars you see, and I'll tell you where you live.



*Inquinamento luminoso in Svizzera = Pollution lumineuse en Suisse = Lichtverschmutzung in der Schweiz. Istituto di Scienza e Tecnologia dell'Inquinamento Luminoso, Thiene, Italy; [data processing: Stefano Klett, Dark-Sky Switzerland]. Situation 2015. 1:1 000 000. [Langnau am Albis]: Dark-Sky Switzerland, [2016]. Also online: [darksky.ch/download/ICH-artificial-sky-brightness-atlas-2015.jpg](http://darksky.ch/download/ICH-artificial-sky-brightness-atlas-2015.jpg). © Dark-Sky Switzerland. Figure 25% reduced.*

■ Further Reading: page 79.





## Remains of the Day



*Kataster der belasteten Standorte. [Data as of June 6, 2019]. In: Aargauisches Geografisches Informationssystem AGIS. Dataset ID: 1970. Aarau: Kanton Aargau, Abteilung für Umwelt, 2019. Current version: [ag.ch/geoportal/](http://ag.ch/geoportal/) → Online-Karten → Kataster der belasteten Standorte. © AGIS.*

Up until a few years ago it was common practice in Switzerland to deposit waste in a suitable location. Over time it became clear that many landfills had been constructed in unsuitable locations or filled with hazardous waste. In some cases poisonous substances had been released and polluted bodies of water and agricultural land. The whole thing literally stank to high heaven. Since 1985, Kölliken, a village in the canton of Aargau, has even become nationally known for its hazardous waste site. Nowadays, the cantons are required by law to record, inspect, monitor and if necessary, clean up their landfills. The best overview of the current state of affairs in the canton of Aargau is the multiple award-winning Aargau Geographic Information System (AGIS). One of the thematic maps is the cadaster of contaminated sites. The base map is either a current aerial photo, various topographical maps, or a mix of both. A legend shows

three different types of contaminated areas: landfills, operational sites and accident sites. Many areas in the canton are plastered with contaminated areas. Long-time residents are in the know, but newcomers may be frightened. The cadaster shows exact information about each parcel of land and more information about each parcel is only a click away. Everything from “in need of decontamination” to “no monitoring or decontamination necessary” can be found. It is important to know that even parcels which haven’t been registered may also be more or less contaminated. The annual amount of pesticides, fungicides, herbicides, etc. used leave their trace in home gardens. In addition, it is important to know that railway, military and aviation sites aren’t included as they are subject to special rules. Have a look at related data in the AGIS maps for soil excavation, chemical risks and nature conservation.





# Out and About



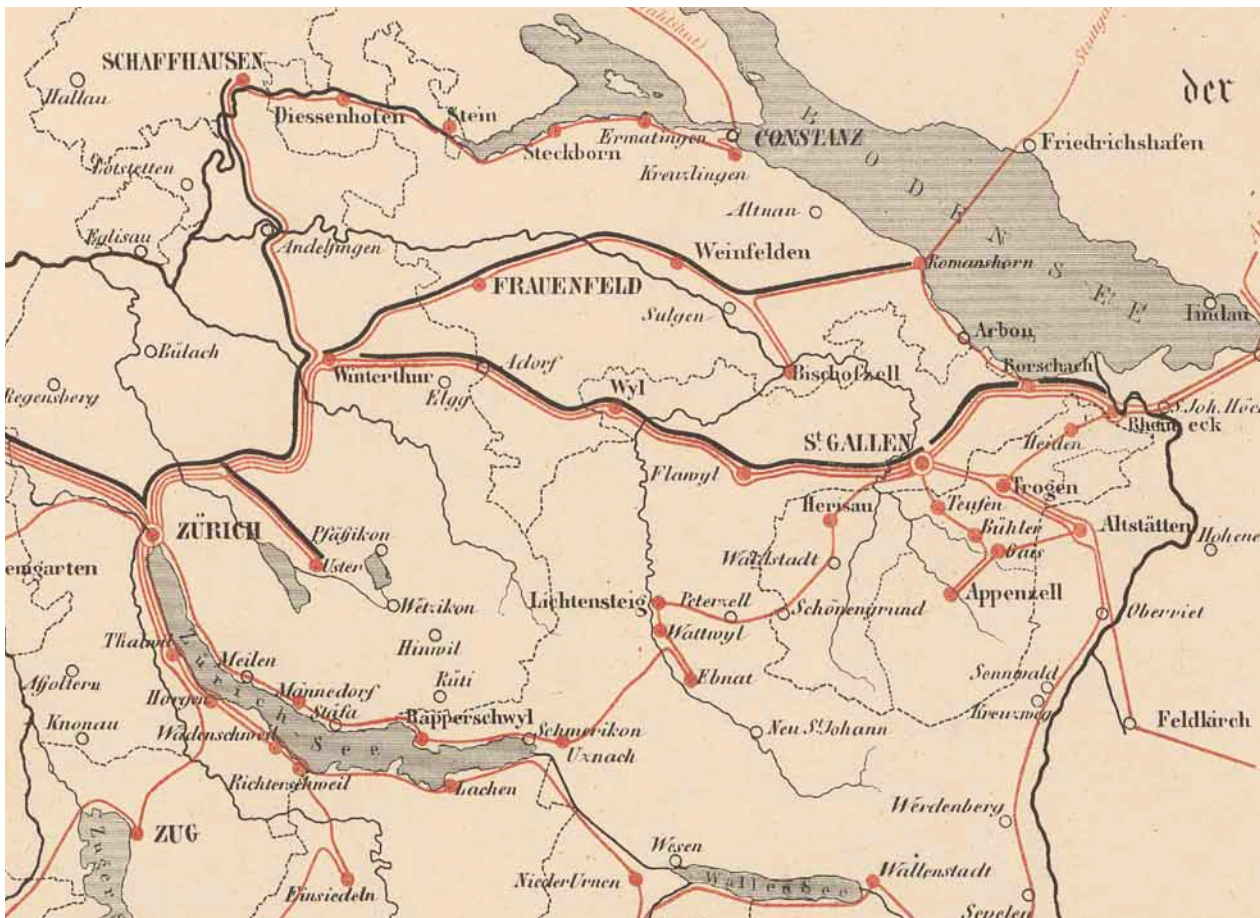
Reiss Cärtli auff die gemachte Reiss Ao. 1738. Von H.R.S. [i.e. Hans Rudolf Sulzer]. 1:4 000 000. 1738. (ZBZ, Ms Z IX 632, after title page. Also online: [doi.org/10.7891/e-manuscripta-17867](https://doi.org/10.7891/e-manuscripta-17867)).

Anyone who travels has a story to tell upon returning. If words aren't enough, a map may be useful just as it was in 1738, when cloth merchant Hans Rudolf Sulzer (1695–1766) from Winterthur undertook an extensive business trip. The route went via Basel along the Rhine to the Netherlands where he visited Utrecht, Amsterdam, Leiden, and Rotterdam. There, he embarked a boat to London and crossed the "Mare Germanicum" (North Sea). The return journey was by land via Dover and then by boat to Calais. In France, he headed south towards Paris and returned to Switzerland via Dijon and Besançon. He composed a handwritten report of his journey which consisted of 375 pages! Behind the title page he inserted a "travel map". Sulzer must have had a commercially available map at his fingertips, probably from an atlas,

which he copied. The stated degrees of latitude and longitude and the, for this time typical, distortions suggest this. Since his map doesn't correspond with the standard map size of the 18<sup>th</sup> century, Sulzer was probably forced to compile his drawing from various map sheets. Either way, he copied the coastline, several large rivers and visited towns from the original map. A thin line marks his itinerary. More than that wasn't of interest to him, his family or his business partners which is why he left the remaining area more or less empty. The map title, a list of destinations and the names of the shown countries was written in the three corners of the map. This is how the exemplary travel documentation originated and certainly earned the author praise.



## Live Wires



Carte des lignes et bureaux des télégraphes suisses = Karte der schweizerischen Telegraphenlinien u. Bureaux. Zusammengestellt von der schweizerischen Telegraphen-Direction. 1:600 000. Winterthur: Top. Anstalt von J. Wurster u. Comp., 1858. (ZBZ, 4 Hb 46: 36. Also online: [doi.org/10.3931/e-rara-33452](https://doi.org/10.3931/e-rara-33452)).

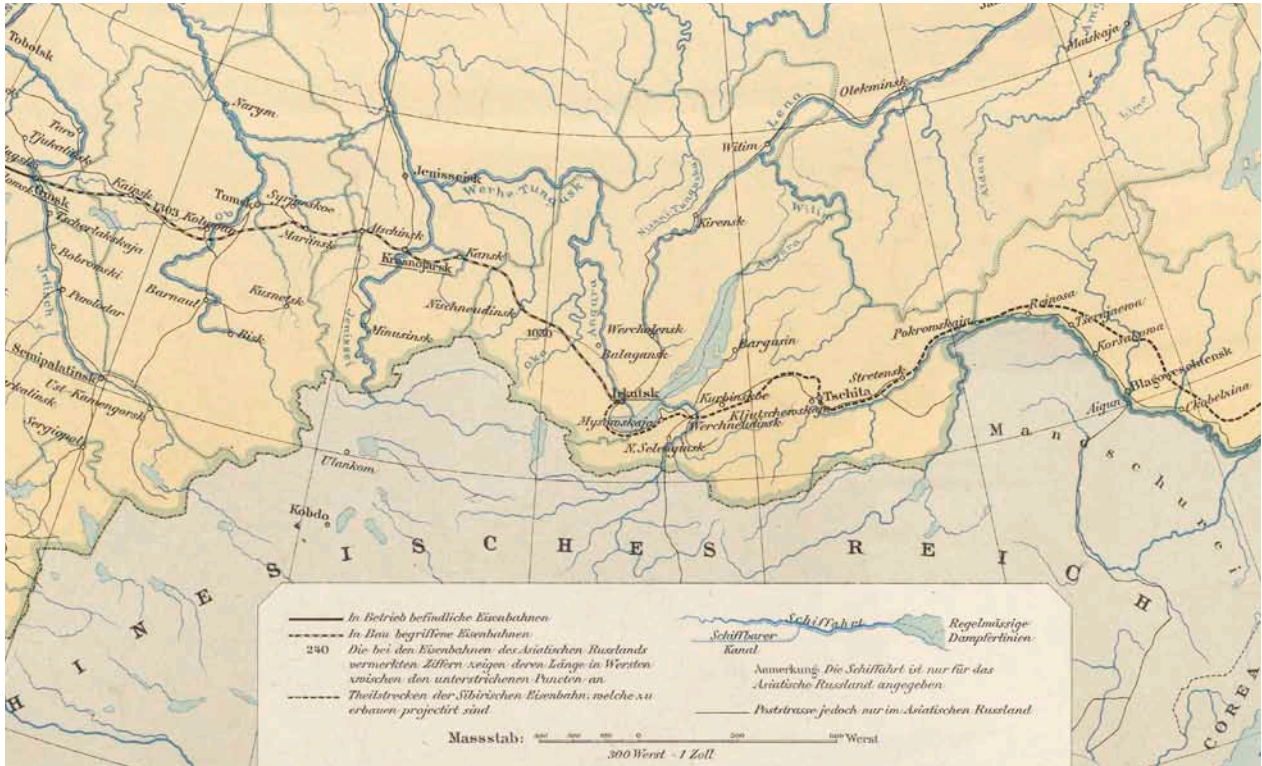
The Germans were quicker. In 1849, the Swiss Federal Council learned via the government in the canton of Bern that a telegraph system in Prussia had been successfully implemented. The usefulness of the new medium was understood but the young federal state had other priorities. A petition from the economy was necessary before parliament was able to agree on a law at the end of 1851. The telegraph system was then considered to be a federal task. By mid 1852, the first telegraph line between the cities of Zurich and St. Gallen was ready for operation. According to this map of 1858, there were 11 main offices and around 110 branch offices. All cantonal capitals as well as important industrial and commercial towns were connected to the telegraph lines. The tele-

graph network was especially dense in the industrialized northeastern part of Switzerland. In contrast, there was no access in Upper Valais, in the western Bernese Oberland and in many parts of the canton of Graubünden. In addition to the national network (in red), a private network (in black) for the railways was created. The linear symbols are easy to understand: for every actual telegraph wire a line was drawn on the map. If you are to believe the map, there is no direct connection between Trogen and St. Gallen. This means the Morse code signals would have had to detour via Altstätten and Appenzell or via Rheineck and Rorschach. One wonders if this task was overwhelming for the telegraphists or rather for the cartographer.





# Next Stop is Siberia



Karte des Russischen Reichs: mit Angabe der Eisenbahnen und inneren Wasserwege. 1:15 000 000. Bern: Topogr. Anstalt Gebr. Kümmerly, [1895]. (ZBZ, 3 Bi 46: 1).

For decades, Kümmerly & Frey’s trademark were road maps with a blue cardboard flap. The wide variety of other maps the publishing house in Bern offered in its almost 150-year history was far less well known to the public: thematic maps, atlases, illustrated books, and geographic teaching material. Since the 1880s, Kümmerly also published railway maps. Most of them were of Switzerland or individual cantons. In 1895 the Kümmerly brothers published a railway map of the Russian Empire. The occasion was probably the construction of the Trans-Siberian Railway which began in 1891. The map shows the status as it was in 1894, when the line had reached the city of Omsk. As construction progressed to the east, the climatic and topographic conditions became more difficult. After almost unimaginable efforts, the construction of the Trans-Siberian Railway was completed in October 1916. Traveling by train from west to east or vice versa has now been possible for over 100 years. During the summer months, the large rivers in Siberia

served and still serve as transportation from the south to the north. Their navigability is also indicated in the map. Even a road network with postal traffic is depicted. All in all, the rather small-format map has very little content. For example, references to topography are missing. The margin also fails to give information about the original map used; perhaps it was a Russian map. Indications for this assumption are the Verst units in the scale bar and the prime meridian running through St. Petersburg. The Kümmerly brothers, both sons of the company founder, are the publishers. Arnold Kümmerly (1862–1931), the younger of the two, was always outshone by his elder brother Hermann (1857–1905). The latter was a gifted cartographer and became the creator of the wall map of Switzerland used in schools. In 1898, Hermann’s cousin and brother-in-law Julius Frey (1872–1915) became a partner in the company which from then on was known as Kümmerly & Frey and had an excellent reputation nationally and internationally.

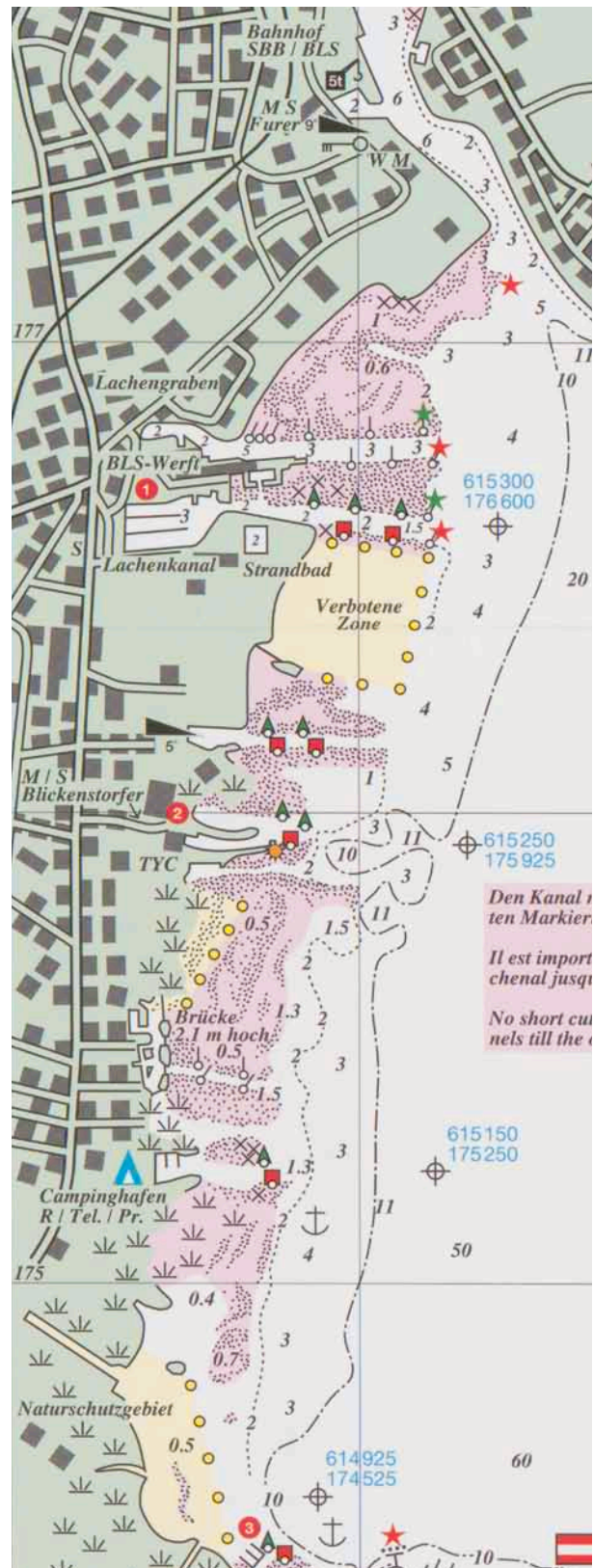




# Ship Ahoy

Quiz question: Why is a “normal” map unsuited for use on a lake? Well, normal maps don’t chart maritime areas and coastal regions accurately enough. Therefore, specialized thematic maps are needed for navigating bodies of water. Our example covers two of the most well-known lakes in the country as well as Lake Wohlensee. The three corresponding sections from the topographic map of Switzerland 1:25 000 have a few additions but still only serve as a general guide. The 22 large-scale inset maps are what make this item a useful nautical chart. They show the area around harbors and public beaches where most of the use conflicts happen. In addition to areas around the beaches which are banned for boats, shallows, sea marks and many other objects which can’t be found on a “normal” map are shown. Sea marks are the red and green signals which mark the shipping passage to either side and make for safe navigation. Woe betide the captain who doesn’t have a nautical chart with him and runs aground.

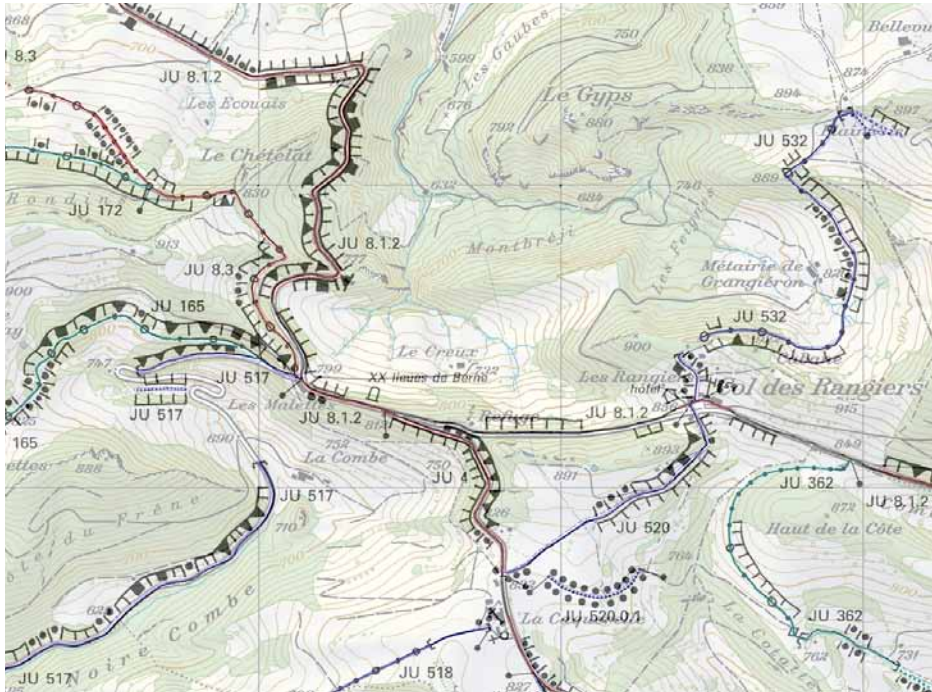
This can’t happen to Jean de Bosset (\*1935). As a teenager in 1954 he worked on his first nautical chart. For this he chose the area in front of his house, Lake Neuchâtel. Bosset did everything himself: surveying the depths of the lake with an echo sounder, exploring sea marks and creating the map legend. Over the years, he produced detailed charts for other large Swiss lakes north of the Alps. The demands of the users increased with his success. Since then, a professional map design has become a standard for periodically updated nautical charts. With these charts you are now prepared for your next boat ride: ship ahoy!



*Thun bis Kanderdübung: Lachen, TYC und Gwatt-Hafen. 1:15 000. In: Seekarte Thunersee, Brienersee und Wohlensee: mit detaillierten Hafenplänen. Echolotvermessung und Hafengrundlagen: Jean de Bosset; Kartografie: Pasquale Gisondi. Ausgabe 2002. 1:25 000. Kirchberg: Schad + Frey, 2002. © Atelier Schöni.*



## Groundbreaking



*Bundesinventar der historischen Verkehrswege der Schweiz IVS. Data as of April 16, 2010. 1:25 000. Ittigen: Bundesamt für Strassen ASTRA, 2010. Online: [map.geo.admin.ch/?topic=ivs](http://map.geo.admin.ch/?topic=ivs). © Federal Roads Office.*

■ Further Reading: page 79.

To Klaus Aerni (1932–2014), formerly at the Geographic Institute, University of Bern:

Dear Klaus,

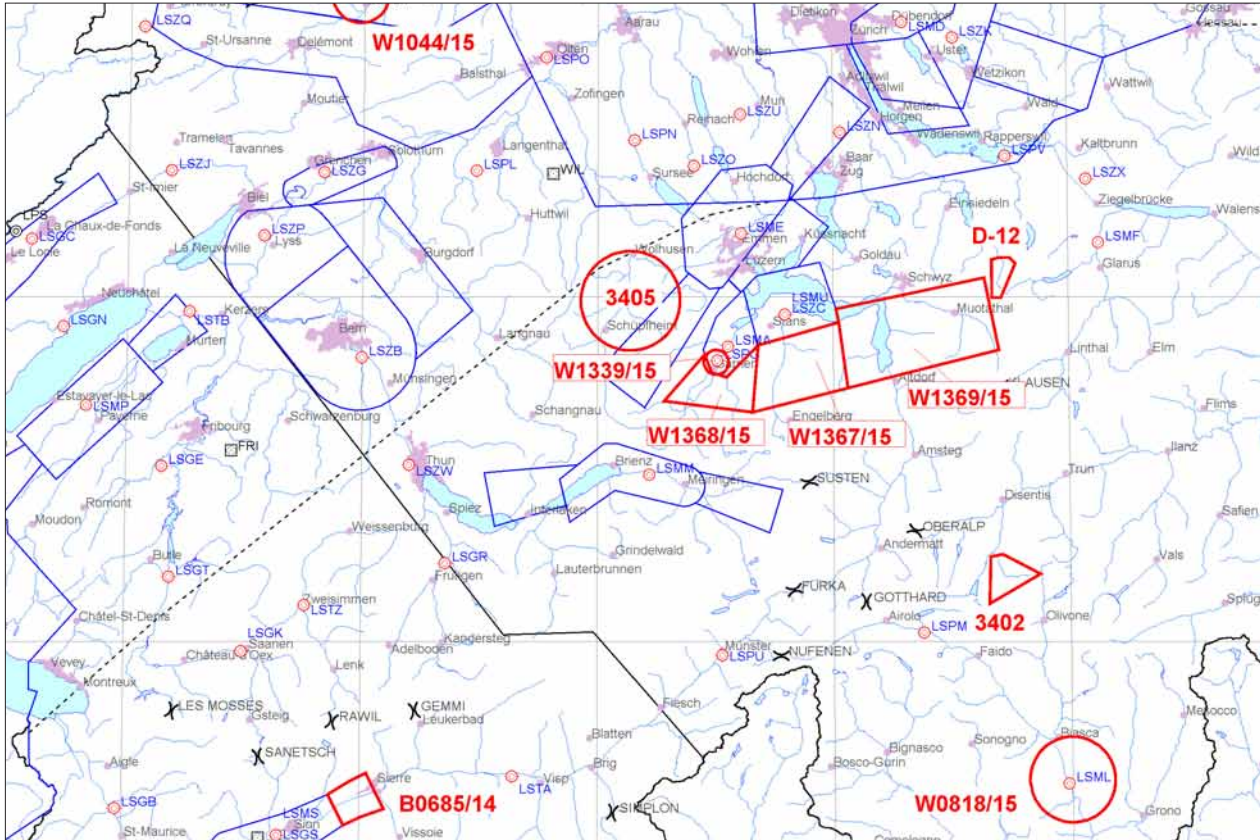
Remember when you were a child and there were roads from ancient Roman times everywhere? Thanks to your tireless research, some of them turned out to be late medieval or even early modern ones. Of course, you weren't out to destroy myths. Your motivation was the scientific documentation and the conservation of old transport routes which you saw as historic sites and feats of engineering. Or were you able to anticipate the hiking boom after the turn of the century? Either way, you were able to convince geographers and historians of the trendsetting project "Inventory of Switzerland's Historic Transport Routes". A corresponding working group has been established at your alma mater, the University of Bern. Starting in 1983, your team systematically evaluated old maps and files in order to find clues about historical routes that had disappeared long ago. You were out and about a lot to assess the original course and current state of them. The results were charted on maps. Not only the routes themselves, but also the structures were important to you. As well as everything that had to do with them: allées, position markers, inscriptions, wayside crosses, chapels, guest

houses, etc. Every detail was recorded onto topographic maps and all road sections were documented in writing and with photos. The scientific part of this work was easy compared to the political part. Not everyone was happy with this inventory. Some municipalities and individuals saw it as an unnecessary and costly obstacle for future road construction. But that didn't cause you to stop tackling this route (pun intended). The high point in your life's work was definitely the federal decree of 2010, in which the inventory was officially recognized. Since then, around 3750 km of visible routes are protected as routes of national importance. The cantons may protect further routes which are of cantonal or regional importance. The inventory has triggered a lot. Position markers have been restored, old roads have been restored to their original cobblestones and new tourist attractions have been created. The Federal Roads Office is now responsible for the periodic updating of the inventory while the engineering company Basler & Hofmann has methodic and technical responsibility.





# Limited Freedom



Daily Airspace Bulletin Switzerland DABS: Date 2015 AUG 21. Version 3. 1:1250 000. Wangen: Skyguide, 2015. Current version: [skybriefing.com/portall/home](http://skybriefing.com/portall/home).

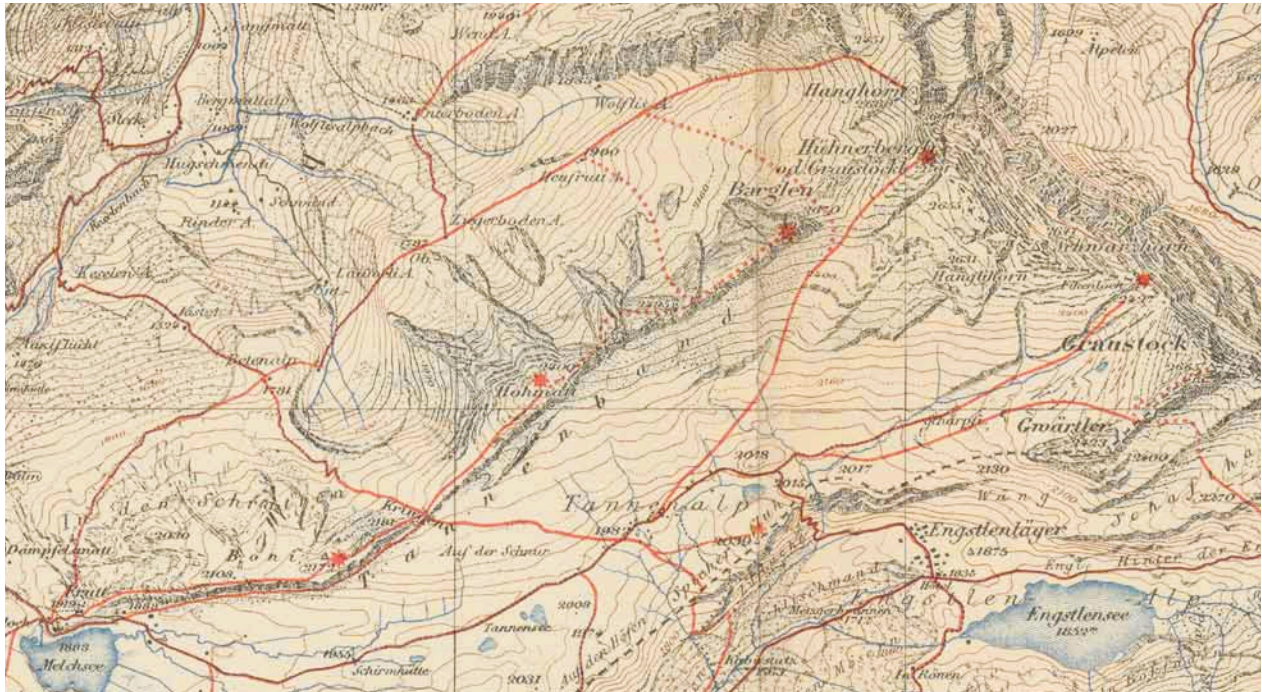
As all pilots know, freedom is limited above the clouds. They must study Skyguide's (air traffic control) Daily Airspace Bulletin (DABS) before every take-off or transit through Switzerland. Therein, the no-fly zone limitations and other restrictions are published on a map. A list on the back describes the zones in more detail. For example: the center point of Zone 3405 is situated at 46°59'40" North and 8°04'11" East, covers a radius of eight kilometers or 4.3 nautical miles, and ranges from 1850 meters or 6000 feet to 3950 meters or 13 000 feet. Got it? With these verbal specifications most people can deduce a cylinder that "floats" in the air. But where this zone is and which area it actually covers is hard to imagine without a map. Who has memorized all the coordinates of every place in Switzerland? However, it would be wrong to refer to the list as "abstract" and the map as "descriptive". Not all necessary flight information is suitable for display on

a map. That is why nonspatial information (time and reason for restrictions) are best kept on a list. Most information about air traffic is not even shown on the DABS map, e.g. general airspace structure, airways, terminal control areas, and controlled traffic regions around the larger airports. This information is documented and published annually in the official Aeronautical Chart and the Aeronautical Information Publication which pilots must consult. Now you're ready for take-off!





## For They Know Not What They Do



*Exkursionskarte für das Brüniggebiet: Flüli, Lungern, Melchthal, Frutt, Hasliberg, Brienz. [Reproduction and printing:] Schweizerische Landestopographie. 1:50 000. Luzern: Eugen Haag, 1920. (ZBZ, 16 HI 47: 21).*

At some point in the 18<sup>th</sup> century, tourists began climbing mountains for pleasure and enjoying the grand view of the peaks from there. Depending on the mood, age and weather, a topographically less demanding tour, which was called “hike” or “excursion” was sufficient. It took a while for someone to come up with the idea of selling maps with hiking suggestions to tourists. This required large-scale topographic base maps (larger than 1:50 000). These weren’t available in Switzerland until around the turn of the 20<sup>th</sup> century: the “Siegfried” map series. In addition, a regional expert had to be found as an editor. And thirdly, quite a bit of money was needed as the production of a large-format map was expensive. At first, it seemed the Lucerne bookseller Eugen Haag (1871–1949) was able to overcome these obstacles without difficulty. His map shows the area around the Brünig with a large selection of hiking routes. Paths for all are shown with a solid line and those for experienced and sure-footed hikers are dotted. The legend points out that climbing routes are not marked. So, let’s choose a hike. At times we aren’t sure if we’re reading the map correctly: too

many routes lead in a straight line through the terrain and are totally detached from the trail network. In some places they even cross shear rock walls. Something is very fishy here. Finally we choose the ascent from the Tannalp to the Hühnerbergli, today called Tannalp and Rot-sandnollen. According to the excursion map this is a path for all. Black contour lines point to a rocky path. A glance at today’s topographical map doesn’t bode well. Online research confirms that this route is “a rather nasty hike across a limestone surface” with dangerous “holes under tall grass, razor-sharp edges, etc.” There is no visible path. Further along, there is “fine slate rubble”. Thank you, but we envisioned a hike with children differently. Whom should we complain to? To the bookseller who was also the client, the publisher and the salesman? To a negligent editor who unfortunately remains unnamed? To the Federal Topographical Survey which was in charge of reproduction and printing? Or should we have simply taken a closer look at the map before we bought it?

■ Further Reading: page 79.

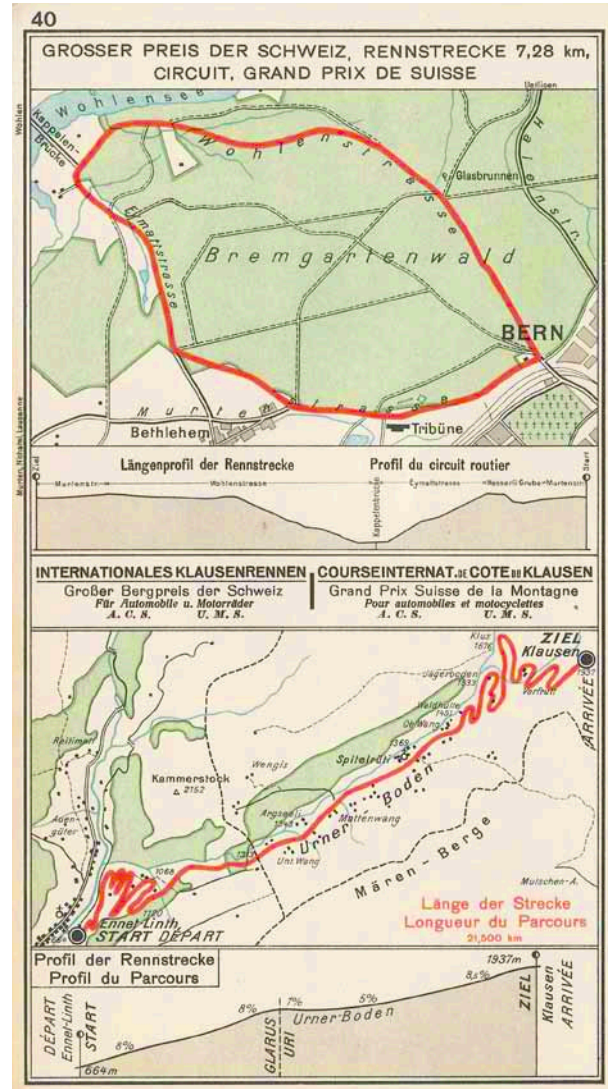


# Traveling at High Speed

Kümmerly & Frey's 1934 "Pocket Atlas for Car Drivers" (Taschenatlas für den Automobilisten) offers, for today's standards, an unexpected extra: on the last page there are two maps of the "Grand Prix of Switzerland" (Grosser Preis der Schweiz) in Bern and the "Mountain Grand Prix of Switzerland" (Grosser Bergpreis der Schweiz) on the Klausen Pass. These maps were of course not for the race drivers themselves but rather for the audience on the sidelines. It's uncertain if the map of the Klausen hillclimb was of any use at all. The race route is only a red line and, to a large extent, reference to the topography is missing. Relief shading, which would offer a three-dimensional feel of the mountainous area, would have been helpful. At least there is a profile of the route which somewhat compensates for the lack of clarity within the map. By the way, the map is oriented towards the south. Due to this trick, the race route and the profile can be read using the common reading direction from left to right. This simplification was obviously more important than the strict adherence to an orientation towards the north, as it can be found on all other maps in the atlas.

The international Klausen hillclimb took place 10 times between 1922 and 1934. The last of the historic races on August 5, 1934, was won by the legendary German driver Rudolf Caracciola with a new course record. Since 1993, several commemorative races have been held for vintage cars along the modernized pass road.

■ Further Reading: page 79.

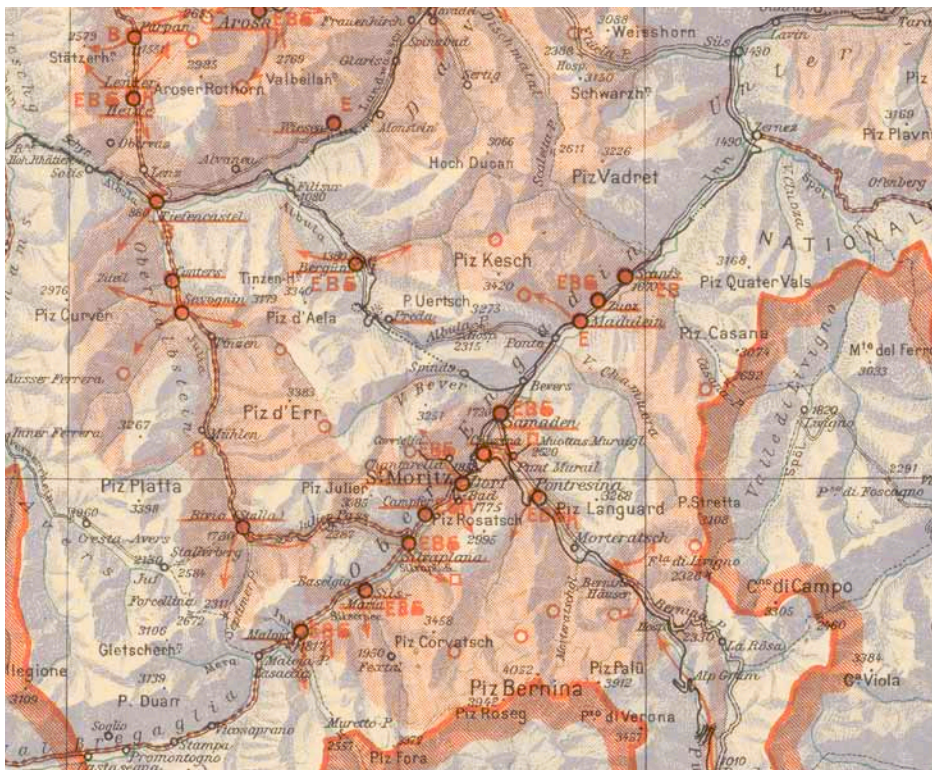


*Internationales Klausenrennen: Großer Bergpreis der Schweiz für Automobile u. Motorräder = Course internat. de cote du Klausen: Grand Prix Suisse de la Montagne pour automobiles et motocyclettes: A.C.S., U.M.S. 1:90 000. In: Schweiz: Taschenatlas für den Automobilisten: offizielle Automobilkarte des A.C.S. als Taschenatlas = Suisse: atlas de poche à l'usage de l'automobiliste: carte automobile officielle de l'A.C.S., édition atlas de poche. Bern: Kümmerly & Frey, [1934]. p. 40. (ZBZ, Atl 927 B, S. 40). Figure 35% reduced.*





# When It Snows



*Wintersportkarte der Schweiz. 1:500 000. Bern: Geograph. Anstalt Kümmerly & Frey, [c. 1935]. (ZBZ, 16 Hb 37: 1).*

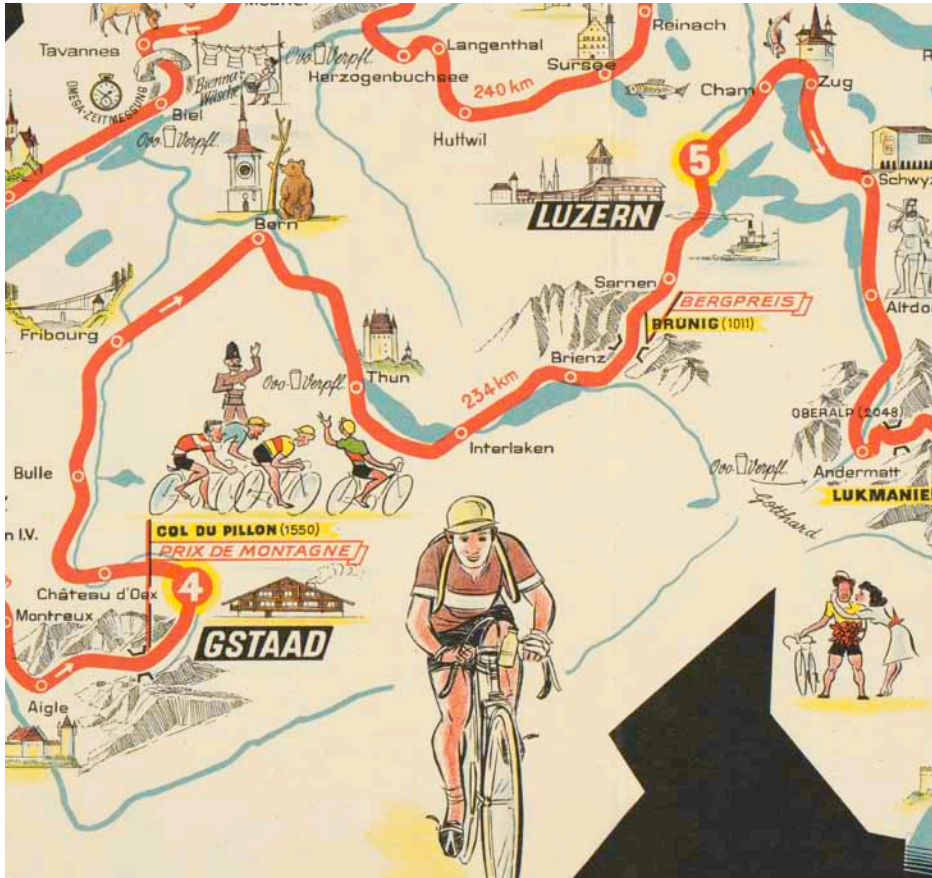
Anyone wanting to do winter sports before World War II was spoiled for choice. A map of Switzerland which depicted skiing areas and sports offered in winter resorts, came at the right time. Unsurprisingly, the resorts were mainly in the Alps. But also in the foothills of the Alps and in the Jura region there was enough snow to indulge in skiing. Ski resorts looked very different from the way they do today. There were hardly any mountain railways and ski lifts — the first T-bar lift opened in Davos in 1934. Simple alpine huts and somewhat better equipped mountain hotels offered meals. The resorts featured stylish bars and restaurants for wealthy local and foreign guests. The British, who introduced almost all of the winter sports to Switzerland, have been welcome since the 19<sup>th</sup> century. They founded the first skating club (Davos 1870) and the first curling club in Switzerland (Davos 1880), built the first toboggan run (St. Moritz 1872) and participated in the first bobsled race (St. Moritz 1892). The first downhill ski race in Switzerland was also organized by the British (Crans-Montana 1911). Incidentally, women were always among the participants.

Interestingly enough, this winter sport map from Kümmerly & Frey was not aimed at the British, but rather at locals or tourists from bordering countries. This is the only possible explanation why the map title is printed only in German and the legend is bilingual (German and French). Significant is also what is *not* shown on the map. Whereas today's ski touring maps depict routes almost everywhere in the Alps, routes are missing in large parts of the cantons of Ticino, Valais and Uri. Is this due to the lack of infrastructure? Is the map not up-to-date? Furthermore, sports such as skijoring and ice hockey are missing from the legend even though they are depicted on the cover of the map. Is this due to a lack of concept or a conscious decision not to show team sports on the map? Last but not least, a word about the symbols. There is an awkward and barely legible mix of pictograms (e.g. for curling), geometric symbols (e.g. for alpine huts) and text symbols (e.g. for bobsled runs). It wasn't until decades later that uniformly designed pictograms came into fashion.

■ Further Reading: page 79.



# Battle of the Giants



Tour de Suisse. [Design:] Otto M. Müller. 1:700 000. Aarau: A. Trüb & C., [1950]. (ZBZ, Kar NL 4: A 102). © Estate of Otto M. Müller. Figure 40% reduced.

■ Further Reading: page 79.

Just look at those snappy bicyclists the Zurich graphic artist Otto M. Müller (1913–2002) drew! He became well known for his pictorial map “Varied Switzerland” in 1941, and after World War II the number of cartographic commissions increased. The pictorial map of the 1950 Tour de Suisse is a typical example of his early work. The sparse bodies of water and the red route are striking. Stopovers and passes where prizes could be won are labeled in large letters. Pictorial elements are placed in empty areas, hence the technical term “pictorial map”. Shown are landmarks such as the Zytgloggeturm in Bern, the castle in Thun or the Kapellbrücke in Lucerne. Mountains near the passes refer to the challenges for the cyclists. That’s all. The inventive and clear design also appeals to a younger audience, who flock the racecourse. The crowd favorites Kübler and Koblet are at the beginning of the 5<sup>th</sup> stage in Gstaad. Off they go

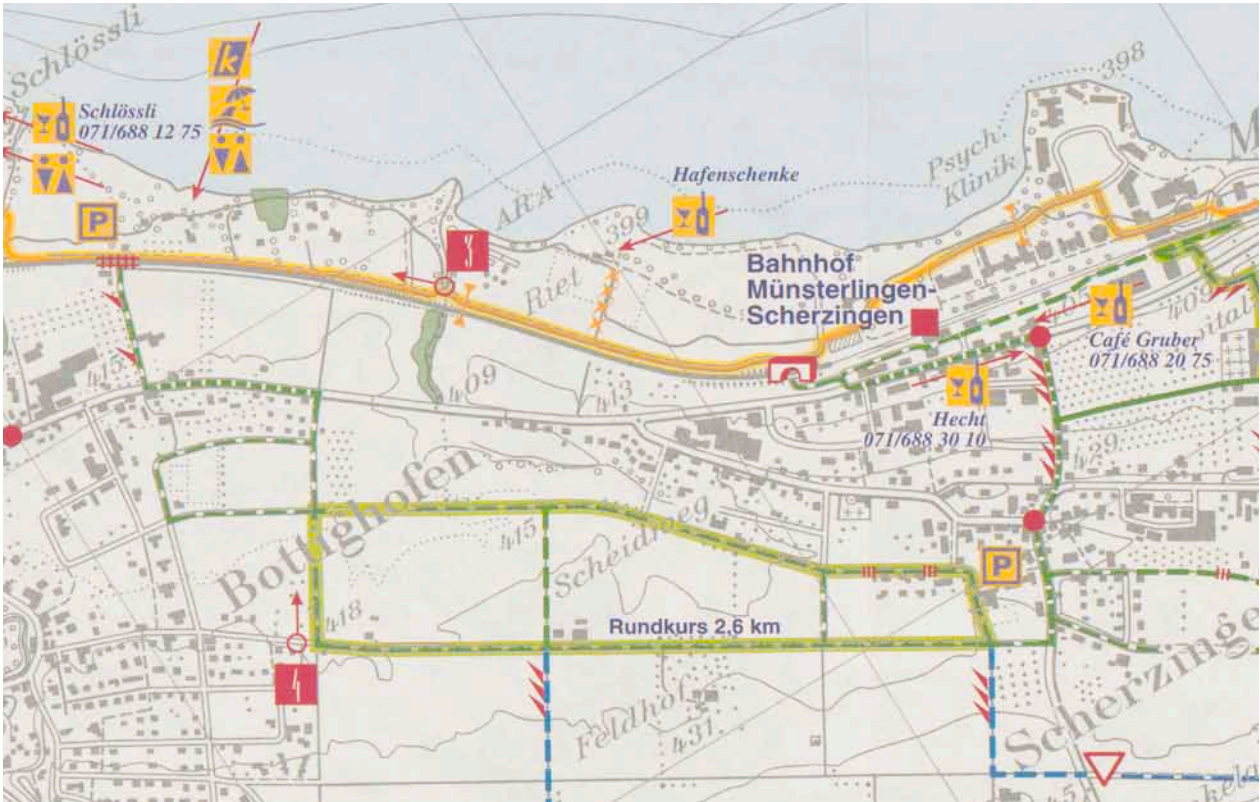
at a tearing pace Kübler Koblet in the same group Bulle flat area around Gruyère on towards Fribourg pedal pedal Kübler Koblet hot shortly before Bern Schär sways and gives up Aeschlimann gives up Koblet Kübler huge crowd in Bern hurrah go hello policeman now the Aare valley nice and flat group of five four minutes ahead hard to catch up an exhalation before Thun finally Ovaltine hits the spot lake to the left lake to the right Diggelmann Schütz almost 10 minutes lead unbelievable pedal harder Koblet Kübler up to the Brünig Pass burning calves go go mountain prize goes to Diggelmann Koblet attacks down to Lake Lucerne unleashed 45 km per hour Kübler Bobet trailing finish in Lucerne nearing finally bravo bravo Stettler wins after 234 km in 5 hours 56 minutes and 45 seconds,

the next three places are tied and go to Meier, Koblet and Diggelmann, Kübler is seventh. What a spectacle, a battle of the giants! The charismatic Koblet against hard-working Kübler. Both win the Tour de Suisse three times and both win the even tougher Tour de France. The cycling euphoria in Switzerland is at its peak.





# World Premiere



Bodensee: Kreuzlingen – Güttingen – Romanshorn. Herausgeberin: The Inline Map Factory. Ausgabe März 1998. 1:12 500. Frauenfeld: Wäger & Partner, 1998. (Swiss skate map No. 1). © Wäger & Partner.

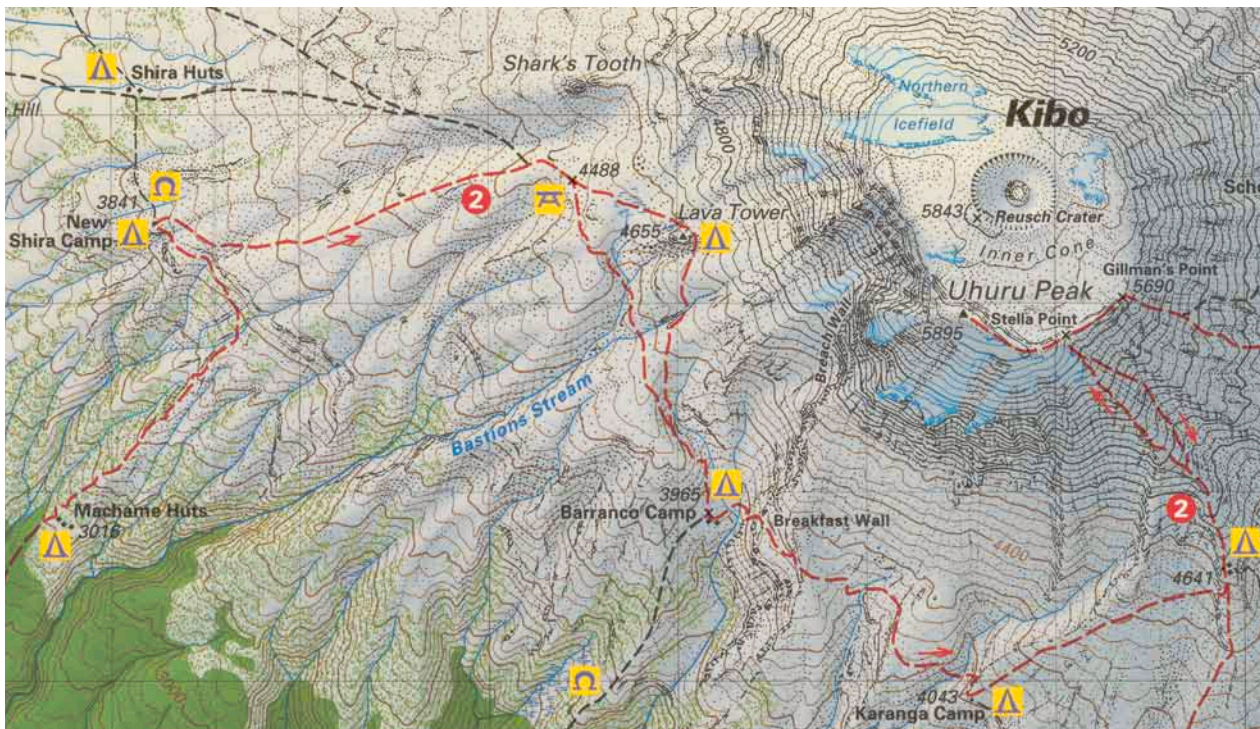
The older generation probably still remembers roller skates. One could roll across the schoolyard or around the neighborhood. Yet, this toy was unsuited for longer distances. In the early 1990s, inline skates from the US reached the European market. Due to the wheels being arranged in a row, one could skate much faster. The distances covered became longer—a new trend sport was born. The first “travel guides” for suitable routes were published and sold well. The then still young company Wäger & Partner in Frauenfeld decided to produce corresponding maps. The company boss Clemens Wäger (\*1956) and his employees skated along the routes, mapped obstacles and dangerous intersections as well as restaurants and public restrooms along the way. The topographic map series of Switzerland was used as the base map. In the spring of 1998, the world premiere was finally printed and available in stores. The map of the area between Kreuzlingen and Romanshorn at a

scale of 1:12 500 was the first in the series “Swiss Skate Maps”. In the same year, the publishing house issued nine additional sheets of the series, also depicting parts of northeastern Switzerland. Since 2008, Wäger & Partner’s skating maps have been undergoing a revival as an online service by SwitzerlandMobility called “Skating In Switzerland”.

■ Further Reading: page 79.



## On Top



*Kilimanjaro, Kibo: climbing and trekking map: climbing routes, trekking profiles, vegetation profile. Layout, field survey, cartography, drawings and photos by Sandra Greulich, Sacha Wettstein. 1:80 000. Bern: climbing-map.com, 2008. © Climbing-map.com.*

Nothing is normal at climbing-map.com: The maps produced at the small publishing house are made in the employees' spare time, and pen and ink are still in use. The range of their products includes mountains that are higher than ones in Switzerland and are mostly located on other continents. The owners Sacha Wettstein (\*1972) and Sandra Greulich (\*1973) have often been asked if it pays off. "Of course not!". They smile at this question about their hobby. They aren't interested in financial success but rather in traveling, experiences, contacts around the world, mountaineering skills and the training of the eye and hand. Of course, both are on the cutting edge of technology. They take GPS devices and cameras with them. Computers are diligently used in the months leading up to and after the expedition. Technology is nevertheless only used to make the maps more accurate and beautiful. The actual goal is the creation of the perfect map for a mountaineering dream destination. It isn't a coincidence that published maps of Aconcagua, Kiliman-

jaro, Cotopaxi, Mount Elbrus, Pico Turquino, and Island and Meru Peaks resemble Swiss maps. This map style is known worldwide for its perfection. Experience showed the two owners exactly what they want to offer their demanding followers. Sandra Greulich is a cartographer and topographer, Sacha Wettstein is a biologist and mountain guide. Climbing-map.com has become somewhat of a poster child. Both the NZZ Folio and Spiegel Online magazines as well as the Swiss national television have run reports about the company. And they recently received the national cartography prize "Prix Carto". The jury not only praised the innovative use of the Swiss map style for mountains which are 5000 and 6000 m high, but also the comprehensive additional information on the back of the maps. There, overview maps, diagrams, profiles, bird's-eye views, illustrations, and route descriptions can be found and together form a complete work of art.

■ Further Reading: page 79.



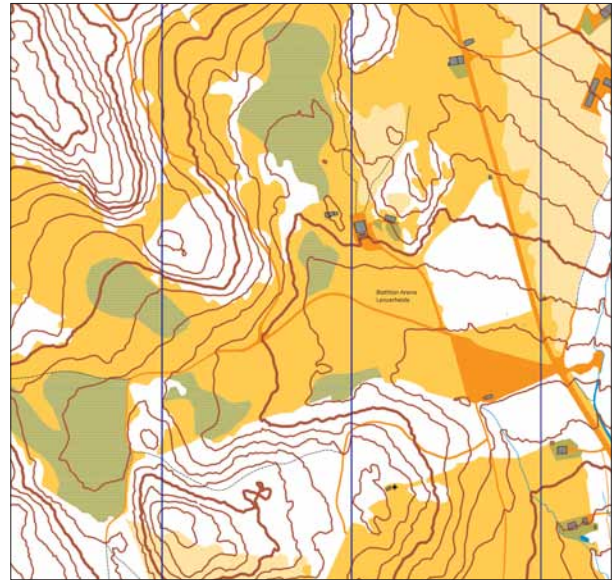


## Not Old News

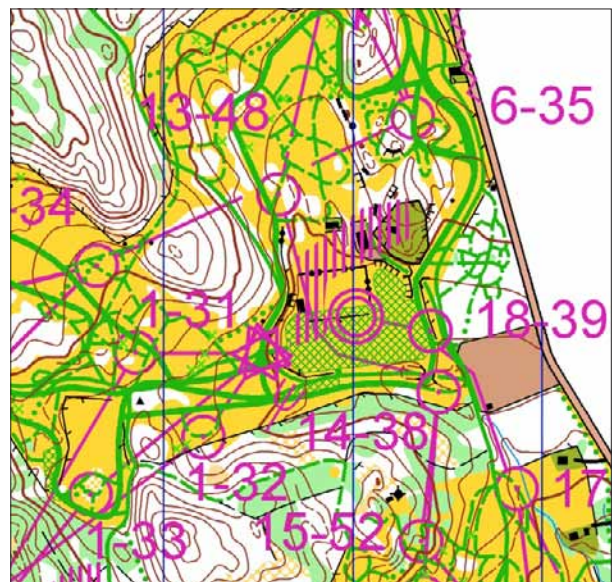
The first glance sees a typical map for an orienteering race (top): cultivated land is yellow, forest is white or green, swamp is blue, contour lines are brown—but wait, what is going on here? The contour lines are shaky and wedged together as if they were cold. Is the final cartographic touch missing here? Well, what is shown here is an automatically generated map, as a small note under the map title states. The magic word is airborne laser scanning. For this high-tech process a laser is attached to an airplane or helicopter. During the flight the laser scans the earth's surface, vegetation, the roofs of buildings, etc. Up to 50 control points per square meter are possible. A highly accurate surface model can be calculated from this scatterplot, from which contour lines can be derived. And all of this almost fully automated. The official survey provides the buildings and the roads, and voilà the makeshift map is finished. Athletes can use this to visualize the competition area in advance.

The final maps for the competition are of course precisely generalized and the track network is shown in purple. As this is an orienteering race on skis, an additional track network will be printed in green (bottom). The attraction of this sport is to choose an ideal route on the given track network as quickly as possible. As a competition organizer you need to have a good connection to Mother Hulda. Nothing works without snow. However, fresh snow right before a competition is also not wanted as it covers the track network. Either way: if you carry a GPS device with you while making the track, the recorded course and the location of the checkpoints can be immediately read into OCAD, a Swiss cartography software. This is a huge improvement from the early days of orienteering races in the 1960s and 1970s when the production of an orienteering race map took months.

■ Further Reading: page 79.



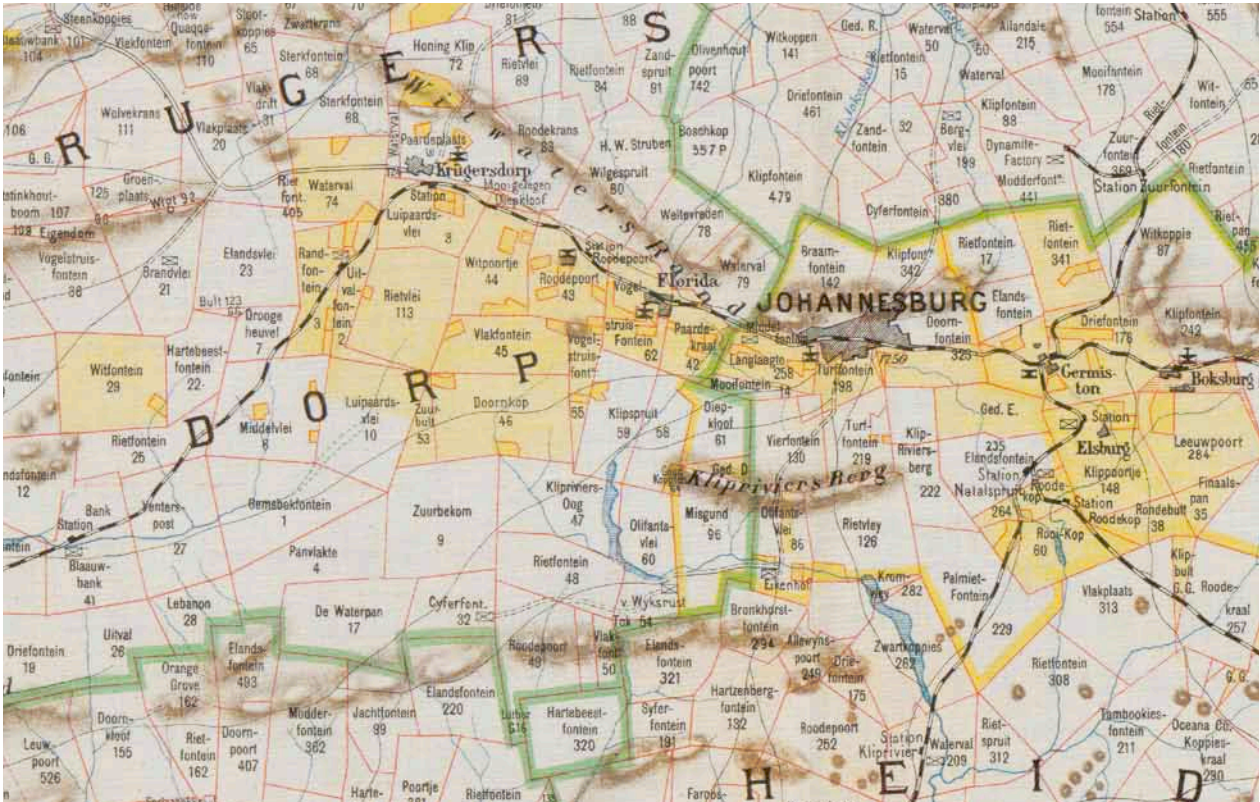
Lantsch/Lenz. [Cartography: Gian-Reto Schaad]. Auto-generated map. 1:10 000. [Lenzerheide]: European Championships Ski Orienteering, 2014. Also online: [skiolem15.ch/index.php/en/downloads](http://skiolem15.ch/index.php/en/downloads). © skiolem15.ch.



Lantsch/Lenz: Bual – Biathlon Arena – Tgampi – Golfplatz. Kartographie: Gian-Reto Schaad. [Edition] Relay 25.01.2015 Women. 1:10 000. Chur: Ski-O Swiss, OLG Chur, 2015. (Ski-OL-Karte 1791Q). Also online: [skiolem15.ch/index.php/en/live](http://skiolem15.ch/index.php/en/live). © skiolem15.ch.



# Hard Facts, Soft Silk



*Jeppe's map of the Transvaal or S.A. Republic and surrounding territories. Compiled from surveys filed in the Surveyor General's Office by Fred. Jeppe and C.F.W. Jeppe; lithographed by Wurster, Randegger & Cie (J. Schlumpf). 1:476 000. Pretoria: [Surveyor General's Office], 1899. (ZBZ, 17 Mp 76: 1: 5. Also online: [doi.org/10.3931/e-rara-32488](https://doi.org/10.3931/e-rara-32488)).*

The map shows the hand of new masters: before the arrival of the Boers and English, borders drawn with a ruler and towns with European names were unknown in South Africa. The newcomers introduced a regime in which the culture and language of the native inhabitants were irrelevant. It is through this lens that this map series depicts the Transvaal. Its authors are the Germans Friedrich Jeppe (1834–1898) and his son Carl Friedrich Wilhelm Jeppe (1870–1900). Both were government employees, one with the postal administration and later with the national surveying office, the other with the mining authorities. Their main interests were gold mines and farms managed by mining companies which are highlighted using two different shades of yellow. Wurster, Randegger & Cie., a company based in Switzerland, was commissioned to reproduce and print the map on six sheets. Silk was the chosen print medium as it holds up

better than paper in humid and warm climates. Sales of the map were to be assumed by Edward Stanford Ltd. in London. But the ink was barely dry when in October 1899, the Second Boer War between the Republic of Transvaal and Great Britain broke out. The British General Staff was soon in possession of the new maps. It is unclear whether this changed the course of the war. Fact is, Great Britain won the war three years later and made Transvaal a colony. Shortly thereafter, a development began which has since then shaped the image and history of South Africa: from 1904, people from the slums of Johannesburg were forced to resettle on the Klipspruit farm (see center of the map extract). The city of Soweto originated from this first mine labor camp, one of the principal sites in the fight against apartheid.

■ Further Reading: page 79.

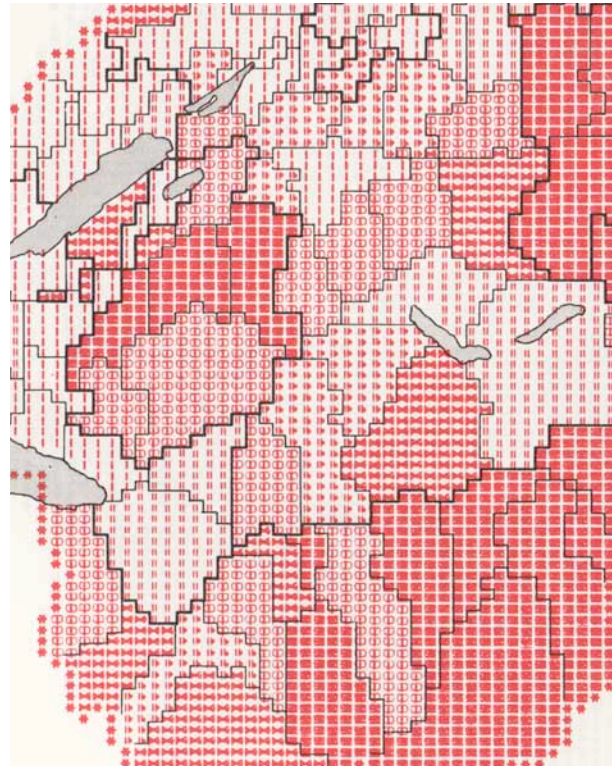




## The Matrix

This is the story of four Zurich geographers who produced an atlas in 1971/72: André Kilchenmann (\*1941), Dieter Steiner (\*1932), Otto F. Matt, and Ernst Gächter (\*1943) noticed that statistical data was, up until then, almost only available in tables. Identifying spatial aspects and trends was difficult to do and the subsequent map production was cumbersome and expensive. A computer that could sort and classify data and correctly show reference surfaces was needed. Two events that seemingly had nothing to do with each other lead to the result. First, the Swiss 1970 census was, for the first time, available digitally on magnetic tapes. Secondly, the University of Zurich had recently acquired an IBM computer called System/370-155. This machine was available with RAM between 256 and 2048 kilobytes and cost more than two million dollars. The geographers ran the program GEOMAP on it which was able to process statistical data and produce maps. 190 area units were used as a spatial reference. These included all districts and some additional areas of similar size in cantons which weren't divided into districts. The statistical data was calculated into six classes for each subject. There are various methods to do this and depending on which one is chosen the message in the map can change significantly. Finally, a symbol was assigned to each of the classes and was supposed to serve as a filling on the map. For example, a simple line resulted in a light filling for the lowest class and a combination of the four characters K, H, @ and # printed on top of each other resulted in a dark filling for the highest class (see detail bottom right). The program was now able to calculate the desired maps through the relationship between area unit, theme, class, and symbology. This is how 68 maps were created for the following topics: population, housing, occupation, elections, agriculture, and taxes. They were plotted individually and then Kümmerly & Frey reduced them photographically and added the legend. The electronically saved maps were between 152 and 160 kilobytes in size. If necessary, they could easily be recalculated within 12 seconds using other classifications, symbology or map scales. A small thing for a computer but a milestone for Swiss cartography.

■ Further Reading: page 79.

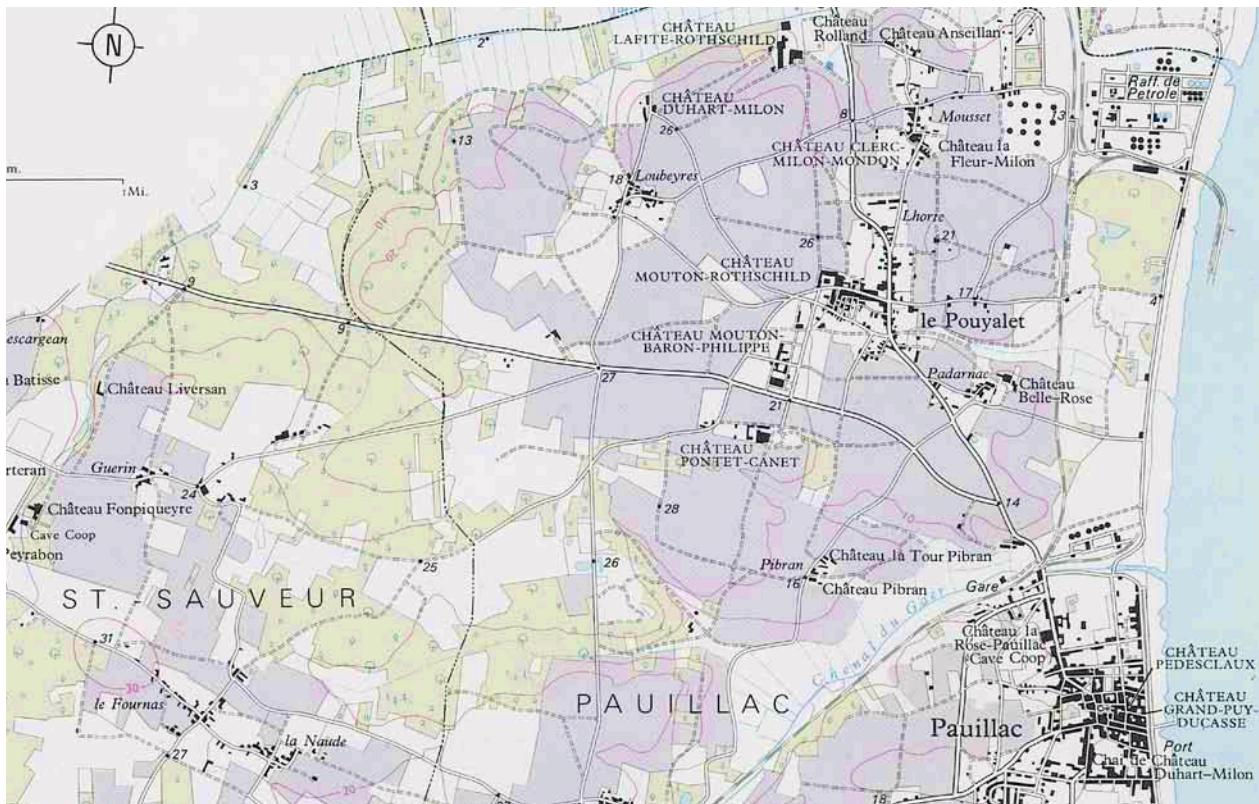


*Zivilstand ledig in Prozent der Wohnbevölkerung = Single inhabitants as per cent of resident population. 1:1 400 000. In: Computer-Atlas der Schweiz: Bevölkerung, Wohnen, Erwerb, Landwirtschaft: eine Anwendung des GEOMAP-Systems für thematische Karten = Computer atlas of Switzerland: population, housing, occupation, agriculture: an application of the GEOMAP system for thematic maps. [By André] Kilchenmann, [Dieter] Steiner, [Otto F.] Matt, [Ernst] Gächter; Computerkarten: Geographisches Institut und Rechenzentrum der Universität Zürich. Bern: Kümmerly & Frey, 1972. p. 22. © Institute of Geography, University of Zurich.*





# Oenocartological



[Winegrowing estates in the vicinity of Pauillac]. 1:35 000. In: *Der grosse Weinatlas: die Weine und Spirituosen der Welt*. [Author:] Hugh Johnson; Übersetzung und Bearbeitung von Jürgen Schwab. Bern: Hallwag, 1972. p. 79. © Gräfe und Unzer.

The “Chatéau Hallwag”, located in a prime location in Bern’s Lorraine quarter, was famous for its fruits. The company was founded in 1912, when the young Wagner publishing company took over the 200 year old Haller printing office. Hallwag’s main business was road maps, which was equipped with its own cartography department. But every now and then, foreign goods were merged with local tradition. This was the case with the “World Atlas of Wine”, a 1972 vintage. The essence was purchased in Great Britain, translated and then finally distributed under license throughout German-speaking Europe. The first bottling was a bit dry but still interesting. However, the poor transparency didn’t convince the cartographic experts. For example, the wild assemblage of three different fonts in a small area and a weak accentuation left a bad taste. Furthermore, a pale color was used throughout the atlas to highlight vineyards.

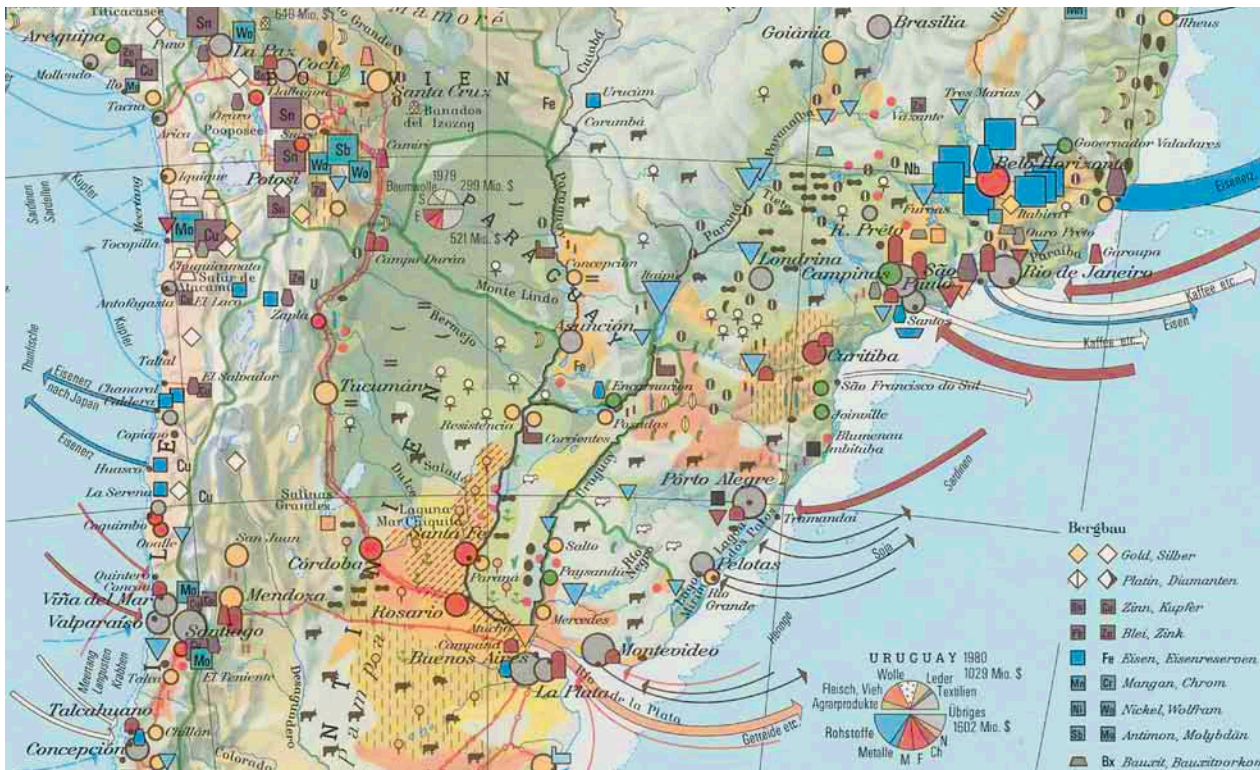
It would have been possible and profitable to spice up the estates with various colors. In this first vintage, many other bitter notes can be found. Overall, the character was promising, the finish was of ample length. The rich selection chosen by the British oenologist Hugh Johnson (\*1939) was immediately embraced by the public. Later vintages were further developed, thus becoming more complex and demanding. Around half a million copies of this matured, almost monumental Grand Cru had been ordered by 2001. Since the sale of the books division to Gräfe & Unzer and the takeover of the Hallwag publishing house by Mair (now MairDumont), the wine atlas is considered to be a German A.O.C.

■ Further Reading: page 79.





# In the Beginning There Was an Experiment



Südamerika: Wirtschaft. [Edited by Ernst Spiess]. 1:25 000 000. In: Schweizer Weltatlas für die Volks- und Mittelschule. Herausgegeben von der Konferenz der kantonalen Erziehungsdirektoren. Ausgabe 1981: Bearbeitung der [...] übernommenen Karten: Eduard Imhof; Bearbeitung der neuen und Nachführung der übernommenen Karten: Ernst Spiess; kartentechnische Herstellung, Reproduktion und Druck: Orell Füssli Graphische Betriebe. Zürich: Lehrmittelverlag des Kantons Zürich, 1981. p. 123. © Swiss Conference of Cantonal Ministers of Education (EDK).

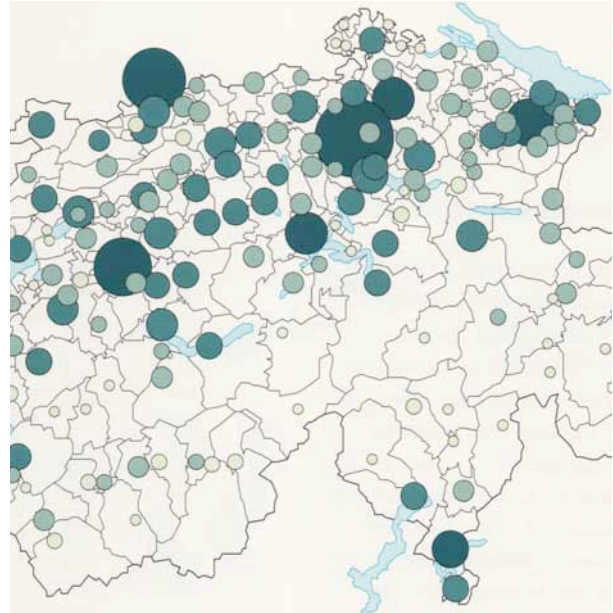
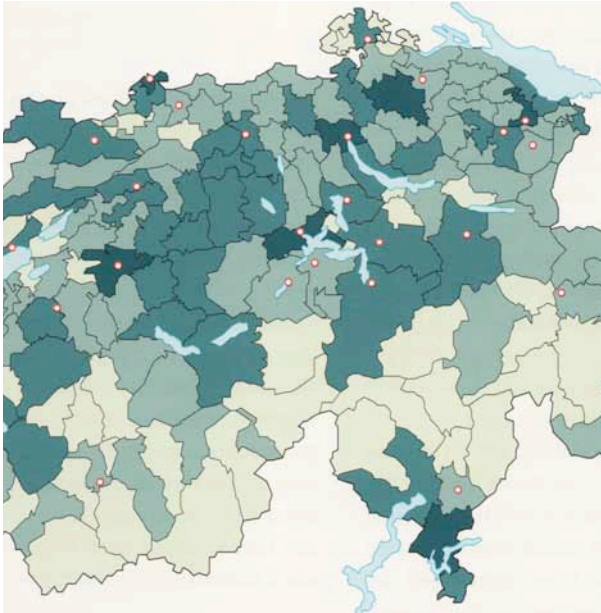
In 1981, this complex economic map of South America opened a new chapter in Swiss cartography. Up until then, the official atlas used in schools consisted mainly of topographic maps of the continents and countries. They depicted cities, rivers, national borders, topography and hypsometric layers. In addition, small thematic maps were used to show information about languages, population density and economy. With the rise of globalization it was especially difficult for the small economic maps to show the links between countries. For this reason, the atlas editorial staff, under the direction of Professor Ernst Spiess (\*1930), gambled on an experiment and developed two new types of maps: First, a general map in which vegetation is represented in natural colors and second, at the same scale, a map illustrating the complexities of the world economy.

The resulting reaction from schools was unusually controversial. But one soon became acquainted with the correct way of interpreting the various information layers in the map: lighter colors for land use, pictograms for important regional agricultural products, geometric symbols for mining, energy and industry, arrows for the most important transportation routes, and borders, rivers, relief shading and text labels for general orientation. The cartographic concepts from 1981 were optimized for later editions of the Swiss World Atlas (Schweizer Weltatlas) and have since proven themselves. Only time will tell if the changing viewing habits of “digital natives” and new curricula will require another modification of the map design.

■ Further Reading: page 79.



## Purists and Pragmatics



*Bevölkerung 1910. [Cartography: CAT Design]. 1:2 700 000. In: Historischer Strukturatlas der Schweiz: die Entstehung der modernen Schweiz. [Authors:] Bruno Fritzsche, Thomas Frey, Urs Rey, Sandra Romer. Baden: Hier + Jetzt, 2001. p. 11. © Hier + Jetzt.*

Cartographers are often faced with the question of how to visualize statistical data on a map. The easiest solution is to group the data into categories and color the reference areas accordingly. A typical example are the maps in the Historical Structural Atlas of Switzerland. Shown here is the population density map in absolute figures, based on districts in 1910. The color-coded categories are visible for each district. Unfortunately, large but sparsely populated areas seem to push into the foreground (left). For this reason, cartographic handbooks recommend using point symbols for absolute values. They emphasize both densely populated and uninhabited areas. This is relevant in a country like Switzerland where the population is unevenly distributed. However, this representation causes symbols to overlap in densely populated areas (right). One could spend much time trying out various circle sizes and colors, but one must ask what the cost-income ratio is. The team of authors of the Historical Structural Atlas pragmatically decided to use the first method. The cartographic design was entrusted to CAT Design, which also creates infographics and scientific illustrations.

Dear readers: When comparing the areas around Basel, Zurich and the Gotthard region, which method would you choose?

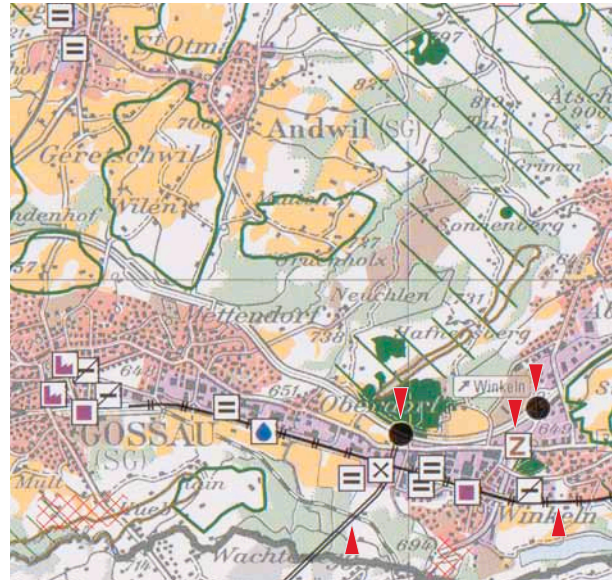




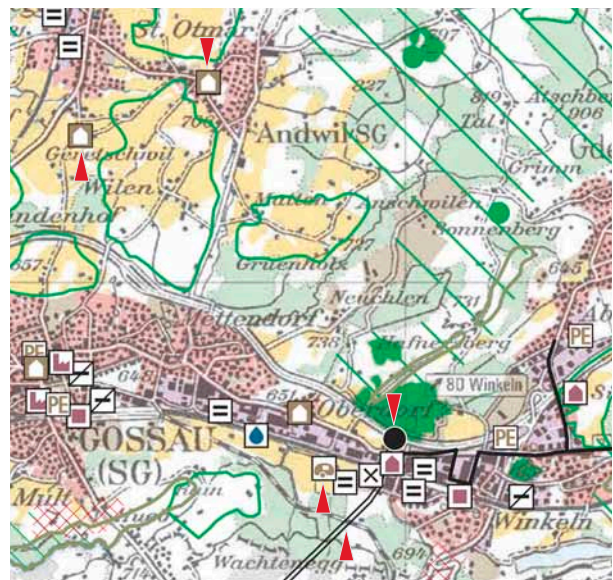
## Watching the Government Work

If you want to build a house, many things must be settled before contracts can be signed. For new homes, only building zones which have been decided on by the municipality and approved by the canton may be used. Building zones may not be established at will. Cantons must keep reserves open for future roads, regional leisure areas, mining sites, etc. Federal laws on e.g. road construction or land use planning must also be taken into consideration. In order to coordinate all requirements, cantons have so-called structure plans. They set a framework for spatial development and serve as long-term policy guidelines. Whether the registered development proposals will ever be realized is of course a different matter. Let's take a closer look at the structure plan of the canton of St. Gallen: in 2005 (top), construction of the new stadium in Winkeln began in a zone for shopping and leisure centers. An expansion of the highway junction was planned to accommodate the expected increase in traffic. The "Gossau-Ost" connection with a distributor road from the southwest was also planned. In addition, the railway line between Gossau and the city of St. Gallen was to be prepared for commuter trains. All three projects are therefore highlighted in black. Ten years later (bottom), the junction at Winkeln and the commuter railway have been completed which is why they have been removed from the structure plan. There are still discussions about the connection "Gossau-Ost" and the distributor road. Not far from there, a new passageway and pitches for Travellers is planned to which objections are pending. Since the national inventory of sites worthy of protection became binding for the canton of St. Gallen in 2009, they are also documented in the current structure plan.

What developments will the future bring? It is clear that the authorities will have to continue to try to balance all requirements in terms of infrastructure, mobility, quality of life, etc. In the periodically updated structure plan you can watch the government work.



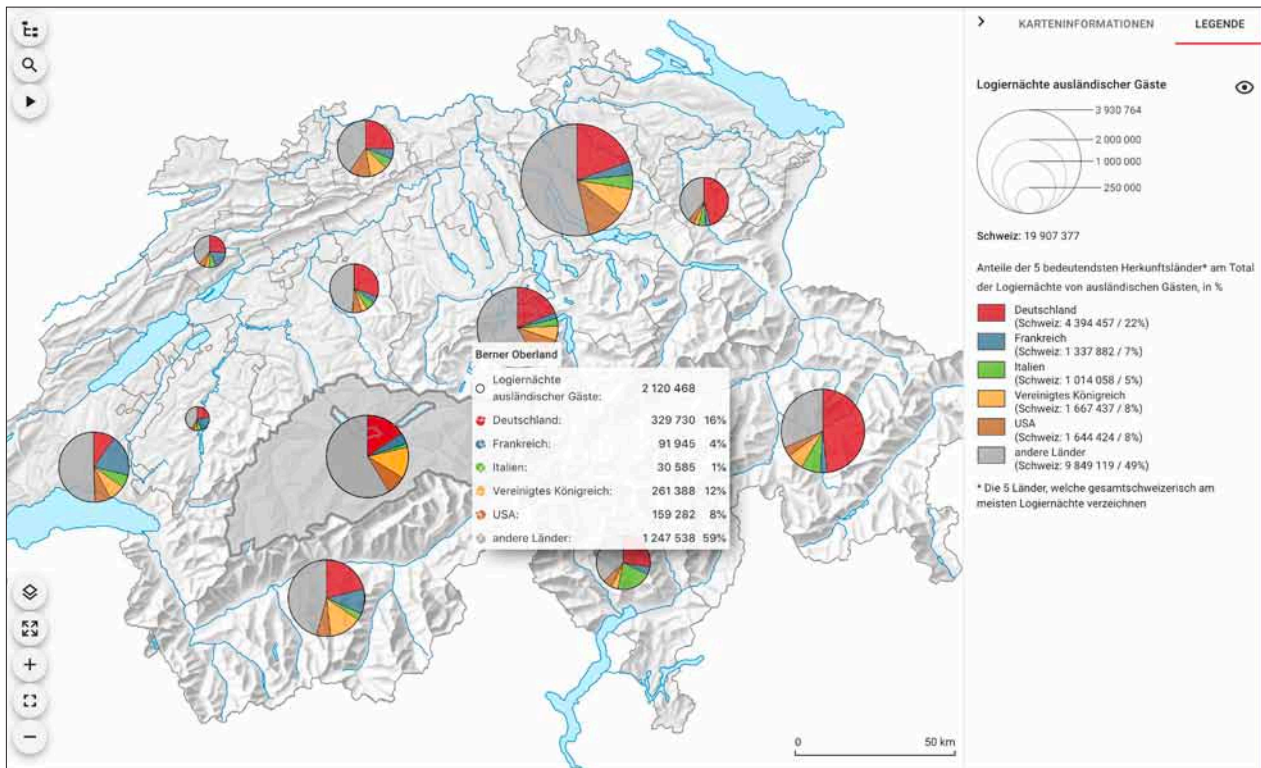
Richtplankarte 1:70 000 Kanton St. Gallen. Stand Oktober 2005. St. Gallen: Amt für Raumentwicklung, 2005. © Amt für Raumentwicklung und Geoinformation.



Richtplankarte 1:70 000 Kanton St. Gallen. Stand August 2015. St. Gallen: Amt für Raumentwicklung und Geoinformation, 2015. Current version: [sg.ch/bauen/raumentwicklung/kantonaleplanung/richtplanung.html](http://sg.ch/bauen/raumentwicklung/kantonaleplanung/richtplanung.html) (Text) and [geportal.ch/ktsg/map/76](http://geportal.ch/ktsg/map/76) (GIS). © Amt für Raumentwicklung und Geoinformation.



# Goodness Gracious!



Logiernächte von ausländischen Gästen in Hotels und Kurbetrieben 2014. In: Statistischer Atlas der Schweiz. Neuenburg: Bundesamt für Statistik BFS, 2016. Map ID: 18884. Online: [atlas.bfs.admin.ch/](https://atlas.bfs.admin.ch/) → Statistischer Atlas der Schweiz → Tourismus → Logiernächte → Logiernächte nach Herkunftsländ → 2014 → Tourismusregionen. © Federal Statistical Office, ThemaKart.

The year 2015 began with a huge scare for many managers: in mid January the Swiss National Bank decided to end the Euro currency arrangement, an arrangement that had placed a cap on the exchange rates from Swiss francs to euros. Since then much has been written about it. Winners and losers confront each other. Some tourist areas suffer much more than others due to the new exchange rate policy. One of the reasons could be the type of guests visiting a certain area. Looking at the Federal Statistical Office's statistical map "Overnight stays of foreign guests in hotels and health resorts in 2014" confirms the first assumptions. A pie chart for each tourist region symbolizes the absolute number of overnight stays by foreign guests (size of the diagram) and the relative number of the five major countries of origin (width of the sectors). While German guests claim 48% of all foreign overnight stays in the canton of Graubünden, they only

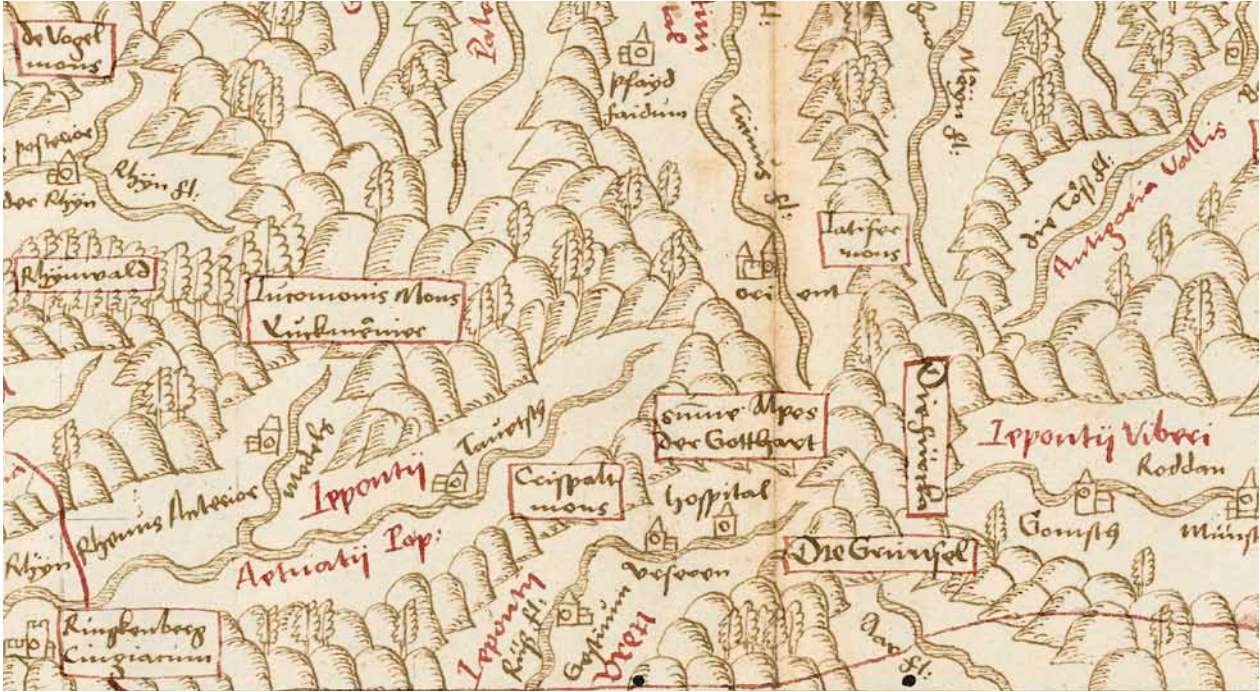
make up 16% of the overnight stays in the Bernese Oberland. On the other hand, 59% of overnight stays there go to guests from "other countries", meaning Arab, South and East Asian countries. In the canton of Graubünden only 32% are from "other countries".

In the online Statistical Atlas of Switzerland there are more than 2500 other maps in 21 sections on various topics: taxation, social benefits, crime, etc. In a nutshell: a treasure trove which presents dry statistics in a visually appealing manner.





# The Indigenous Swiss



[Historical map of the Lepontii]. [Author: Johannes Stumpf]. 1:450 000. [Before 1547]. (ZBZ, Ms A 67, S. 42–43. Also online: [doi.org/10.7891/e-manuscripta-16493](https://doi.org/10.7891/e-manuscripta-16493)).

- “May we acquaint you with the indigenous Swiss?”
- “Why, surely that’s obvious: the people from the oldest cantons of Uri, Schwyz and Nidwalden.”
- “Far from it! We mean the people who settled in the Gotthard area before them.”
- “The Romans!”
- “Not bad, you’re getting closer. We mean those who were there even earlier.”
- “Huh?”
- “Please allow us to introduce you to the Lepontii.”

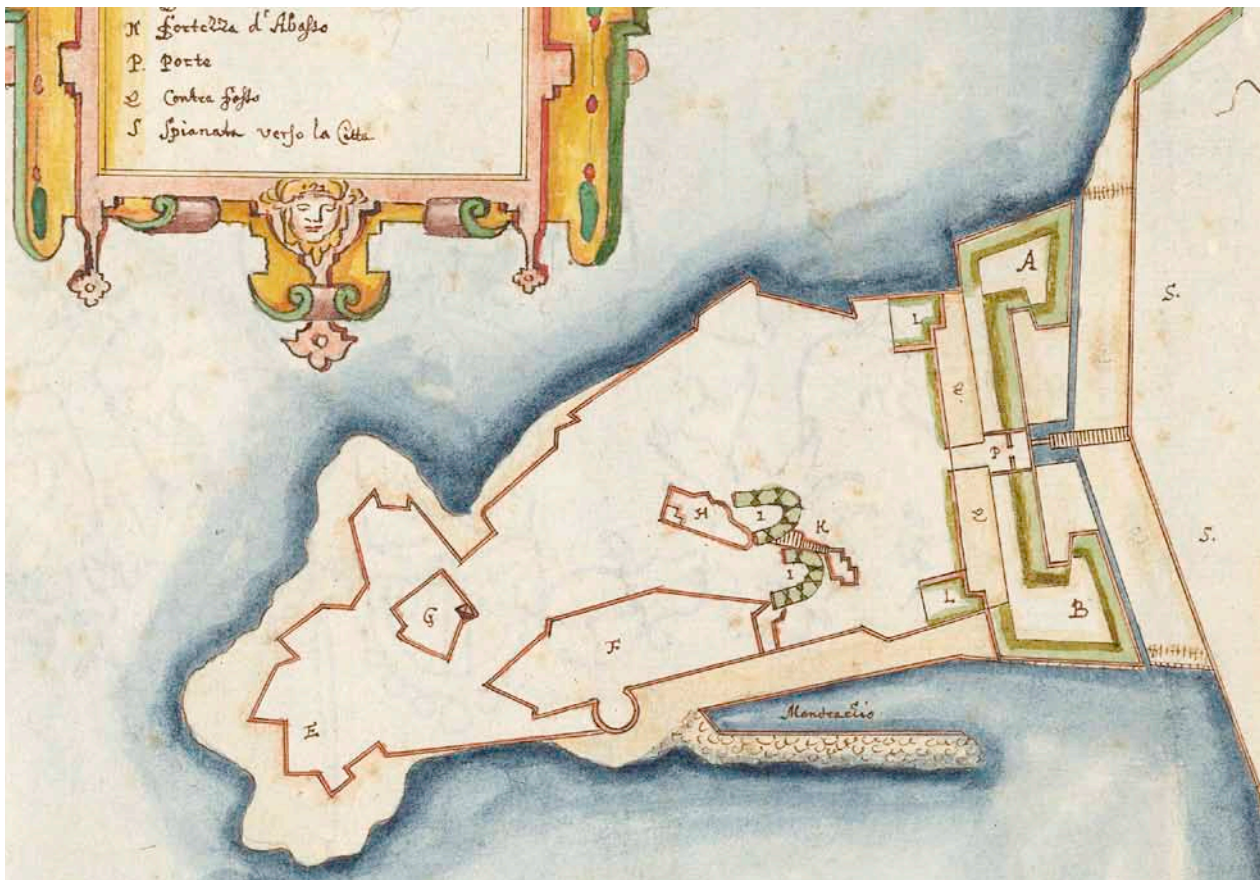
According to the ancient authors Caesar and Pliny the Elder, the Lepontii were Celtic Alpine people. They settled at the sources of the Rhine, Rhone and Ticino Rivers. By doing this, they occupied the strategically important Alpine crossings in the Gotthard area, which earned them customs revenues and allowed them to flourish economically. In the area around today’s Bellinzona, graves with artistic burial objects have been found. The discovery site is at the end of the Leventina valley, whose name derives from the Lepontii. We don’t know much about

these ancient peoples, and in the 16<sup>th</sup> century Johannes Stumpf (1500–1577/78) probably knew even less. This didn’t prevent him from adding a historical map to his epic Swiss Chronicle. Although the sketch is untitled, the intention is clear. The “Lepontij” have been labeled no less than six times around the Gotthard area. A red line marks their settlement area. The map is oriented towards the south with means the area of the Rhaetian people is on the left and the area of the “Vallesiani” (the people from Valais) is on the right. Stumpf uses the Latin and German names interchangeably, depending on the context. Most of the names of the peoples, mountains, passes and rivers are bilingual but most villages are monolingual. As for the terrain representation, Stumpf’s map is a typical example of a so-called molehill terrain representation. This refers to the successive mounds of mountains which are reminiscent of what these animals do. Shame on him who sees a reference to the current tunnel building spree in the Gotthard area!

■ Further Reading: page 80.



## Wider, Higher, Stronger



Corfu. [Author: Johann Ardüser]. 1:5000. [Before 1654]. (ZBZ, Ms B 81, Nr. 53. Also online: [doi.org/10.7891/e-manuscripta-16506](https://doi.org/10.7891/e-manuscripta-16506)).

Europe 400 years ago: denominational differences and the collapse of the political order led to chaos which resulted in the Thirty Years' War. Regular armies, mercenary armies, epidemics, and famine destroyed entire regions. Behind their old walled cities, people didn't feel safe anymore. They demanded new and stronger safeguards. The authorities in many cities decided to build huge fortifications. The specification read: wider, higher, stronger.

In Zurich, 35 year old Johann Ardüser (1585–1665) from Davos, received the responsibility of creating a fortification plan. Ardüser had plenty of experience which he acquired while in Venetian service. During that time, he made copies of various fortification maps. Amongst them, there was also a southern-oriented map of Corfu

in Venetian linear measure. The map shows only the bare minimum, namely ramparts, citadels, castles, cavaliers, fortified gates, the moat and the frontline. The coastline rounds everything off. More was not needed for an aide-memoire. Ardüser spent many years adapting the theory to accommodate the local conditions in Zurich. The construction of the fortification in Zurich became a strain on the citizens of the city. However, the city engineer found time to compile his technical expertise into a textbook and had it printed with the title "Architectura von Vestungen" (Fortress Architecture). Ardüser generously bequeathed his bound collection of around 170 fortress plans and perspective views to the Zurich City Library.

■ Further Reading: page 80.





# Showing Colors



*Helvetiae, Rhaetiae et Valesiae, caeterorumque confoederatorum ut & finitimorum populorum tabula geographica et hydrographica nova & exacta. Operâ & studio Ioh. Conradi Gygeri, Helv. Tigurini delineata & à Conrado Meÿero in aes incisa, anno Christi 1657. Renoviert a.o. 1683. 1:470 000. [Zurich]: [publisher not identified], 1683.*

Copy with colored areas. (Basel, University Library, VB A2:1:21b. Also online: [doi.org/10.3931/e-rara-25115](https://doi.org/10.3931/e-rara-25115)).

Copy with colored borders. (ZBZ, 5 Hb 03: 3. Also online: [doi.org/10.3931/e-rara-36747](https://doi.org/10.3931/e-rara-36747)).

Entangled political borders are typical for the Swiss Confederation. Even the best cartographers had and have a difficult time mapping every corner flawlessly. The author of the presented map is the brilliant cartographer Hans Conrad Gyger (1599–1674). His map of Switzerland doesn't come close to his masterpiece, the painted map of the canton of Zurich. Let's take a look at the content. To do this, one must ignore the colors. What remains are rivers, towns, labels, political borders (finely dotted lines) and the outline of the coat of arms. These elements were engraved into a copper plate. The printer inked the plate and then wiped it with a cloth. The ink remained in the indentions. The printer then let the inked plate and a sheet of paper pass through the press, transferring the ink. The result was a monochrome map that only had lines and text. As it wasn't possible to

print colored areas, each copy had to be hand colored. Apparently, the color sample for the Swiss map was lost after Gyger's death in 1674. This could explain why the coloring is completely different on each copy. There were even differences in the details. The colorist had to make sure not to forget an exclave or run his brush along the wrong line in difficult border situations.

The pièce de résistance was the coloring of the coat of arms. The colorist may have known those of the Thirteen Cantons by heart. Those from smaller or less important territories were certainly more demanding. Or do you happen to know which of the Valangin coat of arms on the two copies is correct?

■ Further Reading: page 80.

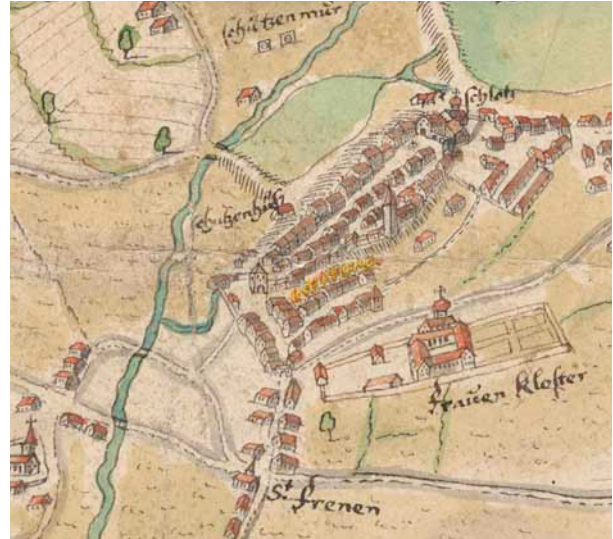


## Among Colleagues



*Geometrischer Grundriß der Statt Wyl und dero Gegne, auch wie selbe von lob. Ständen Zürich und Bern überzogen, und zur Übergab gezwungen worden den 22ten May Ao. 1712. [Cartography probably by Hans Jakob Lavater]. 1:9500. 1712. (ZBZ, MK 2154. Also online: [doi.org/10.7891/e-manuscripta-15764](https://doi.org/10.7891/e-manuscripta-15764)).*

April 1712: After years of negotiation and hesitation, the Reformed cantons of the Swiss Confederation prepared for war. The cause was the intolerable behavior of the Prince-Abbot of St. Gallen in Toggenburg. Several thousand soldiers from Bern and Zurich marched together with troops from Thurgau and Toggenburg towards the abbatial sovereign territory. The first destination was Wil, a small and exposed town near the border of Toggenburg. The inhabitants of Wil had foreseen the danger and were prepared. Trenches had been dug, palisades built, city walls repaired and guns brought in. But the attackers brought brutal weapons with them. On a hill near the border, barely on Thurgau's soil, they set up their cannons and fired smoldering cannonballs at Wil. Several townhouses and numerous barns went up in flames. After about six days, Wil's resistance broke and the two generals from Bern and Zurich entered on horseback. As usual after a battle, assets and losses were documented. The authorities demanded a list of dead soldiers, the people of Wil were charged for food and animal fodder, and military cartographers made a map



*Grundriß der Statt Wyl sambt dero Gegne, auch wie selbige von beyden lob. Ständen Zürich und Bern überzogen, und zur Übergab gezwungen worden. [Cartography by] A. Ridiger f. 1:9500. 1712. (ZBZ, MK 1047. Also online: [doi.org/10.7891/e-manuscripta-15308](https://doi.org/10.7891/e-manuscripta-15308)).*

of the surrounding area for military records. At least five versions of this map have survived. They are all precisely oriented to the north and have map scales in paces and rods (equivalent to five ells or 10 feet). The position of the cavalry is highlighted in green and the infantry in yellow. On four of the five versions, a captured soldier sits at the bottom right, covering one eye with his hand. Next to him sits an allegory of war in full armor presenting a lance or flag. Other than that there are no major differences in content. But the individual graphic expression is easily recognizable. Zurich surveyor Hans Jakob Lavater's (1658–1739) style (left) is different from Johann Adam Riediger's (1680–1756) from Bern (right). Which version is the "original" and which is the "copy"? Is one "better" or more realistic than the other? There is no answer. It is important to know, though, that these maps depict the view of the winners. What would the maps of the losers have looked like?

■ Further Reading: page 80.





## On Stage

Augusta Raurica in 1582: Andreas Ryff (1550–1603) and Basilius Amerbach (1533–1591) of Basel begin with excavations and scientific research at the Roman theater in Augst. It was well known in the area that beneath the heavily overgrown hill there was a Roman monument. The hill was used as a quarry which makes something else quite clear: the cultural-historical importance of the hill was lost on the local population. As a professor of Roman law, Amerbach had a different opinion. In his eyes, scientific excavations and documentation were absolutely essential. He therefore opened the first archaeological research site north of the Alps. Unfortunately, Amerbach died a few years later. The ruins were once again overgrown.

Around 180 years later, Augusta Raurica reappeared in the spotlight. In 1763, the 23<sup>rd</sup> and last part of a series on local history of the region around Basel was published. Therein was an article on Augst. It contained an east-oriented map of the area. The draughtsman Emanuel Büchel (1705–1775) was able to not only correctly place the theater (labeled with the letter B). He also knew about temple remains, the aqueduct and a tower on the small island in the Rhine. Furthermore, he added many ruins which were left unexplained. That was, after all, enough information for it to qualify as an archaeological map. Büchel also didn't challenge the fact the Roman city limits of Augusta Raurica were during his time, in fact in two different countries. The map area shows not only "Basel-Augst" in the Swiss Confederation but also "Kayser-Augst" on the Austrian side of the border.

■ Further Reading: page 80.



*Lage von Augst. Emanuel Büchel del.; Io. Rod. Holzhalb sculps. 1:13 900. In: Augst. [Author: Daniel Bruckner]. Basel: bey Emanuel Thurneysen, 1763. (Versuch einer Beschreibung historischer und natürlicher Merkwürdigkeiten der Landschaft Basel 23. Stück). Plate 1. (ZBZ, 3 Jc 54: 3. Also online: [doi.org/10.3931/e-rara-32457](https://doi.org/10.3931/e-rara-32457)). Figure 25% enlarged.*



## Rigid but Speedy

Wilhelm Haas (1741–1800) was planning a revolution in the technical map production. Traditional copperplate engraving was too slow and inflexible for him. Being a trained type founder and owner of a printing press, he began to print maps like books in 1776. This meant each element should be a moveable character that can be arranged as desired. Instead of letters, Haas cast new elements, previously seen only as typographical ornamental elements: sections of rivers in countless curves and thicknesses, lakefronts in several dozen variations, small and large circles for town symbols, shapes for hills and mountains, short and long rows of lines and dots for borders, etc. There were around 300 different molds in total. Despite this impressive number, typometric maps look very schematic and rigid. Haas was criticized for this. But the advantage was speed. By cleverly arranging and stabilizing the characters with filling material, Haas was able to produce maps within a few days. If necessary, they could easily and quickly be corrected without the tedious scraping and pounding on copper plates. This success moved the inevitable enviers and rivals to act. The Karlsruhe geographer August Gottlieb Preuschen (1734–1803) and the Leipzig printer of music scores Johann Gottlob Immanuel Breitkopf (1719–1794) also claimed this invention for themselves. However, over the years Wilhelm Haas and his son Wilhelm Haas Jr. (1766–1838) perfected this technique. The Haas type foundry in Basel became known throughout Europe. But it was a revolutionary time. Between January and March 1798, the Ancien Régime fell apart, and in April the Helvetic Republic was proclaimed. At the beginning of May, the canton of Waldstätten in central Switzerland and the cantons of Säntis and Linth in eastern Switzerland were established. The formation of districts continued until the beginning of July. Haas, as a member of the Helvetic Grand Council, passed news on to his son. By August 1798, he had printed an up-to-date map of the republic including the new districts. It's a bit ironic that the efficient and politically well-informed Haas family was overrun by another revolution. After the turn of the century the newly invented lithography competed with the typometric map production. In 1803, Wilhelm Haas Jr. stopped publishing maps. As quickly as the typometric method was developed, it disappeared again.



*Der Helvetischen Republik neue Cantons und Districts Eintheilung nach den gesetzlichen Beschlüssen. Dem Vollziehungs-Directorium gewidmet von Wilhelm Haas dem Sohne. 1:630 000. Basel: Wilhelm Haas, im Augustmonat 1798. (ZBZ, 4 Hb 54: 1).*

■ Further Reading: page 80.





# Code Name Dora

*Red Army File, 1935:* We have just engaged the Hungarian geographer Alex Radó (\*1899) as an agent. He has been a communist since 1918. His wife, a German, is also a passionate supporter of our cause. In 1924, Radó published a map of the new state with Westermann and introduced the term Soviet Union to the German language. His 1928 travel guide of the Union is regarded as a standard piece of work for capitalist countries. After the fascists seized power, Radó fled to Paris in 1933, where he founded the geographical news agency Inpress. He is extremely well read, articulate, well networked and willing to obtain information for us. We will station him either in Belgium or neutral Switzerland. His code name will be Dora.

*Addendum, 1944:* In 1936, Dora founded the news agency Geopress in Geneva. This smoke screen proved to be effective because he, as an acknowledged scientist and editor, had easy access to important people. His infographics of the political situation found a ready market with newspapers at home and abroad and ensured him a regular income. Since 1940, he has published a trilingual atlas which was intended to act as a periodic summary of the daily infographics. Of this, 24 installments were published. We promoted Dora to head of the intelligence group "Switzerland". In 1943, some of his intelligence collectors and all of his radio operators were unfortunately arrested by the Swiss police, probably due to pressure from the Nazis. We know he was driven underground, but we haven't heard from Dora since.

*U.S. Office of Strategic Services File, 1945:* During a stop-over on a flight from Paris to Moscow, the Soviet agent Radó was arrested in Cairo. He is wanted in Switzerland. According to Radó's statement, he fled to Paris in 1944 with the help of the French Resistance. He presents himself as innocent, but his statements cannot be verified in detail at the moment. A few months later he was transferred to Moscow.

*CIA File, 1968:* In 1955, former agent Sándor Radó returned to Budapest from Russian captivity. There, he was immediately rehabilitated. Since then, Radó has been a professor of Geography and head of the Hungarian



*Europe = Europe = Europa. [Cartography: Sándor Radó]. 1:25 000 000. Genève: Vallier & Blanc, 1/IV/42. (Permanent atlas no. 16). © András Trom.*

Office of Cartography, as well as head of the Cartographia company and editor of the cartographic journal "Cartactual". At his suggestion, the socialist countries edit the so-called "Karta Mira", a world map series at a scale of 1:2.5 million.

*Press reports, 1981:* The leading Hungarian geographer and cartographer Sándor Radó died in Budapest, aged 81. He was most recently chairman of the commission for thematic cartography in the International Cartographic Association. This dazzling figure became well-known through his autobiography "Codename Dora".

■ Further Reading: page 80.



## Small but Nice

Sometimes it's the small things. When the first volume of the Swiss Encyclopedia was published in 1991, not only cartographers caught their breaths. We aren't talking about the risky funding or the quick production cycle. No, we're talking about the infographics that were included with each article about a canton. The draughtsman (whose name is kept a secret) failed disastrously. The borders of the cantons were partially deformed beyond recognition. Many of the large lakes which make orientation easier, were missing and made everything even worse. The call for better maps for the following volumes was even a topic in the daily newspapers.

When at the end of the 1990s small maps were to be made for the planned Historical Encyclopedia of Switzerland, one didn't want to repeat the mistakes made in the Swiss Encyclopedia. The editors commissioned the small but nice Kohli Kartografie company in Bern. Let's look at the 6.5 x 6.5 cm square map depicting the country of South Sudan. Don't be fooled by the simplicity and the lack of colors. The map quality can be seen in the details. For example: have you noticed the tiny exclaves of Angola and Oman? The most recent addition to this map is the border between Sudan and South Sudan which separated in 2011. Their common border is still in dispute. Every decision a cartographer makes about the course of a certain border can be seen as being partisan. Wars have been instigated because maps the size of stamps were supposedly or actually wrong. Praise goes to the masters of the details who aren't scared off by constricted areas or the map topic.



*Situationskarte Südsudan. Kohli Kartografie. Version as of January 16, 2017. 1:140 000 000. In: Historisches Lexikon der Schweiz HLS. Online: [beta.hls-dhs-dss.ch/de/articles/049770/](https://beta.hls-dhs-dss.ch/de/articles/049770/). © HLS and Kohli Kartografie. Figure 20% enlarged.*





## Fake News



[Map of the Holy Land].  
 [Author: Joachim Vadian?].  
 1:1200 000. In: *Das Alt Testament düttsch, der ursprünglichen ebreischen Waarheyt nach uff das aller truwlichet verdüttschet. Getruckt zů Zürich: durch Christophorum Froschouer, im Hornung des Jars 1525.* After sheet CXII. (ZBZ, 31 Nv 02: 1. Also online: [doi.org/10.3931/e-rara-32932](https://doi.org/10.3931/e-rara-32932)).  
 Figure 25% reduced.

Today, we supposedly live in the post-factual age, at a time when facts and their verifiability have a hard time. The choice of words implies that there was a factual age. And if there was a factual age there must have been a pre-factual age as well. In European history, we can in fact find an example of a switch from a mystical world anchored in faith to a society of scientific research. After the “Dark Age” of the Medieval period, the Renaissance period is still regarded as the glorious beginning of the modern era: Seafarers sailed around the world for the first time, new instruments such as the telescope were invented, cartographers developed new map projections, and in 1517, the Protestant Reformation began—just to name a few important events and innovations. These also affected Switzerland. Zurich quickly became one of the central points of the Reformation. It was here where Christoph Froschauer (1490?–1564) set out to print a bible in German. It was published in 1525. It was the first bible in the world to be illustrated with a map of the Holy Land at the time of the Old Testament. Simultaneously, this historical map is the first map to be printed in Zurich. The author of the map is most likely Joachim Vadian (1484–1551), a humanist from St.Gallen. He was very knowledgeable about sources and used a

map, produced around 1515, by the artist Lucas Cranach (1472–1553) as a model. So far, so good. But at some point during the production process a gross mistake must have happened. For some reason, neither the anonymous woodcutter nor Froschauer nor the bible experts noticed that a geographically reversed image of the map had been printed (only the text is true sided and legible). But how could have one known the correct geography of the Holy Land? Which source could readers have used to compare the two? No one owned an atlas then. Most likely none of the city inhabitants could have reported first hand about Palestine. Still, two curiosities should have attracted someone’s attention. First of all, when looking north, east should be on the right and west should be on the left. On the map it is exactly the other way around. Secondly, it should have been obvious to every reader that ships sailing under the Zurich flag had not yet sailed over the sea. Yet such a ship is depicted on the map of the Holy Land. One is certainly welcome to speculate in detail about this oddity. But no matter how you look at it, this map is and remains a kind of Renaissance “fake news”.

■ Further Reading: page 80.



## The Doctors and the Librarian

When lovers of old maps hear “Scheuchzer” and “cartography” they think of the large map of Switzerland published in 1712. Its author Johann Jakob Scheuchzer (1672–1733) was a doctor of medicine and one of Switzerland’s most important naturalists during the 18<sup>th</sup> century. His son Johann Caspar (1702–1729) has been almost forgotten. Young Scheuchzer also became a naturalist and emigrated to London after his studies. There, he worked as a librarian for the royal physician and passionate collector Hans Sloane (1660–1753). Sloane commissioned Scheuchzer to translate and edit a previously unpublished book of applied geography of Japan out of the estate of the German physician Engelbert Kaempfer (1651–1716). However, Scheuchzer understood precious little of the subject matter. Thanks to his employer’s well stocked library he was able to become acquainted with the subject. Scheuchzer produced many illustrations and maps to illuminate Kaempfer’s text.

One of these maps is the political map of the Japanese Empire and its then 68 provinces. For the coastlines and borders, Kaempfer used an anonymous Japanese template which had been published in 1678 and which he had taken back with him. But Scheuchzer changed Kaempfer’s drawing, adding an island here and changing the coastline there. He also added the striking Sino-Japanese characters (Kanji) for the province names. In contrast, many towns are nameless. Only the imperial city of Edo (today’s Tokyo) is emphasized. The isolated volcano Fuji is correctly depicted while all other mountain symbols are grouped together and have little in common with the actual topography. It would be unrighteous to blame Scheuchzer: not only had he never been to Japan, there was another Japanese map in Kaempfer’s legacy which showed exactly such mountains. And didn’t Renward Cysat (1545–1614) of Lucerne draw many mountains on Europe’s first printed map of Japan in 1586? Anyhow, Kaempfer’s text and maps, translated and revised by Scheuchzer, appeared in 1727 under the title “History of Japan”. Two years later, at the young age of 27, the son, librarian and translator of doctors, died.

■ Further Reading: page 80.



*Imperium Japonicum in sexaginta et octo provincias divisum: ex ipsorum Japonensium mappis & observationibus Kaempferianis, qua fieri licuit fide & cura descriptum. A Joh. Casparo Scheuchzer. 1:3200000. In: The history of Japan: giving an account of the ancient and present state and government of that empire. Written in High-Dutch by Engelbertus Kaempfer; and translated from his original manuscript, never before printed, by J.G. Scheuchzer. London: printed for the translator, 1727. Tabula VIII. (ZBZ, 4 Nh 04: 1. Also online: [doi.org/10.3931/e-rara-34724](https://doi.org/10.3931/e-rara-34724)).*





# Catholic or Protestant?



Das Land Appenzell der Innern- u. Ausserrhoden. Mit allem Fleis gezeichnet von Gabriel Walser. 1:140 000. In: *Neue Appenzeller Chronick oder Beschreibung des Cantons Appenzell*. Von Gabriel Walser. S. Gallen: gedruckt bey Ruprecht Weniger, in Verlag des Authoris, 1740. (ZBZ, STF XVII, 2. Also online: [doi.org/10.3931/e-rara-31160](https://doi.org/10.3931/e-rara-31160)).

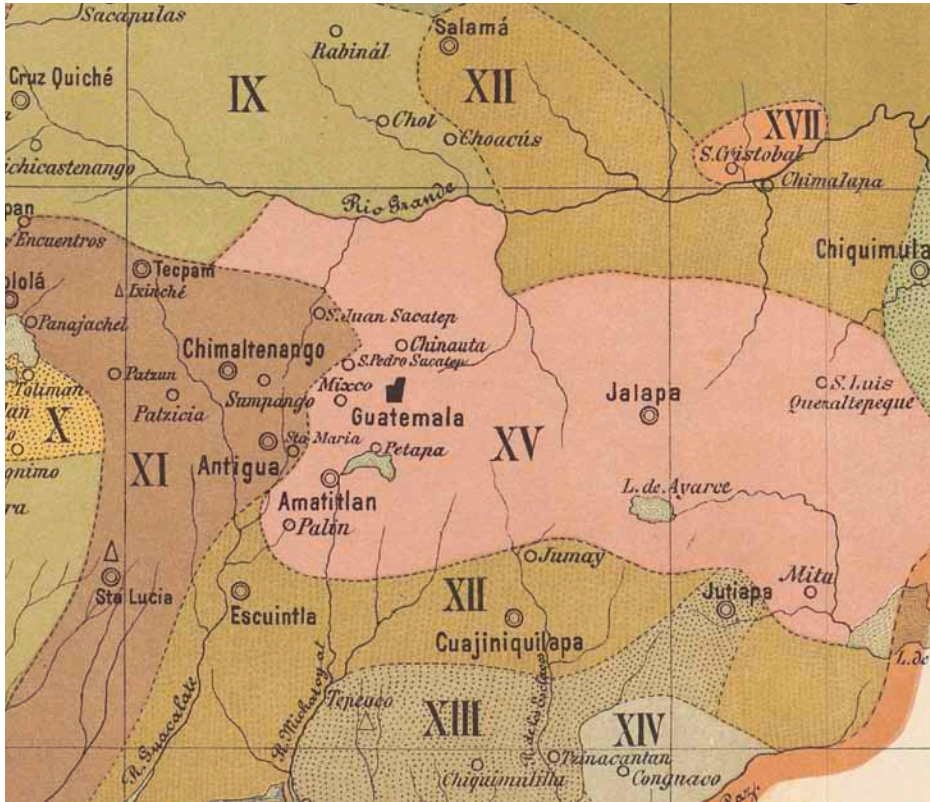
Religious conflicts are in the daily news. Most often they take place in foreign countries, such as the Middle East. But in the past, Switzerland also had confessional wars with great human and material sacrifices. In 1597, Appenzell proved that this problem could be solved differently and was divided into two half-cantons. Catholics and Protestants were strictly, but not violently, separated. Very slowly the two denominations began to mingle again. In 1850, more than 250 years after the separation, 98% of the Ausserrhoden population still declared themselves Protestant. In Innerrhoden, no less than 99.6% belonged to the catholic church. No one was undenominational or Jewish, while Muslims were absolutely unthinkable. Plain sailing! This was especially true for Gabriel Walser (1695–1776), a protestant pastor in Speicher (canton of Appenzell Ausserrhoden) and an expert on religious

matters. In 1740, he confidently published a chronicle of Appenzell, wherein he provided information about his fellow countrymen and listed the churches in both half-cantons. He added a southern-orientated map. According to the map legend, the churches with a flag on the steeple were protestant and those with a cross “of catholic faith”. After this first successful map, cartography became Pastor Walser’s hobby. In his later years, he edited a large Atlas of Switzerland which was published in 1769 in Nuremberg. The included map of both half-cantons, which was now northern-orientated, also showed the bordering area of today’s canton of St. Gallen. As there were, and still are, interfaith churches, Walser created a special symbol for these. And everyone was happy.

■ Further Reading: page 80.



## Forget Me Not!



*Ethnographische Karte von Guatemala. [Author: Otto Stoll]; Lith. Orell Füssli & Co. 1:1 325 000. In: Zur Ethnographie der Republik Guatemala. Von Otto Stoll. Zürich: Druck von Orell Füssli & Co., 1884. (ZBZ, 3 Qc 36: 1. Also online: [doi.org/10.3931/e-rara-32933](https://doi.org/10.3931/e-rara-32933)).*

■ Further Reading: page 80.

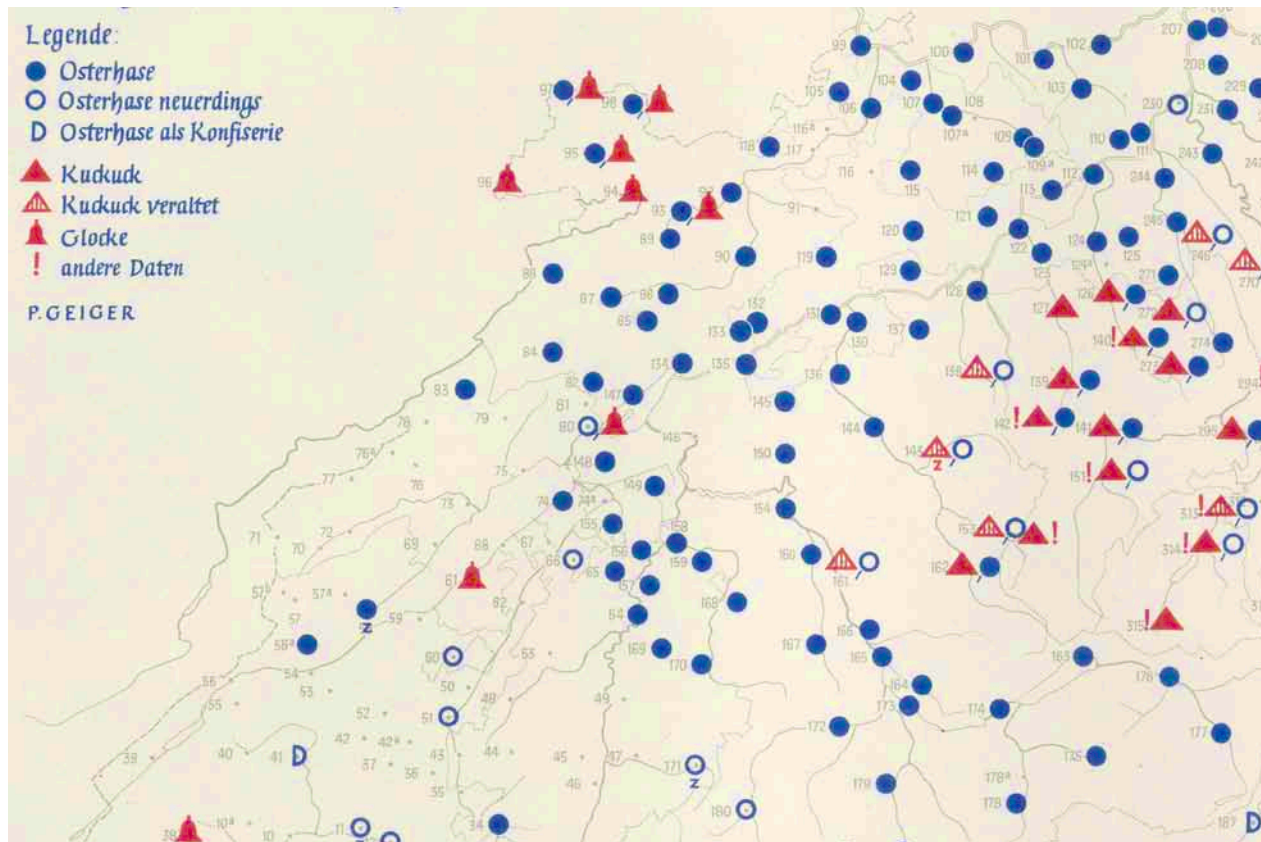
This map is a piece of treasure that has only recently been found. There is no material value and at first glance the content is hopelessly outdated—but more about that in a minute. The map was well hidden and was found by chance. As a so-called component part, it was attached to a book and only usable with said book. Since maps in books aren't kept separately and therefore aren't cataloged separately, it is extremely difficult to find them while researching a certain subject. This is also true for maps in atlases. However, in recent years the research possibilities have improved considerably. Thanks goes to libraries that now routinely scan tables of contents (new publications) or whole atlases (antiquarian books) and make them searchable in their catalogues. But what if a map is hidden in a dull textbook? Who would search for an ethnographic map of Guatemala in a habilitation treatise from 1884 by a physician from Thurgau? Often only a coincidence or intuition lead to these finds. One is obviously pleased about such a lovely find and should therefore document it carefully. No sooner said than done.

Taking a closer look there are a few questions about map author Otto Stoll's (1849–1922) method: Was it really possible to categorize the areas of the ethnic groups of Guatemala as precisely as the map suggests? Were there really no mixed zones? What about the areas where the majority was people of European decent? Wouldn't it make sense to distinguish the five non-Mayan peoples from the Mayan peoples by color-coding or arrangements in the legend? Why is the map scale missing? Despite these ambiguities, the map offers inspiration for thought. For example, an area in the southeast is inhabited by the Pupuluca people (XIV) who, according to the 2002 census, do not exist anymore. Similarly, the Pipil people (XII) in central Guatemala have also disappeared. Something worth mentioning is the tiny group of Alagüilac people (XVII) whose language was long extinct by the time of Stoll's visit. The Alagüilac didn't survive the massacres and the civil war in the 20<sup>th</sup> century. Thanks to the research of a doctor from Thurgau, we at least have a cartographic documentation of where these indigenous peoples lived.





## Easter Rabbits and Cuckoos



Not only children want to know who hides Easter eggs. At a professional level folklorists study traditions, customs, traditional ways of work, tools and legends. As part of the Spiritual National Defense movement, these subjects were examined extensively. Between 1938 and 1942, around 400 informants in Switzerland were visited by specially trained interviewers. The collected answers were meticulously recorded on index cards and made into an atlas of folklore. The initiators wanted to show how diverse the native culture and language was—in contrast to the National Socialist propaganda and the uniform cultural doctrine of the Third Reich. In addition, the young folklorists were able to set methodical accents in their field with the novel visualization on maps. Due to adverse circumstances, the first atlas installment wasn't published until 1950, the last not until 1995. At first sight, the maps seem to be cartographically monotonous: simple point symbols for each location of survey. But the atlas is a true treasure trove. The question about the bearer of Easter eggs yielded the anticipated answer

*Ostereier: wer bringt nach der Kindermeinung die Eier? = Oeufs de Pâques: qui, dans l'idée des enfants, apporte les œufs? [Author:] P. Geiger; graphische Ausführung: E. Zimmerli. 1:1 000 000. In: Atlas der schweizerischen Volkskunde = Atlas de folklore suisse. Bearbeitet von Paul Geiger und Richard Weiss. Basel: Schweizerische Gesellschaft für Volkskunde, 1952. Karte II 178. © Schweizerische Gesellschaft für Volkskunde. Figure 10% reduced.*

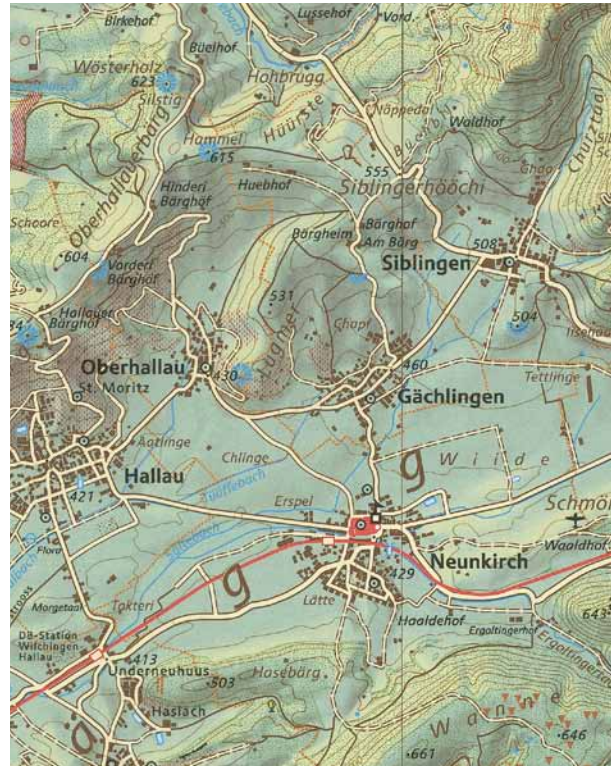
in most parts of German-speaking Switzerland: the Easter rabbit. In the canton of Lucerne and some bordering areas the interviewers found out that children also believed in the cuckoo. Surprisingly, most of the children from other areas in Switzerland (French, Italian, Romansh) hadn't been visited by either of the animals before.

■ Further Reading: page 80.



# Home Is Where the Heart Is

When the canton of Schaffhausen commissioned a new map to be used in schools in 2002, it had three requirements: the map should simultaneously be able to be used as a wall map and as a smaller, more manageable version, it should have a vivid representation of the terrain, and it should reflect the dialect of Schaffhausen. The first requirement is typical of all maps used in Swiss schools. All you have to do is select line widths, font sizes and the degree of generalization so that they are neither too fine for the small map nor too thick for the wall map. The second requirement was a bit more difficult for the cartographers. Creating a new relief shading would have been too time consuming and therefore expensive. After a thorough search in the archives, the original relief shading drawn by Eduard Imhof (1895–1986) for the 1954 edition of this map reappeared. But it was monochrome which didn't exactly meet the client's wishes. The Institute of Cartography at ETH Zurich came to the rescue. Special software was used to digitally break down the scanned relief image and separate it into colored hypsometric layers. It was also geometrically rectified and retouched in some places. The third requirement was the most delicate of all because there are about eight million experts in Switzerland for place names. The cantons may freely determine how they wish to spell local place names on maps and signposts. Compared to other cantons, Schaffhausen decided to spell place names very close to the local dialect (Table). It is unknown how many nonresidents have since then lost their way while driving around the northernmost tip of Switzerland. It is, however, a fact that place names are important historical and cultural resources that must be preserved. When you are familiar with place names in your area, you feel at home. In other words, it's all about identity and homeland. To show this may be the most important task of a map of a canton used in schools.



*Kanton Schaffhausen. Herausgegeben vom Erziehungsdepartement des Kantons Schaffhausen und dem Kantonalen Lehrmittelverlag; Redaktion und kartographische Bearbeitung: Joseph Halytskyj unter Mitarbeit von Thomas Jörg; Beratung zur Schreibweise: Alfred Richli [and others]; Übernahme und digitale Bearbeitung des Originalreliefs von Eduard Imhof aus den Jahren 1947–1953: Lorenz Hurni, Bernhard Jenny, Stefan Räber. Ausgabe 2005. 1:75 000. Schaffhausen: Erziehungsdepartement des Kantons Schaffhausen und Kantonaler Lehrmittelverlag, 2005. © Kantonaler Lehrmittelverlag.*

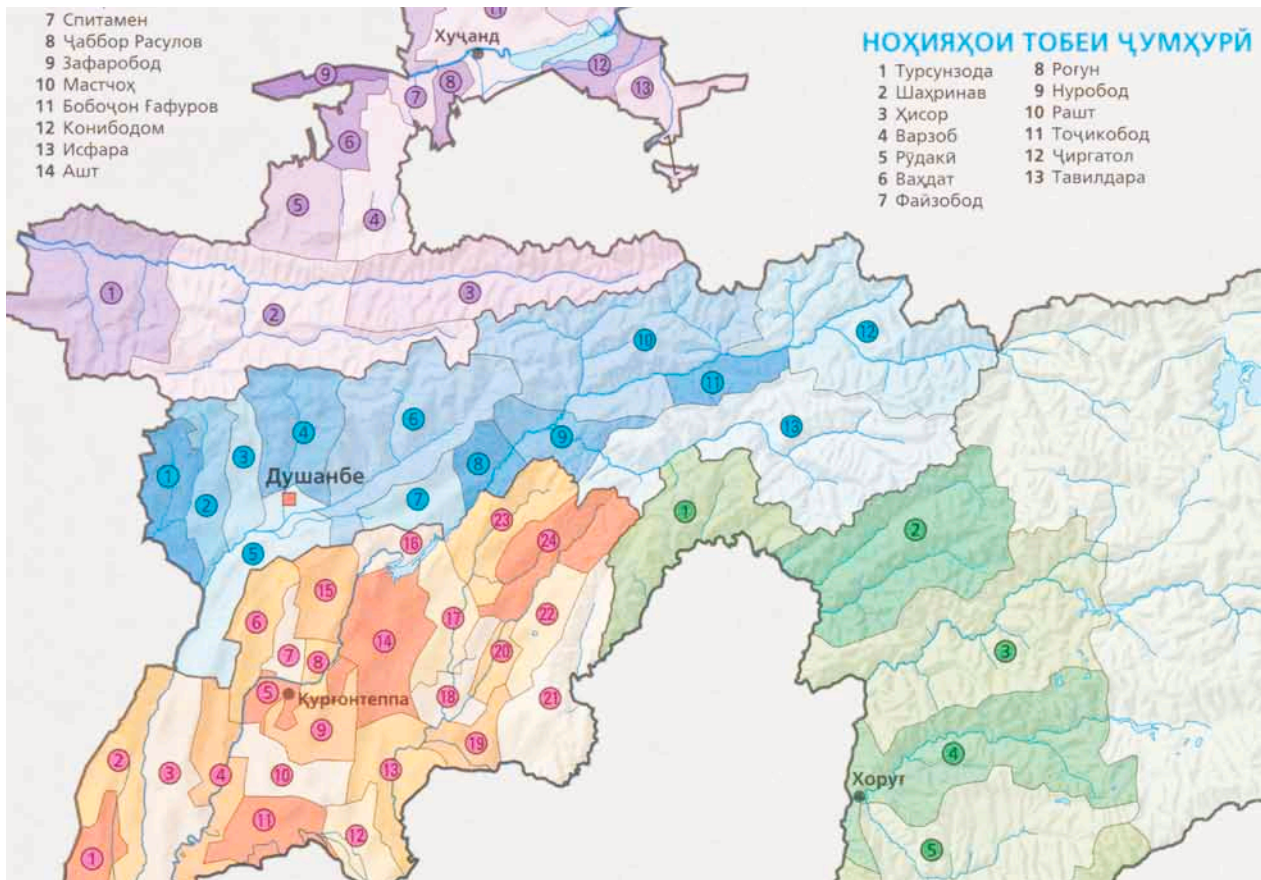
■ Further Reading: page 80.

Local Dialect	IPA Pronunciation	Standard German	English Explanation
Bärg	[ˈbɛrg]	Berg	generic term for mountains
Chläggi	[ˈxɫɛɡgi]	Klettgau	proper noun (“gau”: old generic term for territories)
Hämedalertaal	[ˈhɛmɛdɛlɛrtɔːl]	Hemmentalertal	proper noun (“Hemmental Valley”)
Hööchi	[ˈhøːxi]	Höhe	generic term for heights
Rii	[ˈriː]	Rhein	proper noun (“Rhine River”)





# Showing Initiative



*Taqsimoti sijosī. 1:3 250 000. In: Tojikiston: haritai maktabī. [Edited by] Herman Kroïcman; haritai hok va nabotot: Kristian Opp va Helge Noedler; aksho: Markus Hauzer [and others]; [cartography by] Orell Füssli Kartographie. 1:800 000. [Bern]: Raësatī Švejtsarija oid ba rušd va hamkorī (SDC), [2009].*

This map has a very special history: since 1989, the Zurich cartographer Markus Hauser (\*1970) has undertaken several trips and expeditions to Tajikistan and the Pamir Mountains. Due to his growing interest in the country and its people, he began collecting analog and digital maps. The existing maps weren't very reliable as many were still from the Soviet era. Hauser decided to produce a topographic map of Pik Lenin at a scale of 1:100 000, using the western standard. By large demand, a touristic map 1:500 000 of the Pamir Mountains followed. With these accomplishments Hauser was able to convince the Swiss Agency for Development and Cooperation (SDC) to fund two other map projects. The first was a map each for the northern and southern halves of Tajikistan at the same scale as the Pamir map. As a result, the country received full coverage

at 1:500 000 on three sheets. The second project was a handy map for schools derived from the touristic maps at a scale of 1:800 000. For financial reasons, as much data as possible needed to be reused. Only a bare minimum of generalizing was able to be done. Seeing the target audience was to be school children and not tourists, touristic information was omitted and everything was labeled in Cyrillic. On the back, 12 thematic maps were added, including a political map 1:3 250 000 of the provinces and districts. The map is a successful product which combines private know-how (knowledge of the country and cartography) and governmental development cooperation (funding and distribution).

■ Further Reading: page 81.



## Cheers!



*[Globe cup with a celestial globe on top]. [Manufacturer: Abraham Gessner]. [c. 1600]. (Zurich, Swiss National Museum, Dep. 386). Figure from: Die Becher der ehemaligen Chorherrenstube. Zürich: Orell, Füssli, 1860. (Neujahrsblatt herausgegeben von der Stadtbibliothek in Zürich, 1860). (ZBZ, IV GG 676: ac, 17). Figure 25% reduced.*

■ Further Reading: page 81.

Less than a handful of Swiss-made globes exist. In contrast, more than a dozen so-called globe cups exist. The shown specimen is made out of chased and cast silver and is exquisitely gilded, chiseled and engraved. It belonged to the Canon Society in Zurich, later to the City Library and today the Central Library in Zurich. The cup is kept on permanent loan at the National Museum. The craftsman was probably the goldsmith Abraham Gessner (1552–1613) who emulated his role model and colleague Hans Jacob Stampfer (1505–1579). Atlas stands on a richly adorned pedestal and balances the globe on his head. The globe is 15.5 cm in diameter and is hollow. A frame is attached to the north pole which holds a small, loose celestial globe. Gessner obviously couldn't provide new cartographic insights. He had to rely on the authorities of the time, such as Gerard Mercator (1512–1594), from whom he also copied the typical cursive script to label the oceans.

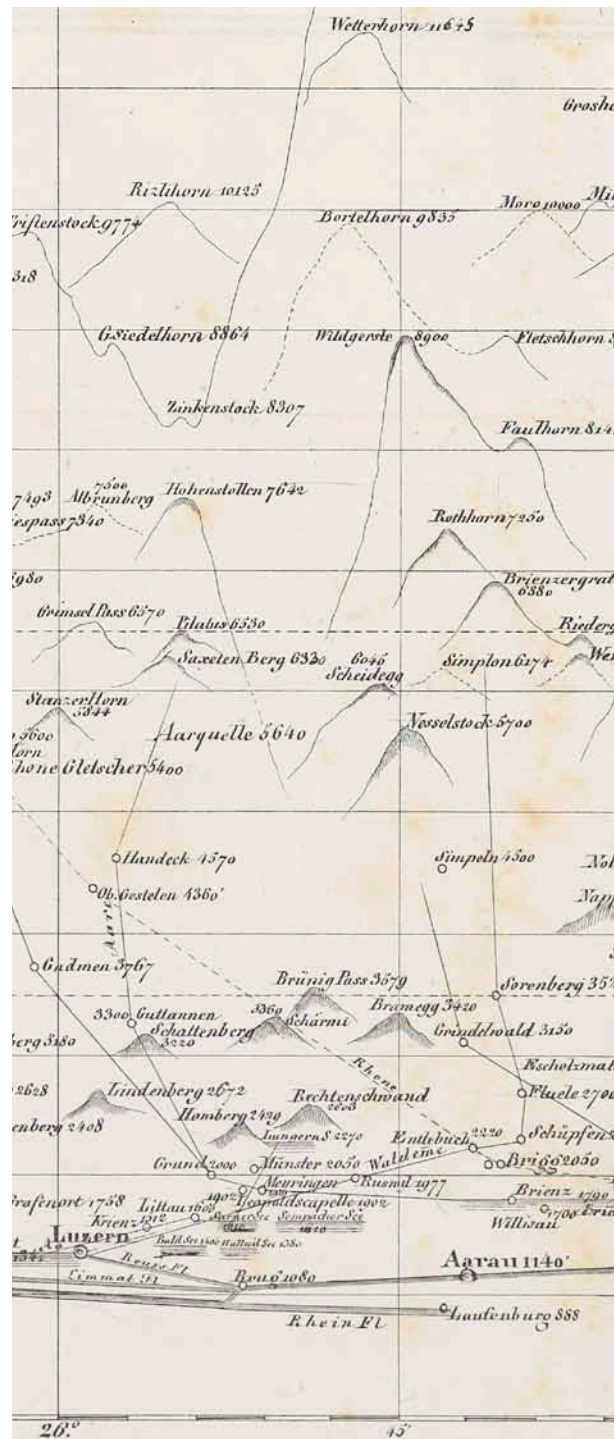
But why would a goldsmith from Zurich make more than a dozen such works of art? Most of them were probably prestige objects. They were flaunted in treasure cabinets of princes and other aristocrats. The shown globe cup was bought by the Canon Society in 1673. From then on, every January 28, the cup was a part of the silverware. That date is the anniversary of the death of Charlemagne, whom the Canons, and since their abolition, the members of the Learned Society commemorated with a speech in Latin and an opulent banquet. And now the showstopper: if you remove the celestial globe from the holder and split the globe along the equator, it becomes two goblets. Expensive wines were passed around and tasted by each member in honor of the emperor. This custom came to an abrupt end when the gentlemen found out that the National Museum used cyanide to polish their gold and silver. Cheers!





# This Is the Limit!

This comparative elevation diagram of Switzerland is neither a map, nor a profile, nor a panorama. Yet, it combines all three of these types. The degree graduation on the horizontal axis is derived from the map. Typical of the time, the prime meridian runs through Ferro, which is identical to El Hierro, the westernmost of the Canary Islands. The scale of the horizontal axis is set at 1:400 000. However, the vertical axis is typical of a profile. The height scale is set at 1:20 000 in Paris foot (pied du roi), equivalent to 32.48 cm, a common unit of measurement at the time. And lastly, the outlines of the mountains which seem to be seen in perspective are similar to a panorama. As is customary, the mountains are labeled with names and elevations. The common term for this inventive combination of elements derived from maps, profiles and panoramas is: comparative elevation diagram. The aim of such a representation is to give the viewer an idea of the elevation ratio of a country or even the whole world. Mountainous Switzerland was of course an ideal location. In order to make the drawing more clear and to be able to accommodate the many labels, the cartographer stretched the vertical scale twentyfold. This means all the mountains are vertically extremely exaggerated and the Alps look like a collection of sugarloafs. For didactic reasons such a vertical exaggeration is not recommended as schoolchildren tend to remember such images. On the other hand, the notes on the edge of the map about the predominant flora at the respective altitude level are worthy of praise. The author of this diagram is Urs Josef Walker (1800–1855), an officer of the artillery and of military engineering from Solothurn. As a young man between 1828 and 1832, he created the first accurate map of his home canton. Ten years later, Walker published this comparative elevation diagram of the Alps between Geneva and Chur as well as the equivalent of the Jura Mountains between Geneva and Brugg. By the way, on the same sheet there are also four cross-sections in which the towns are arranged according to their geographical latitude.

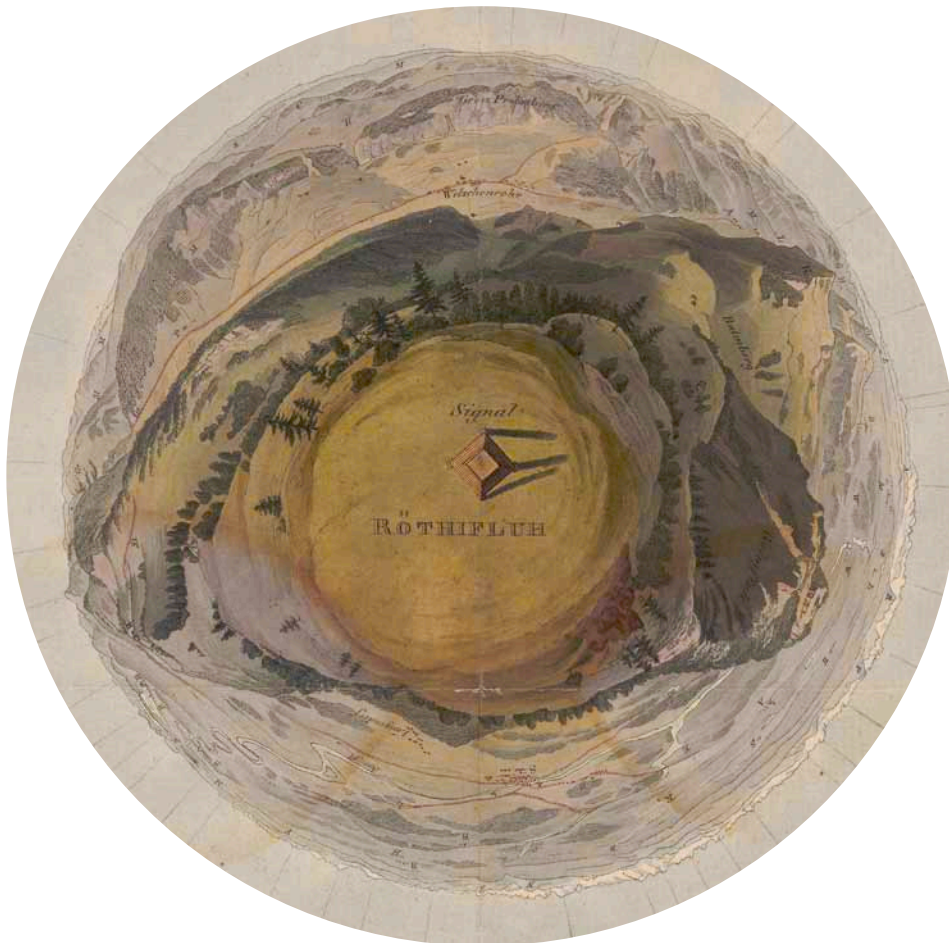


■ Further Reading: page 81.

*Hoehen-Karte der Schweiz. Von J. Walker, Solothurn 1840. 1:400 000, height scale 1:20 000. Solothurn: Verlag von Jent & Gassmann, 1841. (Zürich, ETH-Bibliothek, Rar K 510. Also online: [doi.org/10.3931/e-rara-22228](https://doi.org/10.3931/e-rara-22228)).*



## Going Around in Circles



*Panorama von der Rötiflüh bey Solothurn = Panorama prise depuis la Rötiflüh près Soleure. Dessiné et publié par Henry Keller à Zürich; gravé par J. Scheurmann à Aarau. Zürich: Heinrich Keller, 1829. (ZBZ, S Sol Rötiflüh I 5 a. Also online: [doi.org/10.3931/e-rara-31622](https://doi.org/10.3931/e-rara-31622)). Figure 20% reduced.*

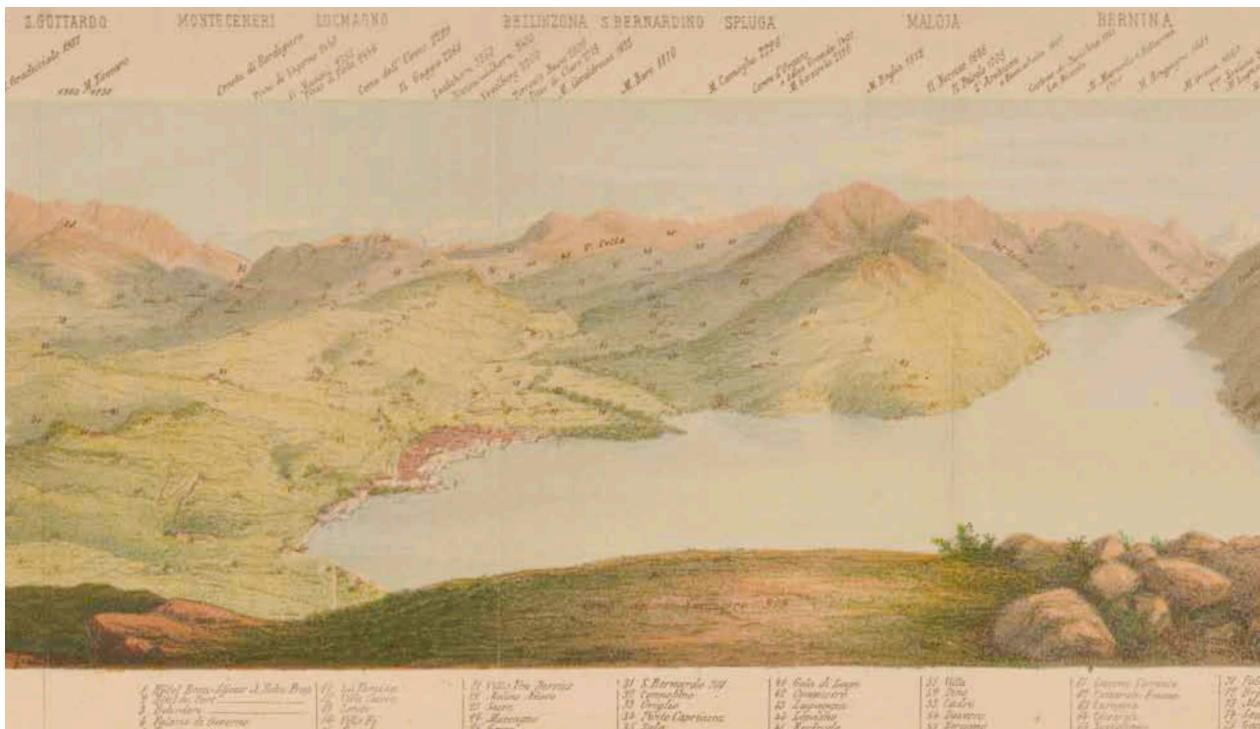
The other day in the Swiss Jura: a drone flies a camera and the fish-eye lens is pointed downwards. Its owner takes a picture of the panorama. In the center of the round photograph he sees the Signal on a hill, at the edge the horizon. 200 years ago the Zurich cartographer Heinrich Keller (1778–1862) had the same idea. He set up his drafting table on the Rötli mountain top and secured a piece of paper to it. He marked his own position in the center and drew a circle using a pair of compasses. After adding the cardinal points, he began drawing. By moving around the table and drawing the scenery as he saw it in front of him, a so-called horizontal panorama gradually evolved. Finally, he labeled the most prominent mountains. At home, the second

part of the project began: the final draft was made and prepared for reproduction. Johann Jakob Scheurmann (1771–1844) etched the outlines onto a copper plate and printed them. These “black” copies were bought by people on a budget. For wealthier customers, “illuminated” copies were offered, each hand-colored by Keller. The business flourished. More and more tourists wanted to go to the mountains and see the view with their own eyes. Over time it paid off to build taverns and roads which in turn attracted more tourists and increased the demand for maps and panoramas. A well-rounded affair for Heinrich Keller. Today, the panorama of the Rötli not only testifies to Keller’s artistic talent and his salesmanship, but also to Switzerland’s emerging tourism.





## Trendy



Panorama preso dalla cima del Monte S. Salvatore presso Lugano. Da E.F. Bossoli; Flli Tensi editori-litografi. In: *Bollettino del Club Alpino Italiano* 21 (1873), tavola IV. (ZBZ, S Tn San Salvatore III 5. Also online: [doi.org/10.3931/e-rara-31625](https://doi.org/10.3931/e-rara-31625)). Figure 50% reduced.

Panoramas are very trendy. Today, every smartphone has a panoramic camera. Practically every lookout point can be reached effortlessly with a cable car (either on rails or by air). But let's go back 150 years to the beginning of the Belle Époque. Instead of carrying electronics, you had paper, pens and brushes. And you climbed summits on foot in order to capture the breathtaking views. That is what the Ticino artist Edoardo Francesco Bossoli (1830–1912) did on Monte San Salvatore in 1873. From there, one has a view of most of Lake Lugano with its many arms and on days with good weather the view reaches from the Alps to the Po Valley. Bossoli sat on the mountain top, figuratively speaking, in a glass cylinder on the inside of which a narrow strip of paper was attached at eye level. By turning around his own axis, the artist was able to copy the landscape in front of him onto the paper in the correct position and create what we now call a vertical panorama. Using watercolors, the artist mixed the matching colors. And of course he didn't

forget to label the summits, villages and hotels in Lugano as tourists always inquired about those. The original drawing was lithographed by the Tensi brothers in Milan, i.e. transferred to stone and printed in several colors. The members of the Italian Alpine Club were delighted with this magnificent piece of art which was enclosed in two parts in issue 21 of the club magazine. Bossoli immediately became a sought-after panoramic artist. His panoramas from Monte dei Cappuccini near Turin (1874), Monte Generoso (1875), Grand Hotel in Varese (1876), Milan Cathedral (1878) and numerous other vantage points were huge successes. It is probably of no coincidence that several years after the publication of Bossoli's panoramas, cable cars were built on Monte dei Cappuccini, Monte San Salvatore and Monte Generoso. The two cable cars in Ticino still exist allowing even the most inactive of tourists to photograph their own panorama.

■ Further Reading: page 81.



## Keeper of Mountains



*Relief des Berner Oberlandes. [Manufacturer:] Simon Simon, [in collaboration with Joseph Reichlin]. 1:10 000. 1886–1913. (Bern, Swiss Alpine Museum). Photography: Markus Oehrli. CC BY-NC-SA.*

Whoever regards maps as too abstract, will certainly like relief models. The example shown is a landscape model which, compared to a city model, gives an overview of a larger area. It is more than 25 m<sup>2</sup> in size. In addition to the Bernese Oberland, the relief model also depicts the adjacent valleys of the canton of Valais. Engineer Simon Simon (1857–1925) spent 27 years, or more than a third of his life constructing an exact replica of this landscape at a scale of 1:10 000. Current maps were used as a basis for the topography while plaster was the building material. The finished parts were painted true-to-life with oil paints—alternatively a geological coloring would have been possible. It is hard to imagine the exhilaration the sight of the finished relief model created in 1913. It was the first time people were able to see the Bernese Ober-

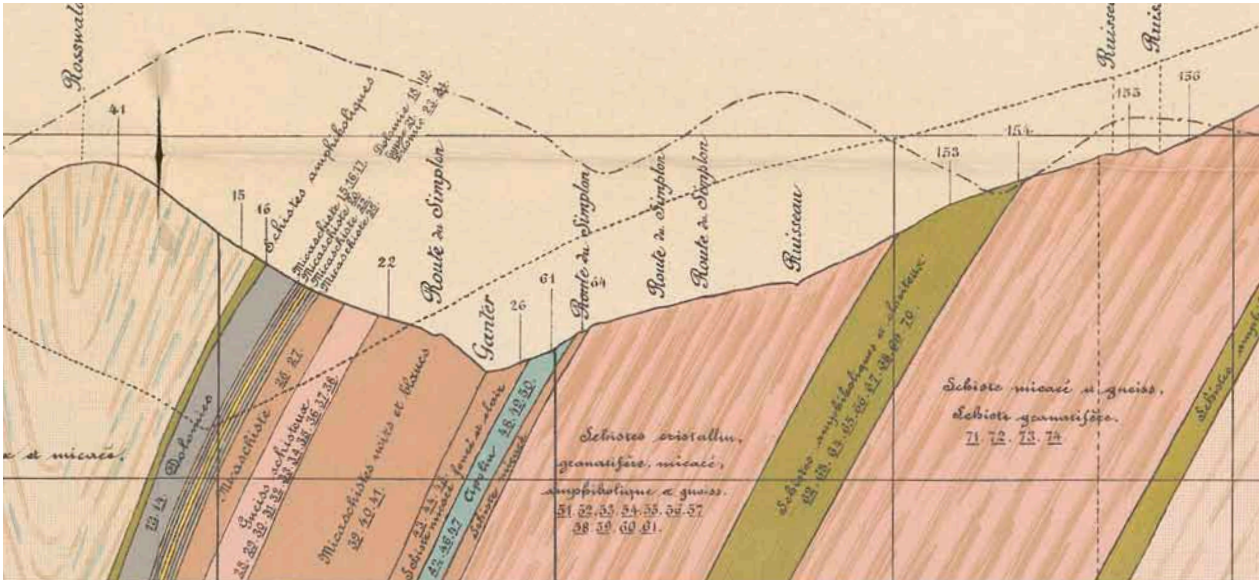
land in its entirety. Until then, only a few experts had been able to view the landscape from above, either from an airplane or a hot air balloon. Today, our eyes shine for a different reason when we look at the relief model: due to climate change, the glaciers have since retreated considerably. The Great Aletsch glacier most likely won't show itself as mighty as it once did on Simon's model. For this reason, it is all the more important to preserve this relief model of the Bernese Oberland as an object of cultural value. The Swiss Alpine Museum is responsible for the upkeep of the relief model, but it is the responsibility of the public to politically and financially support such memory institutions.

■ Further Reading: page 81.





# A Clean Cut?



Profil géologique du Simplon dans l'axe du grand tunnel. [Author: Hans Schardt]; Julien Dupuis autog. avril 1891; lith. J. Chappuis. 1:20 000. In: Simplon-Tunnel: Projekt 1893. Bern: Buchdruckerei Gebhardt, Rösch & Schatzmann, 1894. Plate IV. (Zürich, ETH-Bibliothek, Rar K 94. Also online: [doi.org/10.3931/e-rara-22888](https://doi.org/10.3931/e-rara-22888)). Figure 10% reduced.

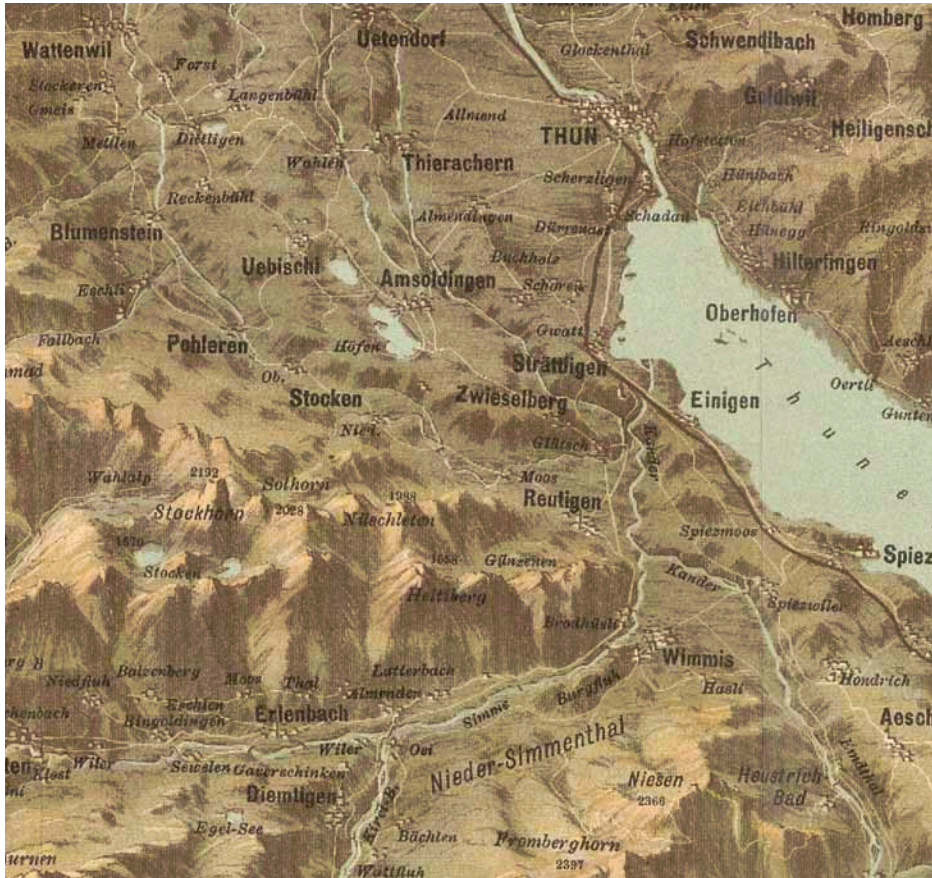
What are cross-sections good for? Let's ask the engineers of the new Gotthard Base Tunnel. For years they asked themselves what types of rock were to be expected and whether they would hinder tunnel construction. Seismic and gravimetric measurements and sounding holes were used to try and depict the bedrock. As we have known since the breakthrough, the predictions were very reliable. The budget for the construction could be met. Cross-sections had also been made for the same reason in earlier tunnel projects, but with simpler means complying with the standard of the time. For example the Simplon tunnel: the official project documentation from 1894 included various site plans, cross-sections, longitudinal sections, and a geological cross-section. Its development process is a story in itself: the geologist, whose name was kept a secret, spent several weeks in the Simplon area without modern instruments but with a rock hammer and a notebook. Afterwards, he sketched a map and a cross-section in his office in which he attempted to imagine how the layers were arranged during the folding of the Alps. Everything was neatly labeled and the exact prognosis was ready for the tunnelers. The cross-section was lithographed by Jules Chappuis. Printed in color,

the cross-section looks extremely trustworthy. However, from a scientific point of view the cross-section is like a lottery where a direct hit was possible, but not necessarily certain. It is no wonder that colleagues denied this official representation and presented their own cross-sections. Soon it would become clear who had predicted correctly. Tunnel construction began. The drilled layers of rock were continuously noted and compared to the predictions. When 80% of the tunnel had been excavated, the geologist Hans Schardt (1858–1931) published a second version of the geological cross-section in 1903. This time he added his name. He could be proud of his work from ten years prior. In the commentary, he complained the first version was a failed attempt and not well received by the public. At the same time he let readers know his cross-section would have been more precise if he had had more time to revise it before printing in 1891/94. By the way, Schardt was satisfied with the choice of lithographer because he chose Chappuis again for the second version. Why the name of the geologist is missing from the first version remains a mystery.

■ Further Reading: page 81.



## Let's Pretend



*Bernese Oberland. Gezeichnet von G. Maggini. 1:135 000. Zürich: Verlag des Art. Institut Orell Füssli, [c. 1895]. (Volks-Atlas der Schweiz in 28 Vogelschau blättern Blatt 16). (ZBZ, 16 Hb 77: 1:16. Also online: [doi.org/10.3931/e-rara-31189](https://doi.org/10.3931/e-rara-31189)).*

At the fin de siècle, flying was unimaginable for most people. Although, being able to see the world from above like a bird would have been a wonderful thing. Giovanni Maggini (1857–1926), an engineer from Ticino, recognized the gap in the market and produced the representative “People’s Atlas of Switzerland in 28 Bird’s-Eye View Sheets”. It’s not really an atlas but rather a map series. One can place the sheets next to each other and have a wonderful overview of Switzerland. The jagged mountains stand tall and cast a shadow over the valleys. Still, there is a sense that something is wrong with the perspective. The feeling grows when one views a whole sheet and studies the shape of the lakes and the river network. These seem to be projected vertically and undistorted onto the map. In contrast, the mountains are obviously shown at a slant. Two perspectives on one map—is that possible? The software MapAnalyst which was created at the ETH Zurich by Bernhard Jenny (\*1974) and his colleagues help us answer this question.

We compare Maggini’s map to a modern topographic map which is assumed to be accurate. Then we select at least two dozen identical points on both maps and let the software calculate the geometric distortion of Maggini’s map. And look: when we only choose points along lakes or rivers on the valley floor, Maggini’s work is a precise map at a homogenous scale of approx. 1:135 000. But as soon as the mountain peaks are included in the equation, there are vast distortions in the line of vision.

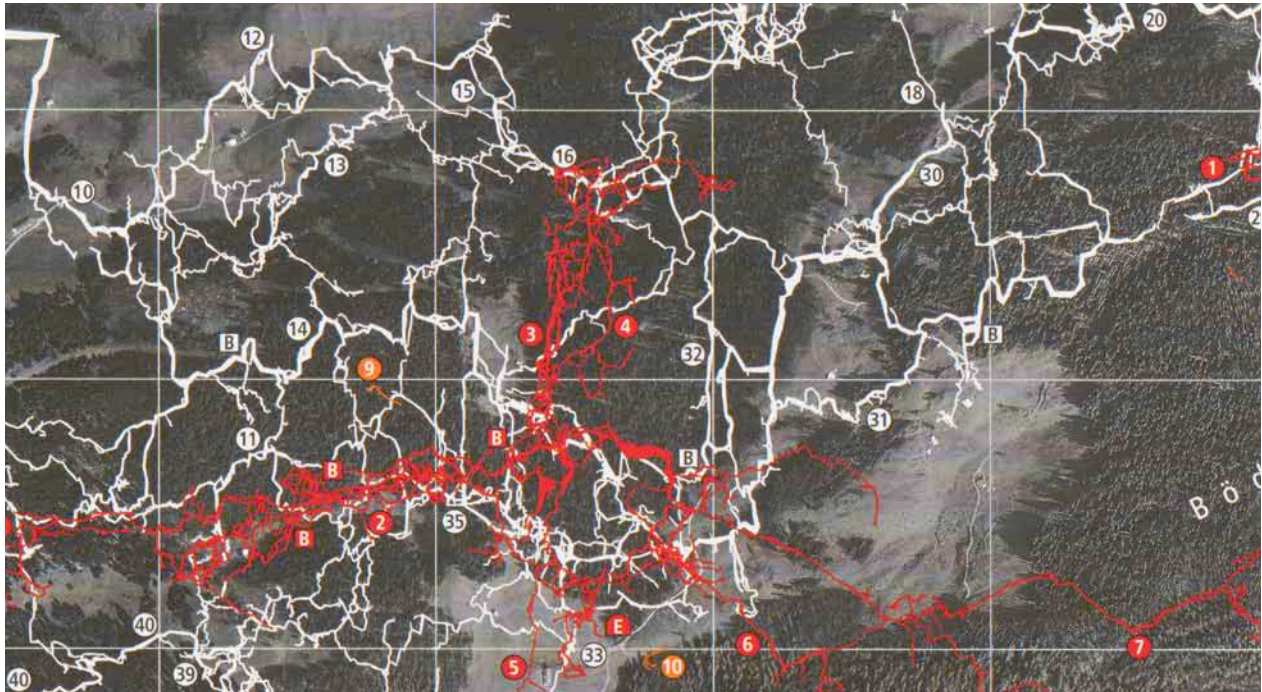
The puzzle is solved. Maggini’s technique isn’t a lie, but rather uses an axonometric perspective that has been known since the early modern times. This special case of a parallel perspective was perfected after Maggini’s death and was used under the name “Aerovue” for various maps of the Swiss Alps.

■ Further Reading: page 81.





## Exit, Please!



*Hölloch: Übersichtsplan der Arbeitsgemeinschaft Höllochforschung AGH. EDV-Planbearbeitung: Felix Ziegler; Bildbearbeitung: Felix Neukom; Redaktion: Urs Möckli; Plandaten: AGH; Bilddaten: Swissphoto. Vermessung: Stand 1. Mai 2000. 1:13 600. In: Hölloch: Naturwunder im Muotatal. Texte: Geri Amacher [and others]; Bilder: Urs Möckli. Zürich: AS Verlag, 2000. © AS Verlag.*

Mapping caves is one of the more exotic fields of cartography. And probably also the most cumbersome. Neither aerial photos nor GPS help underground. How do you not get lost in this eerie maze of passageways and spits? How do you work for long periods of time in the cold and with little light? These questions are easily answered by the speleologists (cavers) of the Hölloch cave in the canton of Schwyz. The Hölloch is one of the 10 longest caves in the world, which is why surveying and mapping it is very important. In the beginning, the explorers used measuring tapes and compasses. Later, high-precision but heavy theodolites were used to map the main cave passageways. Today, smaller devices which can electronically measure distances, bearing and inclination angles in a single operation are used. This data can be transmitted via specialized software which creates more or less vivid maps. However, there is a problem which surveyors are aware of: when measuring along a line from a known to an unknown spot, measurement errors constantly in-

crease. As long as a passageway connects with another already surveyed area, a loop closure compensation must be made. This means the accumulated survey errors are distributed among the survey results. Consequently, all existing maps must be revised.

In 2000, under the direction of Felix Ziegler (\*1967), the Hölloch Cave Research Association published a new map of the cave at a scale of 1:13 600. The three main parts of the cave system are color-coded and overlaid on top of an aerial photo for easier orientation. Just as important as the map is the cross-section shown at the bottom. The cave is a three dimensional object after all. Since publication, the total length of the cave has reached more than 203 kilometers and an additional 19 kilometers have been surveyed and documented in maps at a scale of 1:250. You can be sure you'll find the exit.

■ Further Reading: page 81.



## Vacation Time

Are you in need of a vacation? We have a nice offer for you. The corresponding bird's-eye view is included. It depicts a deep blue sea, secluded bays, sparsely forested areas, winding scenic roads, and picturesque villages. The mountains rise extremely high under the hot Mediterranean sun. The composition seems somehow hyperrealistic. Is it due to the slight vertical exaggeration? Or maybe because of the extremely fine surface texture? Or the streets that never completely disappear, even in forested areas? Either way, the artist Winfried Kettler (\*1936) pulled out all stops to whet the appetite for a visit. And that is exactly what the initiator of such a bird's-eye view intends. The map topic is supposed to be shown from the best side to encourage as many potential tourists as possible to visit. Who thinks about the effort it took to create such a piece of work?

The first step is to agree on the orientation, projection and displayed area. The first highlight follows: photographing out of a rented plane. This is how the artist becomes acquainted with the character of a landscape and the typical silhouettes of the mountains. If necessary, he obtains literature about the geology of the area he is to depict. Kettler explains the next steps in his own words: "In the next step a pencil sketch is made which gives the customer the opportunity to decide if his ideas have been implemented to his satisfaction. It is often necessary to make more sketches until the optimal solution has been found. I usually begin at the bottom of the picture and work my way up, step-by-step. Once the sketch has been approved of, I can begin with the colored version. The color of the sky and the clouds set the mood of the panorama and are therefore very important. The aerial perspective, i.e. the increase of color and light and dark contrasts towards the foreground, give the picture more depth. A fine haze between the individual mountain ranges can enhance this effect. From top to bottom and from back to front, the picture develops."

The finished artwork is scanned and labeled, pictograms, hiking trails, etc. are digitally added. The map is distributed in large numbers to the public, mostly as an illustration in brochures, sometimes also printed as a decorative poster. Bon Voyage!



*[Corsica in summer]. [Artist: Winfried Kettler]. Not to scale. [2000]. (ZBZ, Kar NL 6: A 224). © Winfried Kettler. Figure 90% reduced.*







# Heaven on Earth



Angkor 3-dimensional: Angkor Wat, Bayon, Banteay Srei, Bakon, Siem Reap: panoramic map = *carte panoramique* = *mapa panorámico* = *Panoramakarte* = *carta panoramica*. Painting: Ruben Atoyan. 3rd edition. Not to scale. Hinter-egg: Gecko Maps Arne Rohweder, 2008. © Gecko Maps. Figure 20% reduced.

Around 900 years ago, the Khmer people began building the temple of Angkor Wat. Its symmetrical construction is literally heaven on earth. Angkor Wat symbolically represents the mythical Mount Meru. In Hinduism and Buddhism this is the center of the universe and seat of the gods. Angkor Wat could be seen as a huge map: in the center Mount Meru, arranged around it the continents which in turn are surrounded by an ocean. Being a national symbol, Angkor Wat is found on Cambodia's flag and has been a registered UNESCO World Heritage site since 1992. It is no wonder that since then an increasing number of tourists visit this fascinating place. Where there are tourists, maps are needed. The bird's-eye view created by the map publishing company Gecko Maps based in Zurich, offers a magnificent overview of the temple complex surrounding Angkor Wat, covering more than 400 square kilometers. It is no coincidence that the publishing company opted for a bird's-eye view

instead of a "normal" map. Bird's-eye views are loved by tourists around the world as they are considered to be comparatively easy to read.

Careful now! The illustrator Ruben Atoyan (\*1954) reached deep into his bag of tricks. The temples have been excessively enlarged and vertically exaggerated. They seem to be even more monumental and closer together than in reality. The nearby town of Siem Reap at the bottom of the map isn't as small as it seems to be. The illustrator has emphasized important objects while strongly generalizing others in order to allow the latter to fall into the background. This display format, however, provides a convenient general overview. Local orientation with more details can be found on the 13 smaller inset maps.

■ Further Reading: page 81.

## Dampening the Horror



*Unersorscht II. [Artist:]  
Sandra Kühne. 2009.  
© Sandra Kühne.  
Figure 80% reduced.*

For centuries cartography and art weren't opposites. "Beautiful" maps always combined modern accuracy with practical aesthetics. We need only think about Gerard Mercator's elegant italics or Eduard Imhof's and others' efforts to create a vivid terrain representation. The omnipresent cartography of a major American corporation sets today's worldwide standard. Perhaps this is the reason why artists are looking for alternative cartographic images. Art books and anthologies with titles such as "Mapping It Out— an Alternative Atlas of Contemporary Cartographies" or "You Are Here— Personal Geographies and Other Maps of the Imagination" are bestsellers.

The artist Sandra Kühne (\*1976) who lives in Zurich discovered map art after inheriting atlases from the 19<sup>th</sup> and early 20<sup>th</sup> centuries. She has especially taken a shine to maps of the then unexplored polar regions. Where early cartographers drew grotesque monsters, those at the turn of the century left "white spots". These offer a certain margin between fantasy and science. Sandra Kühne uses scissors for her artwork. She carefully cuts out the

paper between the lines of latitude and longitude. A delicate grid remains which, in the artist's mind, dampens the horror of empty spaces. She tacks the finished silhouette at a distance from the frame. The lighting creates a play with shadows, a quasi third dimension to the original map and the extracted structure of the lines.

As observers we are invited to fill in the gaps with our mind's eye. What do you see?

■ Further Reading: page 81.



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# Glossary, List of Abbreviations

## Glossary

- **Ancien Régime:** Era in Swiss history from the Late Middle Ages until 1798.
- **Federal Council** (Bundesrat, Conseil fédéral, Consiglio federale): Government of the Swiss Confederation consisting of seven members.
- **Helvetic Republic** (Helvetische Republik, République helvétique, Repubblica elvetica): Name of Switzerland from 1798 until 1803.
- **Ovaltine** (Ovomaltine, Ovomaltina): Malted drink developed in 1904 by the Wander company in Bern.
- **“Siegfried” map series** (Siegfriedkarte, Carte Siegfried, Carta Siegfried): Swiss topographic map series at the scales of 1:25 000 and 1:50 000, published between 1870 and 1926 (604 sheets) and revised until 1949.
- **Spiritual National Defense movement** (geistige Landesverteidigung, Défense spirituelle, Difesa spirituale): Political-cultural movement in Switzerland from the 1930s to the 1960s.

## List of Abbreviations

- **c.** circa
- **CC** Creative Commons
- **ICA** International Cartographic Association
- **IPA** International Phonetic Alphabet
- **p.** page
- **pp.** pages
- **SSC** Swiss Society of Cartography
- **ZBZ** Central Library, Zurich