Open-Air Museums in Europe

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By

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Translator: Vladimír Klíma

Cambridge Scholars Publishing

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Preface for the first (Czech) edition

Dr Adelhart Zippelius, the founder of the German Rhine (Kommern) open--air museum, published his handbook of European open-air museums in 1974. It contains a complete list of the then existing European open-air museums, totalling 167. Dr Jerzy Czajkowski, for many years the head of the Sanok Museum in southeastern Poland, wrote the following book adding many more museums. More than 20 years have passed and in the meantime naturally, some museums have grown and more new museums were set up. Our colleagues from the European museums have discussed the need for a new survey. But none of these plans have so far been carried out. Now we cheerfully welcome Dr Jiří Langer's work. His book fills up the gap for those who take an interest in the history of culture; this will primarily serve our colleagues in Europe

Jiří Langer knows European open-air museums very well. He gathered information partly during his research and numerous consultations with his colleagues, and partly thanks to his activities with the Association of European Open-Air Museums. He has kept personal contacts, contributing to the heart-felt atmosphere surrounding our colleagues in various European countries. One often feels that the same problems face museums in Croatia, the Czech Republic, Northern Ireland or Sweden. Their common solutions increase mutual understanding and friendly inter-relations, which all of us appreciate.

In September 1990, Jaroslav Štika and Jiří Langer hosted a big conference attended by nearly 100 participants from European open-air museums. The beautiful and well-kept Wallachian Open-air Museum received, delighted and impressed us. Museums throughout Europe are pleased to co--operate with Czech colleagues from Rožnov pod Radhoštěm.

The Skansen in Stockholm, the oldest open-air museum in Europe was founded and opened to the public by Artur Hazelius in 1891. The new improvements meant that the buildings were not moved for protection and preservation but chiefly in order to be shown to the public for instructive purposes, if I am to use the words of the former director of the Skansen, Gösta Berg. Hazelius understood that industrialisation would strongly transform life in the countryside as well as in towns. The expression *skansen* is now used synonymously in some languages with open-air museums. *Skans* in Swedish means an old place of defence or a fortress. A fortress such as this stood on the top of the hill where Artur Hazelius established his open-air museum. He intended to preserve the old farming cultural legacy and to open it to visitors. The idea inspired his followers and spread all over the

world. Nowadays, the only place this format has not been accepted is South America.

Travelling people can disseminate this idea and the brothers Alois Jaroněk and Bohumír Jaroněk from Rožnov pod Radhoštěm, who visited open-air museums in Århus (Denmark) and Oslo (Norway), started their work to preserve threatened buildings in their region upon their return home.

Many open-air museums attract tourists in their respective countries. Vistors can imagine or dream an illusion of people's past lives. Open-air museums offer a general view and enable the public to understand better the culture and history of a country or a region. Open-air museums have been able to develop their freedom much more easily than more science-based institutions.

Jiří Langer's knowledge and style form the basis of this book that is becoming an extensive and valuable guide for tourists with cultural interests and will assist cooperation between European museums.

Gunnar Elfström, director of the Swedish open-air museum Gamla Linköping, President of the Association of European open-air museums in 1993–1997.

In June 2011, Jiří Langer and Karel Kuča were awarded *European Union Prize for Cultural Heritage / Europa Nostra Awards* in Amsterdam for their book about wooden churches and bell towers in Europe (2009) and in October 2019, they were awarded *the Jože Plečnik Prize* in the Czech Republic for their lifelong conservation activities.

Author's preface

At first, I tried to make drawings of the scenery in order to better recognise villages and their architecture. Then I studied it from the viewpoint of history, sociology and ethnography. In my younger days, I was fond of walking in the mountains, and I drew everything I liked. I became acquainted with villagers. When I started my work in museums, I participated (from 1960) in designing, planning and building open-air museums in the Czech lands and Slovakia. I travelled in order to see them whenever and wherever I could, mostly during my holidays, and observed their relative position among Czech museums. I have seen about 145 open-air museums, many of them several times, surveyed their exhibits and asked my colleagues to inform me about their concept and operation.

As the title suggests, this book deals with the museums in which we move around without having a roof over our heads. Their settings were deliberately reconstructed to demonstrate historical lifestyles which characterised a particular region. Such museums show how people lived, especially their dwellings, what they consumed and longed for, what made them happy or sad and how they transformed the surrounding countryside.

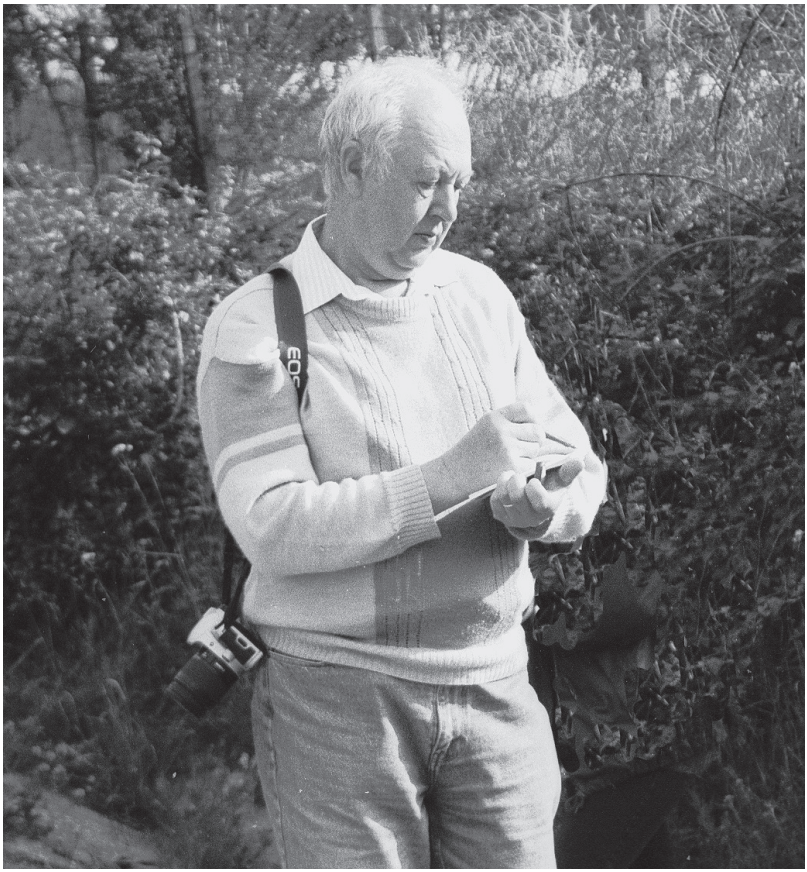
Open-air museums differ from one another as they did not always develop for the same purpose. I cannot classify them by any universal criteria; each country formed its own structure and in some countries, there are not only great national or regional institutions but also small museums, private or village ones, set up by and belonging to local supporters, or major museums established thanks to the donations or associations subsidised by local, district or regional councils but also by the government. Nordic countries especially have many small museums, which are still developing and deteriorating or stagnating. Consequently, data concerning them can be neither complete nor exact. Even addresses of many such museums are almost unknown. But in some cases, they attract more attention than the village itself. Associations set them up not only to present the regional culture and history of past generations of local families but also for one simple reason: their members need a place where they can meet and talk during the long winter nights.

Present guidebooks enable us to trace the cultural relations of Low Germany and the Netherlands, Denmark and the coast of Poland up to the eastern Baltic countries of Norway, Sweden, Finland and northern Russia, as well as countries lying below the Alps and the Carpathians.

Curiously enough, southern Europe has not yet established open-air museums. Why? Probably because the Mediterranean did not develop

villages and farmsteads similar to ours. The local population perceived culture as one whole that was not divided according to the privileges of social classes or residences. Their village houses can be classified as town ones. Building materials perhaps caused restrictions as masonry houses could not be transferred to other places for example. This method was so difficult that it could be applied only to the buildings that were the culmination of many artistic styles and were transferred only if their existence was seriously threatened at their original site. Even central and north European museums avoided brick-built buildings for a long time as wooden houses were more easily taken to pieces and reassembled elsewhere.

For many years I planned to write a book presenting the most important European museums of this kind. At last, I managed to carry out my long-



-time intention thanks to the initiative of Věra Kučová and Karel Kuča and the interest of Baset Publishing House – but to a larger extent than I had imagined. The book aims to capture all museums in Europe if possible. It would have been hard to make a list of open-air museums which come close to their complete enumeration (roughly 4000). These museums, like any living organisms, arise, develop or, unfortunately, decay and disappear. Compromising, I used my knowledge, special literature, museum leaflets and consultations with my friends and foreign colleagues. With so many museums, one cannot find out the present-day condition of all museums between Iceland and the Ural, between the Norwegian northern cape and the Balkans. You may, therefore, see much more in some of the museums than this guidebook promises.

New facts kept enriching my text and I found it difficult to finish writing this book. It would never have been complete without the assistance of numerous colleagues. A single man cannot gather so much information from such vast territories. I wish to remember my friends here from distant museums who helped me study the cultures of their own countries, particularly the late Christopher Zeuner and Michael Thomas from England, Eurwyn William from Wales, Alan Gailey from Northern Ireland, Heino Wessel Hansen, Liese Andersen, Finn G. Nielsen and their colleagues from Denmark, Mats Janson, Gunnar Elfström, Kersti Björklef and Lena Larsén from Sweden, Jakob Agotnes, Ase Tömdel and Ola Setter from Norway, Stefan Baumeier, Carl Ingwer Johansen and Konrad Bedal from Germany, Oľga Sevan from Russia, Jurij Hoško from Ukraine, Paul Niedermaier and Mihai Dancuş from Romania, Endre Füzes and Miklos Cseri from Hungary and many others.

I wish to thank Karel Kuča for his valuable editorial advice and many photos, Milena Habustová and Luděk Habusta for helping me acquire and eleborate data, Helena Bočková for her comments relating to southeastern Europe and all my friends who offered me minor data (as these informed the whole) and who sent me photos taken during their journeys: Vanda Jiřikovská, František Ledvinka, Alena Lenoch, Tomáš Lenoch, Bedřich Přikryl, Oľga Sevan, Daniel Drápala, Zdeněk Cvikl, Jozef Turzo, Tomáš Vašut, Heinovi Wessel Hansenovi, his wife Liese Andersen, Zuzana Syrová, Jiří Woitsch, Miroslav Sopoliga and Olena Krušyns´ka.

My warmest thanks rightly belong to my wife Jaroslava Langerová, who accompanied me on my travels. I could never have written this book without her understanding.

Jiří Langer

Book arrangement

This English edition – like the Czech one (2005) – was completed by Karel Kuča, who also arranged the illustrations, especially photos and maps, and ensured high research standards, whereas Vladimír Klíma translated the text from Czech into English. (The revision of the final version was carried out by Elanor Harris and chapter *The European House and its Context* also by Craigmaile McGregor, whose assistance combines English and ethnography.) Both of us express our gratitude to the editors of Cambridge Scholars Publishing for improving the utility, shape and look of the extraordinary work written in Czech by Jiří Langer, who has devoted his lifelong research and art to his fruitful ethnological studies.

In comparison with the Czech edition, the text of the book had to be shortened by a third: numerous localities near the museums were often left out as well as transport information and the activities of the museums. Texts about museums have been updated and some newly established museums have been added. Many photos have been replaced with current ones.

The book includes 527 museums in 31 countries. The information is offered in alphabetical order of the countries and their museums. The numbers corresponding to them appear on the maps attached to each of the selected countries. Where the network of museums is excessively dense, countries are subdivided into lands or regions (in Germany, Norway and Sweden) also in alphabetical order in order to keep the number codes of museums, photos and maps as they were indicated in this edition. The names of sites and museums are given in the original version (Příbram, Røynevarden and Nowy Sącz). Names in countries using the Cyrillic alphabet are also given 'as they are written', not 'as they are pronounced' because their letters are the same as in the Slavic languages. Latin. International licence plate country codes with the number code of the museum (like EST-1) precede each open-air museum in the text and the captions of the images. The text includes the identification of each museum, the original name of the open-air museum and the town or village, the name of the district or the region, sometimes its postcode, the name of the street or the address of the administrative area. In bold square brackets – **[27]** – are the numbers of buildings or areas corresponding to the numbers in the schematic maps of the individual museums. To speed up orientation, the numbers indicate some museums that do not have a map in the book.

Vladimír Klíma and Karel Kuča

DEVELOPMENT OF OPEN-AIR MUSEUMS

The origin of open-air museums is generally understood in relation to the great expos of the second half of the 19th century. Models of buildings from all continents, mainly from the British colonies, were exhibited in London in 1851. A quite exceptional deed was the reconstruction of part of a medieval town assembled from copies of constructions documented in northern Piemont by the Portuguese architect Alfredo d'Andrade in Torino (I-2), which has been preserved up to the present time.

In 1873, organisers of the Vienna Exhibition attempted for the first time to show authentic pieces of regional architecture (nine houses from the countries belonging to the Austro-Hungarian empire). In 1878, the furniture of living rooms was exhibited together with figures in folk costumes from different countries. (Artur Hazelius of Sweden formulated for the first time the complex concept of folk culture with living people's activities.) Folk culture was similarly shown at large exhibitions in Amsterdam (1883), and in Budapest in 1885, with the interiors of 12 houses from Hungary. The Jubilee Exhibition in Prague (1891) followed the Vienna example in constructing a Czech village cottage from the Elbe lowlands. It was used in 1900 for the opening of an ethnographic collection in Přerov nad Labem and for starting an open-air museum 67 years later (CZ-6). Similarly in 1894 at the Galician Exhibition in Ľviv, six transferred farmsteads, a windmill and a church were exhibited.

The Czechoslavic Ethnographic Exhibition in 1895 resulted from the cooperation of an ethnographer, an architect and many museums through the principal concept of F. A. Šubert, the director of the Czech National Theatre, and looked like a scenographic design rather than a reconstructed village house. The exhibition included 90 buildings and the genuine ethnographic concept corresponded to the idea of an open-air museum. But it was impossible to keep buildings at the exhibition site or transfer them to another place (with a few exceptions). As a result, its concept and valuable experience remained applicable to later house transfers.

In the meantime, there were more successful attempts in Scandinavia: Norsk Folkemuseum, Oslo (N-10) still comprises the so-called royal collection of transferred regional buildings, conceived in 1881 and carried out in 1888. George J. Karlin's similar intention (S-12) came to be realised in Lund in 1891 when Artur Hazelius offered access to his museum, the Skansen in Stockholm (S-16). He started its construction in 1880, having spent the preceding 12 years conducting research in the field and collecting. He founded the ethnographic museum of Nordic countries (the Nordiska

Museet). Following the principle 'A day may come when all our gold will not be enough to create an image of the past', he initiated – together with his friends – the Scandinavians' movement. They did not aim solely at preserving vanishing houses but also at renewing the disappearing atmosphere and elements of the old lifestyles. It is worth noting that many museums of this kind originated before World War I in northern Europe as well as in the north of Germany (D-86, D-87, D-91, D-77 and D-59) and today's Poland (PL-10 and PL-22). Latvian and Lithuanian efforts came to be successfully realised only after World War I (LV-4, LT-3). According to Hazelius's concept, a characteristic farmstead was transferred from each region of the country (and from small districts to minor museums), while its natural surroundings were reconstructed as well.

Anders Sandvig prepared an open-air museum in Lillehammer (N-30) from 1887 with a different intention. He followed a sociological stratification of the Gudbransdal valley population. He reconstructed a large part of the historical settlement where constructions were not understood as evidence of the villagers' skills but as means of recognising their lifestyles. He opened his museum in 1904.

This approach was applied in Central Europe to Rožnov pod Radhoštěm (CZ-9) thanks to the initiative of the painter Bohumír Jaroněk, who from 1912 carried out the old plans using Sandvig's method even although the two gentlemen did not know of each other's intentions. Because of World War I, the development only started in 1925 and even Jaroněk's concept was not fully carried out due to lack of finance.

The building conditions of the open-air museums changed substantially after World War II. Central and Eastern European countries suffered most from irreparable losses to their cultural heritage damaged during the war. Village houses of the time no longer satisfied the increasing housing demands. As a result, they succumbed more quickly to the disruption of the post--war building renovation and economic efforts. This situation made nearly all European nations develop and intensify their activities for systematic monument protection and care. Rescuing extant buildings became a priority for museums and consequently, methods for the preservation of monuments were employed in order to create open-air museums. Monuments are meant to be protected in their original places, which prevented the transfer of some pieces of regional architecture to museums in some countries (including former Czechoslovakia).

The building of open-air museums was recommended in declarations issued by the International Committee of the Organisation of Museums (ICOM). In a polemics with monument protectors, it recognised the transfer

of buildings as the most extreme and exceptional manner of saving them. The so-called original natural setting surrounding most houses had changed in the meantime. Monuments of regional architecture were vanishing fast, too. There was sometimes a need to protect the material of different structures rather than to renovate their architectural shape. Museums displayed them as the fruit of their technological and artistic skills (which was proclaimed by ICOM as late as 1977), regardless of their original surroundings from the 1970s.

Newly established open-air museums began to return to known museological concepts, thanks to Hazelius, Sandvig and Jaroněk. The younger generation demanded more complexity in the displayed elements of reconstructed surroundings. Protected buildings got back their scientifically ascertained (although vanished) surroundings. Not only farmsteads but also nearby fields, meadows, orchards and pastures were renovated. This required considerable care, and so the principle of reconstruction was extended to the ways of traditional farming, production, and even demonstrations of dining, customs/usages/unwritten conventions, festivities and other areas of extinct life.

Wherever there was a choice, only the so-called original material that had been preserved in the buildings was preferred. This worked better in northern Europe where fewer wood-spoiling insects live and where fewer fungi and moulds are active. This was one reason (the other one was where less damage had been inflicted by the wars) why more old houses have been preserved there.

But open-air museums are also built in countries where well-to-do owners have maintained their houses with care even during minor renovations, whereas cottages belonging to poorer people remained empty after the war and, therefore, deteriorated and disappeared. In many cases, only later research showed that some types of houses had completely disappeared and were not included in renewed settlements by museums.

Nowadays, we look for sources (remains of buildings in reconstructions, witnesses' accounts, old photos or drawings, historical official records in archives etc.) according to which the whole house could be reconstructed. Historically motivated demands laid on open-air museums have brought about not only many-sided technological and scientific analyses of old buildings but also reconstructions of damaged building elements as well as its whole construction, ensuring the historical core was preserved.

During the last 30 years of the 20th century, many museums undertook dendrological datations of wood coming from various parts of the preserved constructions. Thanks to this, we can now determine

precisely when the individual parts of a specific building originated from. (D-14).

Ethnographic and experimental historical and archaeological methods can be combined. Some open-air museums are extended by adding areas demonstrating medieval lifestyles. The presentation of these conceptualisations become enriched thanks to the principle that constructions dating from the 4th–7th centuries ought to be shown with increasing precision. This viewpoint can be applied to more complicated buildings, which serves to demonstrate that reconstructions of different periods showed how dwellings had improved in order to satisfy their inhabitants' demands.

The second half of the 20th century changed the technology relating to transferring and preserving buildings. Previously, they dismantled the structure, marked the and examined whether they would be statically suitable even after the reassembly of the building. Damaged or spoiled parts were replaced by new pieces (such as laths and roofing). New materials were used including brick and stone for the retaining walls and paths along front walls and were imitated with precision. Filling in rotten parts of beams was gradually abandoned. New beams of the same size and quality were substituted for old ones. The last decades have enabled the application of more sophisticated techniques so as to transfer large sections at a time, e.g. gables, plaster-decorated ceilings, kitchens built in brick and stone and gates.

The idea of conserving and restoring wooden houses is not different from what it was 50 years ago. The problems have resulted in a new specialist field because of the above-mentioned needs. Large museums ceased to use chemicals that harm human health and prefer physical methods: they apply heated air in perforated pipes under plasterwork, and this system regulates the humidity in a building to block conditions that enhance fungi, moulds and the multiplying of wood-spoiling insects. But many experts (especially from ecological museums) also desire to reconstruct pre-existing lifestyles of those communities which led to such conditions. Usually, smoke--producing operations repelled insects and regular heating removed extremes of humidity. When a beam became naturally rotten, it was easily replaced in the same way (depending on a carpenter's choice of wood) as three hundred years ago.

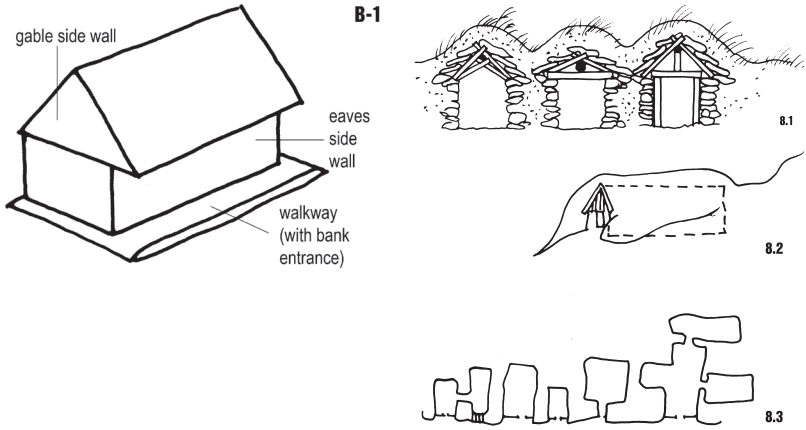
Museums offer knowledge to visitors by displaying the interior furniture in the buildings. Regional specificity and rich visual art presentation were researched at first and later on, efforts were made to demonstrate certain social classes and economic peculiarities. The most advanced museums in this respect are the ones that display exhibits (including written documents)

that recall some people's fates, in particular the dramatic periods of their lives, their family interrelations (including generational), interactions with their neighbours and community conflicts. Visitors can thus perceive specific historical processes. This presentation requires detailed research in terms of history and ethnography, both in the field and from archival sources as the economic and social structures of open-air villages should correspond to historical reality, including all details concerning interior furnishings, implements and surroundings. If very old buildings are studied, e.g. those dating from the Middle Ages or the 15th and the 16th centuries, even fundamental equipment such as household items can seldom be ascertained.

THE EUROPEAN HOUSE AND ITS HISTORICAL CONTEXT

Prerequisites for the emergence of architecture

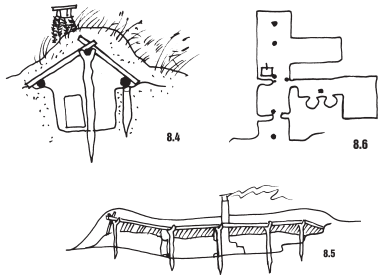
The Near East and the African coast of the Mediterranean, has had a long tradition of continuous cultural development including the apogees of Greek and Roman Antiquity, and the Byzantine era. The most luxurious architecture of town and countryside residential houses developed during those times. The living area was separated from the farming areas, with its yard building and dung-hill. Common activities of life were centred on the first floor of the house, while storage and functional spaces remained on the ground floor. The villa-type house had an open-roofed terrace facing the recreational garden of the enclosed inner courtyard, or the four-sided inner courtyard, a large, central entrance kitchen with a chimneyed fireplace and living rooms arrayed around it. Bedrooms were often only on the highest floor. Settlements along trade routes led to an intensified use of the land rather than the occasional use by farmers and shepherds, who were more peripatetic. Growing wealth attracted nomadic bandits. As a result, fortifications were added to the most ancient residential places and were needed until the end of the Middle Ages (even longer in the Balkans). Strong family farmsteads erected living towers, where they kept their property and could defend themselves when threatened. Many buildings of this kind are still standing in Italian towns (San Gimignano, Bologna and Mantua are among the best-known ones). In the countryside, they have been mainly preserved in Albania and the Caucasus Mountain range. When Mediterranean culture was in bloom, north and west European countries



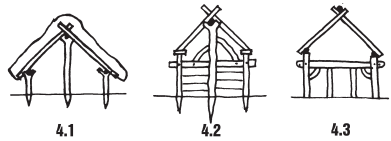
8. House dug-in with truss types: ***8.1*** *with straining beams,* ***8.2*** *with a ridge purlin (Iceland),* ***8.3*** *with a crown post.*

were only emerging from a prehistoric way of life and leaving behind their improvised struggle for subsistence in their unstable and simple dwellings. The majority of the population lived in dug-in underground huts with the only construction being their roofs. Curiously enough, the tradition of dug--out dwellings, under certain specific natural and historic circumstances, survived until the early 20th century (RO-3, RO-7, H-3, DK-8) or mid-20th century (IS-2, IS-6, IS-8). Only the roof projected outwards, being formed by the strutting branches of trees with a ridge purlin inserted at the point of intersection. Grating-like rafters were hung from it to support fern, heather, broom, reed, straw and bark coverings, together with flat stones, turf and peat. Similarly, roofed houses were constructed with the use of **straining beams** on the ground level, sometimes with low stone and peat walls, as with cruck construction. They were sometimes used in the Scottish Highlands (GB-10) from the Iron Age until the early 20th century (and exceptionally, until the 1960s). This method has been preserved more in Western Europe, and chiefly on the Atlantic Islands. The pole system, with the **ridge purlin support**, was more often applied in the sandy and dusty soils along the Middle and Lower Danube, and along the rivers flowing into the Black Sea. **[8.1–7]**

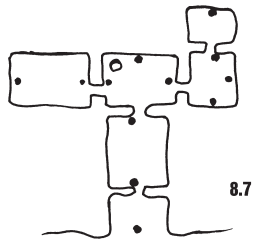
Prehistoric inhabitants built above-ground structures, and these were tied together with the two above-mentioned systems. Straining beams,



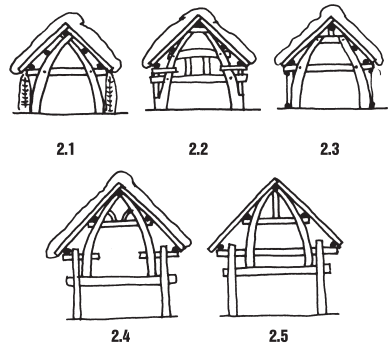
8.4–8.6 Dug-in construction ***8.4*** *with a ridge,* ***8.5*** *only open and roofed entrance,* ***8.6*** *a descending neck appears over the ground (northern Bulgaria).*



4.1 *Cleft post construction (prehistoric forms in the entire Europe).*
4.2 *Pole construction forming a frame with horizontal board panelling (Denmark).*
4.3 *Post construction with a straining beam truss (Denmark).*



8.7 *The central space of the dug--in dwelling is the kitchen entrance space (southern Romania).*

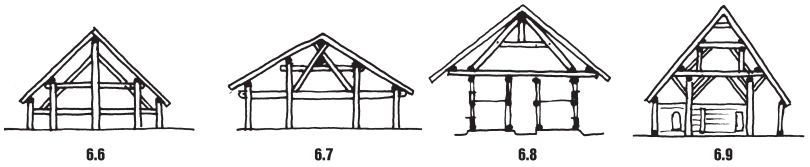


2. Cruck(s) constructions:
2.1–2.3 *England (like France),*
2.4–2.5 *Netherlands (as well as Belgium).*

crucks and poles only supported the roof. The open space under it was, at the periphery of the floor plan, covered by thin walls tied together with poles or stakes, placed under low eaves (DK-5, DK-9, NL-5, D-9, D-112). This system has survived until recently, too. Straining beams, with strong **cruck posts**, became the main element of the oldest constructions (the *cruck*) of timber-framed houses in Britain (GB-2, GB-13, GB-14), western Germany (D-82, D-92, D-95), the Netherlands and Denmark (DK-6, DK-16) with isolated traces elsewhere in Europe (in the Limousin region of France and

also in Romania, for example). They were preferable to narrow, single-pile buildings, which did not need any posts standing in the centre. The second system using poles made it possible to roof any wide space. Its posts formed frameworks on which other posts (**crown posts**) were placed. The whole frame network developed whereby the structure could be made higher or wider simply by adding more parts. The structure supported the roof. The periphery walls were fastened to it on the lower posts bordering the floor plan, but the inner partitions and cross walls were entirely movable. Big family communities needed large roofed spaces, chiefly in the cattle breeding regions, because animals lived alongside people during winter. The German, Danish and Dutch museums demonstrate best how the latter system (using poles) evolved into the timber-framed one, by separating the posts from the truss, although the hall space only had a negligible dividing arrangement (D-92, DK-5, NL-1). **[4.1–3, 2.1–5]**

One of the main elements of the construction of slanting curved posts (crucks) is the **tie beam**. It connects two slanting posts horizontally at ceiling height (ceilings were never made in halls) with its ends supporting lower roof purlins, called wall plates. Post, timber-framed and frame constructions have this tie beam *(Ankerbalken)* under the post tops. The ends pass through chiselled holes in the posts. They are wedged from both sides and often braced, as this joint makes the whole hall structure stable. Small-size constructions (such as the Jutland longhouse, DK-8) use this tie beam as a ceiling beam supporting the cover of the ceiling to close the wall panels. The lower roof side purlin (called the **arcade plate**) supporting the truss, lies on posts over the tie beam. This technological progress simplified hall construction so much that the tie beam was shifted over the posts, and as their upper timber joint started to support the wall plates **[5.1–5.5]**. They could lie farther from the middle than the separation of the posts would otherwise make possible. The tie beam of antiquity became an entablature, which separated the roof structure from the main supporting posts in the middle of the building. These were not yet wall posts, but they were no longer part of the roof construction. A separate truss lay on a high framework and partially hung down to the lower walls. This process started first in Upper Germany (the Hallenhaus mentioned in the 14th century, D-14) and later in the Netherlands, from where it spread northward to Schleswig *(Gulfhaus)* documented in the 17th century (N-1, D-92, DK-8). Unlike the long halls of Lower German cattle breeding farms, Upper German halls have a shorter, almost square floor plan. Their inner framework construction was used elsewhere in Europe in the farming hall sections of unity houses of all kinds of



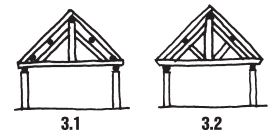
6.6 *Post construction supporting a truss with a ridge purlin, walls are joined under eaves (southern Germany, mostly 17th century).*

6.7 *Post construction with a straining beam standing on a tie-beam and fastening a ridge purlin, with self-supporting walls (southern Germany, mostly 17th century).*

6.8 *Rafter truss on a timber-framed supports a ridge purlin on which more widely open roof slants hang (Switzerland, 18th century).*

6.9 *Truss is supported by posts and their side purlins with wall purlins at their ends are braced with frame construction inbuilds inside rooms (southern Germany, especially Upper Franconia, 14th century).*

1.1–1.3 *Construction of walls and a truss illustrated on the tiles found in the old Roman fortress Carnutum (near the confluence of the Morava and Danube Rivers).*



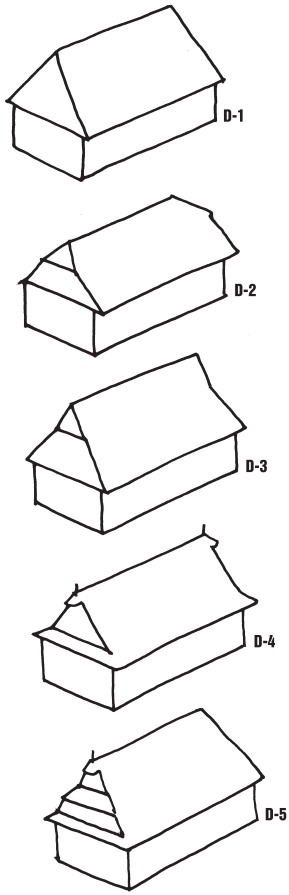
3.1–3.2 *Separation of wall posts from a truss (England).*

construction, and also in large trusses (in the Alps CH-1, D-18, A-4, A-11). **[6.6–9]**

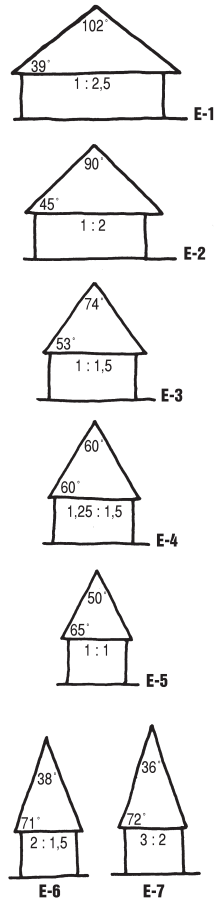
This development resulted in separating the upper slanting parts of cruck posts from their lower straight parts and gave rise to **rafters**. Their couplings are connected above and fastened below as a basis for lower timber joints (wall purlins as basic beams of the truss). Whether they are supported by posts, on a frame, or a wall no longer matters. Our present--day design idea considers roof-supporting walls to be the basis of any construction. This idea developed in the Mediterranean with stone-built houses. Antiquity based building-forms also used pillars which, however, were always separated by an entablature from the truss. One ancient Roman tile portrays three shapes of roof construction: a ridge purlin supported by

straining pieces, posts standing wide apart and a crown post support with a slanting framework **[1.1–3, 3.1–2]**

A truss with straining pieces by the walls of the house can be seen not only in France and Switzerland (F-5, CH-1) but also in the Pannonian basin



D. Roof types: ***D-1*** *hipped,* ***D-2*** *half-hipped,* ***D-3*** *gablet,* ***D-4*** *gablet with a gable cap,* ***D-5*** *double-gablet.*



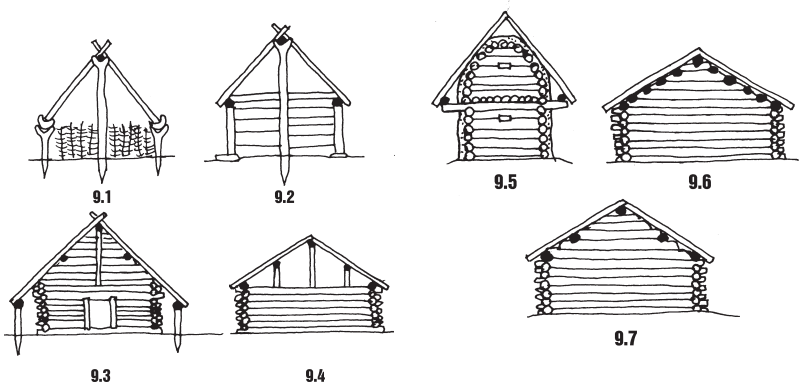
E. Steepness of roofs: ***E-1*** *1:2.5=39°,* ***E-2*** *1:2=45° (in 19th century became a norm in central Europe),* ***E-3*** *1:1=53°,* ***E-4*** *1.25:1.5=60°,* ***E-5*** *1:1=65°,* ***E-6*** *2:1. 5=71°,* ***E-7*** *3:2=72°.*

(H-5) and in earthen constructions of the Lower and Middle Danube River basin (H-3, 6, RO-3, RO-7). We can note the combinations of straining pieces and rafter constructions in some instances. Crucks in England sometimes did not reach up to the upper crossing, they were mutually joined by a collar in order to support the ridge purlin. Or they were shortened at their upper end and connected horizontally by means of a collar, upon which stood a very short supporting post.

Ethnologists consider roof construction an indicator of technological advancement. Firm (stone-built or wooden) walls able to support a roof were the base of old southern European architecture, but too little attention was devoted to improving the truss there. Regular straining beams and small crown post supports with ridge purlins were used. Roofs were low to provide shade. It was only with the increasing timber-framed and frame architecture in western Europe that relatively narrow and tall roofs received rafters without ridge purlins, such as log-built architecture with a truss (called *sleg* in Poland, *samcovaja* in Russia and *åstak* in Norway, which means a beamed roof). **[9.5–7, E1–7]**

After the peak of the Middle Ages, the prevailing central European use of the rafter truss enabled the separation of the roof construction from the walls and became taller, and thus the ceiling also gained more loft space. Carpenters would measure the length of the rafters by the wall of the living room. In some places, they chose a shorter gable wall, whereas elsewhere an eaves wall was selected. The straddling of the rafters, and thus the height of the roof, differed everywhere. The highest roofs are in the east-west part of central Germany, between the Upper Tisa River, in western Romania, southward to the Danube gate and up to the mountains in the southwest across Serbia and Bosnia. Such a roof did not push walls further from each other as much as the low roof did. Consequently, very firm constructions were not needed so much as they were under trusses. In the 16th century, Italian builders introduced into central European towns rectangular roofs (at 90°) with a pair of rafters. This became an obligatory norm for carpenters' guilds, which also applied in the countryside. Only the roofs in the mountains retained the lower-pitched roof rafters. They were gradually perfected in the following centuries by collars and frameworks so that bigger spaces could be covered with increasingly heavier roofing (including not only reed and straw but also shingles, slates and tiles produced from fired clay). **[D1–5]**

The four-hipped slant became the fundamental **form for the roof**. The post construction of the half-hipped roof developed and became an architectural sign of the then economically most advanced European



9.1 *Cleft pole support with a board roof preserved in west Carpathian chalet houses (Těšín region: Czech Republic/Poland).*
9.2 *Cleft pole support and a frame construction (Denmark).*
9.3 *Combination of log-built and post (pole) constructions (a reconstruction of a Celtic house, Slovakia).*
9.4 *Log-built construction with a crown post support truss (Austria).*
9.5 *Two-storeyed granary with a log-built vault (Slovakia).*
9.6–9.7 *Log-built house with a log-built and purlin roof-ceiling (Norway, Sweden, Finland, Russia).*

countries, just as it became a sign of modernity, too. It spread (in the 17th–18th centuries) to the vast territories of northern and central Europe including the Baltic regions, to become fashionable in houses of any building material or construction type. Gabled roofs were more often constructed where beam--vaulted *(sleg)* and rafter trusses were built. Log-building was managed to shape the vaults rounded towards the centre from four sides under a hipped roof. Gabled roofs developed into hipped ones in two ways: the gable is enlarged either from below to become a half-hipped construction or, from above, to become one of the myriad variations of a gabled roof (SK-11). Decorated gables became a prestigious addition to the gable cap. The most beautiful ones to have survived are in the western Carpathians, where there are sometimes hints of a partially roofed hole near the ridge of the hipped roof, which helped smoke to escape (RO-12). This function is connected

with the origin of the roof gable where smoke canopies led smoke from a firebox into an under-roof space **[9.1–4]**

Log-built constructions can be found in archaeological finds throughout central Europe in the late prehistoric and protohistoric periods, other than the above-mentioned constructions. Framed constructions panelled with beams and a small number of completely log-built constructions have been found in large, fortified residential sites from the mid-1st millennium BCE in Biskupin (PL-1a) near Toruń. Even though walls are basic elements of log building, slightly more recent Celtic residential sites (SK-3) contained solutions where the main weight of the roof is supported by poles around a log-built construction. Eave purlin beams lie upon them, while rafters are in turn supported by a ridge purlin braced by two crown posts, placed upon log-built walls. Log building techniques, essentially capable of supporting the roofs of inner spaces, were enclosed by log vaulting. Their proximity depends upon the height of the curving, i.e. on how close to other beams they are (over eaves-orientated walls) in the vault. Beams are less frequent under low roofs in northern Europe. The ridge purlin is set between the two gables at the top. Two eave purlins are set at the bottom and a side purlin is placed in the middle. Boards, and sometimes more coverings, are laid on them. Closer beam vaults enabled builders to daub plaster in the other area or cover the roof from above with birch bark and turf (N-5, N-11). Rooms with such vaults usually have no ceiling. Vaults can therefore be perceived as inclined *roof ceilings* (*tak,* in Norwegian, means both ceiling and roof). Even this system does not take walls as bases for separate roofs.

Comments on European regional architecture are usually concerned with northern Europe and in the most mountainous areas. But this idea is not quite correct. Log-built construction covered the whole of eastern Europe down to the Black Sea steppes. It included the central European lowlands, the Carpathians and most of the Alps, but did not reach the Balkan Peninsula or the Pyrenees Mountains. Medieval peoples tried to gain the largest possible areas of land for farming, to the cost of the forests. Where they had destroyed forests, they substituted earthen dwellings for wooden ones (e.g. in the Danube River basin). There is a sharp demarcating line in central Europe between timber-framing and log-built construction, regardless of natural conditions. Elsewhere, there is an intermediary stage between these two construction systems in the use of **frame walls**, which have horizontal plank panelling or timbers or *(pole construction)* with tenon and mortice joints in the posts preserved in northwestern and southeastern Subalpine regions (D-4, CH-1), in Greater Poland (PL-6, PL-12, PL-21,

PL-22), Ukraine (UA-2, UA-3, UA-5), Romania (RO-1, RO-3, RO-12), in southeastern Jutland (DK-3), Gotland (S-2) and elsewhere. The frame wall method of construction preceded both timber-framing and log-built construction, as proven in many places in Europe.

The regions where dug-out dwellings occurred before the early 20th century has demonstrated how much care had to be devoted to the building of earthen walls and the insulation protecting them from external (climatic) and internal (earth) humidity. As soon as the building of light--structured houses began on the ground, all older knowledge and experience, gathered and passed on from one generation to another, was applied to the building and maintenance of dug-out dwellings. Everywhere (even in the mountains), but chiefly in intermittently flooded lowlands, a lot of attention was paid to the riverbank, in the form of elevation and fixing to the ground (20 to 30 cm above the level of the yard). A wall with posts or a frame supporting the truss could be erected on the bank. Even western European hallenhauses and barn houses in north-eastern Europe stand on the bank, which is, however, completely hidden behind these buildings, concealing all the typical functions of the farmstead. In central, eastern and south--eastern Europe and some places in the Alps, the bank exceeds the floor plan of enclosed rooms and makes it possible to build a roofed (sometimes an arcade/colonnade type), open living space. The humidity of the wet ground that had been frozen over threatened northern (and many eastern) European dwellings. Buildings in many regions were therefore constructed either on pillars or underneath log-built constructions containing storage spaces with ventilation holes. Such houses already had wooden floors on an elevated ground floor from the medieval beginnings of building culture, unlike houses with banks where floors were earthen (central Europe until the mid-19th century). Only after dwellings had been erected over cellars and stone-built constructions had become widespread, were houses built upon foundations that were really solid underneath.

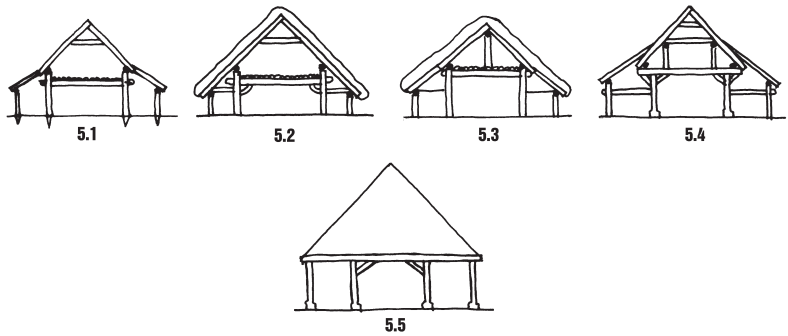
Mediterranean innovations in western Europe

The integration of the northern barbaric regions into the southern (Byzantine-Roman) economic sphere forced the founding of the first states and the building up of early medieval societies on bases differing from those of Classical Antiquity. The great cultural contrast between the dwellings of the advanced south and that of the simple, close-to-nature north caused the penetration of Mediterranean architectural elements northward. There were two routes: the western one, leading via eastern France to the middle

Rhine River basin, and the eastern one, passing through the Balkans to the Carpathians, the middle Danube River basin and the north-western Black Sea coast.

Northern rulers and leaders had equally ambitious housing aims to those of their southern counterparts. The oldest brick-built architecture of monasteries, the royal courts of the southwestern towns and the first medieval states of Europe are early expressions of these efforts. Josef Schepers (1908–1989), professor at Münster University, conducted research into the oldest innovations in western European architecture. Cattle breeding in the north, in some places infiltrated by the traditions of Celtic and Roman crafts centres, started, from its southern regions, to substitute hall, pole-demarcated spaces, for people and animals in separate, two-storeyed brick-built dwellings (sometimes continuing to retain their wooden frames). The upper floor was used for living, the lower for kitchens, washing and storage rooms and walkways with galleries and terraces, their garden areas being used for recreation. The yard was separated from them and fenced-off to include the other farm outbuildings, mainly cowsheds. Examples of this solution were in northern Italy and south-eastern France. Brick-built tower houses and two-storeyed palaces appeared in castle areas and in towns where they had either full gable walls or a wall overhanging the arcaded entrance space. The latter type was the main innovative process in Lorraine in the 12th to14th centuries, south of the line; Lille – Maastricht – Koblenz – Frankfurt – Nuremberg – Passau, and frequently occurring to the west of it and even sporadically in the east. Towards the mid-Rhine River basin, the importance of the main living room on the first floor, with a hearth increased, whereas in central Europe the oven was in the group that developed into a blind stove heated from the neighbouring kitchen (D-14). This process was considered significant. Mediterranean elements in the High Middle Ages continued to the Lower Rhine River basin, including the valleys of the Lower Mosel and the Lower Mainz, appearing even in the Subalpine regions. These innovations were introduced gradually, first in large cities, and later in small towns and wealthier villages around them, but they started in the wine growing regions. The important part of the house was the wine cellar and its entrance, usually dominating the architecture (F-5, CH-6 southwest of the country and Engadin). Stone-building was first applied in villages in the kitchen area with a chimney, and the periphery walls, but the inner structure remained timber-framed.

People living in the countryside considered it important to separate living from farming (stabling livestock and other animals and storing hay and straw). The hall space (at the heart of the house) included a wall-



5.1–5.2 *Post (pole) construction supporting a rafter truss; walls are added (northern Germany).*

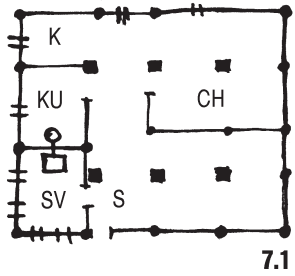
5.3 *Tie-beam on posts supports crown post with the purlin of a truss; periphery walls are added (northern Germany, chiefly from the end of the 18th century).*

5.4 *Tie-beam becomes a cross-joint of posts and bears the basic truss beams of a wider truss; outer walls are added (northern Germany, chiefly 19th and 20th centuries).*

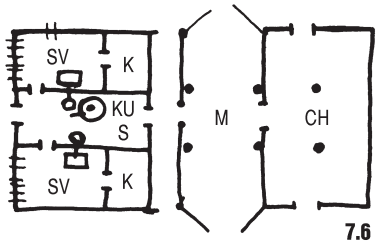
5.5 *Pillars support the roof construction; the frame supports the rafter roof (northern Germany, mostly the 19th and 20th centuries).*

-enclosed chamber for sleeping (or only a chest bed). Growing requirements transformed it into a living room with a stove. The space around the fireplace (from which the stove was fuelled) became ever more significant within the house. As soon as it became separated from the barn and stalls by means of a wall, a separate dwelling developed. It was a two-part unit with a smoke kitchen and a clean living room, which had a ceiling. The chamber was developed for sleeping, partially under the truss or on the first floor. The kitchen had remained open to the truss until it was joined with a chimney. The formation of two-unit, tall buildings is confirmed by the uninterrupted main **timber-frame** posts, joined with the upper wall beam (D-46, D-108). **[5.1–5, 7.1–7, 7.10].**

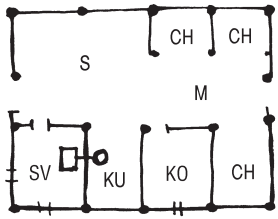
The oldest Hallenhauses, dating from the 16th century in the Lower Rhine River basin and western Lower Saxony, demonstrate that their thick frames of strong oakwood posts do not need oblique braces or supports to withstand side pressure (D-60). They were painted in the same brown colour as the daubed covering of their walls. As late as the 17th century, the post 'grid-style' framework became less dense in the interior of Westphalia, Hesse, Swabia and Franconia, and the main construction lines

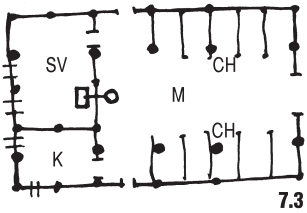


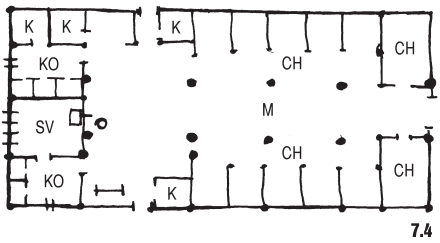
7.1 Six inner posts support the truss, the space is enclosed and divided by frame-and-plank walls (Upper Franconia, 14th century).

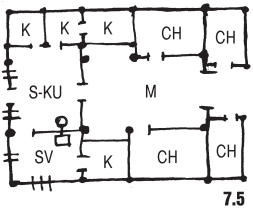


7.6 Three-unit living part is separated from a threshing floor and cowsheds by an entrance passage (German and Austrian Alps, from the 17th century).









7.2–7.5 Three-unit living part developed by separating a barn-cowshed hall (northern Germany, 15th–18th centuries).

became ‘broken’, and oblique directions were emphasised to form richly decorated fronts. The blackened network of beams contrasted with the white walls. High steep gables are most decorative in Upper Franconia, also Swabia, Thuringia and Egerland (Cheb region CZ): (D-1, D-8, D-14, D-26, D-32, D-37, D-41, D-46, CZ-5 and others). The large porches over the entryway space offered still more opportunities for decoration. They had date inscriptions and finely carved and painted ornaments (prevalently