

Fritz Staudacher
Heinrich Wilds
hidden
Childhood and Youth

THE TOPICS

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The first photograph of Heinrich Wild shows him as an apparently not-so-happy ten-year-old.

Foreword

While the life of topographer, inventor, designer and company founder Heinrich Wild (1877-1951) is relatively well known from the time he left the topographical office at the age of thirty, little is known about how he grew up and what shaped him. ((SK WHJ-B)) The first indications of this were given in the article "Heinrich Wild and Albert Einstein: The beginning of two great world careers" ((STA6)). This article attempts to provide further information about Heinrich Wild's childhood and youth. To this end, research into Heinrich Wild's immediate family and professional environment and relatives was deepened with astonishing connections that also contributed to his success.



Changing times: Four times successful Heinrich Wild. *(from left to right): 1899: 22 years old (lieutenant in the fortress troops) - 1900: 23 years old (Federal topographer in Bern) - 1907: 30 years old (chief engineer at Zeiss in Jena) - 1937: 60 years old (inventor in Baden for Kern + Co AG, Aarau).*



Heinrich Wild's ancestors, relatives and close acquaintances. *Heinrich Wild is not a "nobody" who appears in isolation and changes the world. He has famous ancestors, relatives and friends who shaped his and our culture. From left to right: relatives reformer Huldrych Zwingli (1484-1531), universal genius Aegidius Tschudi (1505-1572) and mountain mapper great-uncle Rudolf Leuzinger (1826-1896) and (not pictured) his uncle Linth Engineer Heinrich Leuzinger. Far right: his good colleague Leonz Held (1844-1925), first-class topographer and director of the Federal Office of Topography from 1902.*

Wild's hidden childhood and adolescence¹

The ETH geodesy professor and later Director of Topography, Dr. Simon Bertschmann, was already well acquainted with Heinrich Wild during his time in Jena, both professionally and privately. He writes about the "autodidact" ["we have to call him that because he did not finish the school of geometers"]: "Heinrich Wild was a strong, headstrong personality with a brilliant mind. With his groundbreaking inventions, he astonished and deeply admired geodesists all over the world. Thanks to his clear and incorruptible mind, the high flight of his ideas, which, however, always remained under the control of a strongly developed critical sense, thanks to his tireless urge to research, he gained insights and knowledge of such an intellectual height that the majority of those who enjoyed the advantage of normal scientific training were unable to reach. Added to this was the gift of realization, without which his work could not have become so outstanding." ((BS)) In addition to his professional career, Heinrich Wild prioritizes a happy family life with his wife and nine children. Following Albert Einstein and Gotthold Ephraim Lessing's conviction "that the pursuit of truth is more delicious than its possession" ((E1-153)), this article attempts to provide further insights into the childhood and adolescence of Heinrich "Heiri" Wild.

Anyone who wants to get to know Heinrich Wild and his achievements that shaped international surveying and photogrammetry will find excellent basic documentation in the anniversary publication published by the Swiss Geodetic Commission to mark the 100th anniversary of his birth in 1977. ((SK WHJ/9)) It begins with an article by Heinrich Leopold Wild Jr. who writes about his father:

"Heinrich Wild was born on November 15, 1877 in Mitlödi GL. At the age of three, he lost his father and the family moved in with his grandmother in Bilten. Although this resolute woman left her mark of unrelenting severity on the bright boy's youth, he nevertheless spent a happy youth and was often the leader of amusing pranks."

Following this introduction, I began my research in 2005 by looking for the house where he was born. With a bit of luck, it should still be there. The first sentence in Heinrich Wild Jr.'s introduction reads:

"Heinrich Wild was born on November 15, 1877 in Mitlödi GL."

But my search turns out to be in vain and I am perplexed: all letters and telephone inquiries to various authorities end in unison with the official confirmation from the Glarus State Archives that for this Heinrich Wild (1877-1951) from Mitlödi GL as Place of birth only Bilten (Ober-Bilten) is proven. ((LA)) Although this answer does not come as a complete surprise to me, it still makes me wonder: Is the Mormonen database in Salt-Lake-City better documented than the first son, who is well acquainted with his father? An Internet search had already led

¹ NOTE: We refer to this Heinrich Wild (1877-1951) here often with the nickname "Heiri" to make it easier to distinguish him from the numerous other Heinrichs and Wilds. For the place names, we use the "old" place names as they were valid in the canton of Glarus until the courageous and successful reform of the municipal structure in 2011 with the creation of only three municipalities: Heinrich Wild's birthplace Bilten, with a population of 2,500, has since been part of the municipality of Glarus Nord, and Heinrich Wild's citizenship town Mitlödi, with a population half that size, has been part of the municipality of Glarus Süd. Literature sources are enclosed in two round brackets ((63-65)), picture credits in square brackets [65-66].

Cross-reference from psychology. If we follow the findings of psychology and in particular Pierre-Marie-Félix Janet (1858-1947) to better understand the causes, traumas and long-term effects of difficult experiences and experiences together with the repression and solution strategies adopted, we often recognize unconscious post-traumatic stress disorders. Particularly at a young age, they make an unusually strong contribution to the development of the personality and its ability to perform. This is both in a positive sense but also with numerous negative effects. Compensatory activities, whether obvious or concealed by tabooing or sublimation, shape one's own life and influence that of partners in private, professional and/or social life.

me to the "www.family-search.org" database of the Mormon headquarters, which was advertised as "free" but then immediately became chargeable. The result was that Bilten was Heinrich Wild's birthplace. So I deleted the birthplace "Mitlödi" and replaced it with "Bilten" in my 2008 manuscript of a photo book "The Einstein-Wild Relation", ((STA2)) as well as in an article I published in the Bulletin of the Swiss Physical Society in the same year. ((ST2)) In 2013, "Heiri" Wild's grandson Jörg Benz - son of Heinrich "Heiri" Wild's first daughter Elisa Margeritha Benz-Wild, born in 1902 - published an excellent article about Heinrich Wild, written by surveyor Benno Stöckli in 2004, in a family history. In his introduction, he mentions the birth of twins to his grandfather. It is not unusual that there are no official and/or ecclesiastical records of the stillborn and unbaptized offspring. ((BJ32)) So was the information in the official Heinrich Wild commemorative publication published in 1977 by the Swiss Geodetic Commission - one of the highest scientific authorities and also responsible for geographical designations - incorrect? But perhaps it was just as intentional in order to rule out any other risk of confusion? During their more than ten-year stay in Germany, the Wilds had automatically entered the name affix "Bürgerort Mitlödi" as their place of birth abroad, so that everything on their identity documents would match foreign customs. However, it is much more likely that they did not want to be reminded of Bilten and therefore made it taboo. But why? What did they want to hide? Why did they not want to be reminded of it or draw anyone's attention to it?

Perhaps the second sentence of this biographical text will shed some light on this:

"At the age of three, he lost his father and the family moved in with his grandmother in Bilten."

In this second sentence, Heinrich Wild Jr. describes a difficult life situation in a purely factual and seemingly objective manner - but fails to mention two further stressful events. During its only three years of existence, this small family had already buried two small boys in white children's coffins. After the (twin?) birth of "Heiri" on November 15, 1877, Rudolf Wild, baptized with the first name of his great-uncle, was born in Bilten almost exactly one year later on November 1, 1878, and died on February 19, 1879. And exactly another year later, on November 5, 1879, barely half an hour's drive from Bilten in Schänis/SG, another child was born.

His little brother Fridolin Wild was born on February 11, 1880 after a rather agonizing quarter of a year on earth. The place of birth, Schänis in the canton of St. Gallen, probably refers to the family's place of residence at the time, which is still unknown. Jost Heinrich Wild, a textile dyer,

draughtsman and innkeeper who worked several jobs in different places, was not registered with his wife "Liz" and son "Heiri" in Mitlödi, Bilten or Schänis in the canton of St. Gallen at the time to avoid paying taxes. When "Heiri's" father Jost Heinrich Wild (1853-1880) died of severe pneumonia in Ober-Bilten on August 1, 1880, only mother Elisabeth "Liz" Wild-Weber (1853-1917) and son "Heiri" survived from the original five (or six with the twin brothers) members of this family. The suffering that befell this young widow Elisabeth and little "Heiri" within just three years was, in fact, immeasurable.

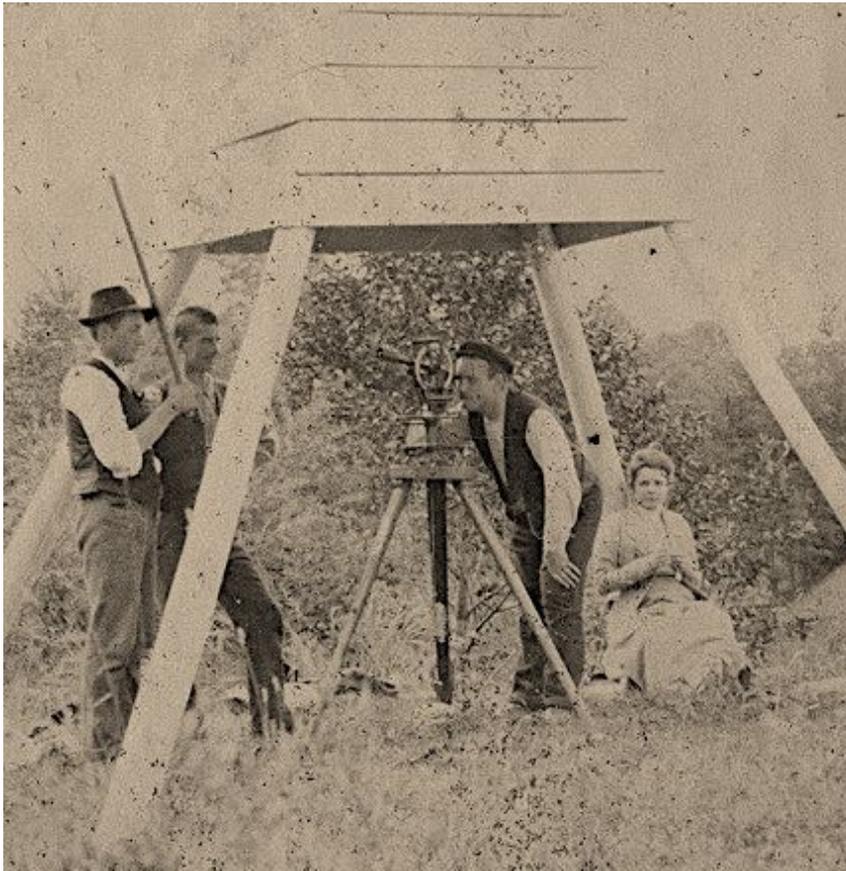
But what does Heinrich Wild Jr. say about his father in the third sentence?

"Although this resolute woman [the grandmother] left her mark of unrelenting severity on the bright boy's youth, he still had a happy youth and was often the leader of the merry pranks."

So continues Heinrich Wild Jr. in the third sentence of his biography of his famous father. "Heiri's" mother suddenly disappeared too, as he was brought up by his grandmother Regula Weber-Leuzinger (1828-1906) from the age of three; his mother and young widow Elisabeth "Liz" Wild-Weber seemed to have other things to worry about than her son, so that he grew up without a father, mother or siblings. We can only guess what this "stamp of unrelenting severity" in the upbringing by the "resolute" grandmother Regula Weber means if we know what "Heiri", who had become a father, himself understood by "proper" upbringing. Grandson Jörg Benz learns this from his mother Elisabeth Benz-Wild, who was born in 1902: "Every morning at six o'clock, all nine children had to line up on one limb for morning rounds before breakfast. Each of them had to report a certain time and direction of sunrise, temperature, weather, etc. to their father. There was strict silence at the table; only those who were asked by their father were allowed to speak. Often there was nothing to eat until one of the children had calculated the contents of the soup bowl or the mass of an orange." ((BJ41)) Why did Heinrich Wild Jr., who was so respected in his profession as an engineer and concerned with the utmost precision, conceal the truth out of respect for his father? What is not quite right and what do we not want to be constantly reminded of?

With child and cone. In his introductory article, his son Heinrich Leopold Wild junior, who accompanied his father throughout his life, not only in his private life but also in many cases in his professional life, describes the early involvement of family members as follows: "When Heinrich Wild had to carry out triangulation work in the summer months - namely in the Valais - the whole Wild family was part of the surveying party. They traveled through the vast area with their children and a cart. At the top of the wagon was a children's bathtub, which was admired everywhere. While the father Wild devoted himself to his measurements on some mountain peak, mother looked after the family and carried out the dislocation in the valley." ((SK WH9)).

Wherever possible, Heinrich Wild combined family and career, as here on the Rhone

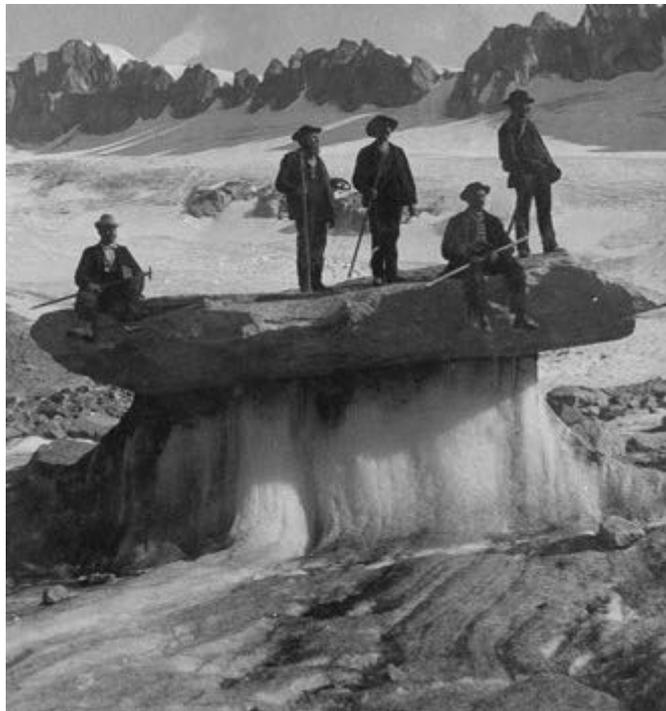


Son Heinrich Leopold Wild jun. as a six-month-old infant in Troistorrents/VS in 1901 and the same Heinrich Wild jun. at the age of 17 in Jena.



Above: Triangulation pyramid with repetition theodolite of the time in Troistorrents in Lower Valais.

In the late summer of 1901, Heinrich Wild carried out forest surveys here. This photograph of angry farmers illustrates a situation that the federal topographers of the young federal state often encountered. They rejected this "devil's work" and burned down triangulation pyramids without further ado. Heinrich Wild's young wife "Lilly", looking somewhat shocked into the camera here, has her six-month-old Heinrich Jr. with her (top right), who will accompany his father throughout his life, both privately and professionally - in the picture below at the age of 17 in Jena. But where is Heinrich Wild right now? Behind the camera or on a summit?



Bottom right: Federal topographer Heinrich Wild in 1901 on the left on a boulder in the Rhone Glacier. Heinrich Wild observes, measures and documents its development with Leonz Held and Max Rosenmund. It is one of the first geodetic surveys of glacier movements. ((SK KF 15/16))

Heinrich "Heiri" Wild leaves school after just six years



Bilten elementary school in 1889 with principal and upper school teacher Grünenfelder. The now twelve-year-old Heinrich Wild is in the top row (fourth from the right). It is "Heiri's" elementary school farewell picture, as he has not only physically reached the level of the 14-year-olds due to a growth spurt, but also intellectually jumped up more than two grades and is released early into working life. Further school attendance is not possible for financial reasons.

His grandmother Regula Weber-Leuzinger (1828-1906) experienced Heinrich Wild's nimbleness and clever on a daily basis. The widow, herself descended from the Tschudi family on her mother's side, ran a textile dye works in Ober-Bilten. After the death of her son-in-law Jost Heinrich Wild on August 1, 1880, she takes the little grandson, who is not even three years old yet, into her household, while her daughter seems to earn her living elsewhere and not in Bilten. Of the sixty pupils at the Bilten elementary school, the 7-10 year olds are taught in a lower school class and the 11-14 year olds in an upper school class: in the lower school class by Miss Teacher Stauch and in the upper school class by the upper school teacher and principal Grünenfelder. In this constellation, "Heiri" masters the upper school curriculum faster than any of his classmates, even though the majority are already two years older than he is.

Progressive Bilten. In the 1940s, the school community of Bilten played a pioneering role in Switzerland in terms of school education by making school attendance compulsory until confirmation. (HG302) The canton of Glarus was also a pioneer within the Confederation with regard to the use of hydropower and electricity, as well as with an occupational health and safety law for employees in industrial companies. The canton and the Confederation then

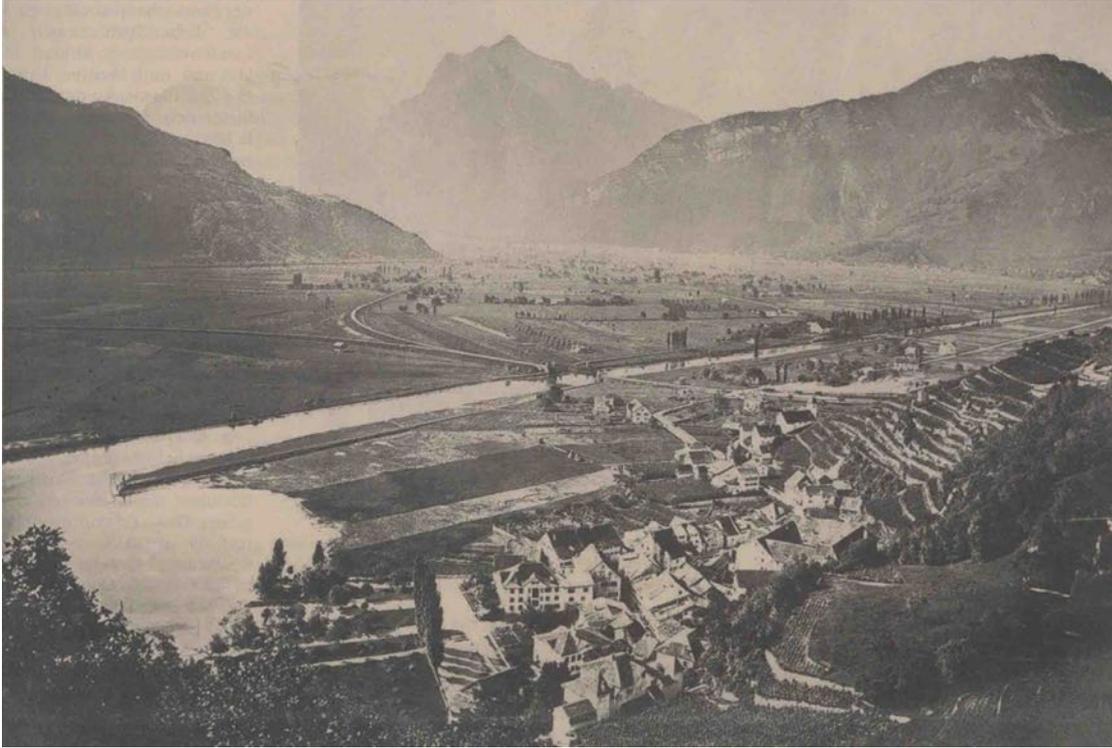
reduced compulsory schooling to the age of 12, whereby it was not uncommon for a hundred days of tolerated absence to be spent on the alp, snowed in, helping with the harvest, delivering Glarner Schabziger, haymaking or "shifting" in the factory, i.e. working two or three shifts, sometimes in piecework mode. When Heinrich Wild attended elementary school in Bilten, seven years were the minimum compulsory federal schooling, with the option of adding two to three years of secondary school or attending further education, which was not possible in Bilten itself and which Heinrich Wild was also denied for financial reasons. Little "Heiri" finds everything to do with arithmetic and everything to do with technology and the natural sciences extremely interesting. However, "Heiri" is not only far ahead of his peers in grasping and combining technical and scientific contexts, but also in other subjects. As a twelve-year-old, sixth-grader Heinrich Wild has already mastered the entire subject matter of the eighth grade of primary school, so that teacher Grünenfelder can teach him nothing more and dispenses the bored "Heiri" from attending school with top marks. For this reason, we find the twelve-year-old permanently on the payroll of the Linthwerk after leaving elementary school. ((LA2005/Walter Nüesch))

Genial instead of Green Henry. It's not just 12-year-old "Heiri", who is bored with the simple school curriculum, who is happy about this early departure from school, but also his teacher Grünenfelder, who is interrupted by his specific questions, and his classmates in his Bilten upper school class, who are lagging behind him. Four adults close to "Heiri" are also happy for him: his grandmother Regula Weber and his mother "Liz" Wild, because he can now finally earn money and support himself. Uncle Heinrich Leuzinger is also pleased, as he finds "Heiri" to be an inexpensive surveying assistant, especially for documenting the Linth region, which is still subject to hydraulic changes. But great-uncle Rudolf Leuzinger in Mollis, who is regarded as the best mountain cartographer in the world, is equally positive about the occasional support from "Genial Henry", as the twelve-year-old can be described in contrast to the protagonist of "Green Henry", a novel about development written by Gottfried Keller and first published in 1854. During my archival research in Glarus, Mollis, Winterthur, Zurich, Bern, Jena and Heerbrugg in 2005, I experienced a great surprise in the Glarus archives.



The photo of 10-year-old "Heiri" is a section of a lower school class photo from 1887 in Bilten.

As a twelve-year-old, Heinrich Wild is on the Linthwerk payroll



Lake Walen outflow into the Linth Channel near Weesen at a time H. Wild joined the Linthwerk in 1889.

After more than three decades, I meet my former Eternit colleague from Niederurnen, Walter Nüesch, who now works in the National Archives. Walter Nüesch took me to the Lintharchiv ((LAN)) [[LIAR]], where I discovered 46 plans measuring 70 cm x 70 cm under an overview cover sheet drawn up by Gottlieb Heinrich Legler, many of them with the signature "Gezeichnet von Heinrich Wild". In total, they document an area of 45 km²- i.e. a good one per thousand of Switzerland's land area - and date from the years 1883 to 1896. The plan "Weesen (10)" shown in a section on the following page was drawn by the 19-year-old Heinrich Wild. Like all the plans, it is not only perfect in its object drawing and coloring, but also in its lettering. Eight years later, we encounter this characteristic again in a field that Heinrich Wild would make his worldwide domain: the construction of completely new optomechanical instruments, whose patent application and production drawings were accurate to a tenth of a millimeter (see p. 45). But why did Wild or his son never say a word about this proof of outstanding skill and his many years of work in this field? Heinrich Wild's talent was apparently recognized early on by his uncle Heinrich Leuzinger when the busy man occasionally took a short break from work at his cousin Regula Weber-Leuzinger - "Heiris" grandmother - in Ober-Bilten.

To allow him to earn some pocket money, he occasionally takes "Heiri" to his construction sites during the school holidays when he is ten years old. Leuzinger has been a Linth construction manager for Linth Engineer Gottlieb Heinrich Legler since 1888. After leaving School, twelve-year-old Heinrich Wild spent several years working on the large Linth plain, which had become his workplace, with the channelized Linth and side channels under



Gezeichnet von Heinrich Wild.



Heinrich Wild, 1889.

Linthwerk plan drawn and colored by Heinrich Wild in 1896 on a scale of 1:2000 on 70 cm x 70 cm sheets (detail from Plan 10 Weesen). From 1875 to 1969, a railroad line (1875-1902 VSB Vereinigte Schweizerbahnen, subsequently merged into SBB) ran from Zurich via Ziegelbrücke directly to Weesen, where it crossed the Linth Channel and branched off to Glarus. Since 1969, the railroad line has run on the "Gäsi" side to the left of Lake Walen parallel to National Road 3.

construction practically right outside his grandmother's front door in Ober-Bilten. In this way, the mathematically and technically gifted "Heiri" learned at a very early age and to the highest standard from Heinrich Leuzinger, a graduate of the Polytechnic, how to survey, map, and redesign an entire area. He also learned more about the history of the Linth project, which had shaped his entire childhood and youth.

Exemplary hydraulic engineering project. The "Linthwerk" is the first major intercantonal federal hydraulic engineering project. It drains the area between Mollis and Ziegelbrücke by capturing and diverting the Glarus Linth from Mollis/Näfels in a five-kilometre-long channel leading to Lake Walen. Before this channelized detour, known as the Mollis Channel and later the Escher Channel, the two mountain rivers Linth and Maag meandered into each other in

Ziegelbrücke - a situation which, from the middle of the 17th century, led to ever greater backwatering of the Maag River and thus to increasingly severe flooding and swamping of the entire area due to increasingly intensive rainfall and deforestation of the mountain forests. According to the correction concept, Lake Walen serves as an equalizing basin within the Linthwerk, which now absorbs the entire water masses and channels them into the Zurich-Obersee near Schmerikon or Grynau Castle via a second channel - the Linth Channel. The increasingly marshy Linth plain between Lake Walen near Weesen, the start of the channel near Mollis/Näfels and the end of the channel near Schmerikon is to be transformed into an agricultural, industrial, transportation and leisure landscape. The idea of correcting the Linth had been under consideration for some time - but it was not actually started until 1783, when it first became an item on the agenda of the Federal Diet: the floods had become so large, numerous and devastating that they deprived the local population of their livelihood. The "Little Ice Age" had an influence on this, as it led to the Alpine glaciers reaching their greatest extent in modern history ((KM144)) and the year 1762 brought particularly severe floods and inundations, as well as intensifying the sedimentation in both the Rhine Valley and the Linth region.

A barren expanse, neither sea nor land, full of musty smells and the cries of frogs. "The inhabitants looked pale and sickly. Every year, when spring returned, the villages were full of shivering fever sufferers," writes Melchior Schuler in his 1836 history of the state of Glarus. ((SM)) And he continues: "The catastrophic swamping of the Linth plain in the 18th century was the disastrous consequence of unbridled forest destruction in the Glarus region. The careless felling of timber for the growing domestic demand was joined by the predatory economy in the service of exports and rafting down the Rhine to the Netherlands. Terrible devastation plagued the population of the valley". ((HJ97)) More and more people fell victim to typhus and typhus fever. In order to remedy the situation, the Bernese Andreas Lanz (1740-1803) recommended to the Federal Diet that the Glarus Linth be diverted into Lake Walen, following the successful regulation of the Kander into Lake Thun in 1711. At Ziegelbrücke, the river joined the Maag coming from Lake Walen near Weesen and covered the entire area up to Niederurnen with debris to such an extent that it chopped off more and more of the people's land and caused them to sink deeper and deeper into misery.

Two Linthwerk pioneers: Hans Konrad Escher and Konrad Schindler. From 1792, Hans Konrad Escher (1767-1823), who was highly talented both technically and artistically as well as politically, took up the Linth problem. Born into a wealthy family of silk merchants, the young Zurich native was a member of the Helvetic Society and gave a speech on the increasingly urgent Linth problem at the last Diet of the Old Swiss Confederacy in 1797. In 1798, Escher was elected President of the Helvetic Grand Council (now the National Council) based in Aarau. He personally recorded everything that could have geological significance with his impressive powers of observation and great talent as a painter, drawing pencil, ink pen and watercolour paintbox, and visualized his ideas with excellent sketches, plans and calculations.

Konrad Schindler (1757-1841) is less well known. In 1799, H.K. Escher surprisingly received a letter from him in Mollis. Schindler was a merchant, architect and philanthropist and resided



The Linthwerk stretches from Lake Walen to Upper Lake Zurich. Its main initiator was Hans Konrad Escher von der Linth (1767-1823) from Zurich.

in an imposing mansion called "Haltli", which overlooked the entire Linth plain and which he had built according to his own plans after a stay in Paris. What Schindler had in common with his compatriot Escher, who was ten years younger, was his concern for his homeland. Like Escher, he could also afford financially - not least because he had won millions in the Dutch state lottery - to work on this major joint project free of charge. In this first letter, he begins by letting Hans Konrad Escher know the following: "The sad situation of our canton will be only too familiar to you. Trade and commerce have been at a complete standstill for a long time, the potatoes have almost been used up by both armies, many houses and stables are ruined, most of the fodder has been used up and destroyed: there is nothing left but to slaughter the cattle, and when they are eaten - to die of hunger - unless the government is able to work vigorously against this misery". ((S)) He did this himself: appointed captain of the Glarus militia in 1791 at the age of 34, he was wounded in battle against the French troops and from then on also became politically active. When he wrote this letter to Escher, he was head of the administrative chamber of the then Canton of Linth in 1798/99 and was elected to its education council in 1800. 1200 children from the canton of Linth only survived because they were taken in by other cantons as part of a campaign orchestrated by Konrad Schindler in 1800, thus saving them from starvation. Schindler's patronage is closely linked to his great-uncle "Heiris" Rudolf Leuzinger. He not only benefited considerably from the establishment of the Linth Colony, which was largely due to Konrad Schindler, who took in the young orphan and provided him with a good education. When Schindler died in 1841, the now 15-year-old Rudolf Leuzinger had already been a pupil at the Linth Colony for seven years. After an extremely successful career in Winterthur, Glarus and Bern, he returned to Glarus at the age

Warlike times. The years of the search for the best solution to the Linth problem are also the years of the occupation of Switzerland by French troops and 1798 is the year in which the Old Swiss Confederacy is transformed into a Helvetic Republic. Named after their main geographical feature, the Linth and Säntis cantons are created, which are dissolved again in 1803 with Napoleon's Act of Mediation. In between, Switzerland once again became a theater of war in September 1799. This time it was a Russian-Austrian-English alliance, supported by internal Swiss resistance forces, which was directed against the French occupiers of Zurich in a pincer movement of Russian troops from the south led by General Alexander V. Suvorov and the two other coalition members from the north. However, this campaign came to an ice-cold end in Glarus in October 1799. In July 1800, the new French order was enforced.

of 55 as a world-famous mountain cartographer and took up residence in one of the most attractive places in his homeland, the Haltli, built by Konrad Schindler on the slopes of the Mollis mountain. Here, between 1881 and 1896, Rudolf Leuzinger produced a wide variety of maps of all kinds - above all mountain maps - which he continued to improve with unusual creativity.

Financing and construction finally begin. Not least due to the turmoil of war, the Linth problem was not addressed again by the supreme federal body until 1804. Now the Federal Diet decides to establish two institutions to realize this ambitious "Linthwerk" project: the "Schatzungs-Commission" is chaired by Hans Georg Stehlin, the "Aufsichts-Commission" and the overall project is chaired by Hans Konrad Escher (see appendix p. 79-82). On July 28, 1804, Escher and Schindler were commissioned by the Federal Diet to implement the project on the basis of a concept proposal drawn up by Andreas Lanz in 1783, according to which the water of the Glarus Linth would be diverted from Mollis into Lake Walen via a channel. Johann Gottfried Tulla (1770-1828), the Baden Rhine river inspector, who in turn straightened the Rhine, drafted the entire channel construction plans in just six weeks. ((BR1)) A total of 14 channels are to be excavated and lined: two of them in embankments with a double trapezoidal profile. Using this profile shape, the Mollis and Linth Channels will each have a second, raised bed on an embankment in addition to their actual riverbeds. This will serve as an overflow basin in the event of flooding. Or, in Escher's own words, "a double bed, one for the normal water level and a higher and wider one for the extraordinary overflow, which means that the area remains safe for all conceivable accidents" (see p. 21, bottom right). ((KB36)) As early as the time of the Helvetic Republic, Hans Konrad Escher had the idea of financing the Linth plant with a public bond that could also be purchased by private individuals. It was Konrad Schindler who developed the political strategy and the financing through shares. In 1807, at the same time as construction began, the "Akzienverein" created for this purpose successfully placed "Linth shares" (see p. 82), which for the first time could be acquired not only by the cantons themselves, but also by citizens - and were actually acquired to a large extent.

In September 1807, construction finally begins on the five-kilometre-long Mollis Channel. The man responsible, Konrad Schindler, describes how the work is carried out: with man-power, more specifically: "Everything done by hands - using only shovel, pick, heel and barrow". ((S)) After three and a half hard years of construction, the Linth is diverted from its old bed into the new one on May 8, 1811. Hans Konrad Escher, who was responsible for the construction of the Linth Channel between Weesen and Schmerikon/ Grynau Castle, used a different contract award and construction technique, depending on the size of the project and the ground conditions, to build a Linth Channel three and a half times as long. He invites tenders for 30 m long sections, which interested construction companies bid for. The subsoil here is much more saturated with water and requires a caisson construction method to protect the workers at particularly critical points. The use of fascine technology is fundamental to the optimal operation of the Linth Channel - "a method that made the work considerably easier, especially with the landings at the Ziegelbrücke," we learn from René Brandenberger from Linth Escher



This plan by the Bernese engineer Andreas Lanz from 1783 is the first representation of the structural elimination of the Linth emergency by the Linthwerk, which was established in 1804 by a resolution of the Federal Diet. According to this plan, the marshes were drained and the flooding, which occurred several times a year, was permanently contained by means of two channel structures and Lake Walen as a catchment and equalizing basin. This hydraulic system eliminates the previously neuralgic location of the meandering confluences at Ziegelbrücke and regulates the water flow as far as Lake Zurich. This plan served Hans Konrad Escher von der Linth as the basis for the first inter-cantonal Linthwerk, which was supported by the entire Confederation in the Federal Diet.

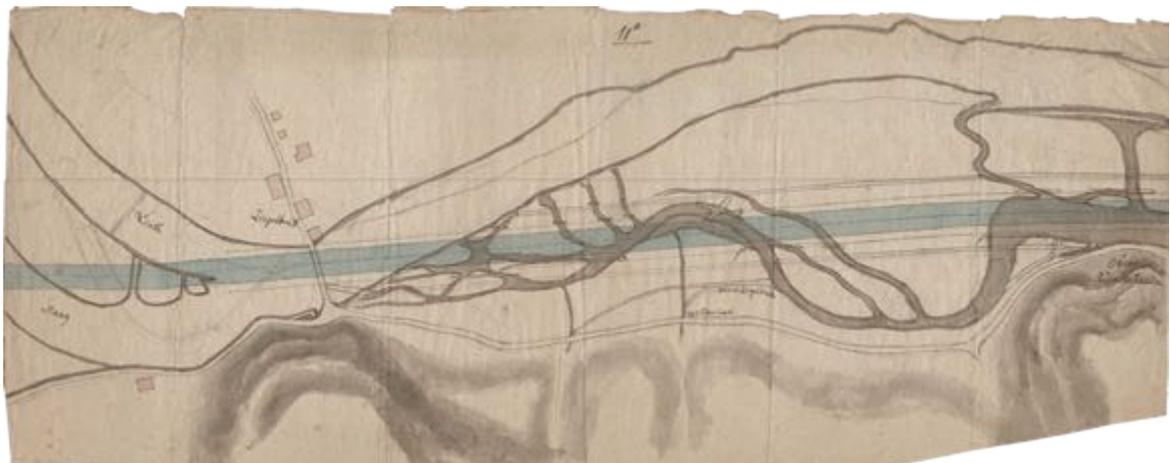
Foundation. ((BR2)) Fascines are bundles of brushwood or scrap wood tied together, up to 40 cm thick and up to 4 m long, often in a V-shape - i.e. bundles of rods that have a water-repellent effect. Escher uses them to steer the river into narrower channels, thereby increasing the flow. In this way more bed load is transported away from the bottom and the river bed deepens by itself. Additional fascines are placed at the edges at an angle to the direction of flow: These hold back debris and build up a new bank - again by themselves. "Escher lets the forces of nature work to tame them," summarizes the Linth-Zeitung. ((KB)) Shortly after the construction of the Mollis Channel, supervised by Konrad Schindler, was inaugurated in 1811 under Hans Konrad Escher's presidency of the Linth Supervisory Commission - renamed the "Escher Channel" in 1832 - the annual and repeated flooding between Niederurnen and

Ziegelbrücke became history. With the opening of the Mollis Channel, the Glarus Linth actually carries its considerable debris into Lake Walen as planned and creates a lot of new land at "Gäsi". It is partly used for reforestation of a completely new forest area and partly for the cultivation of sought-after reed grass. The construction of the Linth Channel, which began at the same time as the Mollis Channel, was completed and approved in stages, the last of which was the Benken Channel section in 1816. In 1823, the Linth Channel was handed over to the cantons of St. Gallen, Glarus, Schwyz and Zurich - shortly after the death of Hans Konrad Escher, whereupon the canton of Zurich posthumously awarded him the hereditary honorary title "von der Linth" and the Mollis Channel was renamed the Escher Channel in 1832. This was followed - albeit no longer as tightly coordinated as in Escher's time - by the start of construction of the extension of the channel in 1840 due to the permanent lowering of the Lake Walen lake level (since then it has risen by more than eight meters!), construction began on the extension sections of the Escher Channel at "Gäsi" into Lake Walen, the Lake Walen outflow into the Linth Channel at Weesen and, as the final section, the extension of the Benken Linth Channel at Schmerikon and Grynau Castle into the southern part of Lake Zurich, known as Lake Zurich Obersee, which belongs to the cantons of St. Gallen and Schwyz. From 1848 onwards, the newly founded federal state made direct payments towards the construction work and subsidized the Linthwerk through a "federal Linth toll" until the early 20th century. From 1862 onwards, the founding of the Federal Linth Commission was headed by a national body that appointed the first Linth Engineer Gottlieb Heinrich Legler full-time, who integrated the torrents and backwaters into the overall hydraulic system.

Gottlieb Heinrich Legler's capacity. The most influential person after Escher von der Linth, who also strongly supported the young Heinrich Wild, was Gottlieb Heinrich Legler (1823-1897). Legler was elected adjunct to the Grisons technical director Richard La Nicca in 1845. He was born the son of Thomas Legler, a Swiss soldier in Napoleon's service abroad, in Antwerp, a cosmopolitan city in the Netherlands at the time. This location had always been characterized by a conflict with the polder landscape constantly threatened by the sea. As a teenager, Gottlieb Heinrich Legler attended the Upper Industrial School in Zurich and enrolled in the Faculty of Philosophy at the University of Zurich in 1841, but just one year later, due to a lack of adequate engineering training opportunities in Switzerland, he transferred to the Vienna Polytechnic K.u.K. Institute (later: Vienna University of Technology) to study civil engineering. During his adjunct function in Glarus, Legler worked intensively on torrent constructions, among other things, before embarking on a military career and having a significant influence on the construction of the fortifications at St. Luziensteig. In 1862, the Federal Linth Commission appointed him the first full-time Linth Engineer, a post he held until his retirement in 1896. Together with Heinrich Leuzinger (1858-1937), the adjunct and Linth construction supervisor appointed by him, he took on the expansion of the channels including the back ditches (or side streams). He had a total of 2.1 million francs ((SD71)) at his disposal over three decades - an amount that is probably equivalent to around 150 million in today's purchasing power. Legler became internationally renowned after just a few years. His expertise formed the basis for numerous hydraulic engineering projects from Lake Constance to Lake Geneva, as well as realizations such as the Rhone hydropower plants in Geneva.



Hans Konrad Escher von der Linth was also a gifted geological observer and painter. In this watercolor from 22 July 1812, he captures the Glarus Thrust with the Tschingelhörner and the Martinsloch, now part of the UNESCO Sardona World Heritage Site.



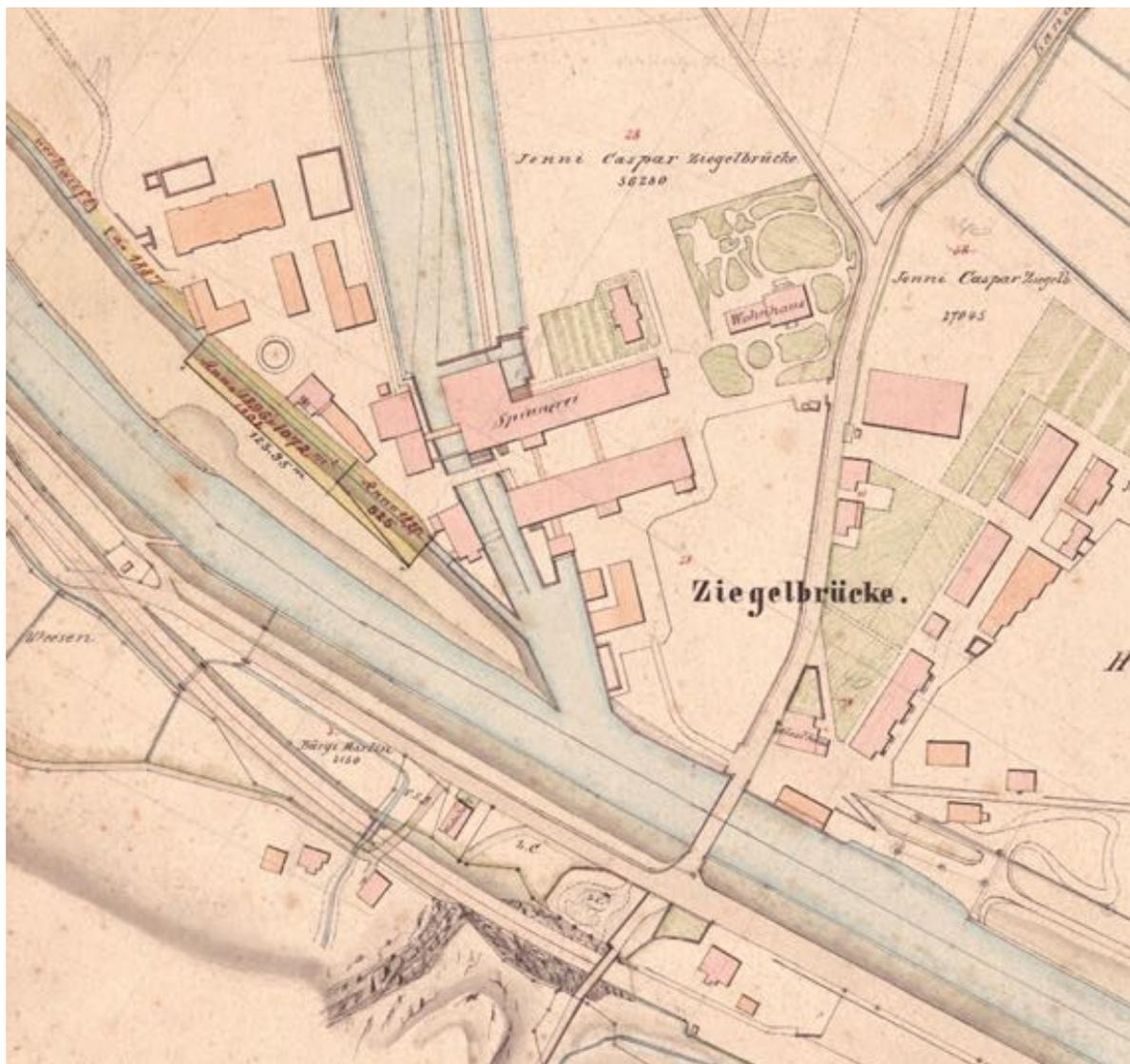
This watercolor by Hans Konrad Escher of the Linth from 1807 is oriented to the west and shows the situation near Ziegelbrücke, including the course of the planned Linth Channel. The flooded area is drained, "freed from fevers" and put to agricultural use. It is the first undertaking of its kind in Switzerland.



Linthwerk area plan 12: "Ziegelbrücke, Oberurnen, Windeck Castle". Measured, drawn and colored at a scale of 1:2'000 by 18-year-old Heinrich Wild.

Crowning glory of the 14-year-old talent. At the age of 14, Heinrich Wild had already completed two years of hard work at Linthwerk when Legler discovered his exceptional mathematical and manual skills as well as his perseverance and ambition to want to know everything and, in many cases, to be able to do everything better than the master himself. Wild's uncle Heinrich Leuzinger hired the twelve-year-old six-year-old primary school graduate back in 1889. He took him with him to all the construction sites, with Heinrich Wild focusing on surveying and mapping the plots of land subject to charges, the area values and quality categories of which were required to determine the Linth perimeter charges. During his work in the field and office under the guidance of his uncle, Heinrich Wild proves to be so excellent in everything he does that the famous Linth Engineer Gottlieb Heinrich Legler in Glarus offers him an apprenticeship. ((CP192)) With him - an honorary member of the Swiss Society of Engineers and Architects (SIA) - Heinrich Wild completes a four-year apprenticeship. It is hard to imagine a more competent and prominent teacher - or a more talented and eager apprentice. The plans drawn up here by Heinrich Wild together with H. Leuzinger represent Heinrich Wild's first surviving work ((LAN)) and at the same time document Legler's main life's work as a Linth Engineer.

Declared of age three years earlier and already self-employed. After completing his apprenticeship with the renowned Linth Engineer, Heinrich Wild followed his uncle's example and set up his own business. However, in a canton with a pioneering factory law dating back to 1848, there was still a legal hurdle to overcome. At that time, citizens were only considered adults at the age of 21, with active and passive voting rights – which women in the canton of Glarus were denied until 1972. And to be self-employed and run a business, you had to be of legal age. Heinrich Wild obtained power of attorney from his mother, who had completely neglected his education, and had high-profile advocates in Legler and Leuzinger. After being declared of age, Heinrich Wild purchased a surveying instrument at the age of 18. He used it to roam the Linth and Escher Channels on his own account, in a standing rowing boat ((SB386)) that was propelled like a Venetian gondola and enabled him to complete his assignments more quickly. ((SK HWJ9)) In this boat, he carried his own levelling device, tripod, measuring rod, knee-high rubber boots, writing implements, and provisions. And so “Heiri” surveyed, evaluated, monitored, and documented the ever-changing Linth plain between Mollis, Lake Walen, and Weesen as far as the upper Lake Zurich near Schmerikon and Gryнау Castle.



This detail from the original 70 cm x 70 cm Linthwerk area plan 12 "Ziegelbrücke, Oberurnen, Windeck Castle" shows the once devastated and now heavily industrialized section



Mollis or Escher Channel: the first 5 km long channel of the Linthwerk, completed in 1811. Photographed in 1925 by Walter Mittelholzer.

Projects of the century. After a decade of planning, a century later, under the leadership of the 5th Linth Engineer Markus Jud, a general renovation was carried out between 2008-2013 under the project name "Linth 2000 flood protection". A total of 126 million Swiss francs was invested, including a not inconsiderable amount for renaturation. Since 2004, the Linthwerk has been subject to an intercantonal concordat, which has already initiated a follow-up project called "Linthwerk 2100" under the 6th Linth Engineer Ralph Jud. Once again, the aim is to reconcile economy and ecology with increasingly demanding flood protection.

Additional challenges for engineers – and for all of us! The forces of nature have always challenged humankind: those who live in the mountains or near the coast are particularly exposed to them and also feel the changes generated by a growing world population that is careless with the resources available. We are experiencing this in the current climate change, which is heavily based on the burning of fossil fuels, with rising temperatures, increasingly longer periods of drought, massive glacier and polar ice cap melting, cloudbursts, and tornadoes, and we are facing increasingly torrential downpours – in other words, too much water at once and too little in the long term. This means that new, short-term hazards are emerging in addition to long-term geological and climatic fluctuations. In addition to overcoming topographical obstacles with engineering structures such as bridges, mountain passes, railway lines, and tunnels, there is an increasing risk of rockfalls and landslides as the permafrost line rises. Like the switch to renewable energies, these also require new solutions for a secure water supply and for the hydroelectric and pumped storage power plants built for electricity generation and energy storage. In areas such as the Linthwerk, another problem must be taken into account, as water extraction causes land subsidence.



The mouth of the Escher Channel into Lake Walen near "Gäsi" was renaturalized during the general renovation in 2008-2013.

Brilliant first-year surveying student. For "Heiri," who was left half-orphaned at the age of three by the death of his father, the rise from a young man with only six years of elementary school and no further education for financial reasons to the renowned Federal Topographical Bureau in the federal capital of Bern was a steep path. He has now successfully started this journey at the Linthwerk and, at the age of 17, is already taking the next step at the Winterthur Technical College, where he has been accepted into the geometer class. From April to August 1895, he attends the first course during the summer semester and finishes as the best in his class of 13 students, achieving the highest possible grade of 5.5 in all nine subjects. Meanwhile, together with the cantonal authorities Linth Engineer Gottlieb Heinrich Legler is pressing to complete the "Plans for properties liable to contribute to the Linth in the municipalities from Lake Walen to below Grynau Castle. Drawn from measurements by H. Leuzinger, engineer, and Hch. Wild 1883-1896. Scale 1:2'000." Heinrich Wild interrupts his geometer studies at the Winterthur Technical College for a whole year to complete the plans.



On the left is the 5 km long Escher Channel, which has diverted the waters of the Linth from Mollis/Näfels into Lake Walen since 1811. On the right, the 17 km long Linth Channel, which since 1823 has diverted the waters of the Linth, Maag and Seez as well as other smaller Lake Walen mountain streams from Lake Walen, which is used as a catchment and equalizing basin, from Weesen to Schmerikon and Grynau Castle into the Upper Lake Zurich. (Photos from 2005.) The double trapezoidal shape of the channel profile is clearly visible in the picture on the right.

Professionally successful Heinrich Wild. We do not meet Heinrich Wild again until October 1896 in Winterthur, after the delivery of the large plan work, when he enters the II. class. He did not, however, complete the six-semester course at the School of Geometers. After the fourth course, he turned to military officer training, which focused on the fortifications of St. Maurice and Gotthard. The years 1896/97 marked a big step for the not yet twenty-year-old. His great-uncle Rudolf Leuzinger died in Mollis, and his master Gottlieb Heinrich Legler retired and died just one year later. His uncle Heinrich Leuzinger is now the Linth Engineer himself - and the perimeter plan documentation has been published. It is not without reason that Heinrich Wild's name appears twice on the cover page. It looks as if he will be able to compensate for and overcome his family's shortcomings with his great professional skills and successes. Will he succeed? - And if so, in what way? To find out, we need to take a closer look at his extended family environment and his professional network - if he has one. Who are these Wilds and Leuzingers actually? So let's start by taking a look back!

Heinrich Wild's precious family base

Heinrich Wild's birthplace Bilten is located in an area that was settled by people from two cultures south and north of the main Alpine ridge, who also mixed here. The first, but not yet permanent, settlement took place after the last ice age - around twelve thousand years ago - with the melting of the two mighty glaciers of the Alpine Rhine and the Linth. The first evidence of modern human settlement dates back to the 8th century BC. Ch. In the valleys carved out by the glaciers and filled with various rocks and debris, the lakes and rivers left behind form waterways through the Alpine Rhine Valley and Lake Constance to the Upper Rhine near Schaffhausen and through the Seezt valley, Lake Walen and Linth plain to Lake Zurich, the Limmat, the Aare and the Rhine. A wide variety of goods and mercenaries were moved and exchanged between southern and northern Europe via Alpine passes such as Splügen, Julier, Maloja, Albula and Flüela as well as mule tracks over the high Alpine ridge to and from Italy and Ticino. Logs were transported from Ziegelbrücke to the Netherlands to build ships, dykes and windmills. Glarus oak logs are particularly sought-after in the rich Netherlands, where they are highly prized by the famous cabinet makers of Rotterdam. ((SZ2))

Highly qualified luminaries from the canton of Glarus. Heinrich Wild grew up here in an environment that had a lot to offer him. On his father's side, he is the son of the artistically talented draughtsman and textile dyer Jost Heinrich Wild, who died of pneumonia at the age of 27. "Heiri" is therefore also the grandson of the dyer Mathias Wild, who had moved from Bilten to Schmerikon and had married the daughter Anna of the carpenter Lienhard. The very first records from the paternal Wild line refer to the great Swiss reformer Huldrych Zwingli (1484-1531). From his mother's line, the historian, statesman and cartographer Aegidius Tschudi (1505-1572) cannot be overlooked, as can Heinrich Wild's great-grandfather Gabriel Weber (1768-1824), who was a raven landlord, councillor, appeal judge, Landesersparniskasse administrator and lieutenant, who led the Glarus III Battalion in Hüningen under Guillaume-Henri Dufour in 1815 and was praised by the latter. Heinrich Wild himself "benefited" personally from a contemporary great-uncle and an uncle who were extremely successful in his professional field: Rudolf Leuzinger (1826-1896), the unsurpassed mountain

cartographer of the time, and Heinrich Leuzinger (1858-1937), the Linth construction foreman and later Linth Engineer, who employed the young "Heiri" at the age of twelve. From the maternal line of the Leuzingers, "Heiri" was thus not only shaped by genetically inherited characteristics and the early childhood education of his parents and grandmother, but above all by direct personal experiences and lively professional relationships with these two highly qualified luminaries of hydraulic engineering, surveying and cartography.

Glarus genealogy work: 36 large folios. The genealogy specialist Patrick A. Wild provides us with information about Heiri's relatives on his website www.glarusfamilytree.com. Wild, who has also created an impressive documentation for "his" Wild family line. ((WP)) He referred me to a large Glarus genealogy archive, which is official and can be viewed in the Glarus State Archives. Johann Jacob Kubli-Müller compiled it from the church registers of all Glarus parishes between 1893-1923 with a high degree of internal consistency in the form of a 28-volume work that in many cases goes back as far as twenty generations. The canton took over these folio volumes in return for financial compensation and continued them up to volume 36 - now partly in digital form, of course. In 2018, I bent over the folios in "Sütterlin" script in the Glarus State Archives, filled with names, dates and event references with their own very consistent search logic.

Grandfather Mathias Wild with his 22 children. We already know that textile dyer, draftsman, and innkeeper Jost Heinrich Wild (1853-1880) died in Ober-Bilten at the age of 27 and that his son "Heiri" Wild (1877-1951) was taken in by his grandmother when he was not even three years old and half an orphan. Now we learn from this documentation that Heiri's father, Jost Heinrich Wild (1853-1880), as the eldest son with two siblings, had not fared much better and had also been left half-orphaned at the age of three. However, he did not lose his father, but ten days after the birth of their fourth child of the same name - a daughter named Anna Wild - he lost his mother, the carpenter's daughter Anna Wild-Lienhard (1832-1857) in Schmerikon. The role of surrogate mother for the three surviving infants, Jost Heinrich Wild, Fridolin Wild, and Anna Wild, was immediately taken on by her 19-year-old sister Katharina Lienhard (1838-1921). In this difficult situation, united in pain, grief, and hardship, father Mathias Wild and sister-in-law Katharina also grew closer. She not only took care of the infants, but also of her former brother-in-law and father of the children, Mathias Wild (1829-1907), who was nine years older than her - and vice versa. As a result, Mathias Wild married his second wife Katharina only seven months after the death of his wife Anna, and she gave him a daughter, Margret, just six months later. This union produced 17 more children, four of whom died in their first year of life and four more before the age of 16, with only fourteen of them fortunate enough to reach adulthood. The naming convention seems irreverent and confusing to us today: if an infant died, as in the case of his daughter Margreth, the next girl born was given the same first name. As a result, we find four newborn daughters named Margreth in Mathias Wild's family register, after his three previous Margreths had all died in infancy. Of his original 22 descendants, only nine were still alive when Mathias died: "Heiri" Wild's six step-uncles and three step-aunts. Floods in the Linth plain continue to spread a type of Anopheles mosquito that causes *malaria tertiana/quartana*, known as "intermittent fever," and typhus, often referred to as "bacterial dysentery," is still rampant. The very cold and wet 1880s often left the grain unripe on the stalks and the potatoes rotting in the ground, along with the hay used as livestock feed, so that hunger and malnutrition were also part of everyday life for humans and animals. Things only improved after the completion

Johann Jacob Kubli Müller's impressive Glarus genealogy work

Handwritten genealogy entries in German, including names like Jakob Wild, Anna Lienhard, and dates such as 1877, 1899, 1900, 1901, 1903, 1907, 1910, 1918, 1935.

118. Jakob Wild um Miltödi, der Mathias + der Katharina
 geb. 1876 Jan 26 + 1909 Juni 19

Anna Lienhard Lienhard um Oberhofen, der
 Jakob + der Katharina Andereg
 geb. 1876 Juli 13 + 1907 Januar 20 in Bietlen
 op. 1899 Aug 9
 op. 1907 April 1. wie 402 118b

119. Jakob Wild um Miltödi, der Mathias + der Katharina
 geb. 1877 Jan 18 gest. 26. Dez. 1951 in Baden

Anna Katharina Lienhard um Lienhard,
 der Leopold Dominik + der Theresia Lienhard
 geb. 1870 März 4 geb. Baden 4. Dez. 1855
 op. 1900 Mai 5

1916 Aug 1. in Jena: Maria Wildgand, geb. Baden
 29. April 1944 Dipl. Mag. S. H. Walter Koth

1918 März 28. in Jena: Fritz Wildgand, geb. Jena, geb. Baden
 1935 Dez. 17.

1918 Aug. 6. in Jena: Hans Friedrich, wie 402 118b

Handwritten genealogy entries in German, including names like Mathias Wild, Anna Lienhard, and dates such as 1828, 1853, 1857, 1858, 1859, 1860, 1861, 1862, 1864, 1866, 1867, 1868, 1870, 1872, 1873, 1874, 1877, 1879, 1880, 1881, 1876.

118. Mathias Wild um Miltödi, in
 Bietlen, dem in Schmeichen, der Fost, der
 Magdalena Mathi 478
 geb. 1828 Mai 16 + 1907 Oktober 20 in Schmei-
 chen

30. 1, Anna Lienhard um Bietlen, der
 Gaimm + der Margareth Aebi V30 Bietlen
 geb. 1832 Juli 10 + 1857 Januar 18 in
 Schmeichen
 op. 1853 Juni 30

30. 2, Katharina Lienhard um Bietlen, der
 Gaimm + der Margareth Aebi V30
 Bietlen
 geb. 1838 Mai 18 + 1921 Januar 28 in Linsch
 op. 1857 August 20

1853 Okt 31 Joh. Gaimm, wie 413b
 1854 Nov 21 Margareth + 1855 Juli 11
 1856 Jan 13 Fridolin wie 413b
 1857 " 8 Anna wie Müller 450

Jan 6. Ehe:
 1858 Feb 3 Margareth + 1859 Feb 24
 1859 Jan 19 Magdalena + 1879 Mai
 1860 Okt 12 Margareth + 1863 "
 1861 Sept 23 Jacob = 1865 "
 1862 " 14 Conrad wie 414b
 1864 Mai 29 Margareth " Ballma
 1866 Jan 31 Johannes " 414
 1867 Mai 26 Rosa wie Hees 440
 1868 Okt 21 Gustav Aebli + 1873
 1870 Mai 4 Jacob wie 414b +
 1872 Juni 7 Lina Katharina wie 414
 1873 Juli 30 Gustav Aebli + 187
 1874 Nov 1 " " + 181
 1877 Juli 15 Magdalena + 1878
 1879 Feb 15 Mathias + 1881
 1880 Mai 13 Emil Mathias +
 1881 Dec 4 Gustav, wie 415
 1876 Jan 26 Jakob " 415

Above: Entries on the Johann Heinrich Wild family (1877-1951).



The author researching a Kubli Müller tome in the Glarus State Archives in 2018.

Left: Entries on the Mathias Wild family (1828-1907).

of the work led by Linth Engineer Gottlieb Heinrich Legler since 1864, which Heinrich Leuzinger and Heinrich Wild documented in their 1896 plan. See "Die Linthwerk-Fieber" (The Linthwerk Area Fever). ((SZ1)).

A large, highly professional family. So our twelve-year-old Johann Heinrich "Heiri" Wild knew twelve close relatives *on his father's side* when he started work at Linthwerk in Schmerikon in 1889: 1) His then sixty-year-old *grandfather Mathias* (who died in 1907 at the age of 78) and his *step-grandmother Katharina* (who lived in Zurich until 1921); 2) His then 43-year-old *great-uncle Fridolin* and his 42-year-old *great-aunt Anna Müller-Wild*; 3) His *five step-great-uncles* Konrad (then 27 years old), Johannes (23 yrs.), Jakob (13 years old), Emil Mathias (10 years old) and Gustav (8 years old); and 4) his *three step-great-aunts* Margreth Bollmann-Wild (25 years old in 1889), Rosa Heer-Wild (22 years old) and Lina-Katherina Schellenberg-Wild (17 years old). His mother "Liz" Wild-Weber, grandmother Regula Weber-Leuzinger, great-uncle Rudolf Leuzinger and uncle Heinrich Leuzinger came from *his mother's* line. They challenged and encouraged him intellectually and professionally.

For eight years - from 1889 to 1896 - Heinrich Wild was able to work with his *uncle Heinrich Leuzinger* (1858-1937) at the Linthwerks, where this polytechnic engineer had been employed since 1884 and worked as Linth construction foreman from 1888. He taught "Heiri" a great deal of what he needed to know and be able to do in hydraulic and civil engineering, from edging torrents, dam profiles and surveying to plan mapping. Heinrich Leuzinger, who is responsible for the plans with him and is very busy, hardly has the time to draw them up, nor does he have the technical drawing skills that Wild has. In addition to his role as Linth construction manager (1886-1896) and later as Linth Engineer (1897-1934), this father of six also ran a private construction company, with which he realized the correction of the Sernft river, the improvement of the Seez valley, the construction of the Panten bridge and the construction of the torrent structures.. To enable the Federal Linth Commission to complete the thirty years of Linth work for which Legler was responsible and to collect the perimeter fees, Heiri Wild worked day and night on the completion of the 46 plans at a scale of 1:2'000, so that they could be presented to landowners and the public in 1896 and fees could be collected from them.

Heinrich Wild's much older *great-uncle Rudolf Leuzinger* (1826-1896) was a world-famous mountain cartographer, known in specialist circles right up to Emperor Napoleon III, who ran his own studio in Mollis from 1881-1896. "Heiri" Wild's brother Rudolf, whose first name was reminiscent of his uncle, was born a year later in 1878 but died just three months after his birth. All three fathers mentioned here - Mathias Wild, Rudolf Leuzinger and Heinrich Leuzinger - married twice; Mathias Wild and Rudolf Leuzinger in their second wedding married their former younger sister-in-law. Rudolf Leuzinger, who was universally described as a modest and popular contemporary, became a father eight times. His first wife Barbara Wild-Trümpy-Hösli bore him five children in Winterthur, of whom daughter Anna died at the age of four in 1858. Just one year later, after a long period of "consumption" (tuberculosis), the mother also lost her life. Her half-sister Rosina Wild-Trümpy-Spälti, who was a decade younger, took care of the four children (and their father) and married the great master of mountain engraving Rudolf Leuzinger. This second marriage resulted in three children, with Jacob, born in Ennenda in 1860 nine months after the wedding, also leaving this world in Bern at the age of four. Their youngest daughter, baptized Rosina in 1879, was a "latecomer": when

she was born in Bern, her mother was celebrating her 41st birthday and her father was already fifty-three! Rudolf Leuzinger thus had a large, ever-expanding family to look after and moved with them four times: for the first time in 1859 with four children from Winterthur to Ennenda to run a cartography studio and optical goods store that he had opened in Glarus - interrupted by a quarterly stay in Paris in 1860 - until the devastating fire in the cantonal capital; a second time in 1861 after the destruction of the Glarus business from Ennenda to Bern; then from there in 1881 after twenty years of successful business to Mollis in the prestigious and stately Haltli, one of the most beautiful vantage points in the entire Glarus region, and again in 1889 in Mollis in the Ober Haltli. (See also pp. 14, 32-38 on Rudolf Leuzinger).

Paradox: with the first birthday, life expectancy increases by twelve years.

Every beginning is difficult – especially before the 20th century for “new arrivals” on earth! Statistically speaking, one in four newborns did not live to see their first birthday. As a result, newborns in eastern Switzerland at that time had a life expectancy of 56 years at birth, but 68 years after their first birthday. ((WP)) The main cause of death, often three months after birth, was the numerous rampant germs against which the weak infant organism first had to develop defense mechanisms, but was unable to do so because it was not considered proper to breastfeed infants and feed them breast milk. However, those who survive their first year of life have already built up enough antibodies to enable their immune system to better fight future infections, especially of the gastrointestinal tract. In addition, younger mothers often suffer from deadly childbed fever, the cause of which Ignaz Semmelweis recognized in 1842 as “poor hygiene,” but which was strongly doubted by the medical community at the time and whose successful control was only established decades later. Diseases such as diphtheria and scarlet fever, but also epidemic infectious diseases such as smallpox, measles, and whooping cough, continued to limit life expectancy. Pharmacy according to Paracelsus was still in its infancy, but made great strides, not least thanks to innovative microscopes from Zeiss in Jena, Leitz in Wetzlar, and Reichert in Vienna. In 1905, Robert Koch – together with Louis Pasteur, the founder of bacteriology and microbiology – received the Nobel Prize in Medicine for his discovery and cure of anthrax and tuberculosis; in 1928, Alexander Fleming accidentally discovered penicillin, which would not be used for another 15 years.



Johann Heinrich Wild's parents: Elisabeth Wild-Weber (1853-1917) and Jost Heinrich Wild (1853-1880).

The absence of Heiri's mother. In contrast to "Heiri's" briefly mentioned strict grandmother, there is no mention of his mother. We assume that Elisabeth Wild-Weber (1853-1917), an attractive widow of the same age who had moved to Zurich after the death of her husband of 27 years, had left her only son with her grandmother Regula Weber-Leuzinger (1828-1906) in Ober-Bilten due to economic necessity and/or persistently differing views on education and disputes, and that she would hardly have seen him again when she died in Bilten in 1917 at the age of 64.

During the First World War in Jena. After leaving Federal Office of Topography, Heinrich Wild lived with his family in Jena from 1908 to 1921 during the German Empire and the Weimar Republic. When the First World War began on August 1, 1914, he had to immediately resign from his job as a foreigner and was no longer allowed to enter the company. Nobody assumed that this war, which developed into the "Grande Guerre", would last four years and be lost by the German Reich and the Austrian Danube Monarchy. "Do nothing" has never been an answer for the Wild family and therefore they organised a better structure and organisation for distributing food at Jena. So year after year of war added up - also for the Wilds, who for these reasons remained without income during the entire four years of the war with their family of ten in Jena; during this long period, the father of the family was dependent on the income from his patents as well as on the meagre pay from the annual several months of active service in the Swiss Gotthard fortress. It was here that Major Heinrich Wild met the geologist, alpinist and photogrammetry pioneer Robert Helbling, one of the two later co-founders of his Heerbrugg company. This owner of a surveying office was in turn able to win over his well-funded fellow ETH student Jacob Schmidheiny as the third founding partner of "Heinrich Wild, Werkstätte für Optik und Feinmechanik". However, the war and post-war years in Jena had so eroded Heinrich Wild's financial substance that in 1921 he contributed patent rights rather than francs as founding capital. However, the capital injections made by Jacob, Ernst and Max Schmidheiny and Albert Schmidheini due to considerable initial losses meant that Wild's share shrank to a minority stake and he left the company in 1932. An attempt to take over the entire company with the support of Zeiss Jena in 1930 was unsuccessful. ((STA2 - 77))

The Wilds move with the Zwinglis from Wildhaus to Glarnerland

The most historically significant person in Heinrich Wild's family is the reformer Huldrych Zwingli (1484-1531), born in Wildhaus in Upper Toggenburg, from Johann Heinrich Wild's father's line (1877-1951). In the years 1523-1526, the Peasants' War was still raging in Toggenburg, which belonged to the diocese of Constance and was subject to the Prince-Abbot of St. Gallen. When Zurich openly supported the Toggenburg rebels in their rebellion against the Prince-Abbot of St. Gallen, the Second Kappel War broke out in 1531, in which Huldrych Zwingli lost his life, but by then had created such an important work of reformation as a reformer that it has continued to have an impact to this day.

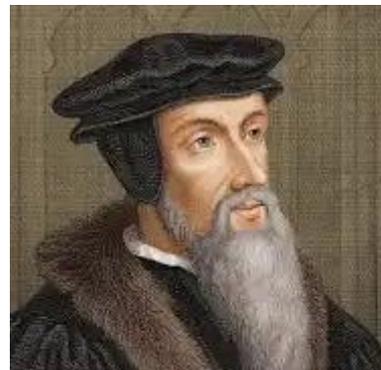
Huldrych Zwingli, the son of a wealthy farming family with nine children from the Wildhaus district of Lisishaus, was personally educated from the age of six to ten by his uncle, who worked as a priest in Weesen on Lake Walen. He then continued his education at the Latin schools in Basel and Bern with great success. After studying at the University of Vienna, Zwingli took up the lucrative post of parish priest of Glarus in 1505 at the age of just 21. In 1510, the linguistically gifted Zwingli founded a boys' Latin school there, which, in addition to Aegidius Tschudi, prepared numerous other generations of Glarus personalities for university studies. In 1516, after the devastating defeat at the Battle of Marignano and a plague illness, Huldrych Zwingli defended the Pope's party and was therefore forced to leave Glarus for three years, during which time he held the office of lieutenant priest in Einsiedeln and from there followed a call to Zurich in the same position at the Grossmünster in 1519. Here Zwingli, who was able to read the original text of the Bible in Hebrew and ancient Greek, came into contact with the humanist Erasmus of Rotterdam (1466/67/69-1536), who was teaching in Basel. After an exchange of ideas about Erasmus' translation of the Bible from Ancient Greek and after reading translated parts of Martin Luther (1483-1546), he also began to turn away from the church and the papacy, including the veneration of saints, the cult of relics and the sale of indulgences, and even from liturgical singing and organ playing, to the point of banning all paintings from churches. Zwingli's worship service was devoted solely to the proclamation and interpretation of the Word of God in German, for which Zwingli translated together with his friend Leo Jud and other Swiss theologians from Ancient Greek, Hebrew and Latin within six years and published in 1531 the New Testament in Zurich chancery language as the first complete German-language translation of the Bible.



Martin Luther (1483-1546)



Huldrych Zwingli (1484-1531)



Jean Calvin (1509-1564)



Weesen flooded again in 1803. Colored etching by unknown after a drawing by Hans Konrad Escher.

Huldrych Zwingli was born in this log-built house in Wildhaus on January 1, 1484.

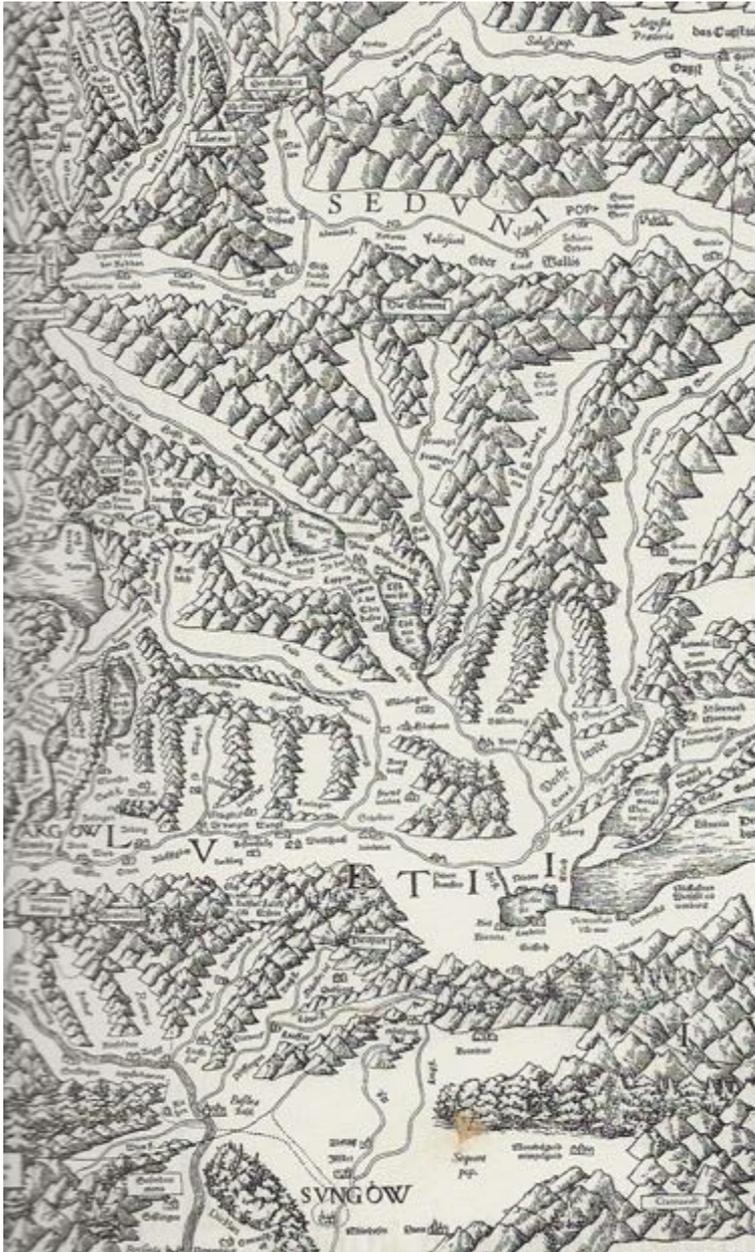
Between 1519 and 1523, Zwingli convinced the citizens of Zurich of the need for fundamental change, married demonstratively in Zurich's Grossmünster cathedral in 1524, and presented his confession of faith in 1525. At the invitation of Landgrave Philip I the Magnanimous of Hesse (1504-1567), he met with Martin Luther and other prominent figures at Marburg Castle in 1529 for a disputation, but they failed to reach agreement on key issues such as the interpretation of the Eucharist. Together with Joachim Vadian of Watt (1483-1551) in St. Gallen and reformers in other Swiss and southern German cities, but above all with Jean Calvin (1509-1564) in Geneva in 1536, a Reformed Church was formed in the Swiss Confederation, whose teachings and doctrines spread beyond the Holy Roman Empire of the German Nation to the Netherlands and from there to the rest of the world.

Move to Mitlödi in the Glarus region. Documents from 1544 ((WP)) show that Huldrych Zwingli's brother Claus Zwingli, together with his legitimate children and his daughter's husband (son-in-law) Claus Wilhelm, were released from serfdom and became landowners of Glarus. He had bought his release from the serfdom of the Prince-Abbot of St. Gallen in exchange for a cash payment. They were only given the surname "Wild" when they registered in Haslen near Glarus, where they were given their place of origin "Zum wilden Haus" (Wildhaus) as their surname. Claus (Niclaus) Wilhelm, who had married a niece of the Reformer in 1538 on his farm next to the Zwinglis in the Wildhaus district of Lisishaus, emigrated from Toggenburg to Glarus around 1544 and settled in the hamlet of Leu (Nesselau) in Haslen. In 1555, on presentation of his ransom from serfdom, he was granted land rights (cantonal citizenship) and tagwen rights (local citizenship) to Haslen in the canton of Glarus for himself and his five sons at the time, Harms, Heinrich, Claus, Peter and Bartholomew, in return for the payment of 340 guilders. Claus Wild junior, born in 1544, settles in Mitlödi in 1586 and baptizes his son Marx Wild, born in Haslen in 1567, who acquires the Tagwenrecht of the municipality of Mitlödi in 1613, thus founding the Heinrich Wild family line. ((WP))

Cross-reference: First points of contact with Einstein. Harms Wild, who was born in Toggenburg around 1540, is a carpenter by trade. He settles in Bilten and builds, among other things, Peter Winteler's teacher's house in Filzbach with a technically very sophisticated and beautiful parlor ceiling. Harms Wild's completion date "Anno Domini 1607" can be found in a ceiling beam. More than three centuries later, Albert Einstein was also familiar with this building high above Lake Walen. The physics genius lived as a pensioner in the household of cantonal school professor Jost Winteler during his Aarau Matura year. This veritable family of teachers, who had been active for generations, had moved the center of their lives from the canton of Glarus to the canton of Aargau years ago and still maintained ties to their "ancestral home" in Filzbach. When a large family reunion was held here at Easter 1914, Einstein's sister Maja visited Filzbach with her husband Paul Winteler. ((RF60))



Lake Walen with Weesen around 1860, when the VSB railroad line crossed the Linth Channel at Weesen to Glarus and Chur. All the land visible in front of the bridge could not be built on at that time. Colored aquatint picture from the book by Rudolf Dikenmann "Souvenir de la Suisse". ((SZ2))



**Wild ancestor
Aegidius Tschudi
(1505-1572) creates
the first printed
map of Switzerland**

In 1538, Aegidius "Gilg" Tschudi (1505-1572) from Glarus drew a map of the Swiss Federation for his Swiss Chronicle, which he had cut into wood and printed by Sebastian Münster in 1560. The map (see detail) is oriented to the south with the Gotthard at the top left. It is the first printed, more accurate map of Switzerland from the book "Die Uralt warhafftig Alpisch Rhetia" mit Gletscher- und Hochgebirgswelt".

The old Glarus family of Aegidius "Gilg" Tschudi produced numerous leading figures in science, domestic and foreign military services and politics. The most important scion is the Zwingli and Glarean student, historian, cartographer and politician Aegidius Tschudi, a maternal ancestor of Heinrich Wild. Tschudi is regarded as the first historian to compile documents and historically relevant records to substantiate his findings. In 1560, he commissioned the Basel geographer Sebastian Münster to cut the map of the country he had drawn in 1538 into wood and print it with a coat of arms frame. With a scale of approx. 1:350,000, it is the most accurate work of its time. Between 1534-1536, Tschudi wrote his Swiss historical work "Chronicon Helveticum". It was not printed until 1737 and, with the story of Tell taken from the White Book of Sarnen, provided Friedrich Schiller with the model for his play "William Tell". He did the same with his manuscript "Gallia Comata", which was not printed until 1758.

Great-uncle Rudolf Leuzinger: World-famous mountain cartographer



Rudolf Leuzinger
(1826-1896)



Enormous rise: from the "Linthkolonie" orphanage to the manor house "Haltli". *Rudolf Leuzinger grows up as an orphan in the Linth Colony co-founded by Konrad Schindler (top left in a painting of anonymous origin from 1831). He spent his last decade and a half living and working on the stately Mollis Haltli estate built by Konrad Schindler (bottom right). After the Freuler Palace in Näfels, it is the most ornate secular building in the canton.*

On his mother's side, Heinrich Wild is also a descendant of the Netstal branch of the large Glarus-based Leuzinger family. His great-uncle Rudolf Leuzinger (1826-1896) and his uncle Heinrich Leuzinger (1853-1937) introduced "Heiri" to the highest level of engineering knowledge in the fields of civil and hydraulic engineering, surveying and cartography at the time after completing primary school early in Bilten. Rudolf Leuzinger was born the son of a master carpenter and came to the Linth Colony as an eight-year-old orphan. This was built on the initiative of Konrad Schindler from newly reclaimed marshland between Ziegelbrücke and Bilten, which had only recently been reclaimed from the Linth. He completed an apprenticeship as a lithographer, terrain engraver and cartographer at the renowned Winterthur cartographic institute Wurster & Co / Wurster & Comp. and continued his training as a journeyman under the guidance of the ambitious geologist and cartographer Dr. Jacob Melchior Ziegler. Melchior Ziegler had become famous for his map of the Alpine Rhine Valley, in which he vividly depicted the geological characteristics of the mountains. Leuzinger continued to improve this technique and in 1859, at the age of 30, became the world's best known cartographer of mountain depictions.

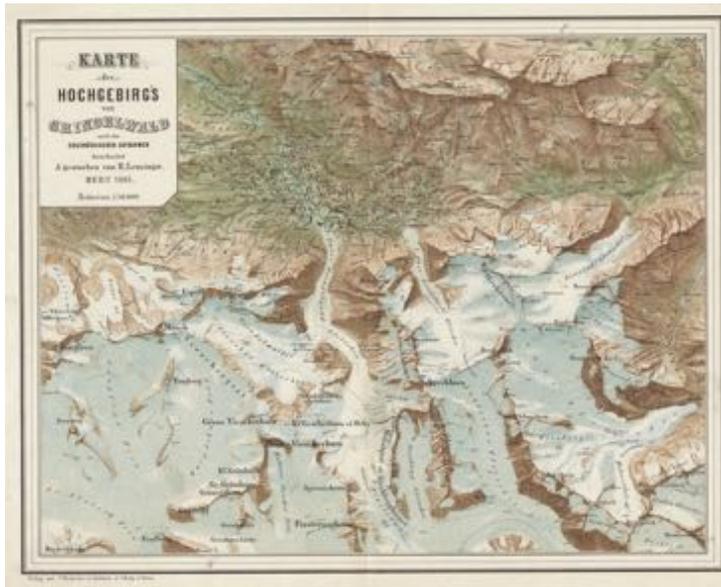
"Only Leuzinger is capable of this!" Because the French emperor Napoleon III found the "sober, artless maps" produced by his own French cartographers insufficiently expressive for the illustrations in his work "Histoire de Jules César," ((HL297)) he invited Rudolf Leuzinger to Paris in 1860 and wanted to hire him permanently in the cosmopolitan city on the Seine after a three-month trial period. However, Leuzinger modestly declined and returned to Switzerland.



Etching by Rudolf Leuzinger, dedicated to his teacher Melchior Lütshg at the Linth Colony. The popular artist used his talent for drawing professionally, particularly for mountain cartography.

In 1861, after a year and a half in the Glarus region, Rudolf Leuzinger moved to Bern following a devastating fire in the cantonal capital of Glarus. When the newly founded S.A.C. Swiss Alpine Club decided in 1863 to publish an annual yearbook with an excursion map, Rudolf Leuzinger was commissioned to produce it, demonstrating his talent for depicting rocks and coming into contact with Colonel Siegfried through the Topographical Bureau's terrain surveys. When the Federal Assembly ordered the creation and production of a new national map in 1868, he joined the Swiss Topographical Office, which had been founded by Guillaume-Henri Dufour and was now headed by Colonel Hermann Siegfried. R. Leuzinger engraved the high mountain sheets - 118 in all - which contain numerous rock formations at a scale of 1:50,000 in stone, while all the midland sheets were engraved in copper at a scale of 1:25,000. In addition, Rudolf Leuzinger is credited with engraving over 200 other maps for a wide variety of uses, some of them in their entirety and some of the most difficult parts. According to a report by Leonz Held, Colonel Hermann Siegfried entrusted "the engraving of the high mountain sheets to our Leuzinger, [...] because he knew full well that only Leuzinger would be capable of engraving the rocks in the same way as they appeared in the better originals." Rudolf Leuzinger was also responsible for producing the first relief maps on a scale of 1:50,000 with contour lines and gray-green relief hatching and yellowish light parts on the opposite mountains. ground tones. ((CP132/86)) Rudolf Leuzinger was also friend with ETH professor Max Rosenbaum, who called on the young Heinrich Wild to help determine the reference height of the Pierre du Niton and survey the Rhone Glacier.

Rudolf Leuzinger's mountain cartography from 1865



"Map of the high mountains of Grindelwald, edited & engraved from Swiss measurements by R. Leuzinger, Bern 1865 Reduction 1: 50'000" - Format 39 cm x 49 cm.

"Mastery hardly surpassed to this day". In 1984, the Cantonal Museum of Glarus celebrated its anniversary with a special exhibition entitled "500 Years of Glarus in Maps – Cartographer Rudolf Leuzinger." In their exhibition guide ((DJ)), Jürg Davatz and Hans Laupper describe Rudolf Leuzinger's professional skills as follows: "Leuzinger's outstanding achievement lies in his convincing depiction of high mountains and rocks. In this field, he developed a mastery that had never been achieved before and has hardly been surpassed to this day. He was also the first to produce so-called relief maps using lithographic color printing. This new method of representation added an artistic touch to the contour lines by using color tones according to vertical levels with oblique incident light. In doing so, he attempted to incorporate atmospheric effects, such as sharp contours in the clear mountain air of the summit areas. He applied this hypsometric color perspective, with light colors at higher verticals and darker colors at lower verticals, to Swiss maps and tour maps for the Swiss Alpine Club (SAC), among other things."

Rudolf Leuzinger returns to his home canton of Glarus. Two decades after his time in Bern, the 54-year-old Rudolf Leuzinger returned to his home in the Canton of Glarus, where he took up residence on the "Haltli" at one of the best vantage points for the landscape between Lake Walen, Biberlikopf, Glärnisch and the Linth plain above the Escher Channel in Mollis and - mostly together with a lithographer employed by him and an apprentice - produced the world's best mountain maps for another decade and a half. Living in Mollis, this experienced expert, half a century older, was a fatherly friend during "Heiri's" time in Bilten at the Linthwerk from 1889 to 1896. It is Rudolf Leuzinger who awakens Heinrich Wild's interest in optics and instruments, as after 16 extremely successful years in Winterthur he had run a business selling such items as a sideline in Glarus until the devastating town fire of 1861. ((CP193)) During his eight years at the Linthwerk from 1889-1896, Heiri Wild was able to learn and practice a great deal about plan drawing and cartography, including perfect map labeling, from his generous great-uncle Rudolf Leuzinger. Together, Rudolf and Heinrich Leuzinger and Heinrich Wild continued a great Glarus tradition of surveying and brilliant cartographic representation of our living space; Friedrich Becker, Eduard Imhof, Walter Blumer and Jakob Oberholzer took it to its next heights.



Detail (I) from the "Karte des Hochgebirg's von Grindelwald" engraved by Rudolf Leuzinger in stone in 1865. The topography is shown in brown shadow hatches and rock design, the glaciers with contour lines and light shadowing and the vegetation indicated by a green forest colouring. The 3-D impression is significantly enhanced by the brightening effect created by an incidence of light from the northwest that casts shadows.

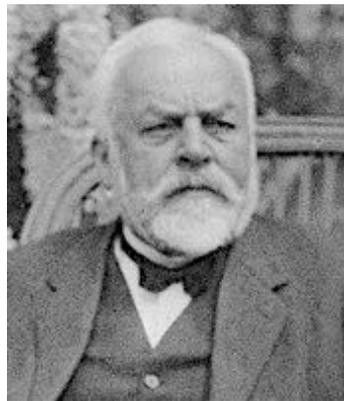


Detail (II) of the rock parts from the "Karte des Hochgebirg's von Grindelwald" engraved by Rudolf Leuzinger in 1865. He was 39 years old when this map was engraved and was still working at the Cantonal Bernese Topographical Bureau. In 1868 he joined the Federal Topographical Bureau headed by Colonel Hermann Siegfried. (See another mountain mapping by Leuzinger on p. 38 three decades later).

Three globally recognized Swiss luminaries and best colleagues



Rudolf Leuzinger
(1826-1896)



Leonz Held
(1844-1925)



Heinrich Wild
(1877-1951)

Unfortunately, *Rudolf Leuzinger* did not live to see the printing of his most beautiful map work, the rock sections of which he had engraved shortly before his death in 1896: the map of the Mt. Blanc region at a scale of 1:50,000. It was only published between 1906 and 1909 in the form of four partial sheet supplements to the S.A.C. annual volumes. The necrology about Rudolf Leuzinger was written and published in the 1896 S.A.C. annual volume by none other than his much younger good friend *Leonz Held*, himself an outstanding rock draughtsman. After graduating from high school, Held completed a surveying apprenticeship in Frauenfeld with the surveyor Gentsch and passed the surveyor's examination at the age of 20. He then carried out forest surveys and mapping in Graubünden with Johann Wilhelm Fortunat Coaz and joined the Swiss Topographical Bureau in 1872. Topographical Bureau in 1872. Leonz Held, who was promoted to First Topographer of the Bureau in 1886, also successfully recommended Heinrich Wild to Jean-Jacques Lochmann, then head of the Bureau, for employment in 1899. Already in his first year in Bern, *Heinrich Wild* achieved great independence with fortress surveys in St-Maurice, Rhone glacier documentation with Max Rosenmund and Leonz Held in Valais and precision levelling from Biel to Neuchâtel after the instruction by Dr. Robert Hilfiker. In 1901 Held was appointed head of the Topography Bureau and in 1902 he was already in charge of the Federal Office of Topography, which was now a division of the Military Department as director. In 1905, Heinrich Wild's miracle year (see p. 50), Held promoted Heinrich Wild to first class Federal Topography Engineer.

These three friends and extraordinarily successful employees of the Federal Office of Topography Rudolf Leuzinger, Leonz Held and Heinrich Wild all completed an apprenticeship and trained in their professions without attending university. They became world leaders in their fields, carrying Switzerland's expertise and achievements in surveying, cartography and instrument making around the world. Following specialist opinions, Rudolf Leuzinger is the world's best mountain cartographer. Leonz Held is from 1902 on the from now on first director of the now officially named Federal Office of Topography continuing Switzerland's worldwide reputation in cartography. And to this day, Heinrich Wild is the person who, as the inventor of completely new surveying methods, company founder and instrument designer, revolutionizes the entire industry on all continents.



Rudolf Leuzinger's last masterpiece: detail of the rock sections of the Mt. Blanc map engraved by him in stone for the Swiss Alpine Club (SAC) in 1896. It was included in four parts under the title "La chaîne du Mont-Blanc" in the four SAC yearbooks 1906-1909 and is not identical with a one-part map of the same title, also engraved by him in the rock sections, which had already been published by Kümmerly frères in Bern in 1896, also under the direction of Xaver Imfeld.



Rudolf Leuzinger as an employee of the Bernese cantonal Office of Topography had already mapped the Rigi two decades before Heinrich Wild in a scale of 1:100,000 with contour lines and brown shadows. This region was surveyed by Heinrich Wild again in 1899 on behalf of the Federal Office of Topography where he met his future wife "Lilly" Märchi-Bürgi in Goldau.

Heinrich Wild - the student who gave up his diploma

In 1895, while still surveying and mapping in the Linth plain, the 17-year-old Heinrich Wild enrolled in the first summer semester course of the "School for Geometers and Civil Engineers" at the Winterthur Technical College (today: Zurich University of Applied Sciences Winterthur ZHAW). It set very high mathematical and technical standards, which only the best surveying assistants and good science-oriented high school graduates could meet on the second educational path.* The program of the Winterthur Technical College in 1895 contains the following information: "The school for surveyors primarily aims to train surveying technicians and, accordingly, to prepare them for the surveyor's examination of the concordance cantons. To this end, the theoretical lessons are accompanied by practical exercises which culminate in a survey carried out in accordance with the legal requirements. In addition, it seeks to enable its students to carry out simple path, road and engineering structures, mergers, drainage and irrigation work, i.e. to train them as agricultural technicians."

Highly demanding curricula. The IV. class, which Heinrich Wild completed between October 1897 and February 1898 in the winter semester, had a weekly 34-lesson curriculum with the following learning content:

Algebra: 3 lessons per week. The binomial theorem with positive and negative exponents. The elements of probability theory. Infinite series. Convergence examples. Interpolation calculus. Solving transcendental equations of higher degree by approximation.

Analytical Geometry: Weekly 3 hours The conic sections. Forms of equations. Quantum problems. Constructions. Deconstructions of the general equation of the second degree.

Mathematical exercises: Weekly 1 hour repetition of selected chapters of planimetry, stereometry and trigonometry using numerous selected examples. Exercises in arithmetic with special consideration of geometer practice.

Spherical trigonometry: Weekly 2 hours Spherical trigonometry. Derivation of the formulae of the plane triangle from those of the spherical triangle. The axis errors of the theodolite. Tasks from mathematical geography. Simple map projections.

Construction mechanics: Weekly 4 hrs Composition and decomposition of forces. Polygon of forces and ropes. Lever, pulley, inclined plane. The center of gravity - Guldin's rule with applications. The simple beam. Strength theory with applications.

Building materials science: 2 hours per week Natural and artificial building blocks. Woods, metals; mortar, mastics, asphalt.

*) When the Federal Council prescribed academization in a regulation due to the high demands in this profession and thus transferred this training to the ETH and EPUL, the course was closed in 1916, although "this school of geometry, recognized at home and abroad, had made Swiss land register surveying possible in the first place". ((ZH))

Schule für Geometer.														Sommer-Semester 1897	
III. Kurs.														20. April bis 16. Aug.	
Deutsch	Alp.	Gen.	Math. Lehrg.	Math. Geom.	Phys.	Mineral.	Prakt. Geom.	Feldmessung	Planng.	Frans.	Engl.	Ital.	Beträge	Bemerkungen	
5.5	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	1		
114	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	1		
55	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	1		
46.3	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	1		
5.5	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	1	Wuv.	
55	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	1		
55	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	1		
5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	1		
114	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	1		
114	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	1		
5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	1		
6.1	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	1		
5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	1	Kein Zeugnis gemacht Wuv. Wuv.	

List of grades of the 14 summer semester participants of the third course from April 20 to August 16, 1897. Heinrich Wild's grades have all been deleted with the remark: "Do not make a report". The names of the other 13 fellow students are covered here for data protection reasons.

Building construction theory: Weekly 4-hour lecture on stone structures. Arches, vaults: wooden connections, simple bending and blasting structures. Parallel to this is the presentation of simple objects, as culverts, small bridges in stone and wood.

Practical geometry: 6 hours per week. Federal Precision levelling.

Practical dioptrics: The measuring table and measuring table methods. Topographic surveys. The theodolite and the theodolite method. Calculation of polygons and triangles. Pothenot's and Hansen's task.

Plan and map drawing: Weekly 6 hr. exercises in inking and hatching. General plans and maps.

After the fourth grade, all students who have not already spent at least two years in practice must complete two years of practice in accordance with the Geometry Concordat. [...] A student who mixes technical school and practice in this way will reach the age of 21 by the time they take their practical exam."

Best student with top marks. As he did at elementary school, Heinrich Wild is the best student in his class, achieving the highest grade of 5.5 in all nine subjects, also in course II. As the best student, he is ahead of his fellow students. Heinrich Wild enjoys explaining solutions in mathematics and descriptive geometry to his fellow students during breaks in lessons. At one point, the professor entering the classroom encourages Heinrich Wild, who is currently lecturing, to please continue with his explanations. He predicts to Wild's classmates that they will certainly be hearing from this exceptionally talented geometry candidate in the future. The latter, however, is of the opinion that the local professors have nothing more to teach him ((SK KF15)), as he has already acquired further knowledge of higher mathematics and geodesy during his apprenticeship with Linthing engineer Legler and through determined self-study.

No report for Heinrich Wild! "No report" is written next to Heinrich Wild's name on the class sheet of the third course, in which "Optics - the optical aids of practical geometers" is on the timetable for 3 hours a week in physics. Not all professors liked Heinrich Wild's arrogant demeanor; in fact, they were so annoyed that they apparently even refused to issue him with a certificate for the third course of the 1897 summer semester. Nevertheless, we are surprised to find Heinrich Wild again among the nine students on the fourth course of the winter semester of 1897/98; this time for the first time with an equally good certificate from a fellow student named Rudolf Wersinger, who immediately afterwards also completed the fifth course in the summer semester of 1898 among 18 students with the highest grade of 5.5. This was with one exception, as he had to settle for a grade of 4.5 in field surveying.

Officer training instead of geometer diploma. After completing the fourth course, Heinrich Wild preferred military training to attending school and is no longer to be found in any school register. As a result, Heinrich Wild leaves the Winterthur Technical College at the age of 22 - just like his village school at the time - even before graduating the prescribed number of



semesters without a diploma, but with recommendations from professors to his new employer. New, well-paid tasks had long been waiting for Heinrich Wild at the Federal Office of Topography in Bern. On the recommendation of Leonz Held, Jean-Jacques Lochmann, who was both head of the Topographical Bureau and also head of the Swiss fortifications as Chief of Arms of the Genie troops, provisionally recruited Heinrich Wild as Engineer II. Class in March 1899, after he had completed a year of military service at the fortress of St. Maurice and other locations and had been promoted to the rank of lieutenant in the meantime. ((VP75)) Due to his exceptional abilities and achievements, Director Lochmann appointed him as early as 1900 to the rank of civil service Engineer II. Class. ((SK KF15))

Heinrich Wild died in 1899 at the age of 22 years fortress troop lieutenant.

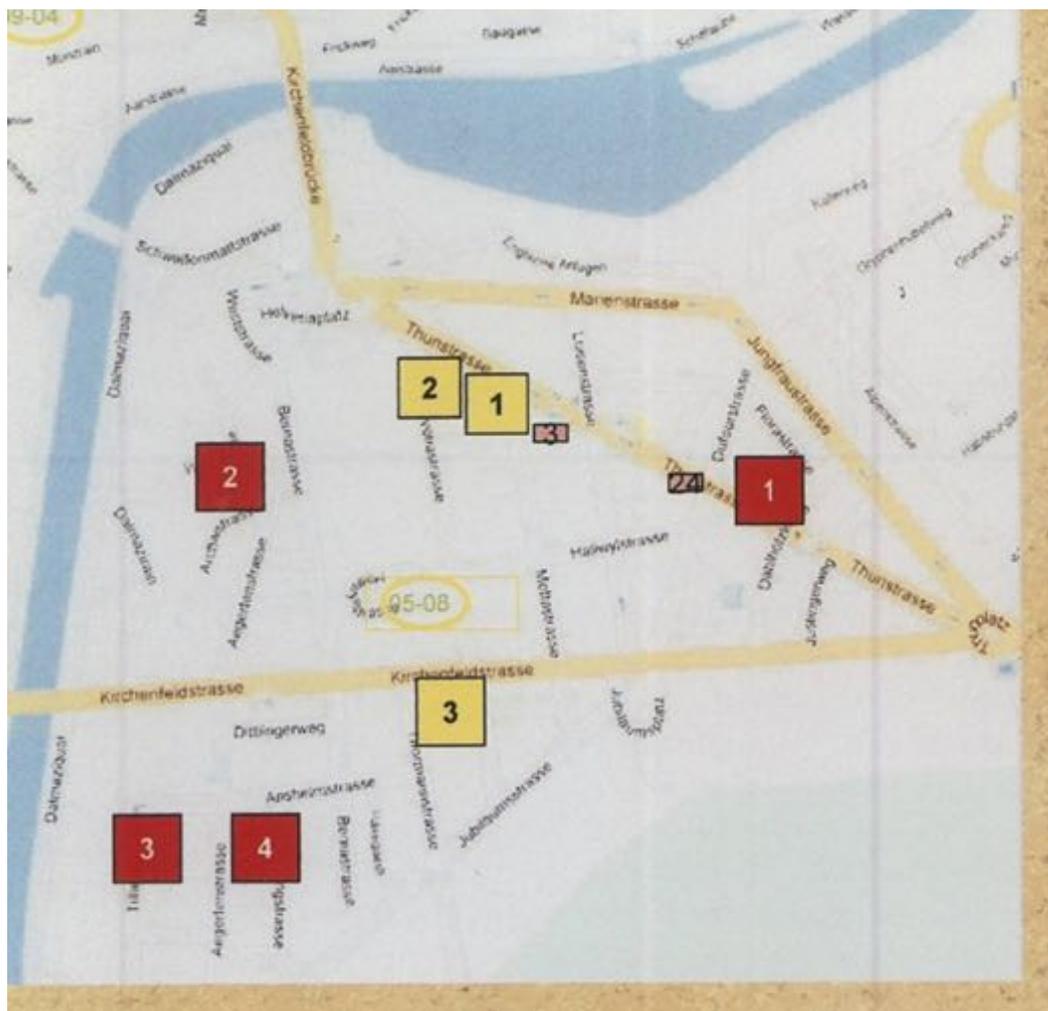
Two new federal civil servants in Bern

With Bern's election in 1848 as the federal capital of the Confoederatio Helvetica, many of the offices were still being established at the turn of the century and offered young, qualified specialists interesting tasks and secure jobs. In addition to the Technical College dropout of Heinrich Wild from Winterthur, Albert Einstein, who had trained at a Zurich university, also came to Bern after a six-month interim stay as an assistant lecturer in physics at the Winterthur Technical College and as a teacher at the Dr. Nüesch Institute in Schaffhausen and, like him, began a global career here ((STA7)). Wild and Einstein were just 22 (Wild) or 23 (Einstein) years old when they took up their posts. Still bachelors, the two initially lived as lodgers in Bern's old town: Heinrich Wild at Aarberggasse 22, ((ZM)) Albert Einstein at Gerechtigkeitsgasse 32 ((H9)) Einstein's superior Friedrich Haller had worked at the Federal Topographical Bureau, where Heinrich Wild was now employed as a topographer, before his appointment as the long-standing head of the newly founded Office for Intellectual Property. ((CP182)) With the renaming of the Topographical Bureau as the "Federal Office of Topography" in January 1902, Heinrich Wild's new boss after Jean-Jacques Lochmann was Leonz Held, who, like Wild, had also worked his way up the ranks as a twenty-year-old without a university degree but with a degree in surveying. ((SK KF15 / CP184)) Einstein and Wild were thus each subordinate to a superior who himself had many years of experience at the Federal Topographical Bureau.

The marital status of the two young federal officials also changed relatively quickly after their arrival in Bern: Heinrich Wild married Anna Katharin "Lilly" Märchy in May 1900, whom he had fallen in love with while conducting surveying work on the Rigi in Goldau; ((SK WHJ9)) Albert Einstein, contrary to his parents' wishes, married his former fellow student Mileva Maric in 1902, whom he had got to know better during his studies at ETH Zurich. ((H12)) It should be noted that Albert Einstein behaved ignorantly and outrageously toward the daughter he had with Mileva in 1902. "Liserl," as he called her in letters, was probably born with Down syndrome in Mileva's southern Hungarian (now Serbian) homeland and died of scarlet fever at the age of 20 months. Wild and Einstein soon became fathers in Bern, and their firstborn sons took their fathers' first names and later became engineers.



Albert Einstein around 1904 at the Federal Office for Intellectual Property in Bern. Here, with the praise of his superior Friedrich Haller, he examined around 1750 patent applications during his seven years as a technical expert. Of the 13 experts working at the office, he concentrated on patent specifications that contained electrical functions - so probably nothing that Heinrich Wild had developed. Incidentally, the head of the office, Friedrich Haller, had recommended that he buy the checked suit.



Wild und Einstein in Berns Kirchenfeldquartier 1900–1909

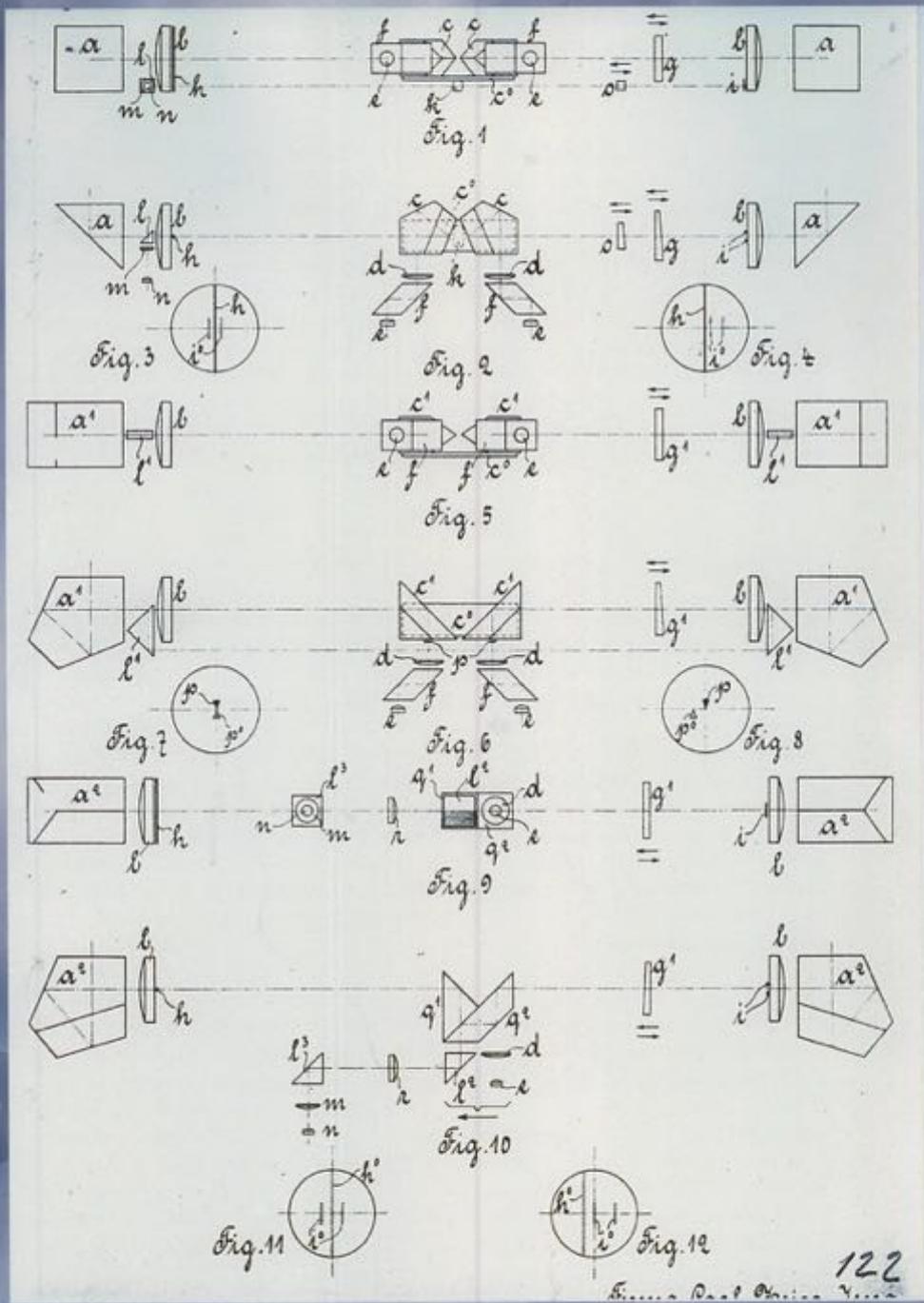
<i>Wild-Wohnung</i>		<i>Jahr</i>		<i>Einstein-Wohnung (von/bis)</i>
Thunstrasse 8	1	1900		
Thunstrasse 8	1	1901		
Thunstrasse 8	1	1902	1 2	Thunstrasse 43a (06-08) Archivstrasse 8 (v: 08) Mileva: Thunstr.24 (06-07) Mileva: Mottastr.3 (08-12)
Thunstrasse 8	1	1903	2	Archivstrasse 8 (b: 01)
Thunstrasse 6	2		3	Tillierstrasse 18 (01-10)
Thunstrasse 6	2	1904		
Thunstrasse 6	2	1905		(Einsteins wohnen von Nov 1903 bis März 1906 in Kramgasse 24 und Tschamerstrasse 28)
Kirchenfeldstrasse 32	3			
Kirchenfeldstrasse 32	3	1906	4	Aegertenstrasse 53 (v: 04/1906)
Kirchenfeldstrasse 32	3	1907	4	Aegertenstrasse 53
Kirchenfeldstrasse 32	3	1908	4	Aegertenstrasse 53
		1909	4	Aegertenstrasse 53 (b:10/1909)

This parallelism also extends to the fact that a younger son in each case – Willi Wild, born in 1907, and Eduard Einstein, born in 1910 – required years of psychiatric care in a clinic (Pfäfers and Burghölzli Zurich, respectively).

Joint commute across Bern's Kirchenfeld Bridge. The workplaces of Heinrich Wild (east wing of the Bundeshaus) and Albert Einstein (Speichergasse 6) are located in newly constructed office buildings on the edge of the old town on Bern's Aare peninsula, now a Unesco World Heritage Site. After their stays as lodgers in the alleyways of the old town, the future fathers of the family, Heinrich Wild and Albert Einstein, look for apartments on the other side of the Aare peninsula in the rapidly developing Kirchenfeld quarter; in Thunstrasse, the Wilds, Albert Einstein and his fiancée Mileva Maric even live just a few houses away from each other at times - living together without a marriage license was forbidden at the time. In order to get to their offices and back home again at the set office hours, Albert Einstein and Heinrich Wild crossed the Kirchenfeld bridge at roughly the same time every six days of the week on their way to work.

Between Albert-Einstein-Strasse and Wild-Strasse. During their years in Bern, Wild and Einstein and their families change address several times. The Wild family remained loyal to the Kirchenfeld quarter ((ZM)). After two moves in the following three years to the Old Town (Kramgasse 24) and then to the Mattenhof quarter (Tschärnerstrasse 28), the Einsteins also returned in 1906 to one of the then fashionable Wilhelminian-style houses in Bern's sparsely populated Kirchenfeld quarter (Aegertenstrasse 53) ((H11)). Heinrich Wild's workplace even came in handy in 1904: the Federal Topographical Bureau moved from the east wing of the Bundeshaus to the Kirchenfeld quarter in a new building at Hallwylstrasse 4. Between 1912 and 1914, the Geodesy and Triangulation Department relocated to the building of the Office of Weights and Measures on what would later become Albert-Einstein-Strasse and Wild-Strasse. This street is not named after "our" Heinrich "Heiri" Wild, but after the director of the Office of Weights and Measures of the same name (see appendix p. 69 "One Einstein - 4 Wild").

Einstein's miracle year 1905 in Bern. During his years at the Bern Patent Office, Albert Einstein, a "specialist teacher in mathematics" employed as a technical expert of the third class at the Office for Intellectual Property, dealt with a total of around 1750 patent applications to the complete satisfaction of his superior Friedrich Berchtold Haller. ((H51)) Since Heinrich Wild submitted at least four patents during his years in Bern, it is possible that one of them was examined by Albert Einstein. However, all searches in this regard were unsuccessful. Among the thirteen technical experts at this office, Albert Einstein had specialized in patent applications with an electrical theme - this only became a topic for surveying equipment six decades later. It cannot be ruled out from the outset that they met at an event organized by the Bernese Society of Natural Science, but there is no proof of this.



Erstaunlich, was der Topograph Heinrich Wild als Optikkonstrukteur leistet: 1907 reicht er diese Weiterentwicklung für einen Doppelbild-Telemeter zum Patent ein und verkauft sie erneut an Zeiss in Jena. Seine Kartographen-Schrift ist auch hier erkennbar. ((ZA))

Example of Wild design intelligence and drawing precision for the double-image telemeter.

In addition to his patent examinations, Albert Einstein also pursued "private" projects of a fundamental nature at work. In 1905, the brilliant Albert Einstein presented a five-stage cascade of work in an unprecedented firework display of ideas, which was continued in 1907. Einstein's work broke through the previous barriers of Galileo's and Newton's classical mechanics and overcame the resistance of Maxwell's and Lorentz's electrodynamics. ((H64)) Einstein discovers and describes atomic forces in the Petri dish, the dual nature of light and its light quanta, as well as the relationships between energy, mass, speed of light, time and space in the special theory of relativity. Almost incidentally, he completed his doctorate at the University of Zurich with an extremely concise thesis on "A new determination of molecular dimensions". Einstein described the decoding of the equivalence principle he discovered in 1907, which was the first major step towards the general theory of relativity, which was only completed almost a decade later - and which he described as the "happiest thought of his life" ((N234)) - as follows: "I was sitting in a chair in the patent office in Bern. Suddenly the idea dawned on me: in free fall, a person should not feel his own weight at all." ((H39)) For Heinrich Wild, 1905 and 1907 were also decisive years on the way to a new age of measurement.

Heinrich Wild: topographer, inventor and company founder

Guillaume-Henri Dufour (1787-1874) was the founder of the Federal Topographical Bureau (today: swisstopo) and the first topographer of the modern Swiss Confederation. Working as a cantonal engineer in Geneva from 1817, he established it as Directeur de la Carte (Director of Cartography) on behalf of the army in Carouge/Geneva from 1832. He was born in Constance on Lake Constance, which at the time belonged to the Austrian Forelands, to French parents who came from Geneva, then still part of France, and who had to leave their homeland for political reasons due to their sympathy for the teachings of Jean-Jacques Rousseau. Dufour graduated from the French engineering schools in Paris and Metz, which were recognized as the best in the world at the time, and took part in the war for France in Corfu, where he was wounded. Between 1832 and 1865, he created the world-famous topographical map of Switzerland named after him. It is awarded several prizes and is considered the "most excellent map in the world". The Topographical Map of Switzerland at a scale of 1:100,000, consisting of 25 individual sheets and featuring an internationally admired relief mountain depiction, shows the entire modern Swiss Confederation and is a cartographic sensation due to its size of 3.5 x 2.4 m alone. As an institution of the Confederation, the Dufour Map also had an eminent political influence on the integration of the young federal state. With its richness of detail, clarity and vividness, it radiated a positive image of Switzerland and the mountains around the globe. From 1865 to 1879, the mathematician and natural scientist Hermann Siegfried took over this bureau, which was moved from Carouge to the new federal capital of Bern in 1865. Due to the topographical working methods practiced here, the Federal Topographical Bureau also became a training center for numerous foreign cartographers. The topographical data obtained for its compilation was urgently needed not only for mapping and geographical orientation, but also for the construction and improvement of infrastructure, for example for the tunnel mining teams starting from the north and south in 1872, which in 1880 converged after 15.003 kilometers 1700 m under the Gotthard massif with a height deviation of only 5 cm and a lateral deviation of 33 cm.

Dufour himself had achieved political significance far beyond this, particularly in 1847 as general of the Swiss troops in the 35-day Sonderbund War, which he ended victoriously mainly because he had instructed his troop leaders to treat the enemy with care in their own country - in keeping with the spirit of the International Red Cross. Guillaume-Henri Dufour was a founding member of the organization in 1864 and created its flag with a red cross on a white background. As early as 1840, he had successfully campaigned for the design of the cross alone on a red background, adopted by General Niklaus von Bachmann, Näfels, from flags within Switzerland, as the Swiss national flag.

Both Jean-Jacques Lochmann and Leonz Held had recognized Heinrich Wild's exceptional abilities and great potential early on at the Topographical Bureau, which provisionally employed him in June 1899 ((VP75)). Interesting tasks awaited the "autodidact" ((BS)) here, which continued his military training and paid well compared to his "breadless" studies. Due to his exceptional abilities, his provisional position as a topographer II class was converted directly into a permanent civil servant position in 1900 ((SK KF15)). In April 1900, Heinrich Wild was thus able to continue his steep professional rise undeterred and set up his own private household with the marriage of his fiancée "Lilly" Märchy, whom he met while surveying in Goldau near the Rigi. Heinrich Wild's appointment as Topographer II Class in the Topographical Bureau was not universally accepted, however, but caused astonishment, especially among older colleagues who had already been in service for some time and were academically trained, as the 22-year-old surveying expert had left the Geometry School without a diploma. Heinrich Wild was able to prove in his application to the Topographical Bureau - supported by a letter of recommendation from the renowned technical school lecturer Johann Jacob Stammbach ((SW2024)) - that he had completed all technical school surveying classes I to IV with the best grades of all his fellow students, had already taught himself the material for the two remaining semesters and had an excellent command of it. Heinrich Wild's career in topography progressed rapidly, not only in the field of surveying, where he was soon entrusted with major projects - such as the Neuenburg-Biel precision levelling - but also the verification of triangulation data of the second to the first order. This included a failed triangulation on the Haute Cime of the Dents du Midi in Lower Valais in 1902, which had far-reaching positive consequences for the entire surveying industry. Heinrich Wild was not satisfied and developed better solutions for surveying by using the new precision engineering and precision optics technology.

Heinrich Wild's first patent: a military double-image distance meter. From the very beginning, one of Heinrich Wild's most important special tasks in topography was the responsibility for all the instruments available in this authority. This task does not only apply to their maintenance and repair, but he also extends it to their improvement and modernization, including contacting their manufacturers or up-and-coming instrument manufacturers. Heinrich Wild had always been interested in optics, as he had a knowledgeable discussion partner in his great-uncle Rudolf Leuzinger. The fifty lessons taught in the physics subject "Optics" in the third technical college geometer class in the summer semester of 1897 awakened and strengthened his interest in this new "precision optics high technology of the 19th/20th century".

With his permanent appointment as a civil servant at the Topographical Bureau on April 1, 1900, the world's most important precision optics company Carl Zeiss in Jena, Thuringia, which

belonged to a foundation, registered him as a freelance scientific employee who was able to work together with the Zeiss chief designer and chief engineer F. Mayer. ((ZABiography)) This company, which uniquely combined modern scientific methods of glass production (Schott), optical calculation (Abbe) and instrument construction (Zeiss), offered microscopes, telescopes, astronomical equipment, photogrammetry recording and evaluation devices, spectacle lenses, binoculars and military rangefinders, but no geodetic instruments. Heinrich Wild's first optical developments therefore concerned the possibilities for improving military optical telemeters.

This becomes obvious when Heinrich Wild registers his first patent in his name at the Swiss Federal Office of Intellectual Property on February 1, 1904: a correctable double-image distance meter with patent number 31049, the patent rights to which he sells to Zeiss in the same year. In 1907, he added another invention for telemeter construction, namely an adjustment device protected by patent specification 216420, for optical improvements, which would bring him license income amounting to 6% of sales - or a one-off payment of 80,000 Reichsmarks (around two million Swiss francs in today's purchasing power!) if Zeiss wanted to buy the patent rights from him in full. However, Zeiss would only decide on this option in the middle of the First World War, after the demand for such artillery equipment had increased enormously. The handsome income from patent sales and license fees for permission to use a patent, in addition to his increased salary in 1905, made Heinrich Wild a wealthy man and enabled him to move into an upper-class villa at Kirchenfeldstrasse 32 in Bern in 1905 with his family, which had grown to six people with the addition of a boy and three girls. Another task of the topographers, which promoted the coalescence of the young federal state, was the triangulation of the II.-IV. order. It is always carried out in coordination with the cantonal surveyors in the interest of their autonomy in the national map updates and forest surveys. Under the instruction of Dr. Robert Hilfiker, Heinrich Wild's first task as a topographer was the precision levelling of Neuenburg-Biel, as well as the surveying of the St. Maurice fortress area with the later ETH geodesy professor Max Rosenmund, glacier surveys on the Rhone glacier with Leonz Held and independent triangulations and forest surveys in Valais. This Rhone glacier survey over decades was the first study of its kind in the world.

Considerable amounts of fresh snow. Heinrich Wild had a particularly negative but at the same time very formative experience on the Haute Cime of the Dents du Midi in the Lower Valais, which haunted him for years. Without mentioning the federal and Valais topographers and surveyors who accompanied him on the arduous and dangerous ascent, Heinrich Wild writes: "At the beginning of this century, I triangulated the Lower Valais using a repeating theodolite. On September 1, 1902, I reached the 3,257-meter summit of the Dents du Midi early in the morning in wonderful weather and hoped to complete the measurements by noon. Instead, I had to 'adjust' the instrument for about two to three hours, and when I was finally ready, the first signs of an approaching thunderstorm appeared. In the afternoon, we deposited the instrument in a sheltered spot on the summit. As considerable amounts of fresh snow fell, it was not possible to continue the work until a few days later. Although the intervening time could be filled with signal stations, etc., it was still partly lost. With an instrument that had been ready for measurement



Twenty-year-old Anna Katharina "Lilly" Wild-Märchy (born Bürgi on her mother's side, 1880-1956) and 23-year-old Heinrich Wild (1877-1951) married in Bern in May 1900.



In 1905, there are already six of them in Bern (including their father Heinrich Wild, who is taking the photo). From left to right: Elisa "Lilly" (1902), Heinrich jun. (1901), mother Elisabeth "Lilly" (1880) with Gertrud (1904) and Hedwig (1903).



The next generation is not long in coming. After Heinrich Wild Jr. (see page 7), three girls are born: Elisa (left) in 1902, Gertrud (center) in 1904 and Hedwig (right) in 1903.

immediately, I could have completed the measurement in two hours at most. It goes without saying that I was not exactly happy with my instrument, which was, incidentally, the best in the Topographical Office."((WH)) Through years of observation and reflection, trial and error, and consistent error analysis, Heinrich Wild continuously improved the triangulation method and also identified and eliminated sources of error in land levelling. In 1904, he brought two companies into contact with each other, each of which had experience in complementary fields: Zeiss in Jena with series production of microscopes and Kern in Aarau with custom-made surveying instruments. This resulted in a (non-usable) functional model in 1904, which was rediscovered by chance in 2017 and is now kept in the Kern archive. The following year, Heinrich Wild incorporated the experience gained with the Kern model into his theodolite concept.

Heinrich Wild's "miracle year" 1905. The license income from the double-image telemeter patent was not the only reason for an extremely successful year in 1905, which became an "annus mirabilis" for Einstein and a wonderful year for Heinrich Wild. During this year in Bern, Heinrich Wild improved his concept of miniaturizing and combining the functions of geodetic instruments using precision mechanical and optical components in such an intelligent way that completely new instruments with entirely new qualities were created. He was now able to identify everything that needed to be changed and improved on a triangulation instrument such as the one on the Dents du Midi. At the same time, in conjunction with microscopes, he is able to help bring about a breakthrough in a completely new idea for circle reading by, for example, replacing the large metal measuring circles with much smaller ones made of glass and doubling the reading accuracy by means of coincident opposite lines. He summarized this in 1905 in a specification for what he considered to be the ideal theodolite: it had to be quicker to set up and easier to read, as well as smaller, lighter, and more reliable than the 30-kilogram theodolite equipment commonly used at the time. At the same time, he published his large 152-page table book "Tables for the rapid determination of height differences from horizontal distance and vertical angle," which would make the work of topographers much easier in the future. The occasion was justified and the joy great



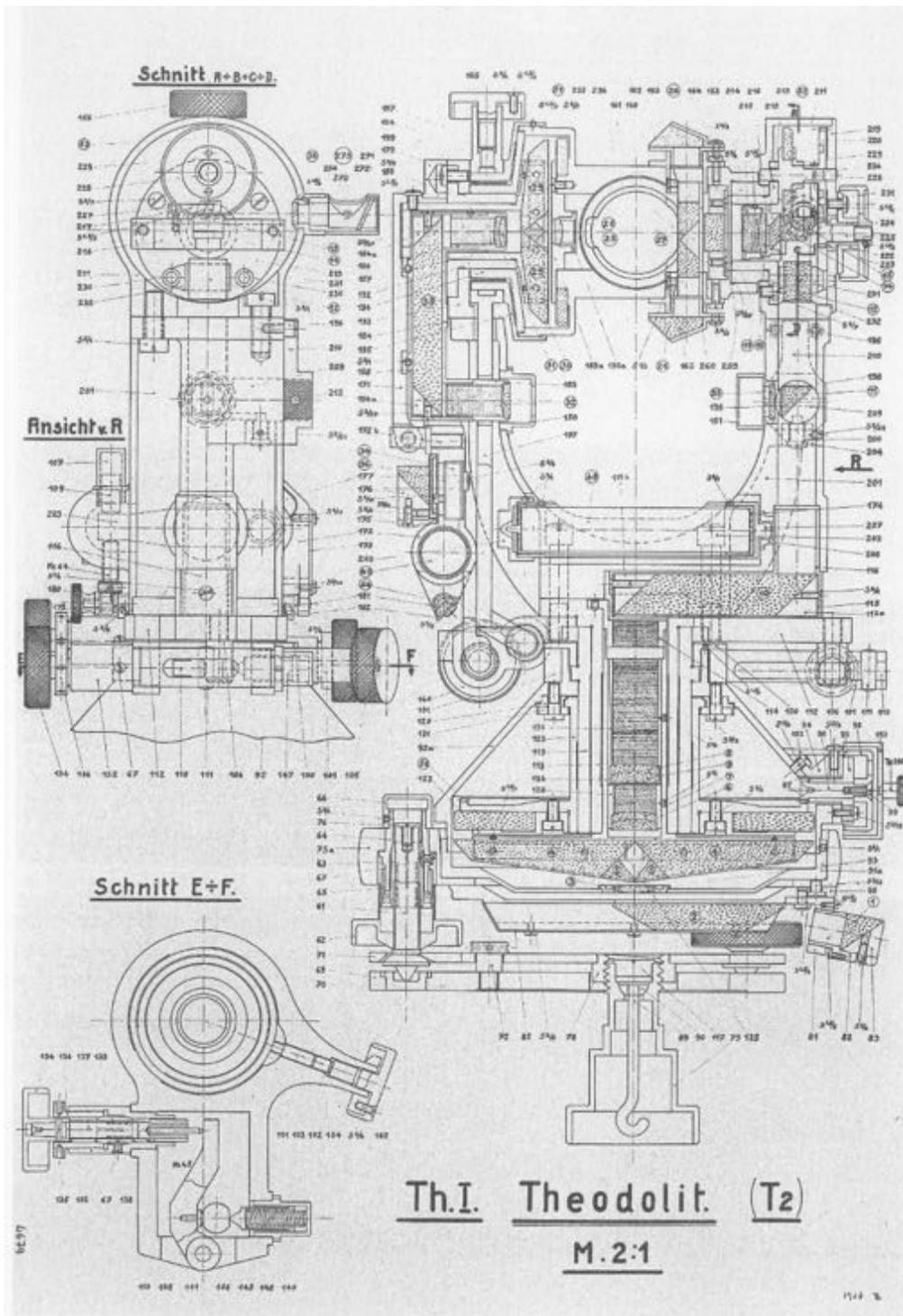
Heinrich Wild wohnt ab 1913 in einer schönen Villa mit Turmzimmer an Jenas bevorzugter Hanglage über dem Zeiss-Werk. Für seine grosse Familie braucht er genügend Platz. Die Ebertstrasse 10 hiess damals noch Sedanstrasse 10. Strassenumbenennung nach verlorener Schlacht vom Kriegsort- zum Sozialpolitiker-Namen.



Having risen professionally, militarily, financially and socially, Heinrich Wild leaves his previous circumstances behind and from 1905 lives with his family in upper middle-class villas in keeping with his status. Above left: 1905-1908 in the Kirchenfeld quarter of Bern. Top right: 1936-1951 in the Römerburg villa in Baden/AG. Center: 1913-1921 on the hillside above the Zeiss works in Jena. Below: 1921-1931 in Heerbrugg's vineyards above the Wild Heerbrugg factory.

when Director Leonz Held promoted Heinrich Wild to the rank of Engineer Topographer I. Class. In addition, Heinrich Wild was appointed first lieutenant in the military and called to the Swiss Military Commission for the introduction of optical rangefinders in the Swiss Army. Heinrich Wild's main interest remains the highly complex triangulation instrument, the theodolite. Despite his already quite concrete ideas in 1905, it takes him another 18 years to perfect the instrument that meets his high standards: at the end of 1923, he launches the first two models of the Wild T2 universal theodolite, manufactured in Heerbrugg, which becomes the world's best-known accurate to a single second instrument in geodesy for decades. In 1974, the 50,000th unit rolls off the production line, whilst the other models from T0 to T4 having been sold in a total of 150,000 additional units by that time. But until then, in 1905, it was still a steep and rocky road that would take him from the Bern State Topography Office to Zeiss in Jena, and from there to Wild in Heerbrugg, and in 1935 even to Kern + Co AG in Aarau. Heinrich Wild obtained his first patent (patent specification 38603) for an essential design element of his theodolite in 1907 for his invention of a diametrical glass circle reading device using microscopes, which he had conceived in 1904/05. However, he had tested such a device for field suitability at Wandschaff in Berlin without success and believed that only Zeiss in Jena was capable of building it. This was precisely where he had excellent contacts thanks to his optical double-image rangefinder! His personal life also took a turn for the better in 1905. With his family of six – consisting of his parents, three daughters, and a son – he was able to move into a prestigious villa in the Kirchenfeld quarter, thus making his social advancement and new status visible to the outside world.

The management and board of trustees of Zeiss expressed interest in collaborating, as it was in line with Ernst Abbe's demand to “enter new fields of practical optics only with products that have emerged from our own work and have not been manufactured by others, either at all or in the same form.” This also corresponded to Heinrich Wild's credo of “never doing the same thing twice.” This is a plausible maxim for an inventor, but a disaster for an industrial company working in series production. This was experienced by Zeiss in Jena in 1920 with a Wild theodolite ThI approved by Heinrich Wild for production in a series of thousands, and by Wild Heerbrugg in the years 1921-1926, when Heinrich Wild was responsible for the entire company and all production processes. The establishment of a new business division, “Geodetic Instruments” (Zeiss department “Geo”), was intended to counteract a decline in sales and employment due to falling demand for military instruments. ((ZA189)) In the summer of 1905, after the end of the Russo-Japanese War – both warring parties were Zeiss customers – ((WR69)), hardly anyone could imagine a major military conflict with comparable or even higher demand for military optics. The misjudgment of future demand by Wild's industrial partners is comparable to that in Einstein's field of activity: while studying in Munich, Max Planck had heard his physics professor say: “Physics is a branch of knowledge that is now more or less complete. All the important discoveries have been made. It is hardly worth pursuing the field of physics any further.” ((CdT 352)) And in 1899, the head of the US Patent Office in New York asked his superior authority to close his office, since everything had already been invented. ((CdT348))



Assembly drawing of the one-second theodolite produced in 1923 by Heinrich Wild in his precision mechanical-optical workshop in Heerbrugg in just two examples at the end of the year, which shaped the entire industry and was first called Th. I., but made surveying history as the Wild T2 universal theodolite.

The noticeable loss of the telemeter business from the end of the Russo-Japanese War led the socially-minded management and foundation board of the Zeiss company on the one hand, and the topographer Heinrich Wild on the other, to consider a combination of both competencies: Wild's brilliant ideas for the development of new geodetic instruments and Zeiss' unique mastery of optical precision mechanical manufacturing processes. Heinrich Wild and the Zeiss management had already negotiated such a collaboration, including Heinrich Wild's later joining Zeiss to set up a geodetic department, at the beginning of March 1906 during talks on the takeover and execution of Wild's rangefinder patents. At the beginning of 1907, both parties decided to seize this opportunity, so that Heinrich Wild resigned from his secure civil servant position in September 1907 in order to set up the new geodesy department at Zeiss in Jena with the rank of senior engineer. Between September 1907 and his move to Jena on February 14, 1908, he acted as Zeiss's representative to the Swiss federal authorities. This marked the end of a very successful period in the career of the outstanding topographer Heinrich Wild - and the beginning of another of three equally successful periods to follow.

From Federal topographer to three-time company founder and independent inventor.

The first of these three new sections concerns Heinrich Wild's extraordinary pioneering achievements from 1907 in setting up the "Geodesy" department at Zeiss Jena and the resulting revolution in instruments for surveying as a whole. *Secondly*, in 1921, with the transfer of optomechanical know-how from Zeiss and newly developed photogrammetric instruments as well as geodetic equipment that had been further developed at the same time, he built up the company that he founded in Heerbrugg on a greenfield site ("Duck bath" area) and that bears his name, which he headed for almost a decade and which from then on occupied the market position it still holds today. He climbed to *the third* level as a freelance supplier of ideas and designs for Kern + Co AG in Aarau, where he succeeded for the third time in making further significant improvements to his theodolite models. Of course, what emerged in the second half of the last century in combination with Einstein technologies is also worthy of note. But all this is no longer part of this article, although it is documented in detail in various other publications. The following publications are particularly recommended from the bibliography list at the end of this article: ((STA6 / SK / VO)).

<p>FRITZ KOBOLD ETH Professor ((SK KF20))</p>	<p>QUOTES</p>	<p>ARTHUR HINKS Secretary Royal Geographical Society ((SK SG26))</p>
<p><i>"When Heinrich Wild left the Federal Office of Topography in Berne at the end of 1907, this institution lost the man to whom it owed most of its success at the beginning of the century."</i></p>	<p>CONTEMPORARY EXPERTS ABOUT HEINRICH WILD</p>	<p><i>"The genius of Mr. Wild has succeeded in getting into a very compact space an instrument that will deal with all those various complications . . . especially the double cam which is unique in Mr. Wild's instrument and is, as far as I know, understood by Mr. Wild himself and by nobody else."</i></p>
<p>EDWIN BERCHTOLD Development Manager Wild Heerbrugg ((BE))</p>	<p>FRITZ DEUMLICH Professor of Geodesy ((WJ DF32))</p>	<p>HANS HÄRRY Director of Surveying Switzerland ((WJ HH49))</p>
<p><i>"Heinrich Wild is quite rightly still regarded today as the most important designer of geodetic instruments who ever lived."</i></p>	<p><i>"Since 1908, Heinrich Wild's inventions - internal focusing, coincidence vial, telescope body and vial carrier made from a single cast piece, flat-plate micrometer with high accuracy, invarband vial - have become increasingly popular. It leads to a standardization of the principles of the instruments."</i></p>	<p><i>"Heinrich Wild's achievements at the time as an inventor, designer, plant manager and sales propagandist - he worked on everything! - and those of his family members in the operation of particularly delicate machine tools, such as the pitch circle machines, demand the highest recognition, even admiration."</i></p>

Twenty new insights into Heinrich Wild's eventful childhood and youths

Thanks to the extended research into Heinrich Wild's environment, we can now shed more light on the first two decades of his life.

- 1) Johann Heinrich Wild, citizen of Mitlödi/GL, is **born on November 15, 1877 in Bilten/GL**; his father is Jost Heinrich Wild, also born in Bilten as the son of Mathias Wild; his mother is Elisabeth Wild-Weber.
- 2) Heinrich Wild is no "nobody" genealogically, but **has excellent ancestors in his family**, including the **reformer Huldrych Zwingli** and the **universal genius Aegidius Tschudi**.
- 3) His great-uncle and **mountain cartographer Rudolf Leuzinger supported him directly** between 1887-1896, as did his uncle, the Linth construction manager and later **Linth Engineer Heinrich Leuzinger**, between 1889-1896.
- 4) His two **brothers Rudolf 1878 in Bilten** and **Fridolin 1879 in Schänis/SG**, both born in mid-November, both **died** the following February, where the Wilds were living at the time (apparently unannounced).
- 5) His **father Jost Heinrich Wild** (1853-1880), a talented designer, master textile dyer, draughtsman and innkeeper in Bilten and Schänis, **dies** of pneumonia in Ober-Bilten **at the young age of 27**, before Heiri celebrates his third birthday.
- 6) **The little half-orphan "Heiri" misses the security of a family life** and is brought up extremely strictly by his grandmother Regula Weber-Leuzinger, née Tschudi, who runs a textile dyeing business. His mother Elisabeth Wild-Weber lives away from home - probably in Zurich, so he grows up without parents or siblings.
- 7) Teacher Grünenfelder lets Heinrich Wild **skip two years of primary school at once** in the Bilten upper school class **and graduates him after only six years of schooling**; this is due to his math skills, good comprehension and early mastery of the subject matter of the eighth grade.
- 8) **Heinrich Wild was already on the Linthwerk payroll at the age of twelve** because he had to earn money to support himself. His maternal uncle Heinrich Leuzinger, who had trained as an ETH civil engineer at the Polytechnic, took him along to the Linthwerk construction sites and surveying projects as a future Linth-Engineer and assigned him increasingly demanding work.
- 9) At the age of fifteen, he began a **three-year apprenticeship with Linth Engineer Gottlieb Heinrich Legler**, but learned far more than the curriculum required, partly because his uncle Heinrich Leuzinger had already explained many things to him at the age of 13 and 14 and because he had an internationally renowned hydraulic engineer and honorary member of the Swiss Society of Engineers and Architects SIA as his teacher in Legler.

- 10) Heinrich Wild was already earning well before he was admitted to the school of geometry because he was intelligent and hard-working, had mastered his trade and early set up his own business after purchasing his own levelling instrument.
- 11) At the age of 17, Heinrich Wild attended course I of the Winterthur Geometry School in the summer semester from 16. 4. 1895 to 18. 8. 1895 and received the best marks in his class - a 5.5, the highest grade achievable at the time.
- 12) Heinrich Wild then takes a full year out of geometry school. He needed this time to complete the Linthwerk documentation.



Heinrich Wild in 1930 in Heerbrugg at the age of 53.

THE FUTURE OF SURVEYING

begins with Heinrich Wild in the Linthwerk on Earth – and with his successors on the moon.



Heinrich Wild's eldest son and his three eldest daughters work with him at his company in Heerbrugg. Here, 28-year-old Lilly Benz-Wild gives the designated CEO Albert Schmidheini a lesson in surveying in Heerbrugg.



On Earth. Heinrich Wild is 10 years old when his uncle introduces him to surveying. From 1909 onwards, experts around the world worked with Wild instruments from 1909 from Zeiss Jena, from 1921 also from Wild Heerbrugg, and from 1936 also from Kern Aarau. (Left: Andean Railway construction in Peru in 1928 with a Wild T3 theodolite from Heerbrugg.)

And on the moon. Instruments from Aarau and Heerbrugg, based on Heinrich Wild's innovations, were selected to build precisely the transport vehicles, to define the moon landing positions and to document in 1989 the activities in NASA's US Apollo program whilst the moon landing.



- 13) **As a nineteen-year-old** in 1896, Heinrich Wild already had **an excellent reputation as a land surveyor**. In this year, the perimeter plans drawn up by engineer Heinrich Leuzinger from 1883-1896 and by Heinrich Wild between 1889-1896 of the properties along the Linth between Lake Walen (Weesen) and of Lake Zurich (Schmerikon / Grynau Castle), which were subject to contributions to the Linthwerk, were made publicly accessible. Heinrich Wild spent seven years obstructing torrents, draining marshland, surveying and evaluating properties and, together with Heinrich Leuzinger, drew and hand-colored all this on 46 perfect 70 cm x 70 cm plans at a scale of 1:2000.
- 14) **He then completes courses II-IV without interruption**. He is not awarded a certificate for course III - apparently due to his behavior - **and after successfully completing course IV, he leaves the school without completing the last two courses and without a diploma**.
- 15) Heinrich Wild himself has continued his education in mathematics far beyond the subject matter of the geometer diploma and **has more practical experience and better mathematical knowledge than many lecturers** - and he seems to rub everyone's nose in it.
- 16) Instead of attending two more semesters of geometry school, **he embarked on an officer's career and was promoted to lieutenant in the military**. He was supported by Jean-Jacques Lochmann, director of topography and fortifications, who worked in a dual capacity. Things must have been quite turbulent at this time in Winterthur, where Heinrich Wild was promoted to the IV. Course (winter semester 1897/98), Heinrich Wild was not given a grade for passing the third course.
- 17) Heinrich Wild was already **in contact with Zeiss in Jena** long before **April 1, 1900**. **He receives a considerable sum for his double-image rangefinder patent from 1904**. He becomes wealthy when he earns additional license fees with a second patent from 1907.
- 18) **The year 1905 turned out to be a miracle year for him**: he received high license income from Zeiss, was appointed topographer first class, first lieutenant in the military and elected to the military commission for the procurement of telemeters, wrote the specifications for a completely new type of theodolite, published his "Tables for the rapid determination of height differences"" and moved with his family of six to a prestigious villa.
- 19) Together with **Leonz Held, Rudolf Leuzinger and Heinrich Wild**, these three colleagues from Federal Office of Topography were appreciated as unsurpassed world leaders **in surveying, mapping, mountain cartography and instrument innovation**.
- 20) The **Einstein-Wild relationship** shows an astonishing parallelism between his life and that of Albert Einstein. **With Einstein technologies, the success of the Wild theodolite constructions continued in the second half of the 20th century**.

Heinrich Wild's childhood and youth from today's perspective

We have learned some, but largely not all, of Heinrich Wild's childhood and youth. For example, we still do not know the definitive reason or purpose of the misleading indication of his taboo birthplace Bilten. However, we do know and receive confirmation that Heinrich Wild mastered all challenges despite his bad childhood fate - and did so with a high level of mathematical and technical intelligence, creative inventiveness and talented craftsmanship as well as great care. He initially takes a very critical view of the traditional, examines it for its functionality and realizes a more compact, more comfortable and more cost-effective solution by making optimum use of the new possibilities of optomechanical technology. In this way, his talents allowed him to receive praise and recognition from others at an early age, gradually strengthening his self-confidence and overcoming the difficult childhood years. He has two highly qualified uncles who recognize his exceptional abilities early on and give him the opportunity to develop them.

Together with his attractive and understanding Swiss wife "Lilly", he founded a family in Berne in 1900 at the age of 23, just as he had missed and wished for as a child. Starting early every morning at six o'clock, he brought up all nine of his children with a rigor that is incomprehensible to us today and gave them a good education.

He tried to ignore events that Heinrich Wild could not influence and to suppress them by looking ahead. For example, it is still not known to what extent his mother Elisabeth Wild-Weber accompanied him after the death of his talented father. His grandson Hans-Heinrich Wild (*1947) does not remember her name ever being mentioned within the family, nor does he remember his grandfather Heinrich Wild ever visiting his son Willi, who was cared for in the Pfäfers Psychiatric Clinic for several years. Heinrich Wild suffered greatly from the fact that three of his five sons had to be laid to rest before him: his neurologically ill son Willi, his son Jost, who died in an accident as a military pilot on the Pilatus, and his son Fritz, who was only 16 years old when his life was snuffed out by a snow avalanche while skiing at Christmas 1936. In business terms, his departure from Heerbrugg caused him the most trouble, although after leaving the company he had founded in 1921 in his own name, he was able to contribute his capacity and inventiveness to the Aarau company Kern + Co AG. The transfer of his remaining shares and the key to the Rebhof villa in Heerbrugg, which he had lived in with his family for almost a decade, to Max Schmidheiny was a lifelong regret for him.

Heinrich Wild in luck

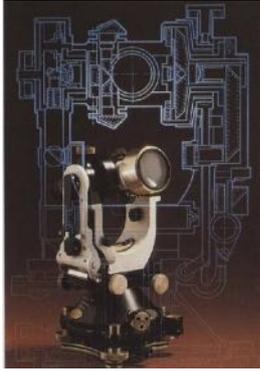


This is what "Heiri" Wild became: the head of a large family and the highly respected personality of world surveying - here on the Baltic Sea beach at the age of 36 during his vacation in 1913.



Heinrich Wild (from left to right): 1899 at the age of 22 in Bern as a lieutenant - 1900 at the age of 23 in Bern as a topographer - 1907 at the age of 30 in Jena as a senior engineer and division manager at Zeiss - 1937 at the age of 60 in Baden as a freelance inventor for Kern + Co AG, Aarau.

Heinrich Wild not only looks back on a very successful life, but also a largely happy one. The last years proved to be years of reflection and serenity after a life characterized by deeds and successes - but also disappointments. ((BS)) Until the end of his life, his interest in questions of higher mathematics, especially the number theory founded by Gauss ((SK WHJ14)) and the new findings of the natural sciences, especially zoology and biology, remained unbroken. He enabled



The Wild T2 universal theodolite, manufactured in his Heerbrugg company in 1923 with an accuracy of one arc second, is the world's most successful angle measuring instrument for decades and an international quality standard.



Only one inventor of surveying instruments is capable of surpassing the Wild T2 design: Heinrich Wild himself! The double-circle theodolite DKM3, manufactured by Kern in Aarau according to Wild's plans from 1939, shows the result at an accuracy of 0.1 arc second. This corresponds to a transverse deviation of less than half a millimeter at a distance of one kilometer!



Heinrich Wild in 1950 at the age of 73. Photo taken at the 70th birthday celebration of his wife "Lilly" in their very prestigious residence in Römerburg in Baden/AG.

his former knowledge of the earth and set an example to his wife Lilly and his children of a life with a high level of knowledge and education In the last years of his life, Heinrich Wild and his wife suffered from illness. He died of heart failure on Boxing Day 1951 at the age of 74. "Heinrich Wild, the most important designer of geodetic instruments who ever lived, has passed away." we read in the obituary. ((BE)) This is a characterization that still applies today.



Little ten-year-old Heinrich Wild has done a lot with his life - who would have thought it!

Thanks

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- [CP]** Caminada, Paul: p. 31 left (*Tschudi map: (CP31)*); p. 31 right (*Aegidius Tschudi: (CP31) and Walter Imhof, Erlenbach*); pp. 3, 32, 37 (*Rudolf Leuzinger: (CP193)*, p. 37 (*Leonz Held: (CP191)*).
- [e-rara]** pp. 34-36 (Map of the high mountains of Grindelwald: MUE Kart 403 BE - <https://doi.org/10.3931/e-rara-43338><https://doi.org/10.3931/e-rara-43367>; p. 38 bottom (*Special map of the Rigi after Dufour edited by Leuzinger, Rudolf [1826-1896]. ETH Library Zurich, R K 272- DOI <https://doi.org/10.3931/e-rara-20696>*).

ETHZ Eidgen. Technische Hochschule Zürich [ETHZ]: [e-rara] pp. 34-36 (Map of the high mountains of Grindelwald: MUE Kart 403 BE - <https://doi.org/10.3931/e-rara-43338><https://doi.org/10.3931/e-rara-43367>; p. 38 bottom (*Special map of the Rigi* after Dufour edited by Leuzinger, Rudolf [1826-1896]. ETH-Bibliothek Zürich, R K 272-DOI <https://doi.org/10.3931/e-rara-20696>. - **[HCE]** Graphische Sammlung Hans Konrad Escher: p.17 bottom (Martinsloch: ETHZ HCE A IX 180a). - **[LBS-MH]** Walter Mittelholzer Collection p. 20; - **[ETH BZ]** ETH Library Zurich: p. 75 (Albert Einstein)

[HH] Hans-Heinrich Wild with the family album of his grandmother "Lilly" Wild-Märchy: The photos on pages 1, 3, 6, 7, 8, 11, 27, 37, 41, 49, 50, 60, 61, 62, 75, 78 are taken from this **album**.

[LAGL] Landesarchiv Glarus and **[LIAR] Linthwerkarchiv:** p.10 (photo Weesen 1889: LAGL); p.11 (plan detail from 10 Weesen: LIAR F VIII. 19 (10); p.15 (Lanzplan LAGL_ZxR_127); p.17 top (Escheraquarell Martinsloch: 1807_LAGL_LIAR_F_II-01 Escher_Ziegelbrücke_farbig.png); p.18 (Plan 12 Ziegelbrücke: 1807_LAGL_LIAR_F_II-01 Escher_Ziegelbrücke_farbig.png); p.19 (plan section 12 Ziegelbrücke: LAGL_LIAR_F-VIII-1e9_12.png); p. 21 (aerial photograph Gási: LAGL); p. 24 (author in the National Archives with Kubli-Müller folio); p. 29 right (Weesen flooding: LAGL_LIAR_SLES_Gsg_016); p. 30 (Weesen with Lake Walen: LAGL_LIAR_SLES_Gsg_016); p. 32 top left (Linth colony: LAGL_LIAR_SLES_Gsg_152); p. 33 (etching of the Linth colony by Rudolf Leuzinger: LAGL_LIAR_SLES_Gsg_005). P. 82 (Linthwerkaktie: LAGL_LIAR_SLES_Gsg_126);

[LG]: Leica Geosystems, Heerbrugg: p.1 62, 89 (Wild T2); p. 52 bottom (Villa Rebhof); p. 54 (T2 assembly drawing); p. 62, 89 (Heinrich Wild as a whole); p. 68 (Mt. Everest from Wild Reporter); p. 72 (Genome Craig Venter: Leica Life) - p. 76 (English theodolite, German repetition theodolite and Wild T2 from Wild Reporter); p. 77 (Wild T2, TC500, MS60); p. 78 (Einstein technologies).

[LES] Linth Escher Foundation: p. 15 (Lanzplan); p. 29 top right (Weesen flooding); p. 30 (Weesen from Diekenmann: LAGL_LIAR_SLES_Gsg_005); p. 32 top left (Linth colony: LAGL_LIAR_SLES_Gsg_152); p. 33 (Linth colony by Rudolf Leuzinger: LAGL_LIAR_SLES_Gsg_005), p. 82 (Linthwerkaktie: LAGL_LIAR_SLES_Gsg_126).

[MLG] Museum des Landes Glarus, Näfels: p. 29 right (Weesen flood MLG JK 525); p. 30 (Weesen with Lake Walen: LAGL_LIAR_SLES_Gsg_016); p. 32 (Weesen: Inv. 02169; from book "Souvenir de la Suisse" <https://www.livre-rare-book.com/book/20676660/17633>).

[MOMA] Museum of Modern Art, New York: S. 71 right below (Les demoiselles d'Avignon of Pablo Picasso, 2025 Estate of Pablo Picasso /Artists Rights Society (ARS), New York).

[PP]: Portraits of personalities: Pp. 3, 28 (*Huldrych Zwingli* painted by Hans Asper in 1531 after Zwingli's death, Kunstmuseum Winterthur); p. 28 (*Martin Luther*: workshop of Lucas Cranach the Elder 1528, Lutherhaus Wittenberg Collection); p.28 (*Jean Calvin*: Calvin as a young man (anonymous artist, 1535, Library of Geneva); p. 31 right (*Aegidius Tschudi [CP31] Walter Imhof, Erlenbach*)); pp. 32, 37 (*Rudolf Leuzinger ((CP193))*); p. 37 (*Leonz Held ((CP191))*); https://upload.wikimedia.org/wikipedia/commons/thumb/3/32/Swisstopo-000-411-245-Held_Leonz_1844-1925.tif/lossy-page1-800px-Swisstopo-000-411-245-Held_Leonz_1844-1925.tif.jpg - [Swisstopo historic](#) -

<https://en.wikipedia.org/wiki/Swisstopo> - p. 42 (*Albert Einstein*: Albert Einstein-Archiv der Schweizerischen Nationalbibliothek, Bern).

[SF] Author Fritz Staudacher: p. 21 bottom, 24, 40, 43, 51 top, 52 (top left and center), 60.

[SO] Other p. 29 left: (*Zwinglihaus Wildhaus*:

https://upload.wikimedia.org/wikipedia/commons/6/6a/Wildhaus_Zwinglihaus.JPG

https://commons.wikimedia.org/wiki/File:Wildhaus_Zwinglihaus.JPG; p. 33 right (Haltli: Wikipedia); p. 52 top right (*Römerburg in Baden*, 1898 Badener Tagblatt); p. 71: (Hodler painting Dents du Midi, Kunsthaus Zürich) and excerpt students 1813 (Jena).

[ZA] Carl Zeiss Archive, Jena: p. 45: Design drawing by Heinrich Wild for patent of 1907; p. 51 bottom left (telemeter assembly); p.51 bottom right (Wild level from Zeiss). Personal visit in 1995 and meeting with Dr. Wimmer.

[ZBZ] Zentralbibliothek Zürich: p. 34 (map of the high mountains of Grindelwald: map collection 4 Jd 06:18); p. 38 (section of the SAC Mt. Blanc map; rock sections engraved by Rudolf Leuzinger 1896: complete map printed and delivered in four SAC yearbooks 1906-1909).

Image origin in order of page numbers

1: HH, LAGL/LIAR, PP - 3: LAGL/LIAR - 6/7/8: HH.

10: LAGL - 11: HH, LAGL/LIAR, ETH HCE - 15: LAGL/LIAR, LES - 17: ETH HCE, LAGL - 18/19: LAGL/LIAR.

20: ETH LBS-MH - 21: LAGL/LIAR, SF - 24: LAGL, SF - 27: PP - 29: SO.

30: MLG, LES - 31: CP - 32: LIGL, PP, LES - 33: LAGL, LES, SO - 34/35/36/38: e-rara, ZBZ - 37: HH, PP, ZBZ.

40: SF - 41: HH - 42: PP - 43: SF - 45: ZA - 49/50: HH;

51 top: Author, bottom ZA - 52: top left and center SF, top right SO, bottom LG - 54: LG.

60: HH, SF - 61: HH - 62: HH, LG - 68: SO - 69: SO -

70: SO. 71: MOMA, SO - 72: SO - 75: HH, ETH BZ - 76: LG - 77: LG - 78: LG, HH, ETH BZ.

82: LAGL/LIAR, LES, SZ.

Fritz Staudacher
Heinrich Wilds
hidden
Childhood and Youth

ANNEX

- 68** Swiss summit cartography in 11.5 million copies
- 69** Heinrich Wild near the North and South Poles / Ein Einstein - 4 Wild
- 70** Einstein's Science, Wild's Technology, and Picasso's and Hodler's Art
- 72** Interjection: The question of genes, culture and AI
- 74** More than just entangled companions: the Einstein-Wild relation
- 75** Surveying revolutionaries in the first and second half of the century
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Swiss summit cartography in 11.5 million copies



Swiss cartography is still the world standard at the end of the 20th century. This Mount Everest map (1:50,000) was produced under the direction of Bradford Washburn entirely with Swiss technology and Swiss specialists as a supplement for the 100th anniversary of the magazine "National Geographic" in a print run of 11.5 million copies. Swissair Photo und Vermessungen AG flew the aerial photographs at an altitude of 12,000 meters above sea level with a Wild RC10 series camera and also carried out the photogrammetric restitution analysis with a Wild A8. The masterful mapping is the work of Swisstopo. It was printed in 1988 by a US printing company that belonged to the Ringier publishing house at the time.



Heinrich Wild near the North Pole and the South Pole

"Heinrich-Wild-Iskappe" on Greenland.

When the Danish cartographer and glaciologist Thorkild M. Nielsen first set foot on a mighty iceberg in Pearyland in May 1950 - this part of Greenland is the northernmost point of land on earth - he named it after the great Swiss inventor Heinrich Wild.

This was because he had successfully used various wild instruments in his difficult tasks in this inhospitable area and had made excellent progress. The "Heinrich Wild Ice Cap" was confirmed on September 30, 1953, by the Committee for Geographical Names in Greenland and is located at a northern longitude of approximately 82°30' and a western latitude of 31°30'.

"Wild Spur" in the Antarctic. In the exact opposite direction, near the South Pole, a mountain ridge on the Danco coast of Grahamland in the north of the Antarctic Peninsula was named "Wild Spur". The Wild Spur extends from Pulfrich Peak on the west side of the Arctowski Peninsula at the coordinates: 64°42' S, 62°32' W. The Wild Spur was first recorded on an Argentinian map from 1957. The UK Antarctic Place-Names Committee named it in 1960 after the Swiss geodesist and instrument maker Heinrich Wild (1877-1951).

One Einstein – five Wild

Five Swiss personalities in the natural sciences of the 19th and 20th centuries bear the Wild surname, which is associated with physics, astronomy and geodesy and thus with Albert Einstein's findings. All five worked at a high level and with different focuses with the fields of metrology, including time measurement, geodetic surveying, including mapping, and astronomy, including astrophysical phenomena. Two of them comes from the Glarus family and three from the Zurich family of Wild.

- [1] **Johannes Wild (1814-1894)** from Richterswil/ZH. He was the first person to be appointed to the chair of topography and geodesy at the Zurich Polytechnic (now ETH Zurich) and was known beyond Switzerland for his work on the Dufour map series.
- [2] **Heinrich [von] Wild (1833-1902)**, the physicist and meteorologist who was born in Uster/ZH and died in Zurich, was the first director of the Federal Office of Weights and Measures in Bern from 1861. Office of Weights and Measures in Bern from 1861.
- [3] **Heinrich "Heinri" Wild (1877-1951)**, born in Bilten, citizen of Mitlödi/GL, topographer, inventor, instrument designer and three-time founder of companies and business divisions.
- [4] **Fridolin Wild (1877-1951)**, was born in Illnau-Effretikon and was a citizen of Mitlödi/GL. He was city surveyor of Zurich from 1952 to 1978.
- [5] **Paul Wild (1925-2014)** was an astronomer from Wädenswil/ZH and conducted research as an assistant to Fritz Zwicky in the USA before becoming a professor at the University of Bern and director of the Astronomical Institute at the Zimmerwald Observatory, where he made numerous discoveries of comets and asteroids and, together with NASA, analyzed stardust. Paul Wild was personally acquainted with Einstein during the latter's final years with Fritz Zwicky in Pasadena.

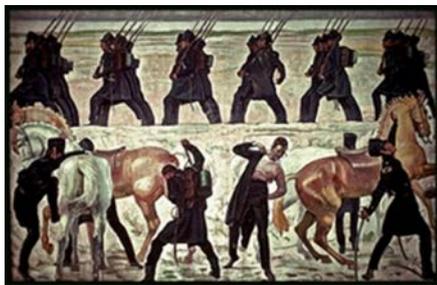
Einstein's Science, Wild's Technology, and Picasso's and Hodler's Art



Chateau de Chillon on Lake Geneva with Dents du Midi. The highest point is 3257 m above sea level Haute Cime (right). Heinrich Wild climbs it twice in 1902 for triangulation work.

Science, technology, and art inspired each other at the beginning of the 20th century. In 1905, two Swiss federal officials made decisive contributions to this development. Albert Einstein turned physics upside down with five publications (see p. 44), and Heinrich Wild laid the foundations for more accurate and efficient surveying of our living space. Heinrich Wild's experience on the Haute Cime (3,257 m above sea level) of the Dents du Midi was one of the triggers for his thinking about completely new types of theodolites. In September 1902, he had to conquer these "teeth of the south," which are clearly visible from Lake Geneva, twice with heavy, unsatisfactory equipment (see p. 48). In 1907, Einstein published his special theory of relativity, which introduced time as the fourth dimension and the simultaneity of different perspectives. Pablo Picasso (1881-1973) incorporated this into his large painting "Les Demoiselles d'Avignon," which is considered the first work of Cubism. From 1912 onwards, Ferdinand Hodler (1853-1918) painted the Dents du Midi from different locations and perspectives. His last work, created in 1917 from Caux above Montreux, captivates viewers with its expressionism, which goes beyond anything he had painted before and is now highly valued on the art market. But Hodler had even more in common with his fellow countryman Heinrich Wild: in 1909, he had completed his 5.50 m x 3.60 m mural "Departure of the Students into the War of Liberation of 1813" for the University of Jena, at a time when Heinrich Wild, as managing director of Zeiss "Geodesy," was launching completely new optomechanical levelling instruments that would make Heinrich Wild the best-known and most successful instrument designer and Zeiss Jena the world market leader in surveying equipment.

*Ferdinand Hodler:
"The Dents du Midi seen
from Caux."
(Painted in
1917.)*



Ferdinand Hodler: "Departure of German Students in 1813 for the War of Liberation." Painted in 1908/09 for the University of Jena as Wild in Jena, developed Instruments.

Right: Pablo Picasso, "Les Femmes d'Alger (O. J. Version O)." With its strongly geometric forms, Pablo Picasso launched Cubism in 1907. The simultaneity of multiple perspectives is clearly visible in the face of the woman on the right. Both halves of her face are shown from the front, from both the left and the right.



1905 and 1907 were Heinrich Wild's and Albert Einstein's wonder years in Bern.

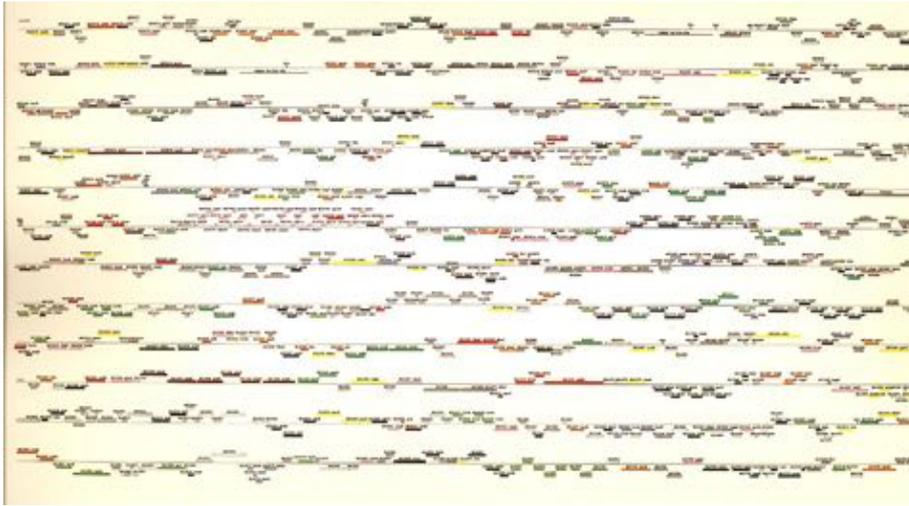


Ferdinand Hodler painted students in Jena in 19 08/09 and the Dents du Midi in 1917.



Pablo Picasso founded Cubism in 1907 with Les Femmes d'Alger.





*Craig Venter:
Excerpt from gene
sequences of the
bacterium
Haemophilus
influenzae.*

*Reprinted in the
Leica Calendar
1992.*

*This US researcher
was the first to
sequence the
human genome in
2000.*

Interjection: The question of genes, culture and AI

Where does a genius like Heinrich Wild inherit, learn, and realize his extraordinary abilities and creative power? How does nature transfer and integrate its latest experiences in addition to the two sets of chromosomes from the parents? How does a disaster such as the 9/11 attack on the World Trade Center in New York affect the DNA molecules carrying genetic information in those affected and their descendants? This evolution must take place between the conception of the child and the conception of the granddaughter and grandson within about thirty years—a question that the relatively new research discipline of epigenetics is investigating, hoping to gain new insights from the unimaginable miracle of human development from a tiny sperm cell and an egg cell. The activation or suppression of certain genes alone creates differences; the variability and diversity of gene combinations additionally ensures the generation of a broad spectrum of individuality among descendants for faster adaptation to environmental changes. Added to this is an enormous diversity of male and female individuals for comprehensive additional mixing. Equally significant are the amplifiers, reducers, and multipliers of social status and material resources, education and training in the fields of culture and technology, whose techniques external catalysts use to adapt individuals and entire groups to the environment and continuously optimize them. Not entirely surprising, but nevertheless sobering, is the finding from genetic paleontology that, due to mass migrations, hardly anyone lives where their ancestors settled thousands of years ago, including the decimation or extinction of Neanderthals to just three percent in the genes of the European population. But not everything can be a cultural technique – from education to searching the internet in knowledge databases and in conjunction with AI programs – or are we still emotionally and genetically Stone Age humans, even though we walk on the moon thanks to our cultural appropriations through technology? The fact that “Euclid genes” have not yet become common knowledge in mathematics, for example, is demonstrated by the fact that a good two-thirds of high school graduates continue to struggle with mathematical subjects throughout their lives and devote themselves to all other cultural techniques. Physically outsourced mechanical and machine motor robot hardware and increasing software capacity, beginning with the invention of writing and spreading with the advent of printing and telecommunications, including social media, to databases with their own artificial intelligence: an unimaginable expansion of all sensors and actuators, including mobility in all media and

even into outer space. And what about geographically based four-dimensional information systems, robots, expert systems, AI artificial intelligence, and hominoids?

Useful mistakes? In an article about Claudia Caviezel from St. Gallen, winner of multiple Swiss Grand Prix Design awards, art expert Silvia Tschui ((TS)) states: "AI generates images, audio documents, and video material that are increasingly indistinguishable from reality. This brings the quality and innovative power inherent in human error into sharp focus. Just as every biological development is based on a mutation in DNA – on an error in the copying process – and just as this mutation always carries the risk of failure, every biological advantage also originates from such an error. What applies to biology also applies to the human pursuit of progress: Success and failure, twin brothers with different fates, are often based on a mutation in thinking in the realm of new ideas, which could just as well be called creativity. On the other hand, constantly replicated stagnation inevitably leads to standstill and decline over time. In relation to artificial intelligence, some theorists formulated the theory of “model collapse” around three years ago. They assume that AI will increasingly feed its data set with self-produced content, thereby bastardizing itself to the point of uselessness. This danger, and therein lies the comforting message of Caviezels “Glitch” [installation at the St. Gallen Art Museum], does not exist for humans."

Invention is not a work of logical thought. Known for his unique flights of fancy and original insights, Albert Einstein, after reviewing—that is, mentally comprehending—1760 patent applications as a technical patent examiner, knew almost everything there is to know about inventions. If, for Niklas Luhmann, inventions and discoveries are the “triumph of the improbable over the probable” and, for Joseph Schumpeter, the result of “creative destruction,” then for Albert Einstein, “invention is not a work of logical thinking, even if the end product is bound to a logical form.” ((E1/146)) The brilliant physicist was probably thinking primarily of his own inspirations, but also of Christopher Columbus, who set sail for the West Indies and landed on the American continent, and of bacteriologist Alexander Fleming, who, instead of finding the bacteria he was looking for, was surprised by mold under his microscope when he returned from vacation, or Konrad Röntgen, who was awarded the first Nobel Prize in Physics in 1901 when, instead of damage to a cathode ray tube, he discovered his hand shining through it and thus X-rays, which were named after him.

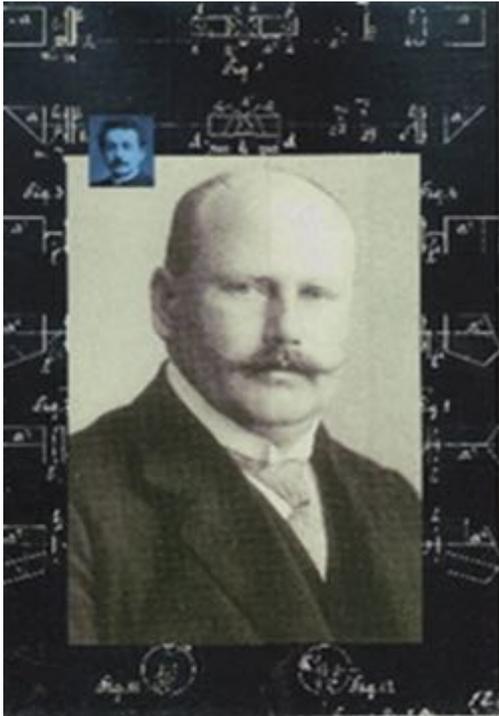
More than just entangled companions: the Einstein-Wild relation

In many cases, the topographer Heinrich Wild sets a signal at a new location even before the physicist Albert Einstein. I once referred to this pattern of unintended similarities as the Einstein-Wild relation, because the parallel changes in location and occupation, which were in no way coordinated by the two people, are reminiscent of "entangled" energy quanta. ((N383)) Einstein was suspicious of the random behavior of the smallest particles according to modern quantum mechanics. But outside the quanta there is the "spooky action at a distance" postulated by Einstein. ((R141)) Applied to humans, this would mean that if we know where Heinrich Wild currently lives and when he changes jobs, then, according to the report "Beginning of two world careers" ((STA6)) published by the FIG as "Article of the Month", it is highly probable that we can also deduce the whereabouts and career change of his "entangled" companion Albert Einstein over a quarter of a century.

Like Heinrich Wild ...

- ... Albert Einstein **moves with his parents in 1880;**
- ... Albert Einstein **leaves school early thanks to his math skills;**
- ... Einstein **began studying at a Zurich technical college** in 1895/96;
- ... **works** Einstein **in the first decade** of the 20th century;
- ... Albert Einstein becomes a **federal civil servant in Bern;**
- ... Albert Einstein also **developed groundbreaking new ideas** - especially **in 1905**
- ... Einstein also has a **head of office who is himself a topographer;**
- ... Einstein also **marries** a partner **in Bern,**
- ... that he **got to know** during his **professional career;**
- ... Albert Einstein is also **the father of a son of the same name;**
- ... who are **both studying engineering;**
- ... Albert Einstein also becomes **the father of a daughter in 1902;**
- ... Einstein and his family also lived **in Thunstrasse in Bern at the same time;**
- ... Einstein changes his **residence in the Kirchenfeld quarter** several times;
- ... 7 years later, one year less than Wild, Einstein **leaves the Swiss capital.**
- ... **at exactly thirty years old;**
- ... **follows** Albert Einstein **even before the outbreak of the First World War;**
- ... a **professional call to Germany;**
- ... Einstein also lives **in the German Empire during the First World War** and **during the Weimar Republic;**
- ... Einstein **was awarded the Nobel Prize for Physics when he founded his company in 1921;**
- ... **1926** by the **Royal Geographical Society** for his photogrammetry equipment, Einstein also
- In 1926, he was awarded a gold medal by the **Royal Astronomical Society** for his findings;
- ... **1930** is **honored by ETH Zurich with the Dr. sc. techn. h.c. degree,** his alma mater
- ETH also awarded an honorary doctorate to Dr. Albert Einstein;
- ... his successors **in the second half of the century** are also **innovative** and enrich his constructions **with electronics and computer science,** as well as with theories derived from Einstein. **laser, digital scan and relativistic GPS correction values.**

These are not only technical processes, but mostly societal-social processes with patterns that do not seem to be alien to the quantum world.



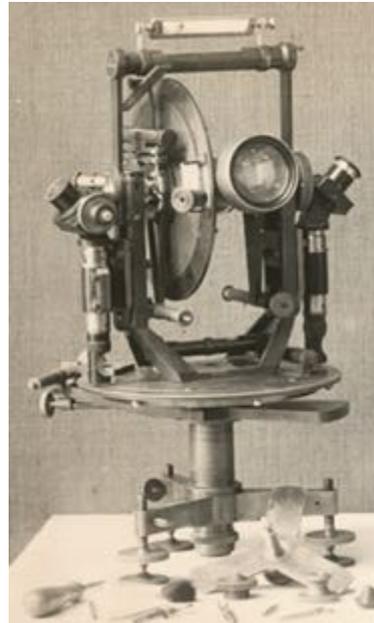
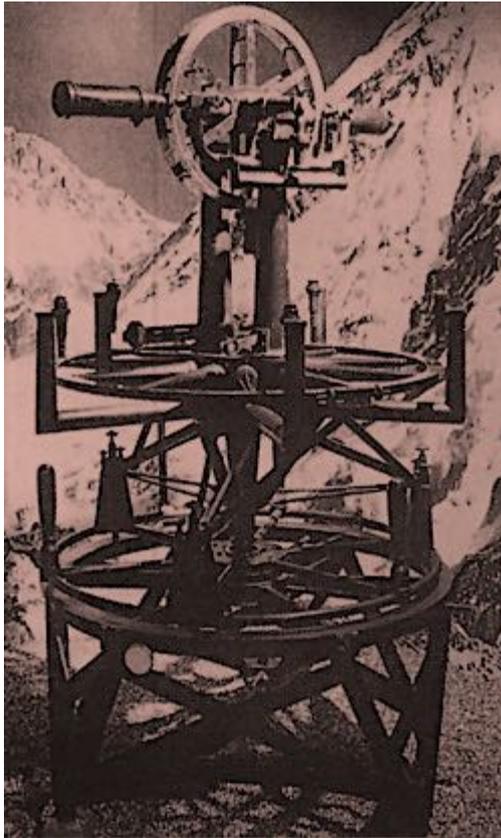
In 1907, at the age of 30, Heinrich Wild switched from topography to industry.



In 1908, at the age of 29, Albert Einstein leaves the Office for Intellectual Property in Bern and becomes a physics professor at the University of Zurich.

Surveying revolutionaries in the first and second half of the century

With his levels, theodolites and photogrammetry instruments, Heinrich Wild shaped the surveying and cartographic documentation of the earth's surface, particularly in the first half of the last century. With his revolutionary surveying equipment, he enabled faster, more accurate and more reliable surveying of infrastructure tasks and buildings, right up to the systems for the moon landing. After leaving the company he founded in Heerbrugg, two decades later he again improved theodolites, this time for Kern + Co AG, Aarau, as a freelance inventor. In the last third of the 20th century, surveying and geomatics also increasingly benefited from the technical implementation of Albert Einstein's findings (laser, GPS, digital photography). Heinrich Wild and his two co-founders Robert Helbling and Jacob Schmidheiny, as well as Ernst Schmidheiny and Albert Schmidheini, who joined the company only a few years later with financial resources and management know-how to save the loss-making company, made an eminent contribution to the development of Switzerland as a business location and especially the Alpine Rhine valley, which has developed into one of the most attractive high-tech regions in Europe since the founding of the company in Heerbrugg. Einstein's technical findings and Heinrich Wild's constructions have improved our knowledge and our orientation on earth, on the moon and in space to this day.



Three generations of theodolites for trigonometric angle measurement. Left: English theodolite from 1874 with metal measuring circles 120 cm in diameter. Center: German repetition theodolite from 1890 with 30 cm metal measuring circles. Right: Swiss theodolite Wild T2 from 1923 with 10 cm glass measuring circles. What these three theodolites have in common is their equally high measuring accuracy of one arc second. What distinguishes these instruments are their weight, their volume, their safety, their reliability, their price, their handling and their labor costs.

Small, smart and easy to measure . . .

The higher and the further away the mountains, the more imposing the measuring instruments used - this seems to be the principle that the designers of surveying equipment have been following for centuries. The English theodolite manufactured for the Survey of India for the triangulation of the Indian subcontinent weighs 760 kilograms and requires thirty assistants and an infinite amount of time to transport, set up, adjust and dismantle to determine the height of Mt. Everest and K2 from a distance of 120 km. The English instrument makers are praised all over the world for their expertise in producing such impressive and accurate devices. They are replaced by the development of smaller, more compact precision metal instruments, primarily by continental manufacturers. Thanks to the transfer of optomechanical technology developed by Jena at Zeiss to Heerbrugg, Heinrich Wild in Switzerland succeeds in reducing these instruments to a sixth of their weight, cutting the transport volume to a quarter, reducing the time required for reassembly to a sixth and making circular reading and measurement much more convenient and reliable with newly developed built-in optical components.



1923: *The Wild T2 opto-mechanical theodolite from Leica Geosystems Heerbrugg from 1923 is the first and most widely used instrument in the world with angular second measurement accuracy.*



1998: *The Leica TC500 optoelectronic total station from Leica Geosystems Heerbrugg combines the classic Wild theodolite design with optoelectronic angle encoders and a laser for distance determination developed from Einstein's theory.*

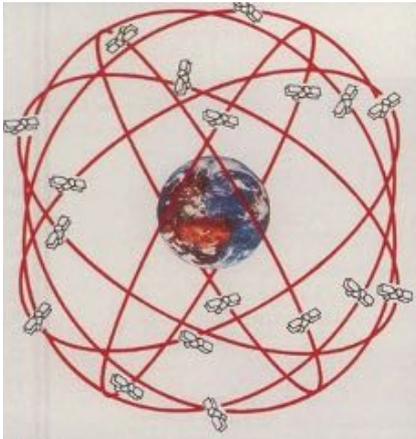


2023: *In addition to the optoelectronic total station with robotic functions and a distance measuring laser developed from Einstein's theory, the largely automated "Multistation" MS60 from Leica Geosystems includes a powerful LaserScan function for capturing, measuring, evaluating and documenting 3D laser point clouds with millimeter precision.*

. . . with integrated Einstein technologies

Today, Wild design principles and Einstein physics findings characterize the instruments of geomatics in various combinations: with Wild's theodolite construction, laser and GPS signals as a measuring SmartStation and with integrated robotic functions; with Heerbrugg high-performance lens, digital sensors, fiber optic gyroscopes and GPS correction information as a documenting digital aerial camera ADS40; and with laser distance meter, 3D angle encoder and digital sensor as a spatially 3-D recording ScanStation. These integrated technology solutions were designed and manufactured by Leica Geosystems employees.

Heinrich Wild and Albert Einstein's successors integrate Wild constructions and "Einstein technologies" into modern surveying equipment.



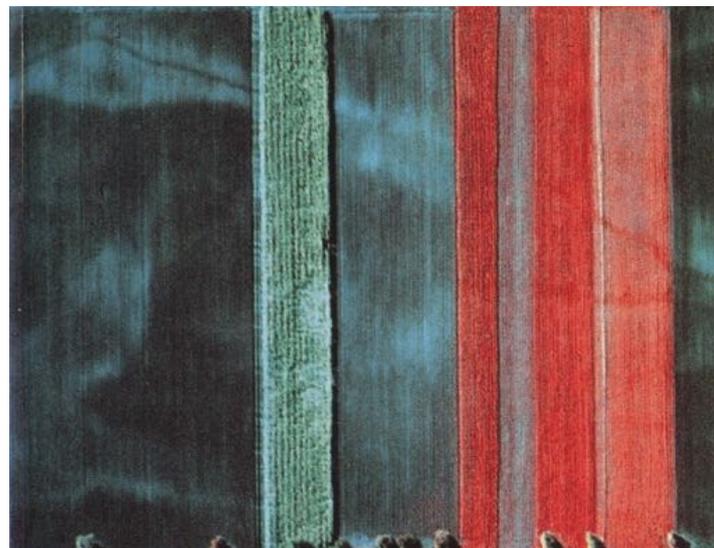
Left: For global navigation systems (such as GPS, Glonass and Galileo) to work correctly, they need correction factors from the special theory of relativity and Einstein's general theory of relativity.



Left: Laser measurement is based on Einstein's theoretical insight from 1916/17. Without it, modern surveying technology would be inconceivable.

Here: dinosaur tracks in Courtedoux, Canton Jura (Switzerland), recorded in 2003 with millimetre precision using Leica Geosystem's LaserScan station.

Right: The digital sensor of the Leica ADS40 aerial camera from Heerbrugg stores image data like this infrared information according to the principle of Einstein's photo effect from the Bernese wonder year of 1905.



Federal Parliamentary Resolution of 1804 on the Linthwerk (from the Official Collection of New Federal Departures, 1818, Farewell Supplement O.) ((SZ2))

A. Conclusum of the 28th month of January 1804, ratified in 1805, with the addition in the 3rd article.

1) The project designed by Captain Lanz and submitted to the Federal Diet in 1784 to divert the Linth from the Näfels bridge to Lake Walen is to be implemented.

2) Before this project is carried out, however, the yoke of the Biäschen bridge in the middle of the Lake Walen outlet is to be demolished, the outlet of the Lake Walen properly secured, and towards this end the bed of the Maag from the Lake Walen down to below the Ziegel bridge is to be widened and deepened to the true normal width and depth of the two Linths.

3) After these two works, the Linth from Windeck Castle to below the confluence of the Biltnerbach and from the Hängelgießen to the Fahrhäuslein above Spet-Linth is to be made into a new channel, the Schänisser-Bach and swamp are to be drained, and the entire Linth bed down to Grynau Castle is to be properly regulated and secured.

(Addition from 1805.) With the new Linth Channels to be dug under the Ziegel-Brücke, the excavation and securing of the channel through which the Glarner-Linth is led into the Lake Walen is to be started and continued at the same time, and the opening of the new lower channels to be created is also to take place at the same time as the opening of the upper channel, or after it.

4) The government of Zurich is to be requested to prevent any further damming of Lake Zurich by means of a vigilant hydraulic engineering policy, and if existing waterworks at the outlet of the lake would be detrimental in this respect, to reduce them as much as possible.

5) To carry out this work, the Landammann of Switzerland shall appoint a competent hydraulic engineer who, under the direction of a commission of three members also to be appointed by the titular Landammann, shall first lay out the plan in the area and implement it as soon as possible.

6) The Landammann of Switzerland also appoints a Schatzungs-Commissair, to whom the Cantons of Schwyz, Glarus and St. Gallen each assign two commissioners; these are taken on oath and duty, and must carry out the following work before the technical execution of the undertaking:

- a) They mark the current boundaries of those marshes which completely deprive the former landowners of all and any use of their lost land.
- b) They estimate the current true value of those properties that suffer from the flooding of the Lake Walen and the Linth.
- c) Under their direction, they shall have a competent surveyor take the measurements required for these surveys and valuations, and shall record all provisions in a duplicate protocol, one copy of which shall be given to the Federal Diet for safekeeping and the other filed with the supervisory commission.
- d) They purchase the land required for the enterprise for its true intrinsic value.
- e) They determine the supply of materials which the municipalities benefiting most from the undertaking have to provide for cheap payment to facilitate and speed up its operation.

7) The Cantonal Government of Zurich shall be given custody of the funds required for this undertaking; it shall, on the instructions of the Supervisory Commission, make the payments to the various paymasters, which it shall set up under its responsibility, and shall render accounts to the Treasury Commission for this cassa management.

8) The Treasury Commission receives a half-yearly report on the use of the funds from the Supervisory Commission and determines the time at which the money contributions for the operation of the company are collected.

9) After the completion of the entire undertaking, the Treasury Commission estimates the surplus value of all properties which can be put into an improved condition and properly secured and handed over to the owners. It is also charged with the complete liquidation of the undertaking, the settlement of accounts with all shareholders, and the preparation of the final complete account of the same.

10) In order to make this undertaking possible, as well as to secure and settle the property rights that are suggested in the process, the following legal principles are established:

- a) No land necessary to this enterprise can be refused to be ceded to it in return for full payment of its true value.
- b) All the land which, up to the time of the undertaking, is constantly taken up by the waters of the Lake Walen and the Linth and rendered completely unusable, falls entirely prey to it through the drying up, without the owners of mortgages and mortgages on this land, which, without the present beneficent undertaking, would at no time have become usable again, ever being able to make any further claim to it.
- c) The surplus value of all marshy and acidified land which is obtained by drying out shall be reimbursed to the enterprise, but the owner of the land shall be free either to pay this surplus value of his land to the enterprise at certain dates, or to cede his land for the valuation price of the value before the enterprise, against cash payment.

11) This entire charitable undertaking shall be under the protection and superintendence of the federal power of the Confederation, and the entire federal public shall be invited to participate in it as an undertaking for the benefit and honor of the entire nation.

12) Towards this end, 1600 shares will be issued, each of which will be paid up to 200 Swiss francs in 4 stages, depending on the progress of the company. No shares can be assigned for a higher contribution, but if, contrary to suspicion, the company requires a considerable advance, the contribution for the shares should not be increased, but rather the number of the latter, which, however, cannot be done without a specific new resolution of the Diet.

13) For the acquisition of such shares, each government of the individual cantons will solemnly request its fellow citizens, spiritual corporations and communities in the most appropriate and effective way, report the success of their efforts to the Landammann of Switzerland, and when the undertaking is set in motion, request the contributions of the share owners of their canton and send them to the cantonal government of Zurich.

14) The owners of these shares are solemnly assured of all the benefits of this undertaking that will be achieved through the implementation of § 10 of this ordinance.

15) It is incumbent upon the Landammann of Switzerland, in view of the success which the appeal to the charity and charitable support of the Swiss public will have, to determine the time when the whole undertaking shall be put into execution; but the contributions of the owners of the shares shall not be demanded until the Schatzungs-Commission has purchased the land necessary for the operation of the undertaking, in the event of its execution, and all difficulties of execution have been so removed that the work itself can be set in motion without delay.

16) The commission appointed to supervise the entire enterprise is obliged to draw up a detailed report every six months on the progress of the entire business, and to make it known to the Treasury Commission, for the attention of the shareholders, together with the half-yearly accounts, and also to submit a general report on the progress and further prospects of the enterprise to the titular Landammann, for the attention of the Federal Diet.

17) Once the work has been completed, the Treasury Commission will determine the proportional contributions that the land protected by this undertaking has the first and most natural duty to make to the maintenance of the dams and other safety structures, according to the previous practice of the Glarus communities.

18) In order to properly safeguard all works of this undertaking against any neglect and destruction, the Diet shall, after completion thereof, appoint a hydraulic engineering police commission which, according to instructions drawn up by the supervisory commission and confirmed by the Diet, shall be obliged to carefully supervise the preservation and protection of all these common federal works carried out, and shall submit a report thereon to the Diet every year.

19) However, before and before proceeding with this entire charitable undertaking and any such decree, His Excellency the Lord Governor of Switzerland shall, for the complete security of the undertaking, await the specific ratifications and declarations of the mainly interested Estates of Schwyz, Glarus and St. Gall, whereby the latter would formally undertake to observe exactly and emphatically apply all legal principles and specific provisions contained in this resolution on the part of their respective governments.

Schweizerische Eidgenossenschaft.

Actie No. 920

an der Unternehmung der Austrocknung der Sümpfe der Gestade des Wallensees
und des untern Linth-Thals.

Da zufolge des Beschlusses der Tagssatzung vom Jahr 1804, die Austrocknung der Sümpfe an den Gestaden des Wallensees und im untern Linth-Thal durch eine Unternehmung bewirkt werden soll, für welche die Summe von 320,000 Schweizerfranken erforderlich ist, und diese Summe durch 1600 Actien, jede zu 200 Franken in vier verschiedenen Terminen nach dem Fortschritt und Bedürfnis der Unternehmung zahlbar, erhoben wird, wogegen den Besitzern dieser Actien alles durch diese Austrocknung gewonnene Land, so wie der Mehrerwerb des verbesserten Landes feyerlich zugesichert ist; so wird hienit

Belegzettel des Caslon-Buchs

als Uebernehmer dieser Actie, gegen die für dieselbe nach Erfordernis zu leistenden Zahlungen, welche aber die Summe von 200 Franken nicht übersteigen dürfen, als Mitantheilhaber an dem durch jene Unternehmung zu gewinnenden Land anerkannt, und denselben die daraus fließenden Vortheile, welche von den verordneten Commissionen im Namen aller Besitzer von Actien besorgt werden, nach dem Beschlusse der Tagssatzung zugesichert. Dieses bescheinigen die zur Leitung dieser Unternehmung von Eurer Excellenz dem Herrn Landammann der Schweiz verordneten Commissionen, und auf besondern Auftrag, der Kanzler der Eidgenossenschaft.

Namens der Schatzungs-Commission:

Der Präsident derselben,

Stehlin

Namens der Aufsichts-Commission:

Der Präsident derselben,

Escher



Der Kanzler der Eidgenossenschaft,

Mousson

Sollte obgenannter Besitzer die-
rung des Eigenthümers besorgt, und
unmittelbar bezogen wurde.

Wenn, so muß diese Abtretung auf der Actie nicht durch die
jensigen Cantonalbehörden besorgt werden, von der die Actie

Anerkennung der Zahlungen

Durch die benutzende Unterschrift derjenigen Cantonalbehörde, welche die Zahlungen von den Actienbesitzern bezieht,

Die erste Zahlung von Franken 50 ist entrichtet den 23^{ten} September 1807. *Stehlin*
Die zweite „ „ „ „ 50 „ „ „ 20^{ten} „ 1807. *Escher*
Die dritte „ „ „ „ 50 „ „ „ 25^{ten} Aug. 1808. *Mousson*
Die vierte „ „ „ „ 50 „ „ „ 26 Junij 1809. *Mousson*

From the early days of share culture: share no. 920, placed by the government of the Canton of Basel, is one of a total of 1,600 Linthwerk shares of 200 francs from 1807 that were taken over by all cantons and placed with the population. 50 francs each must be paid in by the share owner to the respective cantonal authority from September 23, 1807 to June 26, 1809 in four tranches, resulting in a total share capital of 320,000 francs (CHF 25 million in today's purchasing power). On the left, (Hans Georg) Stehlin signs as President of the Treasury Commission; on the right, (Hans Konrad) Escher signs as President of the Supervisory Commission. On the bottom right, the Chancellor of the Confederation (Jean-Marc) Mousson.