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No. 1 (second edition 1980): Kartographische Generalisierung (topographische Karten), 62 pages, 150 figures, size 29,7 x 21 cm, loose leaves (German edition of No. 2) 
SFrs. 30.--

No. 2 (1977): Cartographic Generalisation (topographic maps), 62 pages, 150 figures, size 29,7 x 21 cm, loose leaves 
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No. 6 Kartographie der Gegenwart in der Schweiz 1984, Publikation zur 3. Dreiländertagung in Stuttgart, 56 pages and 48 map-samples, size 29,7 x 21 cm
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No. 7 Cartography in Switzerland 1980-1984, National report for the ICA-Conference at Perth, 54 pages and 48 map-samples, size 29,7 x 21 cm
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15 Years Swiss Society of Cartography

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The map sections have been placed at our disposal by the responsible administrations and firms.
Preface

With this booklet the Swiss Society of Cartography presents for the fourth time now its national report to the participants of the 12th International Conference of the International Cartographic Association (ICA).

For some time now the quality of cartographic work has risen worldwide and in this respect Switzerland has nothing extraordinary to report. With a few examples the SSC has tried to show how cartography in Switzerland is influenced by landscape, culture, economy and politics. We have chosen maps produced in the last few years. Unfortunately we must point out a regrettable gap in our presentation. The examples for spatial planning, which has become very significant recently, are almost completely lacking. The editions of these kinds of plans and maps are very small and, because expenses have to be cut everywhere, a special reprint for this booklet was out of the question. In spite of this however, we believe that, compared to the products of other countries, the examples of cartography in Switzerland with regard to technical accomplishments and graphic representation can hold their own quite well. The Swiss Society of Cartography would like to thank all of the authors for their reports and the cartographic institutes and firms for their generous map supplements.

We hope to have been able to contribute in a small way to the success of the 12th International Conference of the ICA and that this booklet will be of interest to its readers.

The president of the Swiss Society of Cartography

Kurt Ficker
The Official Cadastral and General Cadastral Plans from the Federal Point of View

by W. Bregenzer, Director of the Federal Directorate of Cadastral Surveys, Berne

The official surveying plans
In Switzerland the plans and maps used in official cadastral surveying consist of the cadastral plan and the general cadastral plan. The cadastral plan is used primarily for land registration and contains property boundaries, vegetation and nomenclature (official name list). The scale depends largely on the intensity of land-use: 1:250 in urban areas, 1:500/1:1'000/1:2'000 to 1:5'000 or 1:10'000 in mountainous areas. The general cadastral plan (scale 1:5'000 or 1:10'000) is in effect a topographic plan (contour interval = 10 m) showing vegetation, triangulation points and territorial boundaries. This basic map covers the municipalities and serves as an index map for scientific purposes, technology, economy, administration and spatial planning. It is a link between the large-scale cadastral plan and the Swiss National Maps (1:25'000 and smaller).

Redefined requirements
The legal base for lot or parcel surveying was established in 1912 with the introduction of the Swiss Code of Civil Law. In the meantime, the intensity of land-use has of course increased sharply, meaning that the necessity of spatially related information has risen as well. At the same time, public restrictions of ownership have also become more numerous and significant. The demands on quality and content of the cadastral plan have changed accordingly. Since the 1960s, computer technology and electronic data processing have also had an influence in surveying: automatically drawn plans have become almost standard, while the presently valid instructions still pertain to normal drafting. Similar tendencies, resulting mainly from the needs and wishes of users, can be observed in the general cadastral plan. It should - be clearer, yet show more details than the Swiss National Map, - serve as a basis for collecting and representing various kinds of
information,
- be variable with respect to scale and sheet lines,
- allow a selection of the content,
- allow rapid and inexpensive access, etc.

Proposed improvements
With the spreading use of these plans, the demands on their content have changed as well. Therefore, the Federal Justice and Police Department has ordered the Federal Directorate of Cadastral Surveys to prepare a comprehensive revision of the official surveying in Switzerland. The aim is to be able to offer better services to the economy, the administration and to private users.

The following solutions are proposed with respect to content and representation:

Cadastral plan
1. Expanding the contents of the plan to include public restrictions of ownership and further elements which could serve as a reference for various spatially related topics (for example visible sections of underground cables or conduits).
2. With regard to the possibilities of automatic drafting, standardized symbols and lettering which would allow combinations of plans at different scales.

General cadastral plan
1. Taking advantage of the modern repro-technical possibilities by introducing the overlay-system so that, for example, the following kinds of information can be separated:
- cultural features
- topography
- vegetation
- lettering
- property boundaries.
2. Using orthophoto to represent (and revise) the flooring.
3. Standardized drafting guidelines for combining different scales.

All of these proposed improvements are being discussed in detail. Their realization will depend on whether or not the demands of the users can be met efficiently.

The General Cadastral Plan in the Cantons of Schaffhausen and Zurich

by J.T. Halytskyj, Survey Department of the Canton of Schaffhausen
and
by E. Schwengeler, Survey Department of the Canton of Zurich

In the course of the official surveys carried out by the cantons, our offices exercise a supervisory function and review the work of the independent land surveyors. The cantons also supervise the nine municipal survey departments as well as the two of the cities of Zurich and Winterthur. A further function is maintaining the cantonal triangulation and levelling networks. Probably the most important task, 1st (parcel) and real estate surveying, has been completed to 75% in the Canton of Zurich (89% in Schaffhausen). The cadastral survey office has finished drawing 60% of the sheets (Schaffhausen 30%) from a total of 530 sheets for Zurich (Schaffhausen 128 sheets).

With the approval of the Federal Directorate of Cadastral Surveys, the Survey Department of the Canton of Zurich has developed its own, improved general cadastral plan. The aim of both cantons is to have the general cadastral plan 1:5'000 in one colour and assembled according to municipalities. The streets are not classified in this plan and the buildings are hatched. Furthermore, it contains much more detail and information, which is, of course, appreciated by the users. The Canton of Zurich has produced a general cadastral plan in the form of so-called margin-sheets at the scale 1:2'500 since 1966 (in Schaffhausen since 1975 at the scale 1:2'000). After the drafting and revision work is finished, the sheets are photographically reduced to 1:5'000 and assembled according to the individual municipalities. The general cadastral plan is of great cultural and economic importance and serves as a base in planning and for various representations. It is the only large-scale official plan showing topography.

The cadastral survey office in the Canton of Zurich employs 5 cartographers (Schaffhausen 1) to keep the general cadastral plan updated. Because of the large demand by municipalities and planners, we have to employ additional freelance cartographers. We also work closely with private reproduction firms since neither canton has a
photography department. Our main task, therefore, is the co-ordination, preparation and supervision, as well as production and revision of the cadastral plan at the original scale of 1:2'500 (Schaffhausen 1:2'000).

The general cadastral plan is based on the revised cadastral plans and the planetable surveys which are both reduced or enlarged to the scale 1:2'000. Any inconsistencies are checked out directly in the field. The cartographer then receives a clean draft for drawing and revising. These sheets are sent to the municipalities and the responsible land surveyors for approval. After the final corrections have been made, the municipal plan at the scale 1:2'500 (Schaffhausen 1:2'000) and the Municipal Cadastral Plan at the scale 1:5'000 are produced. Using the punch and register system, we can easily make single-coloured plans of street numbers (line screens) and various other plans for specific purposes. Finally, the plans are printed (offset printing) in editions ranging from 100 to 4000 copies.

In order to satisfy the demands of the users, the general cadastral plan must be revised at least every 3 to 5 years. Furthermore, contour lines are supplemented with stereoplots from aerial photographs dating from 1981 and at the scale 1:10'000.

Because of the tremendous activity in construction, the plan is actually already out-of-date by the time it is published. In an effort to keep the plan up-to-date as long as possible, all of the buildings which are under construction but have not been surveyed are marked by a special symbol. In the Canton of Schaffhausen, however, none of the buildings under construction are represented in the plan.

All of our base material and aerial photographs can be obtained at our offices.

Working methods for the general cadastral plan 1:5'000 in the Cantons of Schaffhausen and Zurich

Basic Material
In making the general cadastral plan, the cadastral plans of the Federal Directorate of Cadastral Surveys at the scales 1:200-1:5'000 (Zurich 1:250-1:2'500) first have to be brought to the scale 1:2'000.

The films are then assembled on a grid plate in the size 75 x 110 cm. From this composite, transparencies are made for the ensuing work (field-work, nomenclature, rough draft, etc.).

Field-work
This next step is one of the most important in the whole process. All of the information which cannot be taken directly from the reduced cadastral plan must be identified in the field. Furthermore, a selection of forest roads and paths is made and a list of any objects which have not been surveyed. All of the determined changes are then surveyed and drawn in the general cadastral plan (new roads, buildings, cultural boundaries etc.). We have found this to be the best method in keeping the revision as up-to-date as possible and in our long experience, we believe that field-work is an absolutely essential step.

Lettering
This style and size of the type depends on the importance and significance of each feature (topographic, cultural, hydro-graphic). There are 3 different sizes (Canton of Zurich 4) to choose from and both cantons rely on the accepted nomenclature plan. In addition, the names of towns and streets and the spot heights are specified. All of this information is shown as a guide image on each fair drawing original.

Topography
A further guide base for the general cadastral plan are the planetable sheets at the scale 1:5'000, from which the contour lines of wooded areas are taken. When forests and wooded areas are drawn, these contours are a very important guide image in avoiding an overlap of the symbols with the contour lines which are drawn later on. The contour lines are until now not drawn on a separate sheet in the Cantons of Zurich. The topographic information for the open terrain is taken directly from the aerial photographs and their stereo-plots.

Original drawing and lettering
The drawings are made on polyester film and comply with the conventional symbols of the survey departments of the cantons. Cor-
tain elements and symbols (vigne-yards, triangulation points, bound-
daries, embankments etc.) are set in place with stripping films or
dry transfer symbols while all of the other elements are drawn.
There is a great advantage in drawing directly on film as opposed
to scribbling because changes can be made at any stage. A separate
film contains all of the stick-up lettering, i.e. place-names, the
names of towns, streets and hydro-graphic features, spot heights
and lot numbers.

Reproduction
A negative is made of both originals (cultural features, lettering)
and, together with the margins, copied to a positive. The product
is the finished margin-sheet at the scale 1:2'000 without contour
lines. In the Canton of Zurich, these negatives, along with a ne-
gative of the contour lines, are photographically reduced to the
scale 1:2'500.

The municipal plan
The resulting margin-sheets are reduced to 1:5'000 and assembled
according to municipalities. These composites make up the Munici-
pal Cadastral Plan at the scale 1:5'000. In the Canton of Schaff-
hausen, the contour lines are scribbed separately at the scale
1:5'000.

The Official Cadastral Plan and General Cadastral Plan from the
Urban Point of View

by W. Bantel, Head of the Cartography/Reproduction Division, Sur-
vey Department of the City of Zurich

The special case of urban surveys
Even though the regulations issued by the Federal Directorate of
Cadastral Surveys are generally applicable, different considera-
tions must be made when surveying in urban areas. Due to the popu-
lation density, traffic, and the structure of public and private
property, there is an extremely large number of points of tangency.
If these points are not determined accurately, even slight
differences can bring about serious consequences, especially where
real estate prices are high. It goes without saying that all of
the information relative to property ownership and to the different
stages of construction must be complete, carefully represented and
kept up-to-date. The surveying data must therefore be kept accord-
ingly with respect to content, quality and availability. This can
be seen in the following example of the Survey Department of the
City of Zurich.

Fix points
In addition to the 170 first to fourth order triangulation points,
25 fifth order points were determined in Zurich. The distances be-
tween the points of the traverse control net in only 40 to 50 m in
the city, whereas in rural areas this distance is 70 to 80 m. The
traverse control points are decisive for the situation. The same
thing was made with the levelling points, from which the heights
are determined. In order to increase their accuracy, a new nivel-
ling net has just been designed. Whereas centimeter values for si-
situation and height are usually sufficient, the city of Zurich is-
sees them in millimeters.

Cadastral survey
In the city of Zurich, the cadastral plan as a whole consists of
1150 original plans drawn on paper of concealed aluminium sheets
size 100 x 70 cm. Most of them are at the scale 1:500 but the densely
built-up areas at the scale 1:200. They also exist on film to facilitate copying. As an aid to planners and construction supervisors, the films contain property lines, street numbers and the buildings are shown with different line screens. On another set of films, different features of the cadastral plan are omitted in order to represent utility lines. Special attention is also given to the so-called characteristic sheets (sketches containing distance measurements). There are about 5000 films (70 x 50 cm at the scale 1:250) containing many detailed distances.

General cadastral plan
The cultural features on the general cadastral plan are taken from the cadastral plan and are graphically revised to comply with the smaller scale. Because of the added details (line screens for buildings, widths of street, street numbers, smaller contour interval, etc.), the normal scale of 1:5'000 is insufficient. Therefore, the 57 original sheets (size 72 x 48 cm) are produced at the scale of 1:2'500. We also issue the same guide image at the scales 1:5'000 and 1:1'000. Aerial photographs (115'000) are taken regularly and their stereo-plots, together with topographic elements from field-surveys, are integrated in the general cadastral plan (contour interval = 2 m, intermediates = 1 m).

Further remarks
Our 85 employees and the structure and duties of our office are organized to from a closely knit group. Since we are limited to the city of Zurich and our employees and customers are all close at hand, we are thus able to offer a broad range of products and services: basic survey (fix points), parcel and lot survey (cadastral plan), cartography (general cadastral plan), surveys for construction supervisors, civil engineering surveys, reproduction of plans (photographs, transparencies), preparing the basic plans and own saleroom.

Because of the additionally demanded information and accuracy, together with the difficulties posed by urban traffic and construction, the costs are appreciably higher than in rural areas.
On the one hand the large number of users allows us to keep the costs within a measurable margin, but on the other hand, a shorter revision cycle must be maintained.

Federal Office of Topography

by F. Jeannerich, Director, Federal Office of Topography, Wabern

Personnel
The Federal Office of Topography still employs a staff of about 150, of which 39 are engaged in the field of cartography. In addition, there are 16 apprentices in cartography (4 per year of apprenticeship) and one apprentice in offset printing.
In 1974 Parliament passed an ordinance restricting the number of federal employees. Therefore, any impasses or new projects can only be met by rationalization measures and internal personnel shifts.

The official maps
The main task of the Office of Topography is revising the approximately 350 National Maps in a 6-year cycle and at the following scales:
1: 25'000 249 sheets, since 1979 all published
1: 50'000 77½ sheets, since 1960 all published
1:100'000 22½ sheets, since 1964 all published
1:200'000 4 sheets, since 1976 all published
1:500'000 1 sheet, published since 1964
(see diagram on one of the following pages)

Assembled maps (map image size: up to 100 x 72 cm):
1: 25'000 14 sheets
1: 50'000 19 sheets
1:100'000 3 sheets

The preliminary editorial work has begun for the new map at the scale 1:1'000'000.

The commercial use of the Swiss National Maps
For the previous official maps, the so-called Dufour and Siegfried Maps, there were no copyright laws or anything of that nature in effect. Private map-makers took advantage of this situation and copied official maps, imprinted them with hiking routes or relief

15
shading without actually having created or produced anything new. Since only the reproduction and publishing costs had to be calculated, these private companies were able to undercut the price of the official maps.

Today, however, an incontestable principle declares that any state services used for commercial purposes must be paid for. Each purchaser of a Swiss National Map is therefore not only paying the printing and publishing costs, but also helping to carry the surveying and reproduction costs for making and revising the maps. What applies to individual purchasers should also apply to those who reprint an official map or parts of it or who use it as a topographic basis instead of making their own surveys.

In setting the amount of the licence fee (decree by the Federal Council from December 12th, 1977), a distinction is made between direct and indirect use of National Maps.

The direct use of official maps is defined as the printing of sections or assembled maps or extracts of individual colour plates without having made any kind of revision work. The fee for the direct use, depending on the scale of the map, is SFr. 0.05 to 0.10 per dm² of reproduced map image and per printed copy. The fee for individual colour plates is reduced accordingly.

The indirect use of official maps is when a map-maker, lacking his own topographic base, uses the official map instead. In this case, the maps are redrawn. The rates for this type of use take into account the loss of accuracy and detail due to the reduction of the scale. For example, if an official map serves as a basis for a new map at the scale 1:100'000 (a map image of 70 x 48 cm represents an area of about 3400 km²), the fee is set at SFr. 1.60 per copy. For a map of Switzerland at the scale 1:500'000 (total area about 42'000 km²), the fee is reduced to SFr. 0.115 per copy.

There is no charge for the indirect use of official maps for scales smaller than 1:500'000 or for sketches not drawn to scale.

Besides these two types of fees, there are flat rates for reprinting map extracts in newspapers, magazines, hiking books, brochu-

res or for general information.

On September 10th, 1982, the Swiss Federal Supreme Court upheld the copyright and licence fee statutes pertaining especially to the indirect commercial use of official maps by private firms.

Thematic maps

By order of the military authorities and other federal offices, various thematic maps were produced. A reduction of the map at 1:200'000 into the scale 1:300'000 has been available since 1981. It is used primarily as a base map for different thematic maps as well as for the museum map of Switzerland and Liechtenstein.

Prof. Ed. Imhof, Hon. D., designed a multi-coloured relief map of Switzerland, also at the scale 1:300'000 to which an imprint showing only national boundaries and hydrography has been added.

A series of 10 geophysical maps was published at the request of the Swiss Geophysical Commission, which also supplied the editorial work as a basis. A simplified version of the National Map at 1:500'000 serves as the base map.

Map 1: Geomagnetic Declination of Switzerland
Map 2: Geomagnetic Inclination of Switzerland
Map 3: Total Geomagnetic Intensity of Switzerland
Map 4: Gravity map of Switzerland (Bouguer anomalies)
Map 5: Gravity map of Switzerland (isostatic anomalies)
Map 6: The Geoid in Switzerland
Map 7: Earthquake hazard in Switzerland
Map 8: Seismicity map of Switzerland
Map 9: Aeromagnetic map of Switzerland
Map 10: Geothermic map of Switzerland

Under the editorial supervision of Prof. E. Spena, the 10th delivery of the Atlas of Switzerland was completed in 1981 and the 11th delivery with 11 additional or revised sheets will appear in 1984.

New projects

The use of digitized topographic map elements is becoming increasingly popular. A primary task is a digital terrain model, which
should be realized in the next few years. There is an inherent ten-
dency to want to gather the greatest possible amount of details and
to also reproduce this large amount of stored data in the same
fashion. In this respect, the considerations regarding the theory
of information will play an ever increasing role in the future.
(See following report by Rudolf Knöpfli).

Reflections on information with maps

by Dipl.Ing. R.Knopfler, Federal Office of Topography, Wabern

A serious problem is the increasing tendency to include more and
more details in maps, almost to the point of illegibility. It is
a natural progression for every culture to become ever more finely
structured. If such a process cannot be counteracted, it can even-
tually bring about the ruin of a culture. Because man believes he
must always improve everything, the original values and necessi-
ties become divided into so many categories and possibilities that
utter confusion may result:

Finally, many people will no longer see the importance or neces-
sity of their jobs and instead of investing their efforts in these
jobs, they will begin to toy with all sorts of ideas and possi-
bilities. This is a dangerous course which must henceforth be
challenged, even at the Federal Office of Topography. One forgets
too easily that there is a map reader who asks a specific question
which he would like to have clearly answered. Furthermore, it is
still not completely realized and understood that it is unreason-
able to expect a map user to pore over maps with a magnifying
glass and tediously pick out his information from a flood of de-
tails.

For some time now, our Office has been occupied with establish-
ing a topographic-cartographic data base. The possibility of being
able to store an almost unlimited amount of statistical data tempts
one to collect data as detailed as possible, and what is worse, to
reproduce it in the same manner. This is often justified with the
"large content of information", whereby one forgets that in commu-
nication, not the amount of the available so-called source information on the sender's side, but the amount which is actually sent, is important. The fact that the receiver's (map user's) power of perception is not unlimited is only too easily overlooked. This means that the sender (cartographer) must describe the probable answers in such a way that the receiver knows exactly which answer in applicable in which case:

before receiving a message:
uncertainty
A or B or C?

after receiving a message:
certainty

A further source of confusion is the fact that there is a considerable difference between collected data and an answer. Let us assume that the widths of roads in a certain area are known in centimeters, and that a map user would like to know on which roads two cars can safely pass each other. The answer to this question can be given with two classes of equivalence. What this receiver must know is not the exact width of the roads but to which class of equivalence they belong. As the name implies, any variations within such a class are considered to be equivalent. Therefore, the differences within a class of equivalence need not be transmitted, which, because of the limited power of perception, is of extreme importance to an undistorted communication. The available channel capacity can then be used to code the actual answer. Otherwise the channel capacity would have to be used to code these differences which were not asked for, this being the only way to ever transmit this already-mentioned large amount of detailed source information from the sender's to the receiver's side. It is even, that when transmitting the finest details with insufficient coding, not only the transmission of the large amount of information is lost, but the transmission of the really important information for a particular receiver suffers as well:

bundled transmission of the classes of equivalence A and B

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scattered transmission of the classes of equivalence A and B

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Transmission of the two classes of equivalence
A : 4 and smaller
B : 5 and larger

The transmission of the originally collected data instead of the classes of equivalence corresponds to a scattered instead of a bundled transmission. The received answers are rather of a coincidental nature, and, due to our limited power of perception, liable to distortion and noise. In no case should this be the aim of cartography in the future. The goal should be a bundled, receiver-related transmission of information. This has always been the idea behind generalization and in the future, this most important principle of communication should be upheld.

(See map example 1:25'000 at the back)
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Federal Office for Civil Aviation
by J.F. Piller, Head of AIS, Federal Office for Civil Aviation, Bern

The Federal Office for Civil Aviation (FOCA) produces several map series in accordance with standards established by the International Civil Aviation Organization (ICAO). The Central Aeronautical Information Service (AIS) as the responsible unit of the FOCA for the production of aeronautical charts draws on the cartographic capacity of governmental services and institutions, such as the Federal Office of Topography and the Department of Cartography of the Swiss Federal Institute of Technology Zurich (ETHZ), as well as of non-governmental charting agencies (private firms and cartographers). All the charts are published as integral part of the official Aeronautical Information Publication (AIP) - Switzerland but are also available separately. Typical of the aeronautical chart production is the rapid rate of change of the thematic information depicted on them, the variety of scales used and the high degree of accuracy required in the interest of flight safety. For this reason the AIS has very soon opted for the use of automated systems for storage, drawing and typesetting of the aeronautical data of the overprint. The charts are published in two categories: instrument flight charts and visual flight charts. Most important for the latter, especially for the Visual Approach and Landing (VAL) charts is a judicious selection of topographical information, detailed cultural and hydrographical features and significant landmarks to be portrayed as visual reference for the pilot. This could be obtained for our charts by combining 4 plates of the Swiss National Map series 1:50'000, including relief shading and wooded areas, as base chart. Printed in several colours (usually 5 with the overprint) the VAL charts thus look very familiar to the pilots, being almost identical in their presentation with the official maps he uses in other activities of every day life. Also intended for visual flight operational and planning purposes are the following two large maps at small scales:
- Aeronautical Chart ICAO 1:500'000 2253-B, Switzerland,
- Chart of Air Navigation Obstacles Switzerland, 1:300'000.

Map originals for the overprint of both charts are produced by the
Maps in Swiss Spatial Planning

by G. Thélin, Federal Office for Spatial Planning, Berne

Maps are essential tools for spatial planners; for them, generating new maps is nothing unusual. During the planning procedure a substantial number of maps is normally drafted and designed. But only those few maps being of general interest get published.

Spatial Planning in Switzerland

The federal law on spatial planning has been in effect since January 1st, 1980. This law encompasses the general goals and principles of spatial planning and places most of the responsibility in the hands of the cantons. The main measures of spatial planning are the cantonal guiding plans and the land use plans of the municipalities.

The cantonal guiding plans are primarily to serve coordinating the diverse spatially effective activities of the confederation, the cantons and the municipalities both in view of the established goals and with the intent to resolve actual conflicts. The fundamentals necessary to prepare the cantonal guiding plans include studies on the agricultural suitability of land, on the landscapes, on natural hazards, and on environmental impacts, as well as perspectives on the development of urbanisation, of transportation, and of the supply with public facilities. The concepts and sectoral plans of the confederation and the guiding plans of the neighboring cantons also need to be taken into a whole series of maps are being generated.

As the preparation of the cantonal guiding plans is still under way, examples of synthesis maps cannot be presented yet.

As far as municipal land use planning is concerned, the federal law on spatial planning prescribes that these plans have to cover the entire territory and to correspond to the cantonal guiding plans. Land use plans are legally binding for everybody and must at least contain the construction zones, the agricultural zones, and the zones of protection. The land use plans will be set up between 1985 and 1987.
Special topic maps
Since 1977 the following spatial topic maps have been published (1):

- 1977, Risk Areas in Switzerland (1975), 22 sheets at the scale
  of 1:100'000
- August 1977, Climate Suitability for Agriculture in Switzerland.
  Enclosed are:
  . comment on methodology and map content
  . 4 maps at the scale 1:200'000 showing climate suitability for
    agriculture
  . map of climate suitability for grain crops, scale 1:500'000
  . precipitation map at the scale 1:500'000
- March 1977, Temperature Structure in Switzerland. Enclosed are:
  . comment on methodology and map content
  . map of temperature structure in Switzerland at the scale
    1:200'000
  . map showing areas affected by Fähn (warm fall-wind) at the
    scale 1:500'000
- March 1980, Soil Suitability in Switzerland. Enclosed are:
  . comment on methodology and procedure used in making the map,
    map content and its use, including the legend
  . 2 maps showing soil suitability in Switzerland at the scale
    1:200'000 (21 colours)
  . 2 examples of soil suitability using the Swiss National Map
    1:50'000 (1 colour): Genève (sheet 270), Solothurn (sheet 233)
    and Zurich (sheet 225)
  . a sample from a soil map at the scale 1:25'000 (6 colours)
- May 1983, Touristic Transportation Systems in Switzerland. Enclo-
  sed are:
  . comment on methods of calculation and graphic representa-
    tions and statistics concerning the development of the touristic
    transportation systems in Switzerland
  . list of the facilities and their technical data for all of
    Switzerland (as of 1.1.83)
  . map of the touristic transportation systems in Switzerland at
    the scale 1:300'000 (see example).

All the above mentioned maps cover the entire area of Switzerland.
Further maps on federal level are in preparation, in particular one
on the snow and another on the wind patterns.
The cantons produce similar maps, for example on appropriate loca-
tions for tourism, industry and agriculture. There are also maps
visualising statistical data.
All the important maps are being published, and there are cases in
which maps have been used to inform the public at large on the can-
tonal planning activities (for an outstanding example, see the
Canton of Lucerne (2)).

(1) Available at the "Bundesamt für Raumplanung, 3003 Bern"
(2) Available at the "Planungsamt des Kantons Luzern, 6002 Luzern"
Geological maps

by Dr. H. Fischer, Swiss Geological Commission, Basel

As far as the production of geological maps is concerned, Switzerland enjoys a unique position in the world. In almost all countries, even underdeveloped ones, maps dealing with Earth sciences are produced by the respective geological surveys, i.e. state operated services. The organization in our country is different. These kinds of maps have become increasingly significant, but because Switzerland has practically no natural resources, the federal government has taken a reserved stance and left this task up to the Swiss Geological Commission, a subcommission of the Swiss Academy of Sciences, founded for this purpose in 1860.

The commission has its seat in Basel and employs three geologists, one cartographer and one secretary. It operates on an annual grant from the federal government.

For making geological base maps (scale 1:25'000), precise information on the geological conditions is necessary. This tedious field work is made by approximately 65 external co-workers. The commission is responsible for the editing, preliminary work for the printing and the general supervision (cartography, printing). The demanding cartographic work is done in part by the cartographer of the commission itself and in part by private firms.

The following maps were produced and printed in the past four years:

a) Geological Map of Switzerland 1:500'000
   The second, slightly modified edition appeared in 1980, the first edition of 1972 (a total of 7000 copies) being out of print.

b) Tectonic Map of Switzerland 1:500'000
   This sheet was also reprinted in 1980 with various modifications (first edition 4000 copies).

c) Geological Atlas of Switzerland 1:25'000
   - sheet 1272 Campo Tencia (No. 73), published in 1980
   - sheet 1031 Neunkirch (No. 74), published in 1981
   - sheet 1188 Eggwil (No. 75), published in 1980
Together with Orell Füssli Ltd. (Zurich), an interesting experiment in map reproduction was made early in 1983 with 4-colour offset printing. Atlas sheet No. 3, Laufen-Müelswil, based on the so-called Siegfried Map and printed in 1936, has been out of print for many years but is still in great demand. Unfortunately, none of the printing originals exist anymore. The map was therefore scanned, cartographers pieced the different sections together and the whole 97.5 by 63.5 cm sheet was printed. The result was amazing: the fit as well as the colour gradation surpassed all expectations.

The following sheets of the Geological Atlas are currently in preparation at the Geological Commission:

- sheet 1146 Lyss (No. 76), published in 1901
- sheet 1325 Sembrancher (No. 77), published in 1903
- sheet 1115 Säntis (No. 78), published in 1902

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Atlan of Switzerland - a Thematic National Atlas

Prof. Ernst Spiess, Department of Cartography of the Swiss Federal Institute of Technology in Zurich

The publication of the Atlas of Switzerland is not a one-off project, but an on-going continuous task. Such is the essence of a resolution adopted by the Swiss Government on 27th February 1978. In so doing, the Federal Council accepted the long-standing conviction of the Editorial Board, that not only topographic maps, but also thematic ones, must be subjected to continuous revision.

Generally, a thematic National Atlas becomes an historical documents within 10 years. It is out of date within a very short time. This process of obsolescence is particularly rapid in the economic sector and in many demographic aspects. Other subjects such as climatology, geology and tectonics are subject only to slow change or, by definition, none at all. In fact, strictly speaking, experience has shown this not to be absolutely true. New scientific knowledge, revised theories, opinions and methods can alter such map images fundamentally within one generation.

With its resolution to continue the work on the thematic National Atlas, the Federal Council has cleared the way, allowing us to keep pace with the continuous development and adoption of the thematic data to be represented. If one is to recognize specific trends of regional change early enough, then this dynamic component of cartographic representation deserves a high priority.

The first Edition of the atlas was started in 1961 under the direction of Professor Dr. Eduard Inhofer and brought to a successful and provisional end in 1978 after 17 years of work.

It contains 9 sections (each delivered separately) with a total of 97 plates and about 400 maps and diagrams. In the new sections of the 2nd Edition, more emphasis has been placed on thematic grouping in their structure. They contain, above all, the latest available data from periodic censuses in map form. For example, the 13 plates of the 10th Section (1981) show the results of the latest census of people employed in companies, the development of tourism, and foreign trade. At this point, we should refer to the two map...
sections from this series in the annex. They emphasise the alteration of the landscape due to the development of tourism in this resort area of the Canton of Tessin. Such examples are ideally suited for bringing to the attention of the relevant political bodies, the enormous changes that have been caused by an excessive promotion of tourism.

The 11th section will be published in 1984. In addition to a new soil map and new geophysical maps based on the most recent surveys, it contains the results of the last population census. The new maps are, in part, simply up-dates in which the representation chosen is comparable to that in the corresponding maps in the 1st Edition. An example of this type of revision is given by the two map sections on population density in 1960 and in 1980. Wherever possible and desirable, measures have been taken to improve the map’s interpretability. With this in mind, we have represented the population of each commune only on the inhabited, productive areas, a redefinition that presents a more realistic picture – especially in mountainous areas.

In several maps, the base maps have been supplemented with additional orientation elements, thereby facilitating interpretation and regional localisation. Usually, not only the current situation is mapped, but where possible, the changes that have occurred in one or several time periods are represented in additional new maps. As an example, we can refer to the map section “Population Density Changes from 1960 to 1980” in the annex; and to a series of maps about changes along language borders since 1900, a subject that attracts special political interest. In this section, there is also an up-dated map with the administrative divisions of the Swiss communes involving an astonishing number of name and boundary changes since the 1st Edition. With this system of continual deliveries (new sections as they become available), the subscriber to the atlas is able to keep abreast of the dynamic development in the country.

On the production side, we use computer-assisted methods to a considerable extent. Statistical data are transferred directly from Federal Office of Statistics’s tapes onto our Applicon interactive graphic system in the Department of Cartography of the Swiss Federal Institute of Technology in Zurich. Using the edit station, these data are converted into histograms, diagrams and map compilations.

Using the light spot projector, the outlines for many of the maps are plotted on film, ready for printing.

For all other stages in the production and reproduction of these maps, the Federal Office of Topography utilizes the usual conventional methods, e.g. air charts and stripmap processes. This division of labour ensures a high quality standard to be maintained and the effective working hours to be reduced. Also, in spite of the considerable reduction in personnel, it allows us to realise the publication program more or less as planned.

The editorial team for the atlas comprises only two full-time cartographers plus the author of this report who acts as chief editor. The Editorial Board, which advises the editorial team and contributes its own ideas to the work, is composed of the following: the Directors of the Federal Offices for Statistics and for Topography, Prof. Dr. J.J. Senglet and F. Jaunrichard; former Director E. Huber; and two geographers, Prof. Dr. C. Raffestin and Prof. Dr. G. Grosjean. The Board thus includes representatives of the institutions and fields which have a primary interest in the atlas content. They are also the best disposed for providing the latest data and also can bring their own ideas on methodology. New technical and technological developments will certainly influence the work on the National Atlas. We are convinced that there is a real need, also in the future, for a collection of clear up-to-date, informative and attractive thematic maps of every country.
Experimental Digital Mapping

by Prof. K. Brassel, Department of Geography of the University of Zurich

The Department of Geography of the University of Zurich offers a methodological study program on the M.S. level with an emphasis on cartography, quantitative geography, remote sensing and digital image processing. The department maintains laboratories both for teaching and research purposes in the areas of geographical computer graphics and digital cartography, geographical information systems, quantitative analysis and geographic picture processing. The laboratory facilities consist of a departmental mini-computer (VAX 11/750) and the University's main computer (IBM 3033/3083) and are equipped with a series of interactive graphic terminals (Tektronix 4100 series), a number of input and output devices (digitizers, raster- and vector-plotters, ink-jet plotter, picture camera), a powerful picture processing system (DIPIX) and related analysis and display software. Research activities include methodological contributions for the design and implementation of geographic information systems, the development of software for thematic mapping and the analysis of spatial problems as well as developments and studies in the area of digital remote sensing. The enclosed map examples illustrate the various activities of the geography department in the area of digital cartography. On one hand, models for spatial analysis are utilized (attractivity indices of the municipalities of Switzerland, evaluation of problem municipalities), on the other hand, developments of mapping packages such as VCPLOT (DORIGO 1983), COPAM (BRASSEL and UTANO 1978), IBIS (MEIER 1984) and ORTHO3D (BRASSEL and KIRIAKAKIS 1983) are presented, and special ways of utilizing these tools are shown (combination of satellite- and landcover information, usage of unclassed choropleth maps). The majority of the map examples utilize a boundary file of all the municipalities of Switzerland, which was generated from a grid based database (HERZOG et al. 1983).
Orienteering maps, a special case in cartography

by H.U. Feldmann, Federal Office of Topography

Orienteering is a sport which originated around 1900 in the forests of Scandinavia. In Switzerland orienteering has been known since the 1930s. At that time this sport was practised by scouts, sport clubs and later on by groups of individual runners.

Orienteering can be done individually, in teams or in relay races. The idea is that each runner completes a course of previously determined control points in the shortest possible time, aided only by a map and compass.

At first the Swiss National Maps 1:50'000 and 1:25'000 were used as orienteering maps. Since the information in these maps, however, was insufficient and not detailed enough, the control points had to be placed in much more conspicuous and well-marked places than they are today. Accordingly, the courses were often too easy and unfair. In order to make familiar forests more interesting and to make it more difficult to take bearings, paths and forest edges were often omitted in these maps.

First impulses for better orienteering maps

In the course of searching for a satisfactory solution in Switzerland, the first, although still rudimentary, orienteering maps appeared in 1965 and were printed in the following 4 colours:

- brown = topography
- blue = hydrography
- black = cultural features, small terrain features
- yellow = open terrain (forests are white)

As in all forms of sport, the competition conditions should be the same for all participants. Since an impartial terrain does not exist, an attempt was made to at least provide impartial, internationally identical maps. In 1966 a commission of the International Orienteering Federation (IOF) with J.M. Larsen (Norway), Ch. Palm (Sweden) and E. Spiess (Switzerland) was delegated to set up uniform drawing specifications for the maps.

The demands on a good orienteering map grew each year. The Central European countries especially were therefore compelled to include a fifth colour to indicate the runnability (vegetation density) of the terrain. As of 1971 the Swiss orienteering maps contained three different shades of green. This added detail makes the field-work and checking that much more difficult and reduces the validity of a map to 3-4 years because of the relatively rapidly changing vegetation.

Must orienteering maps be so detailed?

The more information of particular area that a map contains, the less will the results be affected by chance. If, for example, thick undergrowth is included, then the runner will consider this information in choosing his route. He will always try to avoid thickets in order to lose valuable time struggling through such obstacles. No competitor should have an advantage or suffer a disadvantage because of missing obstacles (cliffs, water, dense thickets) or mistakes in the map.

The assumption that orienteering maps are useful and necessary only for first-class runners is false. Such a runner can find the control points even with a poor and incomplete map. However, an inexperienced runner will often be completely lost in a forest if the map does not correspond with the terrain. With an orienteering map, he doesn’t have to run long stretches to find out if he is on the right path. Each detailed feature gives him information regarding position and direction.

Given today’s broadening interest in orienteering, the course planners must be able to set as many as 150 control points for international competitions. As opposed to the former path forks or stream junctions, today’s control points are usually only fence corners, large rocks, tree trunks, small depressions, thickets, etc.

Base-map for producing orienteering maps

It is recommended that the orienteering maps are drawn at twice the printing scale. This brings the advantage that the draftsman does not necessarily have to be a trained cartographer and he can work more clearly. Furthermore, any inaccuracies in the field-work will be decreased through the subsequent reduction of the original drawings.
The base-maps usually used in Switzerland are the cadastral survey maps at the scales 1:5'000 and 1:10'000. Experiments have also been made using aerial photographs. These are suitable in the Jura and pre-Alps with open, sparsely wooded areas. Because the aerial photographs taken by the Federal Office of Topography are usually insufficient (too old, scale too small) and stereographic plotting being a very expensive investment for orienteering clubs, there are only a few examples available.

Field-survey
The field-survey is almost exclusively carried out by experienced runners. This work demands perseverance and enthusiasm since - as all of the work in orienteering - it is all done voluntarily and in one's spare time.

Good orienteering terrain contains a large number and a great variety of features. Those which are most essential to the runner in competition must be selected and represented on the orienteering map. There are two phases of generalization - selective (field-work) and graphic (difficult, if the draftsman and the field-surveyor are not the same person).

Whereas the scales at 1:15'000 and 1:20'000 are internationally admissible, the following rules apply in Switzerland:

Type A: scale 1:15'000, contour interval 5 m
   (official map for competitions)
Type B: scale 1:10'000, contour interval 5 m
   (for training and practicing)

Preparation of colour-separated drawings
Black ink, dry transfer symbols and adhesive screens are used to prepare the colour-separated drawings on nit polyester film. The lettering is applied directly to the line drawing in the required position. Masking film is used for areas which have to be screened (for instance vegetation density).

Three offset printers have become specialized in printing orienteering maps in Switzerland. They supply the map producers with the necessary material such as punched films and have the equipment available which is needed for the reprints technical work.

State of publication of orienteering maps (Sept. 1st 1983)
On the average, an orienteering map covers about 6 km² of forest. An experienced field-surveyor and draftsman needs about 50 hours for mapping one km² of forest. In 1982, various orienteering clubs surveyed 326 km² of terrain, which corresponds to about 15'000 hours of spare time.

Since 1963, 703 orienteering maps, representing a total of 4800 km² of surveyed terrain (forest: 2900 km²), have been published. The edition of the individual maps is between 1000 and 15000 copies (needed, for example, for a 5-day orienteering competition with 5000 participants).

The sale price of an orienteering map printed on Syntoform or Artofilm is SFr. 1.00 - 2.50. The source of supply for a list of orienteering maps:
OL-Materialabteilung, Gyhreldenstrasse 50, CH-8953 Dietikon
Hydro-Geological Map of the Canton of Berne (attached maps: A section of the Langental area 1:25'000 eastern sector, basic map and geological cross-sections)

by J.P. Tripet, Baden

In recent years the Government of the Canton of Berne published a hydro-geological map for the purpose of groundwater protection and management. As an example, the map of the Laufental area (Northeastern Folded Jura) has been introduced into the present short note. Hydro-geological maps are specialized maps depicting a number of parameters of the groundwater resources on a topographical and geological background. For the Laufental area, particularly complex geological conditions had to be represented on the map: strong folding of the geological formations, overthrusts, groundwater occurrence in consolidated and non-consolidated formations, as well as the existence of several superimposed aquifers in consolidated formations. For clarity, the selected information is displayed on five different sheets. In a basic map and a set of geological cross-sections (a section from both sheets is given in the annex), the extent, lithology and permeability of the different aquifers is represented:

1. Consolidated formations
Major units of the geological sections are represented by four colours (orange, brown, blue, yellow). Detailed subdivisions are indicated by letters. Permeabilities are represented by the corresponding colour gradations (light = permeable, dark = impermeable).

2. Unconsolidated formations
Lithology and permeability are represented by a screen (points, circles, etc. = permeable, dashes = impermeable). This presentation makes it possible to represent consolidated geological formations covered by a thin veneer of unconsolidated material.

3. Further hydro-geological information
Further hydro-geological information such as the locations of springs, water wells, delineations of catchment areas, and tracer test results are represented by punctual symbols.

Three additional contour maps provide more specific information concerning the geometry of the aquifers, the water-saturated zones, as well as the hydro-chemistry.

Acknowledgement. We are grateful to the Federal Office of Topography, to the Aerni-Leuch Ltd., Berne, as well as the Diagis Ltd., Berne, for having prepared the attached maps free of charge.
Private Cartography in Switzerland

by G. Markle, Chief Cartographer, Orell Füssli Graphic Arts Ltd., Zurich

It is surely worth taking a comprehensive look at private cartographic firms and freelance cartographers in Switzerland. When speaking of cartography in Switzerland, not only the public institutions are meant, but one should also recall the many interesting maps produced by private cartographic firms in the last century which enjoy world-wide recognition as well as praise. If such new creations have been less numerous in the last few years, it is because of the increasing pressure to revise more maps more often. This does not necessarily mean that cartographic creativity has declined or that impulses are absent. But the increasing demand for revised maps, the spreading use of maps and the need for all kinds of cartographic representations foster a constant search for faster and more efficient production methods. Modification and innovations in printing methods and reproduction technology have left their marks on cartographic representation. An example is the reduced colour scale and the resulting standardization of modernized reproduction techniques and quality controls. Furthermore, efforts to keep costs low have yielded various production procedures which, though acceptable, rather resemble industrial production methods. In reality, however, making cartographic products is more related to a trade where the map content must be given careful consideration. This is also true for map graphics, which should represent the theme of a map with the user in mind. We can proudly point out that in this respect our products still reflect the quality of former achievements.

It should not be disregarded that cartography in Switzerland, just like other branches, will have to come to terms with the structural changes brought about by computer technology. It is quite probable that we are currently experiencing a turn in the possibilities of map production. The use of computers, plotters and the continuous development of specific programs for different cartographic applications will sooner or later not only influence cartography but also become an integral part of it. The cartographers in Switzerland agree that the experience gathered in the past decades must be included in modern procedures to ensure the map user of an equally suitable product.

Private firms and freelance cartographers

Currently there are about 120 private cartographers and specialists working in Switzerland. Table 1 shows their distribution:

<table>
<thead>
<tr>
<th>Cartographic firm</th>
<th>Staff</th>
<th>Instructors</th>
<th>Apprentices</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hallweg Ltd., Berne</td>
<td>14</td>
<td>1</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>Kümmery+Frey Ltd., Berne</td>
<td>25</td>
<td>2</td>
<td>8</td>
<td>35</td>
</tr>
<tr>
<td>Orell Füssli Graphic Arts Ltd., Zurich</td>
<td>20</td>
<td>1</td>
<td>5</td>
<td>26</td>
</tr>
<tr>
<td>Swissair Photo+Surveys Ltd., Zurich</td>
<td>19</td>
<td>1</td>
<td>1</td>
<td>21</td>
</tr>
<tr>
<td>Schad+Frey Ltd., Berne</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Freelance cartographers</td>
<td>20</td>
<td>-</td>
<td>-</td>
<td>20</td>
</tr>
</tbody>
</table>

Main activities

The firms Hallweg, Kümmery+Frey, Orell Füssli and Schad+Frey each run a publishing house and do most of their own cartographic work. Swissair Photo+Surveys is specialized in mapping survey plans and topographic maps based on its own surveying and photogrammetric work. The freelance cartographers are primarily engaged by state and local offices and institutions. In addition, a large part of their work includes projects of the above-mentioned firms as well as jobs commissioned by advertising agencies and the administration. Private Cartographers in Switzerland practice generally only in Switzerland itself. However, the firms with publishing houses are also engaged in export and are therefore susceptible to recession and fluctuations in the monetary market. In the last few years there has been a noticeable increase in the number of foreign commissions. This may be regarded as a success of Swiss quality and efficiency.
Table 2 shows a rough survey (not representative of the potential, however) of the significant products of the private cartographic firms in Switzerland:

Table 2

<table>
<thead>
<tr>
<th>Significant products</th>
<th>Hallwag Ltd.</th>
<th>Kienzle-Frey Ltd.</th>
<th>Orell Füssli Ltd.</th>
<th>Süssmaier Photo Ltd.</th>
<th>Schoch-Frey Ltd.</th>
<th>Freelance Cartographers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road maps and road atlases, touring guides</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td>☑</td>
</tr>
<tr>
<td>Touristic maps, excursion maps</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td>☑</td>
</tr>
<tr>
<td>Brochures, commercial maps</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td>☑</td>
</tr>
<tr>
<td>Street directories, city guides</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td>☑</td>
</tr>
<tr>
<td>Relief maps</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td>☑</td>
</tr>
<tr>
<td>School maps</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>☑</td>
</tr>
<tr>
<td>School atlases</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>☑</td>
</tr>
<tr>
<td>Geological maps, soil maps</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>☑</td>
</tr>
<tr>
<td>Other thematic maps</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td>☑</td>
</tr>
<tr>
<td>Topographic maps (various scales)</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td>☑</td>
</tr>
<tr>
<td>Cadastral plans</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td>☑</td>
</tr>
<tr>
<td>Application of computer-assisted cartography</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>☑</td>
</tr>
</tbody>
</table>

Most of the maps that are made and regularly revised in Switzerland are produced by conventional methods. Despite the technological advances in the computer-graphics industry, only one firm has decided to use a computer-controlled cartographic plotting system. The enormous investments needed for such a system, the inefficiency due to its as of yet limited application and the relatively long training and schooling period for cartographers has restricted or even prevented the spread of its application.

Seen from the Swiss point of view, the available cartographic capacity will be sufficient to handle all of the conventional cartographic jobs for a long time yet. Decisive for the rapid technical development will be the financial situation as well as the availability of efficient hardware and software. In addition, the schooling and training of experts in much more complex and time-consuming. A training program will have to be planned and financed largely by the private cartographic firms themselves.

The conventional training of about 20% of today's young cartographers is carried out essentially by two private cartographic firms which have the facilities and personnel to train apprentices. Due to the decreasing number of apprentice positions for cartographers, it can be assumed that the vocational and professional training programs will have to adapt to the situation as well. Furthermore, integrating the new technology will in turn also influence the choice of suitable candidates.

In order to solve these problems, the private cartographic firms are going to have to make the necessary considerations early enough and meet the right measures, all of which may not be very obvious right now and fairly costly as well. Questions of economic feasibility and marketability are inevitable.

For several years now there have been new federal regulations governing the publication of cartographic products in Switzerland. On the one hand, each plan and map up to the scale of 1:300,000 is copyright, causing considerable administrative red tape. Furthermore, there is a licence fee for each of these publications, raising the costs of these products disproportionately. The cartographic firms feel that the influence of the licence fee regulation acts as an impediment on the market, causing clients to switch to other means of propaganda. Another factor is the increasing activity of the Federal Office of Topography in the free market and in the services they offer, which reach beyond its actual official
order. Various charges have been made against this unfair competition, with little success, however. With respect to the private cartographic firms not blessed with lucrative orders, this federal office should limit itself to its officially delegated tasks.

In summarizing, it can be said that private cartography in Switzerland is adequately efficient to face the encroaching changes with careful optimism. Instead of idly looking on, means and ways must be found to master the structural and technological advances.

Cartography at Higher Educational Institutions of Switzerland

by Prof. K. Brassel, Department of Geography of the University of Zurich

In Switzerland cartographic education is provided both at universities and in form of a practice-oriented apprenticeship with private and public cartography establishments. The latter career path is used by vocational cartographers active in various functions of the cartographic production process. The present paper considers only the cartographic activities on the university level. In this area we distinguish between two types of institutions:

a) Engineering schools in civil engineering, surveying, photogrammetry and geodesy
b) Geography departments at universities with emphasis in earth sciences, social sciences or the humanities.

At all these institutions, only a small part of the cartography students plan to be prospective full-time cartographers. Emphasis is on providing cartographic skills to professionals of related disciplines (engineers, geographers).

The Department of Cartography at the Swiss Federal Institute of Technology Zurich (ETH) plays a special role in Swiss academic cartography. It offers a broad range of cartography courses, is equipped with advanced research and reproduction laboratories and participates with long-range development and production projects (Atlas of Switzerland, Swiss World Atlas etc.).

The Department of Cartography provides teaching services for civil engineers, surveyors and geographers. It also offers a one-year post-graduate cartography program for engineers. Among the courses taught are basic elements of cartography, cartographic design and cartographic techniques, graphic design for engineers, construction of plans, map reproduction techniques, map design for geographers, thematic cartography, computer-assisted cartography, and map projections.

The Department of Cartography is involved in a series of research projects. One group deals with problems of computer-assisted design
and map construction (basic problems, revision of topographic maps, map projections, symbolism for thematic mapping, etc.). Other projects focus on graphic design and map interpretation, the usage of both base maps and photogrammetric products in cartography. A third research emphasis is on reproduction techniques. In cooperation with the Commission on Cartographic Techniques of the ICA, contributions to the "Handbook of Cartographic and Reproduction Techniques" have been prepared; also for the "Illustrated Textbook of Cartography" of the ICA Commission on Education a chapter on map design and generalization has been written. Furthermore, a study dealt with topographic map revision; it was carried out under the auspices of Commission D of the European Organization for Experimental Photogrammetric Research (EOEP).

Some other departments of the Swiss Federal Institute of Technology in Zurich (ETH) and Lausanne (EPFL) are also concerned with cartography-related problems, such as the Department of Geodesy and Photogrammetry ETH (map projections, land information systems), the Institute for Communication Science ETH (thematic mapping from satellite imagery), the Department of Informatics ETH (Cartographic data structures), and the Department of Photogrammetry EPFL (usage of photogrammetry for land-use mapping).

The Basel Engineering School in Muttenz is a technical college with a program in surveying, in which a course in cartography and reproduction techniques is offered. At the Swiss School for Photogrammetry Operators in St. Gallen, a basic course in cartography is offered as well.

Besides the engineering schools, the geography departments of the various universities offer cartography components. Cartography is considered a methodical subject and is taught jointly with quantitative analysis, remote sensing techniques and statistical applications in geography.

At the Department of Geography at the ETH students are required to participate in most of the courses offered by the Department of Cartography ETH. The Geography Department maintains a mini-computer installation for research in quantitative geography. Projects involve the analysis and display of remote sensing materials, digital mapping, the construction of digital elevation models and the development of interactive classification and mapping systems. For an international project, a Sea-Ice atlas of Baffin Bay has been produced.

The Department of Geography at the University of Zurich offers courses in cartography, remote sensing and digital mapping. A methodical specialization is offered in cartography, geographic information systems and remote sensing. Specializing students participate in the course program of the Department of Cartography (ETH). Jointly with the ETH, the department is implementing a teaching and research laboratory for digital mapping. Research activities of the department include the development of software for thematic mapping, the integration of cartographic and analytical procedures in geographic information systems, and map perception. Other projects involve digital image processing and land-cover mapping using remote sensing input (Survey of Sri Lanka, UNESCO "Man and Biosphere" project Davos, snow mapping of the Alps, mapping of abandoned land in Switzerland, etc.).

The University of Berne offers introductory courses in general and thematic cartography, historical cartography, digital cartography and field courses in surveying and photogrammetry. No specialized research in cartography is conducted but various types of thematic maps are produced in connection with geographic survey projects. Examples are maps of the settlement development and the occupational structures of the city of Berne, vegetation and wild-life mapping in Ethiopia, soil mapping in Kenya, land-use and land erosion in the Kathmandu valley (Nepal), and various maps in connection with the UNESCO project "Man and Biosphere". The department has developed an environmental information system of the Canton of Berne which includes various mapping facilities.

At the University of Basel, an introductory course in general and thematic mapping is offered. Cartographic methods are used as a research tool for geographic application projects. The department of geography has participated in the development of the geomorpho-
logical maps 1:25,000 of both the German Federal Republic and Switzerland. Other projects involve ski-slope mapping and the development of programs for the evaluation of digital maps. The department employs a full-time staff cartographer.

At the University of Fribourg, cartography is taught as a part of courses in geographical methodology. Topics include general cartography and thematic mapping, map interpretation and digital methods. A set of software packages and a micro-computer installation including a plotter is available. This equipment is used for research activities in various areas of spatial analysis (climatology, population geography).

The Department of Geography at the University of Lausanne introduces elements of cartography in a three-year cycle in quantitative and theoretical geography; other subjects of the program are thematic mapping and map interpretation. The department uses various software packages for the portrayal of spatial statistical data. It employs a cartographic draftsman. Specialized cartographic research is not conducted.

The University of Geneva offers general cartography and cartographic design in a three-year methods course (jointly with remote sensing and quantitative geography). The department maintains a cartographic laboratory, uses various digital mapping packages and employs a cartographic technician.

The Geography Department at the University of Neuchâtel offers an introductory course in cartography. It is involved in the development of a cartographic program library and an information system of the Canton of Neuchâtel. Thematic maps have been produced with projects of rural planning and environmental dynamics.

The Vocational Training of Cartographers in Switzerland

by K. Ficker, Chief Cartographer

In Switzerland the so-called master-apprenticeship is based on the "Regulations for the Vocational Training and Final Examinations of Cartographers" from February 22nd, 1979. Part A describes the practical training at cartographic firms and the requirements for the final examination while part B explains the courses at the vocational college.

The regulations concerning practical training came into effect on April 1st, 1979, whereas those pertaining to the final examination did not come into effect until January 1st, 1983. The regulations covering the vocational curriculum were also accepted on April 1st, 1979.

In 1974, the Swiss Society of Cartography introduced a new draft to the above regulations and it took 5 years for all of the advisory panels to approve and finally accept the new regulations.

First of all, the regulations set the duration of an apprenticeship, the maximum number of apprentices per cartographic firm and specifies what the firms should offer. The guidelines, aims and objectives for the four years of apprenticeship are formulated and the expected knowledge and skills for each year are described in detail. Furthermore, the final examination, the subjects and test sheets as well as the evaluation and grading system are determined. Finally, the guidelines and aims of the curriculum at the vocational college and the information presented in each course are defined. These new regulations, drawn up with respect to the curriculum method, are a definite improvement over the former ones.

On April 19th, 1978, the federal law on professional education came into effect. In conjunction with this law, a decree issued on November 7th, 1979, states that a training program must be established for each profession. Based on the regulations, all of the objectives for each year of apprenticeship are formulated in this program. Together with bi-annual reports and annual tests, it is a complete guide for the instructors.

The specialists from the professional association, however, were not asked to work out the courses and curriculum until 1983. It
then became evident that some of the semesters would have to be packed with so much material that efficient practical work could no longer be guaranteed. The reason lies in the wording of the regulations, where the aims and objectives had already been enumerated too broadly. Furthermore, it was not stated clearly enough where significance should be placed and what the objectives actually were.

If the regulations can be changed, then the developments in computer-assisted cartography must be considered and included in the curriculum. Then there are courses such as geography and surveying where the practical application should be emphasized more. There are also differing opinions as to whether more importance should be given to relief shading or to placing the lettering.

Therefore, after only three years, a motion must be made to draw up new regulations and at the same time adjust them to the requisites of the training program.

15 Years Swiss Society of Cartography

by K. Ficker, President of the Swiss Society of Cartography

15 years ago a small committee, under the leadership of the highly meritorious honorary member Prof. Ed. Imhof, set up the statutes for our Society. The opportunity for cartographers and other professionals to form an association was apparently very well received since the first membership list included 99 individual and 3 collective members. The first meeting took place in Bern on March 22nd, 1969, and Prof. F. Spieks was unaniomously elected president. After 3 years, Mr. K. Ficker, member of the executive committee since its founding, was elected president until 1978. Dr. E. Gächter then took over the presidency, unfortunately for only 2 years, and since 1980 Mr. K. Ficker has again been president.

Within these 15 years the number of members has almost doubled and today the SSC can proudly count 167 individual and 23 collective members. More than half of the practicing cartographers in Switzerland are members, making up about 70% of the membership. 14% are in the surveying profession and 13% are geographers. This distribution should continue to be a decisive factor in organizing our activities so that all three fields are represented.

The emphasis, however, will continue to be on the vocational training of cartographers. The SSC is very active in improving and adapting the training program to the newest developments. It can even be said that if this Society did not exist, nobody would be interested in this part of the graphic industry.

The courses we organize usually seem to be successful and attract many participants. The following courses have been offered since 1972: job preparation (3 times), rock drawing, thematic cartography, computer-assisted cartography, typographic lay-outs, reproduction techniques for cartographers (3 times), photogrammetry and ortho-photograph techniques, relief shading, cartographic digitalization. Especially active members have been engaged in various working groups since 1969: vocational education / further education, map graphics, generalization, history of cartography, lettering of maps. The efforts of one group in particular have resulted in the SSC publication "Cartographic Generalization", which went into its
second printing in 1980 and has been available in English since 1977. The Swiss Society of Cartography also has a series of other publications which are still in demand. The SSC can proudly look back on its 15 years of successful activity and hope that in the future we will continue to have enthusiastic members to tackle new tasks.
Einfarbige Reproduktion des Eidg. Uebersichtsplanes
1:5'000 in den Kantonen Schaffhausen und Zürich
Single colour reproduction of the Swiss general cadastral
plan 1:5'000 in the Cantons of Schaffhausen and Zurich
Titel/title:
Übersichtsplan des Kantons Schaffhausen
Stein am Rhein

General cadastral plan of the Canton of Schaffhausen Stein am Rhein

Maßstab/scale:
1:2'000/1:5'000

Erscheinungsjahr/year of publication:
1980

Herausgeber/publisher:
Vermessungsamt des Kt. Schaffhausen
The Survey Dept. of the Ct. of Schaffhausen

Kartographische Bearbeitung/cartographic design:
Übersichtsplanestelle des Kantonalen Vermessungsamtes Schaffhausen
Cadastral Section of the Survey Department of the Canton of Schaffhausen

Inhalt/contents:
Übersichtsplan 1:2'000/1:5'000 ohne Höhenkurven
- Gebäude
- Strassen, Wege etc.
- Bahnen
- Bösungen
- Gewässer
- Reben, Wald
- Höhenkoten
- Schrift

General cadastral plan 1:2'000/1:5'000 without contour lines
- buildings
- streets, roads etc.
- railroads
- slopes
- hydrography
- vines, forest
- spot heights
- lettering

Übersichtsplan 1:5'000 mit Höhenkurven
- 10 m Aquidistanz und 5 m Zwischenkurven
- alle anderen Elemente wie in Übersichtsplan 1:2'000/1:5'000 ohne Höhenkurven

General cadastral plan 1:5'000 with contour lines
- 10 m contour interval with intermediate contour lines
- all other elements the same as in the general cadastral plan 1:2'000/1:5'000 without contour lines

Reproduktion/reproduction:
- Zeichnung des Planbildes auf Folie
- Montage der Schrift
- Photographische Aufnahme
- Additionsskopie zu einem Rahmenblatt 1:2000 (Positiv Situation und Schrift)
- Reduktion der Rahmenblätter auf 1:5000
- Zusammensetzung zu einem Gemeindeplan 1:5'000 mit und ohne Höhenkurven

- drawing of plan image on plastic sheet
- lettering: stick-up
- camera reproduction
- combination of frame with cultural features and lettering (positive) 1:2'000
- reduction of these sheets to 1:5'000
- assembled Municipal Plan 1:5'000 with and without contour lines
Titel/title:
Eidgenössischer  Uebersichtsplan Getwil an der Limmat und Wangen-Brüttisellen

Maßstab/scale:
1:2'500 / 1:5'000

Erscheinungsjahr/year of publication:
1982

Herausgeber/publisher:
Meliorations- und Vermessungamt des Kantons Zürich

Kartographische Bearbeitung/cartographic design:
Cadastral section of the Survey Department of the Canton of Zurich

Inhalt/contents:
Situation mit Parzellen grenzen, Unterschiedliche Schraffur in der Bebauung (Normalgebäude, unterirdische Gebäude, Uberbauten). Höhenkurven mit 10 m Aequidistanz und wahlweise 5 m zwischen kurven, Böschungen, Höhenkoten.
Das Schriftgut enthält: Orts-, Flur-, Straßen- und Gebäudenummern sowie Parzellennummern.

Reproduktion/reproduction:
Neuzeichnung: Bei der Neuzeichnung erfolgt die Ausführung getrennt von der Schriftmontage in 1:2'000. Mit aufgelegter Schriftmontage wird über das Negativ das Positiv-Originalblatt (Rahmenblatt) 1:2'500 erstellt.
Nachführung: Der Positiv-Originalfilm (Rahmenfilm) wird anhand einer Korrekturvorlage in 1:2'500 nachgeführt.
Der eidg. Gemeindeplan 1:5'000: Reduktion der Rahmenblätter in 1:5'000 und Zusammensetzen der negative. Auf dem davon erstellten Positivfilm erfolgt die Naht- und Handstichzeiche. Hiervom werden die Filme für die verschiedensten Arbeiten / Ausführungen abgeleitet.

First edition: the plan is drawn at the scale of 1:2'000, the lettering is done separately. With the lettering placed over the negative, a positive original is copied at the scale of 1:2'500.
Revision: corrections from a proof-sheet are made directly on the positive original film at the scale 1:2'500.
The Swiss Municipal Plan 1:5'000: the positive originals are reduced to 1:5'000 and the negative pieces together. A positive film is made, on which the junctions and edges are retouched. These films are then available to all kinds of users.
Titel/title:
Hausnummernplan Nürensdorf und Hettlingen

Street number plan Nürensdorf und Hettlingen

Maßstab/scale:
1:2'500 / 1:5'000

Erscheinungsjahr/year of publication:
1982/83

Herausgeber/publisher:
Meliorations- und Vermessungsamt des Kanton Zürich

Survey Department of the Canton of Zurich

Kartographische Bearbeitung/cartographic design:
Übersichtsplanstelle des Kt. Vermessungsamtes
Cadastral section of the Survey Department of the Canton of Zurich

Inhalt/contents:
Nürensdorf: Übersichtsplan mit Hausnummern.
Hettlingen: Bei dieser speziellen Ausführung werden die Hausnummern sowie die Strassen- und Gebäudennamen hervorgehoben.

Nürensdorf general cadastral plan with street numbers.
Hettlingen: in this special edition, the street numbers and the names of streets and buildings are emphasized.

Reproduktion/reproduction:
Die Hausnummerierung erfolgt auf einer separaten Polyesterfolie. In Additionsverfahren mittels Passlochsystemen werden die einzelnen Negative zum Strich/Master-Original zusammengenäht. (Max. Format 1190 x 1600 mm).

The streets are numbered on a separate polyester sheet. With the punch and register system, the different negatives are copied into a line/screen original (format max. 1190 x 1600 mm).
Titel/title:
- Oben: Originalplanpause
- Mitte: Baublatt
- Unten: Handriss
- above: original plan
- center: urban construction zone plan
- below: field drawing

Maßstab/scale:
- Oben und Mitte: 1:500
- Unten: 1:250
- above and center: 1:500
- below: 1:250

Erscheinungsjahr/year of publication:
Laufend auf aktuellem Stand gehalten
continuously revised

Herausgeber/publisher:
Vermessungsamt der Stadt Zürich
The Survey Department of the City of Zurich

Bearbeitung/design:
Vermessungsamt der Stadt Zürich
The Survey Department of the City of Zurich

Inhalt/contents:
- Oben: Grundbuchplaninhalt, zusätzlich Baulinien, differenzierte Gebäudeschraf- furen und Hausnummern
- Mitte: Grundbuchplaninhalt ohne Strassen- namen und Versicherungsnummern, dafür aber mit Hausnummern.
- Unten: Situation mit Eigentumsgrenzen und Massangaben
- above: land register with delimitation for buildings, different types of buildings and house numbers
- center: land register with house numbers but without street names and fire insurance numbers
- below: cultural features with property boundaries and measurements

Reproduktion/reproduction:
- Oben und Mitte: Photographische Aufnahme von Grundbuchplan und nachträgliches Er- gänzen bzw. Löschen auf dem Film
- Zeichnung mit Tusche auf Transparent
- above and center: camera reproduction of the land register with subsequent changes made directly on the film
- ink drawing on transparency
Titel/title:
Übersichtsplan der Stadt Zürich

Maßstab/scale:
- oben: 1:2‘500
- unten: 1:5‘000
- above: 1:2‘500
- below: 1:5‘000

Erscheinungsjahr/year of publication:
1983

Herausgeber/publisher:
Vermessungsdienst der Stadt Zürich

Kartographische Bearbeitung/cartographic design:
Vermessungsdienst der Stadt Zürich

Inhalt/contents:
Dem Originalmaßstab entsprechender, sehr detaillierter Übersichtsplan, in Kombination mit Straßen, Straßenbahnen, differenzierten Gebäudeschraffuren und Höhenkurvenbild mit 2 Meter Aequidistanz.
The general cadastral plan at the original scale with sidewalks, tramways, different types of buildings and contour lines (interval 2 meters).

Reproduktion/reproduction:
- Situation und Kurven: Foliengravur
- Gebäudeschraffuren: Masken und Einkopier-Gitter
- Beschriftung: Filmzusatz-Montage
- Zusammenkopie der verschiedenen Teiloriginale (Negativ) mit Panslachsystem.
- cultural features and contour lines: scribing on plastic sheets
- buildings: masks and line screens
- lettering: type-setting on film
- film copying (negatives): with punch and register system.
Titel/title: Landeskarte der Schweiz
National Map of Switzerland

Maßstab/scale: 1:25'000

Erscheinungsjahr/year of publication: Nachführung alle 6 Jahre
Revision in a 6-year cycle

Herausgeber/publisher: Bundesamt für Landestopographie, Wabern
Federal Office of Topography, Wabern

Kartographische Bearbeitung/cartographic design: Bundesamt für Landestopographie, Wabern
Federal Office of Topography, Wabern

Inhalt/contents:
Aequidistanz der Höhenkurven: 10 m (Jura und Mittelland), 20 m (Alpen)
Contour line interval: 10 m (Jura and Central Plateau), 20 m (Alps)
Blattformat: 70 x 48 cm
Mapped area: 70 x 48 cm

Reproduktion/reproduction:
Glasgravur im Originalmaßstab Scribing on glass plates 1:1
Positivkopie auf beschichtete Lackplatten positive copy on coated glass plates
Offsetdruck, 8-farbig offset printing with 8 colours

Bemerkung note:
Die roten Pfeile beziehen sich auf den Beiträg "Betrachtungen zur Information mit Ka- The red arrows refer to contribution "Re-
ten" von Dipl. Ing. ETH Rudolf Knöpfl. flections on information with maps" by
Dipl. Ing. ETH Rudolf Knöpfl.
Titel/title:
Landeskarte der Schweiz

Maaßstab/scale:
1:50'000

Erscheinungsjahr/year of publication:
Nachführung alle 6 Jahre

Herausgeber/publisher:
Bundesamt für Landestopographie, Wabern

Kartographische Bearbeitung/cartographic design:
Bundesamt für Landestopographie, Wabern

Inhalt/contents:
Aequidistanz der Höhenkurven: 20 m
Bildformat: 70 x 48 cm

Reproduktion/reproduction:
Glasgravur im Originalmaßstab
Positivkopie auf beschichtete Lackplatten
Offsetdruck 6-farbig

National Map of Switzerland

Revision in a 6-year cycle

Federal Office of Topography, Wabern

Federal Office of Topography, Wabern

Contour line interval: 20 m
Mapped area: 70 x 48 cm

Scribing on glass plates 1:1
positive copy on coated glass plates
offset printing with 6 colours
Titel/title: Landeskarte der Schweiz
National Map of Switzerland

Maßstab/scale: 1:100'000

Erscheinungsjahr/year of publication: Nachführung alle 6 Jahre
Revision in a 6-year cycle

Herausgeber/publisher: Bundesamt für Landestopographie, Wabern
Federal Office of Topography, Wabern

Kartographische Bearbeitung/cartographic design:
Bundesamt für Landestopographie, Wabern
Federal Office of Topography, Wabern

Inhalt/contents:
Aequidistanz der Höhenkurven: 50 m
Contour line interval: 50 m
Bildformat: 70 x 48 cm
Mapped area: 70 x 48 cm

Reproduktion/reproduction:
Glasgravur im Originalmaßstab
Scribing on glass plates 1:1
Positivkopie auf beschichtete Lackplatten
Positive copy on coated glass plates
Offsetdruck 10-Farbig
Offset printing with 10 colours
Titel/title:
Landeskarte der Schweiz

Massstab/scale:
1:200'000

Erscheinungsjahr/year of publication:
Nachführung alle 6 Jahre
Revision in a 6-year cycle

Herausgeber/publisher:
Bundesamt für Landestopographie, Wabern
Federal Office of Topography, Wabern

Kartographische Bearbeitung/cartographic design:
Bundesamt für Landestopographie, Wabern
Federal Office of Topography, Wabern

Inhalt/contents:
Aequidistanz der Höhenkurven: 100 m
Contour line interval: 100 m
Bildformat: 100 x 71 cm
Mapped area: 100 x 71 cm

Reproduktion/reproduction:
Glasgravur im Originalmassstab
Scribing on glass plates 1:1
Positivkopie auf beschichtete Lackplatten
positive copy on coated glass plates
Offsetdruck 15-farbig
offset printing with 15 colours
Title: National Map of Switzerland

Scale: 1:300,000

Year of publication: Revision in a 6-year cycle

Publisher: Federal Office of Topography, Wabern

Kartographic design: Federal Office of Topography, Wabern

Contents:
- Equal distance of contour lines: 100 m
- Mapped area: 121 x 81 cm

Reproduction:
- Photographic reduction from 1:200,000
- Positive copy on coated glass plates
- Offset-printing with 15 colours
Funknavigationskarte

Radio Navigation Chart - RNC

Maßstab/scale:
1:1'000'000

Erscheinungsjahr/year of publication:
1983 (jährliche Ausgabe)
1983 (annual edition)

Herausgeber/publisher:
Bundesamt für Zivilluftfahrt (BAZL)
CH-3003 Bern

Federal Office for Civil Aviation (FOCA)
CH-3003 Berne

Kartographische Bearbeitung/cartographic design:
Redaktion: BAZL/AIS
Zeichnung: Schad und Frey AG
Kartographisches Institut
CH-3018 Bern

Editing: FOCA/AIS
Drafting: Schad and Frey Ltd.
Cartographical Institute
CH-3018 Bern

Inhalt/contents:
Schweiz, untere und obere Lufttraumstruktur: kontrollierte Lufträume, Navigationshilfe, eine Auswahl von Flugplätzen, Mindestflughöhen, Meldepunkte, Gefahrengebiete und Flugplatzverkehrszenen.

Switzerland, low and high altitude airspace, airspace under control, radio aids, selected aerodromes, minimum flight altitudes, reporting points, danger areas and ATZ.

Reproduktion/reproduction:
2-Farbiger Offsetdruck
Bundesamt für Landestopographie
CH-3084 Wabern

Offset printing with 2 colours
Federal Office of Topography
CH-3084 Wabern
Titel/title:
Touristische Transportanlagen der Schweiz
Touristic Transport Systems in Switzerland

Maßstab/scale:
1:300'000

Erscheinungsjahr/year of publication:
1983

Herausgeber/publisher:
Bundesamt für Raumplanung
Federal Office for Comprehensive Spatial Planning

Kartographische Bearbeitung/cartographic design:
Bundesamt für Landestopographie
Federal Office of Topography

Inhalt/contents:
Standortgenaue Darstellung aller touristischen Transportanlagen, aufgegliedert in Luftseil- Gondel- Sesselbahnen, Zahnrad- und Standsesselbahnen, Kleinluftseilbahnen und Skilifte.
Presentation of all touristic transport systems differentiating various types of cablecars, rackrailways, chair-lifts, cable-railways and skilifts.

Reproduktion/reproduction:
Dreifarbiges Eindruck in die Basiskarte (Generalkarte der Schweiz).
Imprint with three colours on base map (General map of Switzerland).
Ronco sopra Ascona (TI) im Jahre 1930
Ronco sopra Ascona (TI) nel 1930
Titel/title:
Atlas der Schweiz, 10. Lieferung, Tafel 65a**, Fremdenorte (Beispiel): Ronco supra Ascona (TI) im Jahre 1930

Maßstab/scale:
1:12'500

Erscheinungsjahr/year of publication:

Reproduktion, Druck, Herausgeber/reproduction, printing, publishing:
Bundesamt für Landestopographie, Wabern-Bern

Autor/author:
Ernst Spiess (Rekonstruktion der Topographie von 1930)

Inhalt/contents:
Neben reinen Nachführungen und damit zusammenhängenden Ergänzungen werden in die weiteren Lieferungen zum Atlas der Schweiz auch eine ganze Anzahl neuer Karten aufgenommen. Ein Beispiel dafür sind die 7 Karten der Tafel 65a** zur Veränderung der Kulturlandschaft in neu erschlossenen Skigebieten und anderen Fremdenorten.

Mit Hilfe erster Luftbilder und verschiedener historischer Quellen wurde die Situation des bekannten Fremdenkurortes Ronco supra Ascona im Tessin im Jahre 1930 rekonstruiert. Alle Einzelheiten illustrieren die damalige kleingärtnerische Struktur und Nutzung des Tal- und Berggebietes.
Ronco sopra Ascona nel 1980, sviluppo edilizio dal 1930 al 1980
Titel/title:

Massestab/scale:
1:12'500

Erscheinungsjahr/year of publication:

Reproduktion, Druck, Herausgeber/reproduction, printing, publishing:
Bundesamt für Landestopographie, Wabern-Bern

Autoren/authors:
Werner A. Gallusser und Mitarbeiter

Redaktion und kartographische Bearbeitung/editorship and cartographic design:
Institut für Kartographie der Eidg. Technischen Hochschule Zürich

Inhalt/contents:
In dieser Karte wurde die Situation der heutigen topographischen Karte aufgespalten nach baulichen Elementen, die vor 1930 existierten und solchen, die in 3 weiteren Zeitperioden bis heute entstanden sind. So lässt sich schrittweise die bauliche Entwicklung der Siedlung und des zugehörigen Strassenetzes verfolgen. In diesem Gebiet wurden besonders viele Häuser als Zweifamilienhäuser neu erstellt oder umgebaut. Damit parallel ergab sich auch eine starke Veränderung in der landwirtschaftlichen Nutzung.

Reproduktion/reproduction:
Bedingt durch die feinen Bildstrukturen wurden die beiden Karten mit 10 Druckfarben gedruckt.


2nd Edition, 10th section, 1981

Federal Office of Topography, Wabern-Berne

Werner A. Gallusser and collaborators

Department of Cartography of the Swiss Federal Institute of Technology in Zurich

In this map the planimetric features of the actual topographic map were separated into the situation existing before 1930 and into 3 periods of new construction between 1930 and 1980. The map thus enables the reader to follow step by step the urban development of houses and of the related road network. In this area, a very large number of second homes have been built or renovated. In parallel a considerable change in land use can be identified.

Due to the fine image structure, both maps have been printed in 10 colours.
Volksdichte 1960 nach Gemeinden
Densité de la population 1960 par communes
Titel/title:

Atlas of Switzerland, 1st section, plate 24, map 2: Population Density in 1960 by communes

Maßstab/scale:
1:800'000

Erscheinungsjahr/year of publication:
1. Ausgabe, 1. Lieferung, 1965
1st Edition, 1st section, 1965

Reproduktions/Druck, Herausgeber/reproduction, printing, publishing:
Bundesamt für Landestopographie, Wabern-Bern
Federal Office of Topography, Wabern-Berne

Autor/author:
Beatrice Messerli-Ruedin, Redaktionsbüro Atlas der Schweiz an der Eidg. Technischen Hochschule Zürich
Beatrice Messerli-Ruedin, Editorial group for the Atlas of Switzerland at the Swiss Federal Institute of Technology in Zurich

Inhalt/contents:

Reproduktion/reproduction:

This map is one taken from some 400 maps of the 1st Edition of the thematic National Atlas. The last section of this 1st Edition was published in 1978. In the same year, the Federal Council agreed to a proposal submitted by the Editorial Board that the work on this atlas should be continued. In so doing, the Swiss Government accepted the conviction that a thematic map series should undergo a continuous revision in the same way as topographic maps. This map section has been added mainly for comparison to the up-dated version of 1980.

The method of representation used here is the conventional choropleth map with 11 class intervals of colour steps and intensities. The map has been printed in the four standard colours.
2. Bevölkerungsdichte 1980 nach Gemeinden
Densité de la population en 1980, par communes

Gemeindegrenzen: Stand 1980
Délimitation des communes: situation en 1980

Einwohner pro km² produktive Fläche
Habitants par km² de surface productive

0 – 5
5 – 10
10 – 25
25 – 50
50 – 100
100 – 250
250 – 500
500 – 1000
1000 – 2500
2500 – 5000
5000 – 9868 (Genève)

Od- und Unland
nach Arealstatistik 1972
Terres incultes
selon la statistique de la superficie de 1972

1:800 000
Titel/title:


Maßstab/scale:
1:800‘000

Erscheinungsjahr/year of publication:
2. Ausgabe, 11. Lieferung, 1984

2nd Edition, 11th section, 1984

Reproduktion, Druck, Herausgeber/reproduction, printing, publishing:
Bundesamt Für Landestopographie, Wabern-Bern

Federal Office of Topography, Wabern-Berne

Autoren/authors:
Ernst Spiess und Marco Peyer, Redaktionsbüro Atlas der Schweiz an der Eidg. Technischen Hochschule Zürich

Ernst Spiess and Marco Peyer, Editorial group for the Atlas of Switzerland at the Swiss Federal Institute of Technology in Zurich

Inhalt/contents:

This map section shows the population density, calculated from the data of the 1980 census. Unlike in the 1st Edi- tion, the unproductive and uninhabited areas have been set apart (grey zones) and the density has been related to the productive zones only. These areas have been extracted from the areal statistics file stored in grid mode. The same 11 class intervals as in the 1st Edition have been chosen in order to enable easy comparison of both maps. In addition to the map, a histogram is given with the dis- tribution of the 3000 communes in the 11 class intervals. The changes that occurred in the last 20 years can be recon- gned when comparing the same communes in both maps. On average, the national population density increased from 131 to 154 inhabitants per square kilometre.

Reproduktion/reproduction:
Diese Karte ist in 5 Farben gedruckt, die Kontu- ren in dunkelbraun, zusätzlich zu den 4 Normal- farben.

The map is printed in five colours: in addition to the four standard colours, the administrative boundaries are dark brown.
Changement de la densité de la population de 1960 à 1980, par com.

Gemeindegrenzen: Stand 1980
Délimitation des communes: situation en 1980

Prozentuale Zu- oder Abnahme der Wohnbevölkerung von 1960 bis 1980
Pourcentage de l'augmentation ou de la diminution de la population résidante de 1960 à 1980

Abnahme
Diminution

Zunahme
Augmentation

50–80 %
30–50 %
10–30 %
0–10 %
0–10 %
10–50 %
50–100 %
100–200 %
200–1188 %

Od- und Unland
nach Arealstatistik 1972
Terres inculées
selon la statistique de la superficie de 1972

1:800 000
Titel/title:

Massstab/scale:
1:800'000

Erscheinungsjahr/year of publication:
2. Ausgabe, 11. Lieferung, 1984

Reproduktion, Druck, Herausgeber/reproduction, printing, publishing:
Bundesamt für Landestopographie, Wabern-Bern

Autoren/authors:
Ernst Spiess, Marco Peyer, Redaktionsbüro Atlas der Schweiz in der Eidg. Technischen Hochschule Zürich

Inhalt/contents:

Insgesamt wurden die Prozentanteile in 8 Stufen geordnet und auch dieser Karte ein Histogramm beigegeben.

Ernst Spiess, Marco Peyer, Editorial group at the Swiss Federal Institute of Technology in Zurich

In addition to a direct visual comparison between both population density maps, it seemed necessary to prepare a map of the percentage increase or decrease in population within the period between the 1st and 2nd Editions. Thus it shows clearly, where major changes have occurred: on the one hand a prominent increase in most agglomeration cores, on the other hand a noticeable decrease in agglomeration cores and in some remote mountain areas.

The percentages are divided into 8 class intervals. A histogram is also provided with this map.
Title:
Satellite input for Grid Data Bases

Scale:
1:200'000

Year of publication:
1984

Publisher:
Department of Geography, University of Zurich

Cartographic design:
E. Meier, U. Frei

Contents:
The image on the left shows a part of a Landsat photograph of a region of Zurich from October 7th 1972 (band 7, 0.8 - 1.1 µm). It was modified by skew correction and an affine transformation to fit the Swiss Coordinate System. It was then overlaid onto the municipal boundaries as provided by a grid information system of Switzerland. The center map shows a classification of the satellite information (3 classes), whereas the representation to the right shows the land use categories for the same area as stored in the Swiss ‘Hortfarm’ data base. This example demonstrates the potential of satellite information for updating grid data bases.

 Reproductions:
All three maps were produced on an electrostatic plotter (VERSATEC 8224) at the Computing Center of the University of Zurich.

Publications:
Fasel F. (1978): IBIS – ein interaktives Bildinterpretationssystem. Int. Symp. on Remote Sensing for Obs. and Inventory of Earth Resources and for the undangered Environment (ISP-1UFRO Symp.), Freiburg, GFR.
PENDLERVERHALTEN 1980 (GEMEINDEN IM UMKREIS VON 30 KM UM ZUERICH)

ZUPENDLERANTEIL
IN PROZENT DER ARBEITSBEVÖLKERUNG

WEGPENDLERANTEIL
IN PROZENT DER BERUFLSSTAETIGEN

QUELLE: VOLKSAEMLUNG 1980
Title:
Commuters in the Zurich Metropolitan Area

Scale:
see map

Year of publication:
1984

Publisher:
Department of Geography, University of Zurich

Cartographic design:
A. Herzog, M. Bopp

Contents:
The plate shows the relative proportion of commuters of all municipalities within a 30 km radius from the center of Zurich. The map to the left shows the proportion of daily commuters to the municipalities, the map to the right shows the commuters from the municipalities. A comparison of the two maps allows a visual characterization of the municipalities with respect to commuting. The continuous-tone choropleth maps were produced with the COPAN software package. The municipal boundary file was produced from the Swiss grid information system.

Reproduction:
All three maps were produced on an electrostatic plotter (VERSATEC 8224) at the Computing Center of the University of Zurich.

Publications:
Title:
Orthogonal Three-dimensional Thematic Maps

Scale:
variable

Year of publication:
1983

Publisher:
Department of Geography, University of Zurich

Cartographic design:
Z.Kiriakakis, K.Brassel

Contents:
The map examples show applications of a new cartographic method where
discrete statistical surfaces are modelled as three-dimensional features
and viewed from the vertical position. Vertical surfaces are tilted and
represented by oblique hill-shading; horizontal surfaces can be used to
portray additional features.

Reproduction:
The maps are produced on an electrostatic plotter (VERSATEC 8224) at the
Computing Center of the University of Zurich.

Publication:
PROBLEMGEMEINDE DER SCHWEIZ
(FINANZSCHWACH, LANDWIRTSCHAFTLICHE PRAEGUNG)
Title:
Problem municipalities of Switzerland

Scale:
approx. 1:1'400'000

Year of publication:
1984

Publisher:
Department of Geography, University of Zurich

Cartographic design:
G. Dorigo, M. Dumondel

Contents:
A cluster analysis was used to classify the 3027 municipalities of
Switzerland. The map shows the group of financially weak municipalities
of rural characteristic - with coloured dot symbols, and the remaining
municipalities as small black reference dots. The cantonal and district
boundaries were used as a map base. The map was produced with the soft-
ware package VCPLOT.

Reproduction:
The map was produced on an electrostatic plotter (VERSATEC 8224) at the
Computing Center of the University of Zurich.

Publications:
für Agrarwirtschaft, ETH Zürich.

Karten. Geoprocessing Series, Vol.2, Dept. of Geography, University of
Zurich.
Attractiveness of Swiss Counties

Scale:
approx. 1:1'600'000

Year of publication:
1984

Publisher:
Department of Geography, University of Zurich

Cartographic design:
G. Dorigo

Contents:
Based on information on commuters to and from different districts in Switzerland, a mathematical model can be used to estimate the commuter flow between all of the localities. Repulsing (R) and enticing (I) forces are computed for each district. The difference A = R - I is a measure of attractiveness of the region. The map shows the attractiveness A in a choropleth representation, where the class limits are defined by units of standard deviation from the mean. Areas of low attractiveness are represented by colored line symbols, areas of high attractiveness by black dot symbols.

Reproduction:
The map was produced on an electrostatic plotter (VERSATEC 8224) at the Computing Center of the University of Zurich.

Publication:
Title:
Occupational Structure in the 2nd Economic Sector of Eastern Switzerland

Scale:
approx. 1:900'000

Year of publication:
1984

Publisher:
Department of Geography, University of Zurich

Cartographic design:
R. Kuster, G. Dorigo

Contents:
This example represents information concerning industrial occupation in the form of choropleth and diagram representations. It was constructed with the VCPLOT software package. VCPLOT includes routines for dot, choropleth, contour and three-dimensional mapping. The map author can vary the line width, the symbol shape, pattern, class limits, scale, etc. VCPLOT is used as a teaching tool. The present map was designed by a student in a quantitative geography course.

Reproduction:
The map was produced on an electrostatic plotter (VERSATEC 8224) at the Computing Center of the University of Zurich.

Publications:
IN DER WOHNGEMEINDE GEBORENE
IN PROZENT ALLER EINWOHNER

NACH GEMEINDEN

QUELLE: VOLKSPRÜfung 1980

NACH BEZIRKEN

COPAM: GEOPHISCHES INSTITUT DER UNIVERSITÄT ZURICH
Title:
Effects of Aggregation in Choropleth Mapping

Scale:
1:2'000'000

Year of publication:
1984

Publisher:
Department of Geography, University of Zurich

Cartographic design:
A. Herzog, M. Bopp

Contents:
Both maps represent the proportion of inhabitants born in the municipality in which they are presently living (1980). In the top map the information corresponds to municipalities, in the bottom map to the districts. A comparison of the two maps illustrates the arbitrariness of the simplification caused by the aggregation of spatial units. Whereas the top map contains too much information (small areal units, many grey levels), it allows a visual integration of the statistical surface and can be used for manual generalization.

Reproduction:
The map was produced on an electrostatic plotter (VERSATEC 8224) at the Computing Center of the University of Zurich.

Publications:
Titel/title:
OL-Karte Bois de Châtel

Maßstab/scale:
1:10'000

Erscheinungsjahr/year of publication:
1979

Herausgeber/publisher:
OL-Gruppe Murten

Kartographische Bearbeitung/cartographic design:
H.U. Feldmann

Inhalt/contents:
Braun: Geländeformen
Blau: Gewässer
Schwarz: Situation, Kleinformen
Gelb: Offenes Gelände
Grün: Belaubbarkeit

Brown: Topography
Blue: Hydrography
Black: Cultural features
Yellow: Open terrain
Green: Vegetation density

Reproduktion/reproduction:
Lineares Bild: Glasgravur 1:1
Signaturen, Schrift: Strippingfilmmontage
Filmaddition mit Passlochsystem
Offsetdruck

Lines: scribing on glass 1:1
Symbols, lettering: strippingfilm
Film copying with punch and register system
Offset printing
Hydrogeological Map of the Canton of Berne
Laufental area 1: 25 000 eastern sector
Basic Map
Hydrogeological Map of the Canton of Berne
Laufental area 1: 25 000 eastern sector

Geological Cross-section

Preparation:
Motor Columbus, engineering Co. Baden,
M. Marrel, A. Bürgin Ph. Dr., N. Engel, J.P. Tripet Ph. D.

Design and Cartography:
P. Eichwald, P. Kunz (WEA), D. Hafsteller (Rossee)

Published under the supervision of the Department
of Waterworks of the Canton of Berne (WEA) 1982.
G. della Valle Ph. D.

Lettering style, Reprography and Typographical
execution:

Reproduction:
Colour Design 1: 25 000 foliograving; each additional
Copy per colour is centred over a guide-hole and the screens
laid simultaneously. Six-colour offset is used in accordance
with the European norm

Content and Presentation:
compare to the text written by J.P. Tripet Ph. D.
Reproduced with permission of the Federal Topographic
Survey, May 1, 1983.
Titel/title:
Stadtplan London

Maßstab/scale:
Hauptplan: 1:17’500
Zentrumplan: 1:10’500
Umgebungskarte: 1:300’000

Erscheinungsjahr/year of publication:
1981

Herausgeber/publisher:
Hallwag AG, Bern

Kartographische Bearbeitung/cartographic design:
Hallwag AG, Bern

Inhalt/contents:
Plan von London mit Zentrumplan, Umgebungskarte und Streckennetz der U-Bahnlinien

Reproduktion/reproduction:
Normaler kartographischer Aufbau über Folien, Film, Stripmaskverfahren, Strippingfilm etc. Weiterverarbeitung über Film.
4 Druckfarben, Offsetdruck mit Normalfarbenskala

City map London
Main map: 1:17’500
Map of the center: 1:10’500
Map of surroundings: 1:300’000
Based on a normal cartographic construction (foils, film, strip-mask proceeding, stripping film etc.) Processing by film.
Offsetprinting with 4 colours
Titel/title:
Schulkarte des Kantons Aargau
Vorderseite

School map of the Canton of "Argovia"
Front side

Maßstab/scale:
1:100'000

Erscheinungsjahr/year of publication:
1984

Herausgeber/publisher:
Lehrmittelverlag des Kantons Aargau

Educational publishers of the canton of "Argovia"

Kartographische Bearbeitung/cartographic design:
Hallwag AG, Bern

Hallwag Ltd., Berne

Inhalt/contents:

Topographic map of the canton of "Argovia" and adjoining regions. Oblique hill shading with lighting from South.

Reproduktion/reproduction:
Entwurf, Generalisierung und Originalzeichnung auf der Grundlage der Landeskarte 1:100'000 in Zusammenarbeit mit einer Kartographiekommision.

Normaler kartographischer Aufbau über Gravurfolie, Folien, Film, Stripmaskverfahren, Strippingfilm etc. Weiterverarbeitung über Film. 10 Druckfarben, Offsetdruck

Layout, generalization and fair drafting based on the official map series of Switzerland 1:100'000, in collaboration with a cartographic commission. Based on a normal cartographic construction (foil-scribing, foils, film, strip-mask proceeding, stripping-film etc. Processing by film. Offsetprinting with 10 colours

Titel/title:
Schulkarte des Kantons Aargau
Rückseite

School map of the canton of "Argovia"
Back side

Inhalt/contents:

Map of local history and geography with different themes and with special conventional signs. Base: situation of the topographic map with the forests.

Reproduktion/reproduction:
Analog der Vorderseite. 8 Druckfarben, Offsetdruck

Analogue to the front side. Offsetprinting with 8 colours
Title:
Panoramakarte Oesterreich
Panoramic map of Austria

Scale:
Mittelgrund ca. 1:400'000
To average about 1:400'000

Year of publication:
1983

Author-Artist:
Franz Stumvoll, Lms-Oesterreich
Franz Stumvoll, Lms-Austria

Publisher:
Hallwag AG, Bern
Hallwag Ltd., Berne

Cartographic design:
Hallwag AG, Bern
Hallwag Ltd., Berne

Contents:
Panoramic design of Austria and adjoining regions. Visual direction from South to North.

Production:
Worked out with Gouache colours over a construction done by pen and pencil. Reproduction by slide and scanner. Separate montage of lettering, conventional signs and railways, which are added later on. Offsetprinting with 4 colours.
Titel/title:
Schulkarte Luzern
School Map Lucerne

Maßstab/scale:
1:100'000

Erscheinungsjahr/year of publication:
1983

Herausgeber/publisher:
Kantonaler Lehrmittelverlag Luzern
Educational publishers of the Canton of Lucerne

Kartographische Bearbeitung/cartographic design:
Kümmerly+Frey AG, Bern
Kuemmerly+Frey Ltd., Berne

Inhalt/contents:
Situation, farbige Geländedarstellung ohne Höhenkurven
Planimetric representation, coloured terrain representation without contour lines

Reproduktion/reproduction:
- Lineare Kartenlemente in Glasgravur
- Reliefzeichnung schwarz-weiß mit Aerograph
- Rasteraufnahmen in verschiedenen Gradationen
- Hypsometriertöne in drei Farben
- Offsetdruck 10-farbig
- Linear map elements on scribing
- Black and white relief hillshading by air brush
- Half-tone print in different gradations
- Hypsometric tints in three colours
- Offset printing with 10 colours
Titel/title:
Baden-Württemberg
Deutsche Reisekarte, Blatt 5

Massstab/scale:
1:250'000

Erscheinungsjahr/year of publication:
1981

Herausgeber/publisher:
Kümmerly+Frey AG, Bern

Kartographische Bearbeitung/cartographic design:
Kümmerly+Frey AG, Bern

Inhalt/contents:
Strassenkarte mit Relief und Wald

Reproduktion/reproduction:
Foliengravur im Originalmassstab, Strip-Mask-Verfahren, Schriftmontage, Folienkopie auf Astralonfilmen.
Offsetdruck 6-farbig

Scribing in the original scale, strip-mask-proceeding, stripping-in of text matter, photomechanical copies on Astralon foils.
Offset printing with 6 colours
Titel/title: Schweiz

Maßstab/scale: 1:301'000

Erscheinungsjahr/year of publication: 1981

Herausgeber/publisher: Kümmery+Frey AG, Bern

Kartographische Bearbeitung/cartographic design: Kümmery+Frey AG, Bern

Inhalt/contents: Strassenkarte

Reproduktion/reproduction:
- Aufbau und Nachführung der Karte auf dem Sci-Tex Response-250 System
- Dateneingabe ab bestehenden Originalen auf Scanner
- Nachführung am Bildschirm
- Datenausgabe auf Film mit Laser-Plotter
- Offsetdruck 6-farbig

- Setup and up-dating of the map are executed on the Sci-Tex Response-250 System
- Data input of existing originals via scanner
- Up-dating at the screen
- Data output on film by laser plotter
- Offset printing with 6 colours
Titel/title: Europa

Maßstab/scale: 1:5'000'000

Erscheinungsjahr/year of publication: 1982

Herausgeber/publisher: Kümmerly+Frey AG, Bern  Kümmerly+Frey Ltd., Berne

Kartographische Bearbeitung/cartographic design: Kümmerly+Frey AG, Bern  Kümmerly+Frey Ltd., Berne

Inhalt/contents: Uebersichtskarte mit Verkehrsnetz, Geländedarstellung mit Geländebedeckung

Reproduction/reproduction: - Bodenbedeckung als farbiges Original mit Farbstiften auf mattierte Polyesterfolie
- Farbauszüge im Dreifarbensatz in der Kamera
- Offsetdruck 4-Farbig

- Topographic features as coloured original by coloured pencils on mat Polyester foils
- Colour separations by trichromatic printing in the camera
- Offset printing with 4 colours
Titel/title:
China

Maßstab/scale:
1:5'000'000

Erscheinungsjahr/year of publication:
1982

Herausgeber/publisher:
Kümmerly+Frey AG, Bern
Kuemmerly+Frey Ltd., Berne

Kartographische Bearbeitung/cartographic design:
Kümmerly+Frey AG, Bern
Kuemmerly+Frey Ltd., Berne

Inhalt/contents:
Übersichtskarte mit Verkehrsnetz, Gelindendarstellung und Vegetationszonen.
General map with road network, terrain representation and vegetation zones.

Reproduktion/reproduction:
Vegetationszonen mit Aerograph gespritzt, Farbtauszug im Dreifarbensatz in der Kamera.
Vegetation zones sprinkled by air brush, colour separation by trichromatic printing in
Offsetdruck 5-farbig
Offset printing with 5 colours
Titel/title:
Graphischer Stadtplan von Locarno         Pictorial relief city map of Locarno

Erscheinungsjahr/year of publication:
1983

Herausgeber/publisher:
Bucherer AG, Zürich         Bucherer Ltd., Zurich

Kartographische Bearbeitung/cartographic design:
Orell Füssli Graphische Betriebe AG,
Zürich         Orell Füssli Graphic Arts Ltd.,
Zurich

Inhalt/contents:
Vogelschaumartiger, nicht maßstäblicher
Stadtplan in graphischer Manier         Graphical representation of a city map in
bird's-eye view, not to scale

Reproduktion/reproduction:
Offsetdruck in 4 Farben         Offset printing with 4 colours
Titel/title: Stadtplan Genève  
City map of Geneva

Maßstab/scale: 1:10'000

Erscheinungsjahr/year of publication: 1983

Herausgeber/publisher: Photoglob AG Zürich/Vevey  
Photoglob Ltd. Zurich/Vevey

Kartographische Bearbeitung/cartographic design: Dreil Füssli Graphische Betriebe AG, Zürich  
Dreil Füssli Graphic Arts Ltd., Zurich

Inhalt/contents: Die vereinfachte topographische Darstellung kompensiert durch differenzierte Anwendung von Farben und die Ueberlagerung von Signaturen führt zu einem leicht lesbaren Orientierungsmitte mit thematischem Charakter.  
Easy to read citymap, achieved by simplified topographic description, distinguished use of colours and superimposed signs.

Reproduktion/reproduction: Offsetdruck, 4-farbig  
Offset printing with 4 colours
Titel/title:
Geologischer Atlas der Schweiz, Blatt Arlesheim
Geological Atlas of Switzerland, sheet Arlesheim

Maßstab/scale:
1:25'000

Erscheinungsjahr/year of publication:
1984

Herausgeber/publisher:
Schweizerische Geologische Kommission, Basel
Swiss Geological Commission, Basel

Kartographische Bearbeitung/cartographic design:
Orell Füssli Graphische Betriebe AG, Zürich
Orell Füssli Graphic Arts Ltd., Zurich

Inhalt/contents:
Darstellung des geologischen Befundes mittels Signaturen und Farben auf topographischer Grundlage
Presentation of the geological facts by means of signs and colours based on topographical survey

Reproduktion/reproduction:
Offsetdruck, 15 Farben
Offset printing with 15 colours
Titel/title:
Studie zur Reliefdarstellung für eine topographische Übersichtskarte im Gebiet San’ā’ (Nordjemen)

A relief study of a topographic small scale map in the area of San’a’ (North Yemen)

Maßstab/scale:
1:500'000

Kartographische Bearbeitung/cartographic design:
Orell Füssli Graphische Betriebe AG, Zürich

Orell Füssli Graphic Arts Ltd., Zurich

Inhalt/contents:
Relief, Sonnentön, Gewässer

Relief, sunny side of the relief, drainage

Reproduktion/reproduction:
3-farbig (Spezialskala)

Offset printing with 3 colours
Titel/title:
Schweizer Weltatlas für die Volks- und Mittelschule, Karten 5.12: Schweiz, Städte La Chaux-de-Fonds und Genf

Swiss World Atlas for Elementary and High Schools, Maps p.12: Switzerland, La Chaux-de-Fonds and Geneva

Maßstäbe/scales:
1:25'000 und/and 1:100'000

Erscheinungsjahr/year of publication:
1981

Autoren/authors:
Georg Jung und Ernst Spiess

Kartographie, Reproduktion, Druck/cartography, reproduction, printing:
Orell Füssli Graphische Betriebe AG, Zürich

Verlag/editor:
Lehrmittelverlag des Kantons Zürich

Inhalt/contents:

Both maps are converted topographic maps of the National Map Series. In the case of La Chaux-de-Fonds, the colour separation plates were not modified, but supplemented with area tints from which the various stages of the expansion of the town can be differentiated. In the map of Geneva, the detailed urban structure has been replaced by a simplified zonal representation. Information has been added about the international organizations and the boundary situation in this town. The maps have been printed in 6 colours. The hill shading is incorporated on the black plate.
Titel/title:
Schweizer Weltatlas für die Volks- und Mittelschulen, Karten 5.122: Südamerika, Ubersicht

Massstab/scale:
1:25'000'000

Autoren/author(s):
Georg Jung und Ernst Spiess

Kartographie, Reproduktion, Druck/cartography, reproduction, printing:
Orell Füssli Graphische Betriebe AG, Zürich

Verlag/editor:
Lehrmittelverlag des Kantons Zürich

Inhalt/contents:

This map is a proof print for the next edition, whereby the number of printing colours has been reduced to 6. One of them is reserved for the hill shading plate. The main classes of the natural vegetation are represented by area tints and are further differentiated through the use of additional area patterns. In order to give them a natural appearance, the symbols in these patterns are not regularly but randomly distributed. For the production of masters for such patterns, a programme has been developed and implemented on a computer-assisted mapping system.
Einwohnerzahl 1980:
- 0 - 1000
- 1000 - 2000
- 2000 - 5000
- 5000 - 10 000
- 10 000 - 50 000
- > 50 000

starke Bevölkerungsabnahme
starke Bevölkerungszunahme

Relative Bevölkerungsentwicklung in Bezug zur mittleren Bevölkerung der letzten 20 Jahre:
Jede Säule stellt die mittlere Einwohnerzahl im betrachteten Intervall von 20 Jahren in Prozent dar (Säule 1960 - 1980 = 100 %).
Titel/title:  
Praktikumserarbeit "Bevölkerungsentwicklung in den Kantonen St. Gallen und Appenzell"

Maßstab/scale:  
1:250'000

Herausgeber/publisher:  
Institut für Kartographie der Eidg. Technischen Hochschule Zürich

Autoren/authors:  
Eine Gruppe Studierender unter der Leitung von Prof. Ernst Spiess, Heinz Stoll und Ernst Nützler

Inhalt/contents:  

An dieser Darstellungsfarben ist speziell, dass mit den Säulendiagrammen nur die relative Entwicklung gezeigt wird, für die 5 Größenklassen der absoluten Bevölkerung dieser Gemeinden jedoch 5 Farbstufen eingesetzt wurden.

Cartographic laboratory work "Population Changes in the Cantons of St. Gall and Appenzell"

Department of Cartography of the Swiss Federal Institute of Technology in Zurich

A group of students under the direction of Professor Ernst Spiess, Heinz Stoll and Ernst Nützler

This map has been developed within our course on "Thematic Cartography" for surveyors and geographers. After several possible map concepts had been formulated, several draft plots were developed with the help of the DIAMANT program system on our interactive graphic system. For the plot chosen and then improved, a photoplot of the outlines was produced and masks were cut for all area tints. These plates together with some base map elements were combined on final films, ready for printing.

In this map the bar diagrams show the relative development only, while 5 colour steps and intensities are used to give a rough idea about the absolute population of each commune.
Bevölkerungsentwicklung von 1900 bis 1980 der Kantone St. Gallen und Appenzell

1 : 250 000

Legende:

Gemeinden über 1000 Einwohner
Beispiel: 1920 1940 1960 1970
1900 1980

Die Fläche eines Sektors entspricht der Bevölkerungszahl im jeweiligen Jahr

Gemeinden unter 1000 Einwohner (ohne Sektoreneinteilung)

- 500 - 1 000
- bis 500
Titel/title:

Praktikumsarbeit "Bevölkerungsentwicklung von 1900 bis 1980 der Kantone St. Gallen und Appenzell"

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In dieser Darstellung wird die absolute Zahl der Bevölkerung durch die Größe der Sektorfläche wiedergegeben. Geringe Zuwachen oder Abnahmen sind hingegen kaum erkennbar.

This map has been developed within our course on "Thematic Cartography" for surveyors and geographers. After several possible map concepts had been formulated, several draft plots were developed with the help of the DIAMANT program system on our interactive graphic system. For the plot chosen and then improved, a photo-plot of the outlines was produced and masks were cut for all area tints. These plates together with some base map elements were combined on final films, ready for printing.

In this map the absolute population is represented by the size of each sector. Minor increases or decreases are however difficult to identify.
Praktikumarbeit "Uebersichtskarte Region Bodensee"  
Cartographic laboratory work: General Map of the Lake of Constance Area

Maßstab/scale:  
1:1'000'000

Erscheinungsjahr/year of publication:  
1984

Herausgeber/publisher:  
Institut für Kartographie der Eidg. Technischen Hochschule Zürich  
Department of Cartography of the Swiss Federal Institute of Technology in Zurich

Autoren/authors:  
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A group of students under the direction of Professor Ernst Spiess und Heinz Stoll

Inhalt/contents:  
Diese Karte ist das Resultat einer Uebungsarbeit in Rah- 
men der Lehrveranstaltung "Kartenentwurf und Kartentechnik" für Vermessungsingenieure und Geographen. Das Ziel  
bestand darin, den gesamten Ablauf einer Kartenherstel-  
lung der einzelnen druckfertigen kartographischen Vor-  
lagen exemplarisch durchzuspielen. Da insgesamt nur 32  
Stunden zur Verfügung standen, mussten einige Beschrän-  
kungen in Kauf genommen werden, wie z.B. eine relativ  
geringe Inhaldsdichte. Als Hauptproblem erwies sich der  
Einbau des Waldmosaiks ins feingliedrige Relief. Als  
Grundlage dazu diente teilweise ein Satellitenbild. Die  
Waldflächen wurden mit dem Reliefton leicht moduliert.  

This map is the result of a practical exercise in our  
course on "Map Compilation and Production" for survey-  
ors and geographers. The intention was to cover all  
phases in map production: initial concept, compilation  
from various source material, layout, cartographic and  
reprographic preparation of all final plates ready for  
printing. Certain limitations had to be accepted as a  
result of the short time available (32 hours), e.g. a  
relatively low density of map content. The main graphic  
problem was the incorporation of the fine woodland mo-  
saic into the detailed hill shading. As part of the  
base material for this map element, satellite imagery  
was used. The woodland tints have been slightly modu-  
lated with the hill shading tone.