

# THE **LEGACY** OF THE PILE DWELLERS

*Fascination World Heritage*



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LANDESAMT FÜR DENKMALPFLEGE  
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**PFAHLBAU MUSEUM**  
UNTERUHLDINGEN/BODENSEE

**The Legacy of the Pile Dwellers**  
**Fascination World Heritage**

Accompanying Booklet for the Special Exhibit  
At the Lake Dwelling Museum Unteruhldingen,  
Germany

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The finds shown in this exhibit originate  
from the pile dwelling sites in

**Austria**  
Attersee

**Switzerland**  
Auvernier, Corcelettes, Greng, Guévaux,  
Lüscherz, Mörigen, Muntelier,  
Gachnang-Niederwil, Estavayer, Vallamand,  
Vinelz, Wetzikon-Robenhausen

**Germany**  
Aichbühl, Bad Buchau, Wasserburg Buchau,  
Bodman, Dettingen, Dingelsdorf, Hagnau-Burg,  
Hornstaad, Konstanz-Hinterhausen, Litzelstetten,  
Ludwigshafen, Mainau, Maurach, Meersburg-  
Halttau, Nußdorf, Oberuhldingen, Öhningen-  
Wangen, Riedschachen, Sipplingen-Osthafen,  
Taubried, Unteruhldingen-Stollenwiesen,  
Wahlwies, Wallhausen

**Italy**  
Peschiera

**The Lake Dwelling Museum wishes to thank  
wholeheartedly all of those lenders who have  
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The Lake Dwelling Museum is committed to communicate the knowledge and understanding about the pile dwellings and their inhabitants to the public. The museum's facilities include a research institute for basic research, exhibition spaces, and an open-air museum informing the public about the latest findings. In 2011, the prehistoric site of Unteruhldingen was declared by the UNESCO "World Heritage Site of Prehistoric Pile Dwellings" among 111 sites along the lakes at the foothills of the Alps in Slovenia, Italy, France, Switzerland, Austria, and Germany. This represents a new challenge for the museum existing since 1922 not far from the originals in Unteruhldingen at Lake Constance.

To show the history of the pile dwellings during the Stone and Bronze Age means to describe 3000 years of living in carefully selected examples. This period extends from the first residents of the pile huts around 4000 BC to the end of the Bronze Age around 850 BC.

On 5 hectares of ground, in 23 pole houses of the Stone and Bronze Age, and an extensive outdoor area, the life of the pile dwellers is vividly communicated to about 300,000 visitors per year. Guided tours, student projects, presentations of experimental archeology, and a Stone Age trail inviting families to participate are some ways to share information.

The special exhibit, **"The Legacy of the Pile Dwellers – Fascination World Cultural Heritage"** is yet another way to communicate this exciting period. With the question **"What did we inherit?"**, the goal was firstly to present the unique finds from 150 years of research that previously had often slumbered unnoticed in the archives. The second task was to make the lost and valuable heritage hidden in the lakes clearly visible and accessible to the public with methods available to a museum.



Not only the treasures of archaeological research are fascinating, but even everyday objects are of great value for the reconstruction of prehistory. To awaken the understanding for the protection of the sites, to gain the attention of the public and to raise awareness, was one of the overriding priorities of conception. Because only what is understood in its value can also be successfully protected, secured, and preserved as an important information resource for our posterity. This is even more important, the more of the archaeological substance disappears each year through erosion at the modern designed lakeshores or through the desiccation of wetlands.

The Lake Dwelling Museum Unteruhldingen has already accepted the broad mandate of conveying information and protecting cultural inheritance in conformity with the objectives of the UNESCO for the past 90 years.

The Archaeological Service of Baden-Württemberg has enhanced the special exhibit in the entrance hall of the museum with a series of information boards providing details about the sites.

The Reiss-Engelhorn Museums of Mannheim, the Institute of Prehistory and Early History at the University of Tübingen and private collectors from the region have supported this international exhibition. We would like to take this opportunity to express our appreciation and gratitude to all of them. The special exhibit is constructed over 160 square meters (about 1722 sq ft) and shows more than 1000 finds. At monitors installed in the museum, visitors have the opportunity to view the original sites in the lake. With the findings in the display cases and the recovered building elements, the view into the underwater scenery illustrates what we have inherited by the people of the Stone and Bronze Age: jewelry, tools or pottery, but also technical, economic, or social experiences that still determine our lives today.



You will find your journey through time continued on the Museum grounds.

We wish you an enjoyable visit of this special exhibition “The Legacy of the Lake Dwellers”.

August 2012  
PD Dr. habil Gunter Schöbel  
Director of the Lake Dwelling Museum,  
Unteruhldingen

# THE LEGACY OF THE PILE DWELLERS



***“What from your father you’ve inherited,  
You must earn again, to own it straight.  
What’s never used, leaves us overburdened.  
But we can use what the moment may create.”***

Goethe’s Faust Part I

## **What did we inherit?**

111 of over 1000 pile dwelling sites from the Stone and Bronze Age (4000 – 800 BC) are world heritage sites. They are located in six countries: Switzerland, France, Italy, Slovenia, Austria, and Germany. Nine of these are at Lake Constance. An entire archive of human history is buried under water and in the wetlands. Not only piles and poles, but also floors, walls, and parts of roofs were found in the excavations. Pottery, as well as tools, and jewelry made of stone, bones, and metal are known from many sites. The special artifacts in the pile dwelling settlements are organic materials, which, had they not been buried under water, would have quickly decayed.

These are pieces of cloth and lace works, but also 5000 years old wooden vessels. Even bread, apples and burned grain mush or porridge remained preserved. All these things provide great insights into the life of the lake dwellers. Every day utensils like axes or cooking pots, needles or fishing-

hooks have – compared to today’s commodities and aside from the material – not really changed. Other finds, such as unusual animal figurines, curious symbols, and not explainable objects are still a mystery for scientists.

## **From whom did we inherit?**

From the people of the Stone and Bronze Age. A lot was thrown away, many things were lost. Other objects were buried in the mud at the lake-shores because of village fires and were preserved down below hermetically sealed until the present day. Fishers and collectors, art dealers and archaeologists brought this inheritance into the museums. Together with the results of the excavations, these objects allowed an extensive reconstruction of the early life at Lake Constance.

In a time without written documents, it is worthwhile to look more carefully at the objects. They tell stories.



# Jewelry

*A sense for beauty ...*

Large quantities of half-finished beads and scraps show that during the time of the pile dwellings jewelry workshops existed at Lake Constance that were not only meant for the private use, but which also produced for trade. In the Stone Age, beads of limestone **1** and in the Bronze Age of glass and jet (fossilized wood) were crafted **2**.

The knowledge about the manufacturing of glass arrived in Europe from the Southern and Eastern Mediterranean area via trade routes. How well the trade relations were developed, is shown by **3** beads made of yellow amber and black jet, tin pendants as well as decorative pins **4** that came to Lake Constance from the Baltic Sea, the Swabian Alb, the Balkans, and Italy.

Jewelry was worn by women and men. For example, in graves of women perforated bear teeth **5** worn as amulets, in graves of men, ornamented pins **6** in the headdress were found.

## **1 Chalkpearls**

Bodman-Ludwigshafen (D),  
about 5900 years, scale: 1:1.

## **Stone spacer for necklaces**

Wahlwies (D), about 5900 years, scale: 1:1.

## **Flintdrill for pearls and spacers**

Bodman-Ludwigshafen (D),  
about 5900 years, scale: 1:1.

## **2 Glass- and jetpearls**

Wasserburg-Buchau, Unteruhldingen-  
Stollenwiesen (D), about 3000 years, scale: 1:1.

## **3 Amber- and jetpearls**

Wasserburg-Buchau (D),  
about 3000 years, scale: 1:1.

## **4 Needle, bronze**

Greng (CH), about 3000 years, scale: 2:3

## **5 Pierced scarifier-teeth, bear**

Sipplingen-Osthafen (D),  
about 5700 years, scale: 2:3.

## **6 Needle, bronze**

Unteruhldingen-Stollenwiesen (D),  
about 3000 years, scale: 2:3.





Pendants in the form of swallowtails **7 8** with human and animal symbolism represent cult and religious belief still unknown to us. Pierced teeth **9** could also have been trophies or amulets. Often, it should just look beautiful. Ornamentation and the design of everyday objects speak for the demand for jewelry and a sense of beauty. Even graffiti and paintings on house walls, patterned clothing and tattoos on the skin of men and women are known.

## **7 Necklace, bronze**

Auvernier (CH), about 3000 years, scale: 3:4.

## **8 “Swallow-tail pendant”, bronze**

Hagnau (D), about 3000 years, scale: 1:1.

## **9 Pierced dog-teeth**

Sipplingen-Osthafen (D), about 5700 years, scale: 1:1.





# Valuable Goods

## *Used and repaired ...*

Even in the Stone and Bronze Age, things sometimes went wrong. How annoyed must the craftsman have been, when after hours of drilling of a shaft hole for an axe, he suddenly held two halves in his hands!

Raw materials were valuable and recycling was not a foreign word: a broken axe was simply reworked into a hammer **1**, the broken bead was drilled again crosswise **2**, and the broken handle of a jar was clued back together again with tar and bark **3**. Known is also that broken vessels were put back together with resin. Finds of collected scrap metal show the importance of trading scrap.

Not certain is nevertheless whether a bent bronze pin found in Unteruhldingen was a result of a mishap – or whether it can be construed as having really been the first safety pin in history **4**.

Sustainability and reuse, known as modern key words, are an invention of prehistoric times.

All things important for everyday life, like food-stuff, clothing, and building materials – with the exception of luxury goods – originated from the immediate environment of the settlements. An ingenious forest management ensured the supply of wood in correct size and diameter. As shown by the ensembles of finds, important tools and significant jewelry was passed down through generations.

**1 Hatchets, deer antler and groundstone**  
Unteruhldingen-Stollenwiesen, Litzelstetten (D), about 5700 years, scale: 1:2.

**2 Amberpearl**  
Hornstaad (D), about 3000 years, scale: 2:3.

**3 Broken pot with repaired handle, fixed with birch bark and birch pitch**  
Sipplingen (D), about 5700 years, scale: 2:3.

**4 Twisted needle, bronze**  
Unteruhldingen-Stollenwiesen (D), about 3000 years, scale: 2:3.





# House at the lake

*Great amounts of wood ...*

The presented oak piles **4** of Unteruhldingen-Stollenwiesen belong to the houses, which were constructed between 973 – 970 and 862 – 850 BC. The trees for these piles were hewn during spring season. These conclusions are possible with the help of dendrochronology (tree-ring dating). Mostly debarked stem wood was used, but also repeatedly cut stems with a thickness of 14 – 25 cm. Often the soft sapwood was cut off for better durability.

The piles were carefully trimmed with bronze axes – the hatches shown in the exhibit fit perfectly into the still clearly visible hewing marks **1**. With a total length of up to 13 meters, they were originally inserted about 2 – 3 meters in the lake bottom.

The still existing pile stumps show strong traces of destruction and decay **2**. The causes were the impact of heavy waves, bacteria, algae incrustation, worm infestation, or frost damage in winter. Clearly visible is the difference between the well-preserved sections of the piles in the conserving lake bottom and those piles sticking out from the lake bottom **3**. The degree of destruction of the submerged settlements can be concluded by measuring the height of the protruding piles.

This threat was one reason why the pile dwellings of Unteruhldingen-Stollenwiesen were put under the protection of UNESCO's world cultural heritage.



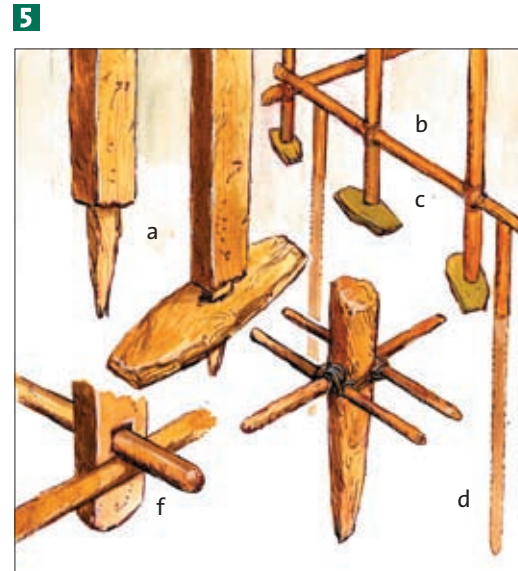
# House at the lake

*Great amounts of wood ...*

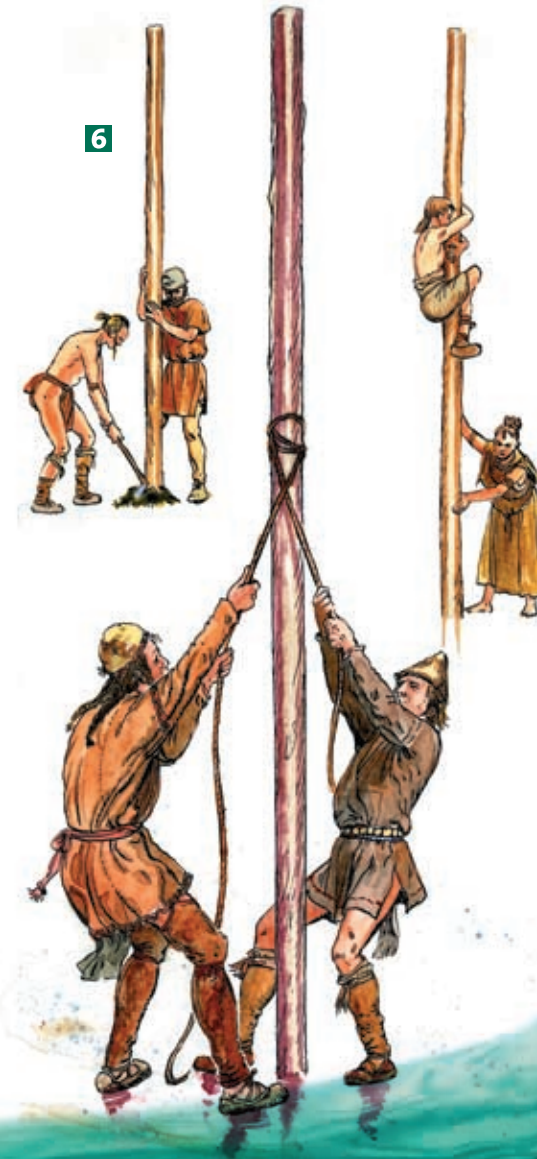
To keep the piles from sinking into the lake ground, several methods were used **5**:

- a) Mortising of the pile into a wooden platform (placed horizontally on top of the mud at the lake bottom) or pile shoe
- b) Bracing (cross beaming) of the house piles with each other
- c) Distributing the entire weight of the house over many piles
- d) Using long piles that reached deep into the bottom of the lake
- e) Tying piles crosswise
- f) Hole braces

The extra effort in constructing these supporting elements was made up for in time saved at the construction of the house **6** and by a higher stability of the building. Most often, the wooden platforms were combined with deeply set piles or inserted into building block structures.



As the experience at the Lake Dwelling Museum shows, only a combination of several methods assured stability of the pile dwellings **7**.





# House at the lake

*Great amounts of wood ...*

Storms, fires, floods, or age-related decay could have been the cause for the collapsing of a pile dwelling. What remained were great amounts of wood, clay and stones, which slowly drowned in mud.

Under favorable conditions – that is in undisturbed storage in the lake mud without the exposure to air – remains of houses can keep intact thousands of years – and today offer ideal conditions for the study and reconstruction of pile dwellings.

Discoloration of the soil layers and the accumulation of burnt stones for example indicate to the trained eyes of an expert that there was a fire place. Garbage dumps along the longitudinal walls of the houses indicate windows. Charred cords **8** on timber illustrate how the individual components were assembled. Reed residues or wooden shingles indicate collapsed roofs. Sometimes even the imprints of once existing wall constructions and floors are still visible in the daub wall structures **9**.

Of special luck are the finds of painted wall remains with pictures of the pile dwellings **10**, like those that were discovered at the Stone Age cult houses at the northern shore of Lake Constance.

At the Lake Dwelling Museum of Unteruhldingen, you can see archaeological reconstructions of Bronze Age villages of Buchau and Unteruhldingen as well as Stone Age Houses from Arbon (CH), Hornstaad, Sipplingen and Riedschachen. They are the result of the scientific examination of archaeological finds in the lakes and marshes.

## **8 Charred cords and ropes**

Origin unknown, Neolithic, scale: 1:3.

## **9 Adobe from a housewall**

Konstanz-Hinterhausen, Sipplingen (D), about 3000 and 5700 years, scale: 1:3.

## **10 Pieces of adobe painted with dots and houses**

Ludwigshafen (D), about 5700 years, scale: 2:3.



# Crockery

*Functional objects and trendy design ...*

Broken pieces in great numbers, but also complete vessels are found in the remains of the pile dwellings. The crockery shows a clear design, which allows for comparisons and differentiations between various cultural groups and thereby assign them to a certain period.

The simple kitchen set in the Stone Age consisted of a cup, a bowl, a pot – these served for drinking, eating, and storing goods **2**. Charred food remains evidence which of the vessels were cooking pots **1**.

In some cultures of the Stone Age, only a few vessel types existed. Other cultures distinguish themselves through a more elaborate assortment of vessels. The differences also pertain to the ornamentations. Some cultures appreciated simple, roughly manufactured pots. Others preferred finely crafted objects with decorations across most of the surface, shiny and polished surfaces or even paintings.

Cups with typical bursts and scorch marks show that conflagrations caused pots in the dwellings to melt **3**.

**1 Bottom of a cooking pot with charred pulp**

Bodman (D), about 3600 years, scale: 1:2.

**2 Midget kitchen-set, Neolithic**

Unteruhldingen, Taubried (D), about 5800 years, scale: 1:2.

**3 Vessels melted in a conflagration**

Guévaux, Murtensee (CH), about 3000 years, scale: 1:2.







In the Late Bronze Age, the crockery sets are more extensive in their function, ornamentation, and sizes. A large pot from Unteruhldingen **4** held 140 liters. Whether grain, water or beer was stored in this pot, is not known.

Strikingly, many of the large vessels were also produced on a very small scale **5**. It is tempting to believe that these were possibly children's crockery or toys. The small objects imitate their great models in every detail, even fine ornaments or crosses on the bottom indicating the owner or pottery brand are present.

#### **4** Storage pot, capacity 140 liters

Unteruhldingen-Stollenwiesen (D),  
about 3000 years, hight: 68 cm, ø approx. 70 cm.

#### **5** Midget pottery

Wasserburg-Buchau (D), Auvernier, Lüscherz (CH),  
about 3000 years, scale: 1:2.



# Perishables

## Organics and things worth protecting ...

From the view of collectors, who acquired the first pile dwelling finds toward the end of the 19th century, textiles and perishable materials were more valuable than stone axes or pots. They were rare and difficult to preserve. Air, dust, and light can destroy fabric or objects made of wood within a matter of a few weeks, which had so far safely been buried in the mud. Many scientists therefore recommend leaving the materials in the protective environment at the locations they were found.

An often-used preservation method was the gluing of weavings between two glass plates **1** and the storing of food remains in glass containers as used by pharmacists. In those containers, we find apples **2**, cereal ears **3**, hazelnuts **4** and even remains of bread **5**, in the same condition they were discovered in the burnt layers of the settlements.

### **1** Textile with fringes

Robenhausen (CH), Neolithic, scale: 1:2.

### **2** Charred apples

Wangen (D), about 5800 years, scale: 2:3.

### **3** Charred barley and wheat

Robenhausen (CH), about 5700 Jahre, scale: 2:3.

### **4** Hazelnuts

Robenhausen (CH), about 5700 years, scale: 2:3.

### **5** Charred bread

Robenhausen (CH), Neolithic, scale: 2:3.





# Perishables

Organics and things worth protecting ...

Cords **6**, bundles of flax and yarn spools **7** delivered the raw material for the production of clothing: shoes, hats, shirts, and cloaks. Tools and utensils made of wood are still buried in the mud in the same way they got there thousands of years ago: elaborately ornamented wooden flutes **8** as well as logboats that were over 10 meters long.

Concentrations of raspberry seeds at the excavations indicate excrement **9** and the location of toilets. They provide valuable information about the eating habits and the health status of the lake dwellers and are also indicators for the hygienic conditions in a pile dwelling. Human bones were only rarely found **10**. These can provide even more accurate information about gender, age, and the diseases of the pile dwellers.

**6 Charred cord**  
Origin unknown, Neolithic, scale: 1:2.

**7 Charred string-ball on a stick**  
Origin unknown, Neolithic, scale: 1:2.

**8 Decorated elder-flute**  
Hagnau-Burg (D), about 3000 years, scale: 1:2.

**9 Excrement**  
Wangen (D), about 5800 years, scale: 1:2.

**10 Skull of an elder lady**  
Wasserburg-Buchau (D), about 3000 years, scale: 1:2.



# Mysteries

*There are still many open questions ...*

Without written records, many things cannot be explained even with the most precise observations and examinations. Mysterious and curious facts accompany the scientific research of the pile dwellings since the very beginning.

Can the illustrations of human figures and body parts be interpreted as art or as votive offerings for religion and cult **1**?

Were the small lead axe pendants toys, protective amulets, trimmings or decoration for clothing, insignia or status symbol for the caster or were they raw material for bronze melting **2**?

Large and small crescent shaped clay objects with lines and circles – however, always only on one side – provoked many generations of scientists to think of a kind of lunar calendar. Or did they serve as fire dogs intended to hold wooden logs or incense sticks **3**?

## **1 Little pot with stylized breasts**

Sipplingen (D), about 5700 years, scale: 2:3.

## **Votive figure, female torso**

Wasserburg-Buchau (D),  
about 3000 Jahre, scale: 2:3.

## **2 Little tin axe, pendant or patch**

Unteruhldingen-Stollenwiesen (D),  
about 3000 years, scale: 2:3.

## **Bronze axe with rests of the wooden handle**

Unteruhldingen-Stollenwiesen (D),  
about 3000 years, scale: 2:3.

## **3 Little moon-idol**

Unteruhldingen-Stollenwiesen (D),  
about 3000 years, scale: 2:3.

## **Moon-idols**

Wasserburg-Buchau (D),  
about 3000 Jahre, scale: 2:3.





An important animal motif in the Late Bronze Age/ Urnfield culture (1300–750 BC) is the duck bird. As an aquatic animal it appears on armor, on horse harnesses, as drawing on vessels, on musical instruments, ritual objects, as a figure in clay and bronze, and as a drinking vessel. It must have had great significance for the people in those times. Hybrids, part fish, part duck, part bull **4**, are at the end of the Bronze Age and could symbolize the basic elements water, air, earth? Or did this figure lead into the subsequent Iron Age, the Age of the Celts, in which the duck was no longer an important art object, but in which the bull played an increasingly more important role?

Many questions still remain unanswered. Because of being designated UNESCO world heritage site, the pile dwellings have been attributed more attention.

In combination with protective measures for the conservation of the remains still buried in the lake mud, there will be a chance that future generations with better research methods will find answers to these questions.

**4 Bronze animal figure representing duck, bull and fish**

Hagnau-Burg (D), about 3000 years, scale: 1:1.

**5 Zürich, Kleiner Hafner, CH**

Graphical record of uncovered strata on synthetic paper.



**5**



# Original ...

## ... or forgery?

With the increasing pile dwelling euphoria in the 1860s, also the demand for pile dwelling artifacts had sharply increased. Fishermen and farmers devoted themselves to this lucrative business that could not even be curbed by the excavation prohibition acts of the Swiss and German state governments (Bern 1873, Thurgau 1861, Baden 1905).

Since this resulted in an excess of supply, prices for simple objects deteriorated. Broken pieces of artifacts or utensils made of bone or stone lost their value and only valuable pieces like textiles or metal objects achieved higher prices.

This prompted forgeries to appear on the market. Wangen, Reichenau, Bodman but also Concise in Western Switzerland, were known to trade in fake artifacts. Therefore the museums in London and Berlin required "certificates of authenticity" and "proof of provenance". Original stone axes reground, pieces of ancient bones with designs carved into them after they were found or even imitations of copper pins made of cheap metal found their way into the museum archives.

Here you see various artifacts.  
Do you recognize the forgeries?  
(The solution is on the next page)





# The World Heritage

*made visible ...*

Images page 34/35:

## These objects are originals:

**1 Needle with a flat, cross shaped head**  
Peschiera (I), about 3700 years, scale: 2:3.  
Pin made of tin with delicate designs.

**8 – 9 Two small axes/chisels**  
Unteruhldingen/Sipplingen (D),  
about 5500 years, scale: 2:3.  
These tools were manufactured from particularly  
rare types of stone like serpentinite and nephrite  
from the Alps.

**11 Bone awl**  
Unteruhldingen (D), about 5500 years, scale: 2:3.  
With this tool holes were pierced into leather.

## These objects are forgeries:

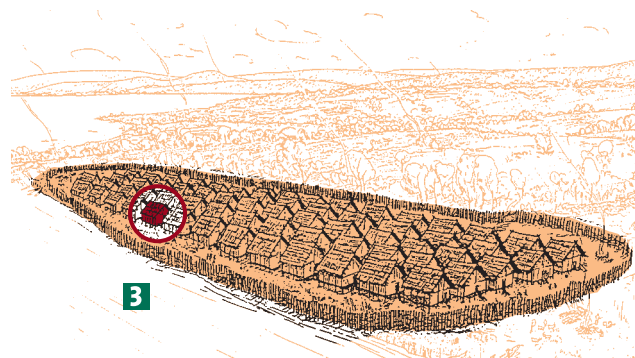
**2 – 3 Brooches and pendants from copper**  
Bodman-Schachen (D), Age: unknown, scale: 2:3.  
Cut out of copper sheet, richly ornamented  
“jewelry” freely designed after Stone and Bronze  
Age models.

**4 – 7 Four small axes/chisels**  
Maurach/Sipplingen (D), about 5500 and  
130 years, scale: 2:3.  
Fragments of Serpentinities. Afterwards ground to  
axes/chisels to increase the value.

**10 Bone awl**  
Untersee (CH), Age: unknown, scale: 2:3.  
Bone ground to a point with subsequently carved  
in bird illustration.

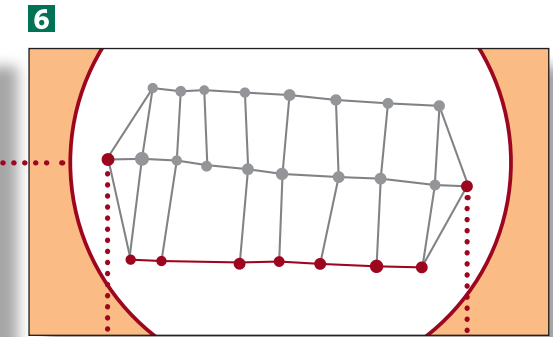
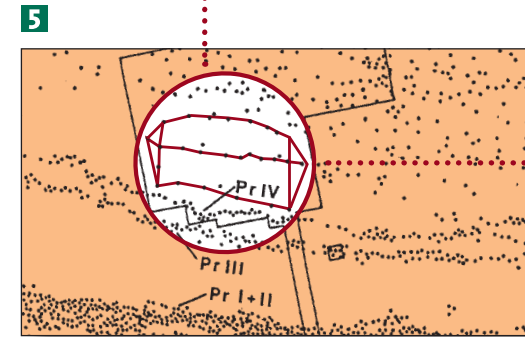
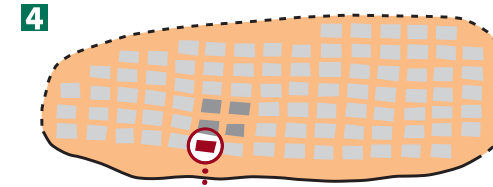


The subaquatic pile field of Unteruhldingen-Stollenwiesen (975 – 950 BC) **1** provided information, for the reconstruction of the village group „Unteruhldingen“ at the open air museum **2**.

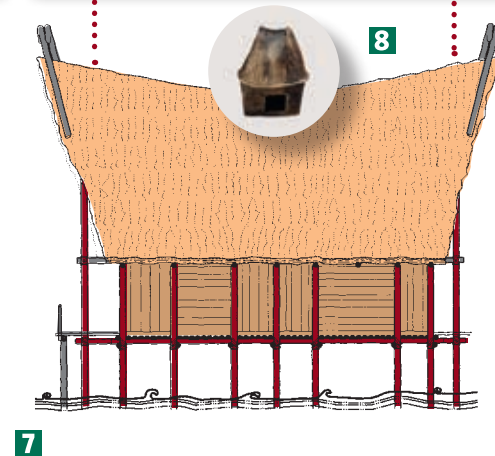


From the 87 discovered houses of the oldest settlement in Unteruhldingen (975–953 BC) **3**, five were selected for reconstruction in the Museum's open-air facilities. They were built based on the results of diving investigations and dendrochronological analyses of tree trunks used for the piles (age determination of the annual rings in the laboratory of the archaeological service of Baden-Württemberg in Hemmenhofen). Helpful for the replication have also been research results of settlements with similarly structured houses existing during the same period in Southwestern Germany and Switzerland.

Exemplarily is the reconstruction method of a house with three rows of piles – a two-aisled building. The house stood originally at the seaward edge at a north-southern direction immediately behind the palisade **4 5**. Built on 15–18 cm (about 6 to 7 inches) thick oak posts, the house's floor plan measured 13 by 6.50 m (42.6 x 21.3 ft). The cross braces between the posts, in the neighbouring houses also pile shoes, secured the construction raised 3–4.50 m (9.8 x 14.7 ft) above the lake bottom. Collapsed walls, preserved hut floors with hearths, finds of rafters, ridgepoles, and charred reeds in the ruined buildings of various settlements, serve together with visual representations as model for the rebuilding of dwellings in experimental processes. These "model dwellings" are exemplary and serve to explain building methods and constructions. So far, no dwelling has been found intact. The fragments of daub, boards, flooring, show, however, a variety of design features that were subsequently arranged didactically at the building of dwellings in the museum.



An extended centerline **6** speaks for a roof shape with a sloping ridge beam spanning the floor plan – a construction that is also found on Etruscan clay urns in northern Italy **8**. The roof slopes and formations can indirectly be detected by symbols on pottery or on walls. According to the information available about dwellings at the Lake Constance, steep roofs thatched with reeds may be confirmed. Hipped roofs are also likely. The supporting piles with lengths exceeding 11 m (about 36 ft) provide the possible maximum height of the ridge **7** supports 1–2 m (about 3.3 to 6.5 ft) driven into the lake bottom.

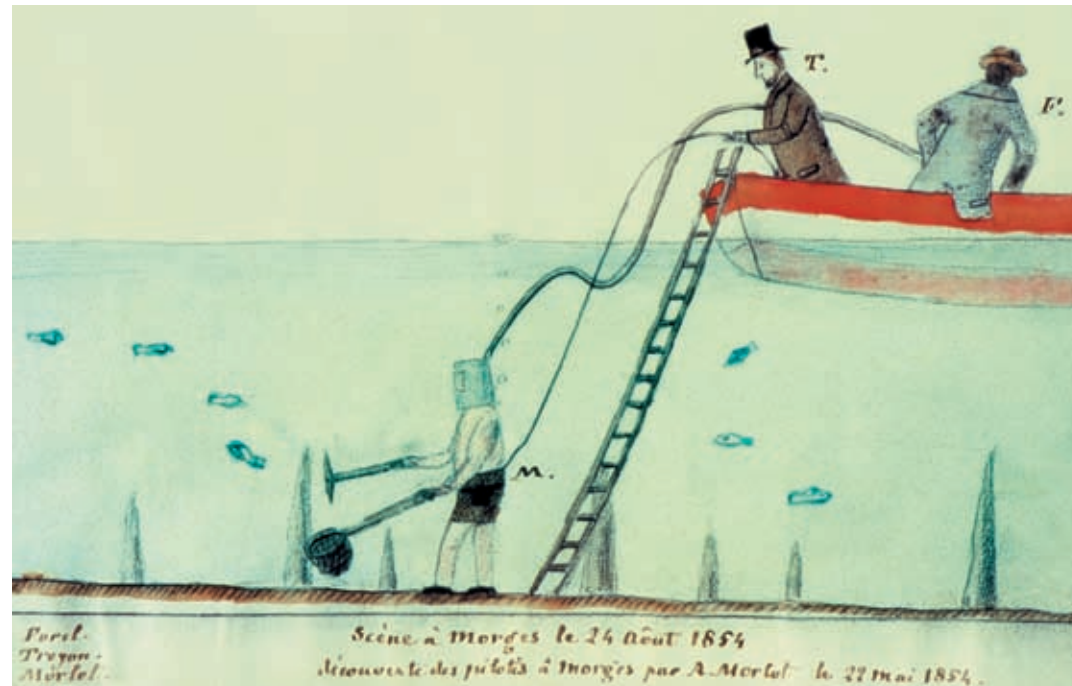




Some houses are spartanically furnished. They have only a hearth and a community bed, stored next to it were supplies for the winter. These houses are mostly from the Neolithic period. Other houses are presented as workshops or serve to demonstrate tool technology for the guided tours. With the help of artists and experimental archeology, the latest houses from the Bronze Age are staged educational. The family house, in the

For example, a salt merchant with his son appears at a basket weaving family who just got up from a night's sleep, offering his goods for trade. A pot is broken – to the right – and the angry grandmother scolds the boy who has overturned the porridge, the morning meal of the family. The scene is a fiction. It probably has never happened this way. Still this image creates attention and provides a more accurate view of the actual lake dweller's life. In the narrow living room, exactly replicated artifacts, everyday objects like clothing, jewelry, can be recognized in dim light. This is a new way of presenting archaeological finds and knowledge about the pile dwelling-building period at Lake Constance and at the same time, it allows for a glimpse into the tedious puzzle of historical reconstructions.

Scenery at the morning of August 24, 1854.  
Discovery of the pile field on May 22, 1854 by A. Morlot.  
F.: François Forel, T.: Frédéric Troyon, M.: Adolphe von Morlot  
Drawing: Adolphe von Morlot



# Beginnings

## *of the pile dwelling research*

### **Morges, Lake Geneva (CH), August 24, 1854:**

The geologist Adolphe von Morlot, in the company of Frédéric Troyon and François Forel, dived for the first time in a prehistoric lake dwelling. After the discovery, he succeeded in developing an underwater diving apparatus just within three months that made it possible to investigate the lake bottom. The equipment consisted of a bucket as a self-made diving helmet into which air was pumped from the top. In the front of the helmet was a view window. The air exited from the shoulders.

The investigation at the bottom of the lake took a hatchet and a scoop. However, this was not as successful as was fishing with a long-shaft hoe, a rake, and grippers – temporarily, this method yielded more finds within a shorter time.

Morlot reported his impressions of the diving freely after Schiller's "The diver":

*"... my diving apparatus came out perfectly – For below all is fearful, of moment sad; Let not man to tempt the immortals e'er try, Let him never desire the thing to see That with terror and night they veil graciously. In any case it was touchingly poetic in the midst of the old piles in the bluish twilight."*



**Replication of diving helmets as used at the beginning of underwater research 1854.**



# Pile Dwelling Research

*in a time-lapse ...*

1853/54



Lake Zurich (CH):  
with an extreme low water level, remains  
of a submerged settlement come to light.

1854

Who invented it?  
Ferdinand Keller examines the settlements –  
and calls them “Pile Dwellings”  
  
Where did the pile dwellers live?  
F. Keller: “At the shore above the surface  
of the water.”

1856

In Germany (at Wangen / Lake of Constance)  
remains of pile dwellings also are discovered.

1858



1859

Keller’s discoveries fascinate and inspire people.  
  
Charles Darwin publishes his book “On the Origin  
of Species”. Because of this book, the question  
about the origin of man becomes of great interest.

1861

The government of Thurgau (CH) prohibits exca-  
vations conducted without prior permission.

1865

Museums in London, St. Petersburg and New York  
want finds for their comparative collections –  
and thereby encourage not only traders but also  
forgers.

1867/68



The Swiss Government proudly presents finds  
and house models of pile dwellings at the World  
Exposition in Paris.

1875

Not only in lakes – remains of settlements are  
also found in bogs.

1888

The Industrialist C.F. Bally reconstructs pile dwell-  
ings in a recreational park for his employees.

1905

The State of Baden prohibits unauthorized  
excavations.

1919 – 28



1921

Over 100 floor plans are discovered during excava-  
tions in Schussenried and Buchau.

1922

Where did the pile dwellers live?  
H. Reinerth: “At the shore.”  
  
Founding of the Pile Dwelling Association and the  
Lake Dwelling Museum Unteruhldingen.

1927

Filming location Pile Dwellings: parts of the  
Ufa movie “Nature and Love” are shot at Unter-  
uhldingen.

1929/30



In the middle of the water – yet with dry feet: first excavation in a large pumped dry casing near Sipplingen.

1935

Do the pile dwellings fit into Nazi ideology? No! Yet during that time everywhere in Germany, Bronze, and even Stone Age, people are reinterpreted as having been “Nordic Germanic”.

1941



Buchau: A new scientific method, the tree ring dating (dendrochronology), makes the dating of piles possible.

1942

Where did the pile dwellers live? O. Paret: “Pile dwellings did not exist.”

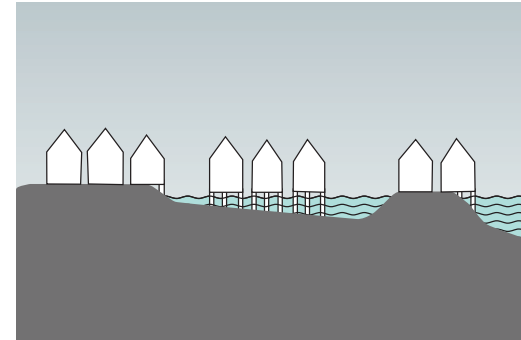
1956

No longer with buckets on their heads, but with compressed air tanks and breathing apparatus: first archeological underwater research at Unteruhldingen.

1979

How many pile dwellings are there? The Baden-Württemberg State Office for the Preservation of Historical Monuments starts with the systematic research of the sites.

1982



Where did the pile dwellers live? H. Schlichtherle: “On the surface of the water, at the shore and on land.”

1973–93

Excavations in Hornstaad, Lake Constance (D).

1996

Reconstruction of a Stone Age dwelling at the Lake Dwelling Museum according to finds in Hornstaad.

1992

A house ornamented with breasts? Divers of the Baden-Württemberg State Office for the Preservation of Historical Monuments discover remains of a stone age cult house.

1993–95

Excavations in Arbon-Bleiche, Lake Constance (CH).

1998

Reconstruction of a Stone Age dwelling at the Lake Dwelling Museum according to finds in Aborn.

2001

Reconstruction of 6 Bronze Age houses at the Lake Dwelling Museum after underwater excavations in Unteruhldingen in 1981–89.

2006

Stone Age – The Experiment. Living like 5000 years ago. In the ARD/SWR television documentary, 13 people live for 8 weeks as people did 5000 years ago.

2009

Excavations in Olzreute, Bad Schussenried (D) bring it to light: Europe’s oldest wheels originate from the pile dwellings.

2011

The remains of the pile dwellings need our protection. There is still so much we do not know! The pile dwellings are designated World Heritage.

2012

The Exhibit „The Legacy of the Pile Dwellers“ opens.



# An Idea

## ... and its explorers

The old pile stumps in the lakes had always been hindering the fishermen when setting their nets. No one, however, could have guessed before the cold winter of 1853/54 that the obstacles in the lake could possibly be the remains of prehistoric settlements. This changed abruptly once the piles could be identified as the discoveries of prehistoric times. After this surprising insight, the “pile dwelling fever” began in many European countries.

Findings reached almost all major museums from Sicily to Latvia as well as the world exhibitions in Paris and Vienna. What started as collecting enthusiasm soon turned into highly regarded research. The piles stood for a new view on the evolution and history of mankind. An intensive

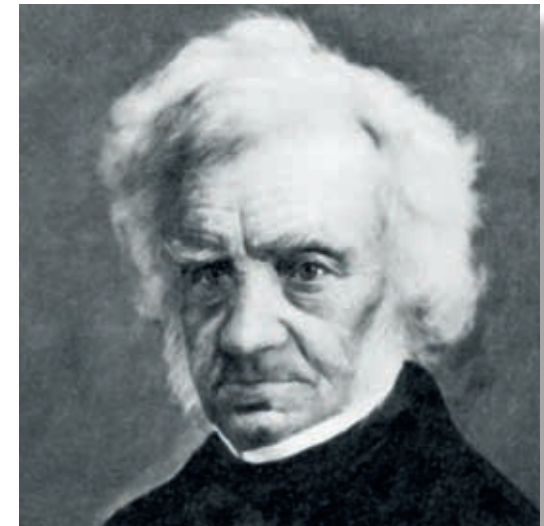
development of research and excavation methods found its beginning, especially in the area of natural science. People interested in history, from private collectors to preservationists to university professors, considered it an opportunity to reconstruct prehistoric life.

Now, after over 150 years of research, the sites have been declared World Heritage. This is the achievement of the researchers named in this booklet. But it is also the achievement of the many associations and sponsors that have supported the Lake Dwelling Museum Unteruhldingen in its mission of exploring and communicating the life of the lake dwellers for more than 90 years.

## Ferdinand Keller

Educator · Prehistorian · Collector

1800 – 1881



*“It is hardly necessary here to state, what in the year 1855 was new to antiquaries, that from a series of discoveries the fact is made manifest, that in the very earliest times groups of families, or probably whole tribes, subsisting by hunting and fishing, with some knowledge of agriculture, lived on the borders of the Swiss lakes, in huts built not on dry ground, but on a series of piles in the shallows near the shores.”*

F. Keller, 1856

As a studied theologian, Keller first became a private teacher in England, and worked later in Zurich. After studies in Lausanne and Paris the first systematic excavations and publications followed. He was the founder of the Antiquarian Society of Zurich, which published the pile dwellings reports after the discovery of the pile dwellings in 1853/1854.

The news about the prehistoric pile dwellings quickly spread across Europe and triggered investigations at several lakes. In a very opportune time for classical studies, the pile dwelling subject

soon reached the world exhibits in Paris and the international news coverage. The Zurich collections were an inspiration and set an example for the founding of numerous museums.

Keller's pedagogical approach was expressed in the invention of the “stone drilling apparatus” and his role as an antiquarian in the counseling and support for archeological research at home and abroad.

## Ludwig Leiner

Pharmacist · Collector · Museum Founder

1830 – 1901

*“What good does it do and how does it help the general public, if there and here in a house, a broken piece of a dish, a sliver of flint stone has been kept and treasured. Assembled those pieces will give everyone a complete and understandable picture of those ancient times.”*

*L. Leiner, 1872*

As an advocate of regional history, Leiner was one of the founding members of Lake Constance Historical Society in 1868 and as secretary together with the Guardianship Konstanz he soon supervised the Baden part of the shore. He was an obsessed buyer of archaeological finds. He even employed pile dwelling collectors paying them from his private funds in order to prevent sales to foreign countries. He performed his own pile dwelling excavations in Konstanz-Hinterhausen and Raueneegg.



Far beyond the borders of Lake Constance, he made a name for himself with the founding of the Museum in Konstanz in the Rosgarten in 1871 in which he exhibited his collections on the history and natural history from the Ice Age to the present. Rudolf Virchow acknowledged his services in 1877 with the words: “The municipal museum in the Rosgarten is a collection of which each state should be proud of.”

Finds of his collection from Hagnau and Konstanz can be seen as a loan in the exhibition.

## Jakob Messikommer

Farmer · Excavator · Lake Dwelling Entrepreneur

1827 – 1917

*“It will be an immense pleasure, if you would visit me in the next year at my pile dwelling. I can assure you that you will look at the ancient objects with heightened interest.”*

*J. Messikommer, 1864*

When digging peat in 1856, he found a human lower jaw in the peat moors near Wetzikon-Robenhausen. This pile dwelling would become his life ambition.

In close collaboration with Ferdinand Keller, he developed into an expert for excavations and financed these through sales of finds to about 1200 customers throughout Europe. The demand is so high that under the advice of Keller, he employed fishermen and collectors in Western Switzerland and at Lake Constance to work for him.

For the World Exhibition in 1867, he put together an assortment of original finds, which are still even today present in almost all archeological museums.



As an excavation specialist, he examined sites of various epochs. The market grew rapidly. For pile dwelling bronzes, soon 50 times more was paid than for a stone axe. Textiles were similarly high in value. Large textile finds were parted into several handy pieces to increase sales.



## Georg Sulger

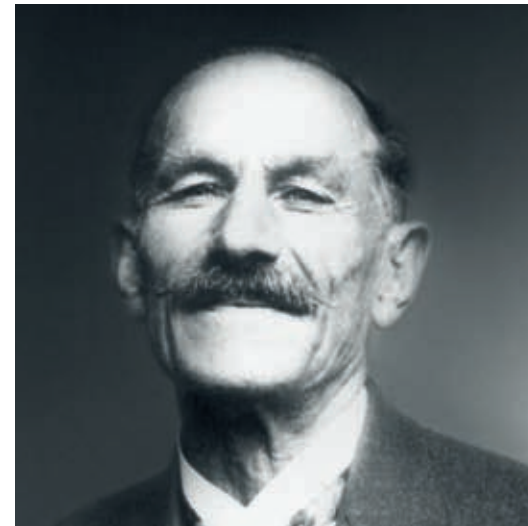
Mayor · Collector · Museums Founder

*“But suddenly something glimmered and sparkled among the pile stumps that appeared to be a small ring, maybe lost by fishermen or boatmen. I dug out the “small ring”, and in front of me lay a golden like beautiful, entirely undamaged spear of bronze. ... My father sold the piece for me and received 30 Marks. From this he bought a small boat that was however a bit worn down by age, but for my use it was sufficient.”*

*G. Sulger, from his memoirs, published posthumously in 1941*

From early childhood on, the son of a fisher collected remains of pile dwellings. Already at a young age he had in his mind to bring the sunken pile dwelling outside his front door back to life so that he could show the finds retrieved in a modern museum to the public.

Only after several attempts and at first with great resistant, he succeeded with the help of the local fishermen and farmers, the cultural experts in the region, and the Institute of Pre- and Protohistory



of the University of Tübingen by founding the Association of the Lake Dwelling Museum in the year 1922. He conducted the association's affairs as chairman until 1937.

With his knowledge about the sites and as a pile dwelling specialist, he was very much appreciated by the researchers. As mayor, he possessed great skills in the development of the site in terms of infrastructure, the first nature reserve at Lake Constance and tourism. The “Pile Dwelling Mayor” Sulger was a visionary, whom the museum owes its existence.

1867 – 1939

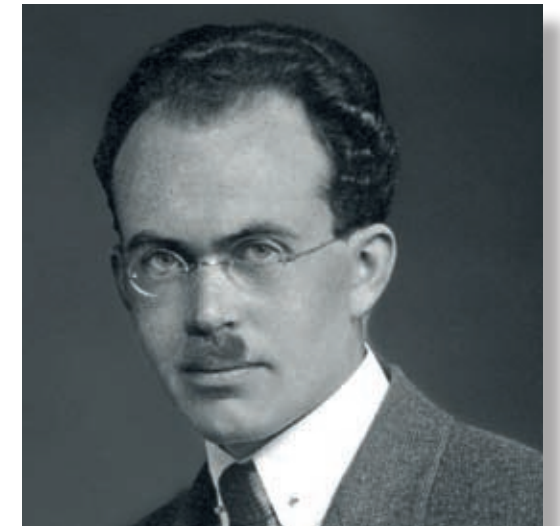
## Hans Reinerth

Excavator · Ideologist · Museum Director

*“All evidence suggests that the pile dwelling villages at Lake Constance, were lake dwellings which were constructed at the marshy shores of the lake ... on supporting piles.”*

*H. Reinerth, 1921*

As a highly talented theology student, he came to Tübingen in 1918, supported by his hometown Bistrita, Transylvania. Surprisingly, he pursued studies in prehistory instead of theology and was awarded his doctorate in 1921. Already in 1925 he became a high school teacher. Together with his mentor, Professor Dr. Robert Rudolf Schmidt, he developed a modern university institute, taking into consideration natural sciences and modern technology. He was responsible for pioneering excavations at the Federsee and at Lake Constance. For the first time Reinerth met with George Sulger in 1919. As the co-founder of the Pile Dwelling Association, the Institute Tübingen made the excavation results from Schussenried (1919–20), Bad Buchau (1921–37), and the pioneer excavation at Lake Constance at the doorstep of Sipplingen (1929/30) available for the reconstructions of the prehistoric villages of Unteruhldingen. As early



as 1921, Reinerth had argued that the settlements were shore settlements rather than pile dwellings built into the water.

Reinerth lost his formerly good name as a scientist because of his work within the scope of the Nazi prehistoric research. After 1949, he was therefore excluded from science. From 1953 to 1986, he served as director of the Lake Dwelling Museum and conducted minor excavations, which were published in the Association's magazine “Vorzeit” (Prehistoric Times).

1900 – 1990

## Helmut Schlichtherle

Archeologist · Excavator · Conservationist

*“The houses are founded with simple piles deeply driven into the mud or with the “Fleckling Construction” (Pile shoes). In several settlements, evidence points to a detached structure.”*

H. Schlichtherle, 1985

Already as a student, he collected pile dwelling objects at Lake Constance, which in his enthusiasm for the Stone Age led him directly to Tübingen and Freiburg to pursue the study of prehistory. In 1979, he was awarded his doctorate and took over the direction of the pile dwelling research institute at Hemmenhofen at Lake Constance for the archaeological service of Baden-Württemberg.

The stagnating pile dwelling research after 1945, the lack of supervision of the sites, and the uncontrolled dredging at the marinas, caused the destruction of numerous settlements in the 1960s and 70s. The “Pile Dwelling Controversy” centring on the interpretation of this type of dwelling also paralysed further research.



H. Schlichtherle earned the pile dwellings international attention again in the science community. The integration of scientific methods such as dendrochronology, and the further development of the diving/underwater archeology, as well as the continuation of the regional archeological research and the work of the Research Institute Tübingen are his accomplishments. With the cadastral registration of the sites, he had contributed greatly to the predicate “UNESCO World Heritage Pile Dwellings”. The house construction “Hornstaad” at the Lake Dwelling Museum is likewise a result of his excavations there in 1973–1980.

born: 1950

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