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CORRESPONDENCE

CONSERVATION OF THE WOODEN ELEMENTS IN THE RENAISSANCE HOUSES
OF THE PEOPLE'S REPUBLIC OF BULGARIA

From the literature [1, 2, 3], and from experience in the field, the following guidelines for the care of wooden monuments have been drawn up.

Identification of the insects and fungi involved in the deterioration of timber invariably determines the choice of effective control measures. Various factors must be taken into account, for instance the indoor climate, the environment, the distribution of light (insects tend to fly out from the areas of the woodwork that has harboured them when light is shone on the area), and the preference of insects for exposed, rough areas on which to lay their eggs.



FIG. 1 A typical Bulgarian renaissance house in Zeravna

Preservation commences with the removal of all irretrievably decayed wooden parts, which are then burned. Inaccessible elements are disinfected by spraying with lindane (1–2 g per m³ of space) or by fumigation. During fumigation, the premises under consideration are sealed, but after the completion of the process, ventilation by fans for 2 to 3 days is necessary before work can be resumed.

Soil, clay, fragments of masonry and other refuse are sprayed with 10% aqueous solution of copper sulphate and then buried. Fungous growths on the construction units of masonry are charred with a blow-lamp. Wood-rotting fungi which also permeate the mortar joints of the masonry are suppressed by water-soluble antiseptics poured into a series of downward-sloping holes, 10 mm in diameter and 20 cm deep, that are drilled in the walls at an angle of 45°. When the holes are filled with the solution, they are closed with wooden stoppers.

Roofs. All irremovable timber is treated *in situ* by three sprayings with 6–7% aqueous solution of sodium pentachlorophenolate to which 1% calcinated soda or borax is usually added.

The carpentry joints of the roof are sprayed with Konservirgrund B1a2, or Acolor TK7 (Т.П.К. Sredna Gora-Vakarel).

The timber used as the paneling of the rafters is detached, immersed in a bath of 8% aqueous solution of sodium pentachlorophenolate, taken out, allowed to dry, and then replaced. An application of hot liquid (60–70°C) of Hydrophobe-zs-2 (Т.П.К. Sredna Gora-Vakarel) renders the timber water-repellent, and it is then spread with a large amount of sodium silicofluoride.

Joists. New rafters are treated by immersion in a bath of 7% solution of sodium pentachlorophenolate, to which 2% calcinated soda is added. Old, dry rafters are treated *in situ* by three sprayings, or by an application of Konservirgrund or Acolor TK7. Bases of the columns are coated with a Hydroimpregnir paste DP1, or Woodtreat. (Konservirgrund, Acolor TK7 and Hydroimpregnir paste are products of Т.П.К. Sredna Gora-Vakarel.)

Frame-built construction. The hardwood timber of these structures is usually plastered and, in order to avoid unnecessary straining of the plaster work, the use of water-soluble anti-septics is preferred. Treatment is carried out by three sprayings with a 7% aqueous solution of sodium pentachlorophenolate. When the construction is dry, a layer of Hydroimpregnir paste DP1 (Т.П.К. Sredna Gora-Vakarel), about 1–2 mm thick, is applied on all the joints.

External building timber in verandas, balconies, portals, columns, etc. is treated *in situ* with a 5% solution of pentachlorophenol in white spirit, or with Konservirgrund AN-B1a (Т.П.К. Sredna Gora-Vakarel).

Columns of historic or artistic value with decayed bases are preserved by boring holes in the infected timber and repeatedly filling these holes with a liquid preservative containing 3 parts sodium fluoride, 1 part sodium silicofluoride and 4 parts water. Rotten fragments of the columns are subsequently consolidated with synthetic resins.

External building timber preserved as described above is given two successive coatings of a varnish based on either phenol-formaldehyde or carbamideformaldehyde resins.

Interior. Ceilings, wood-cuttings, doors, wall-panels, cupboards etc., are conserved as follows:

1. Removal of dirt and dust by brushing and vacuum-cleaning.
2. Removal of spots and stains by chemical means.
3. Stripping of paint-layer by paint-removing mixtures.
4. Fumigation treatment by spraying with 20–25% solutions of paradichlorobenzene in xylene, Fumigant-1 (Т.П.К. Sredna Gora-Vakarel).
5. Contact treatment with Insectomor Ko5 etc. (Т.П.К. Sredna Gora-Vakarel).
6. Repeated prophylactic treatment by coating with Profinsect B5 and Konservirkler B2a1 (Sredna Gora-Vakarel) and injections into the tunnels made by insects.
7. Consolidation of the decayed areas by injections with 8–15% solutions of Paraloid B 72 and coating with 5–8% solution of Paraloid B 72 (Rohm and Haas Co., Philadelphia, Pa. U.S.A.), Calaton A (I.C.I. Ltd. London s.w.1), Polyvinyl acetate, or Xylamon L.X. Hardening (Desowag, Chemiegesellschaft mbH, Düsseldorf).
8. Renovation of the wooden elements by polishing with a 0.5–3% solution of beeswax in oil of turpentine. In some cases, the surface of the elements is rendered anti-static with a 2–3% solution of polyethylene glycol solution and microcrystalline wax in turpentine.

Floors are always impregnated with preservatives. One quite effective preservative is a 5–7% aqueous solution of sodium pentachlorophenolate.

New timber used in repairs is, as a rule, impregnated in a bath containing 7–10% aqueous solution of sodium pentachlorophenolate. After drying, the parts of the timber which, when in place, will come into contact with the ground surface, with masonry or metal, are additionally impregnated with a mixture of 1 part naphtha, 1 part creosote and some pentachlorophenol (usually 3–5% w/v of the naphthacreosote mixture).

Old timber still suitable for re-use is either treated in the same way as new timber or is submitted to fumigation in a closed plywood chamber with Rabasan H (Bayer, Leverkusen).

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- 3 WERNER, A. E. A., *Conservation of Fixed Wooden Structures*, The International Council of Museums, Paris 1963.

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THE DÜSSELDORF RESTORATION STUDIO

The restoration studio of the Düsseldorf Museum of Arts was established at the beginning of this century. Work on the extension, which has now largely been completed, was started in 1961. The technical equipment allows the use of modern restoration and analytical techniques. The Institute works not only for the Museum of Arts of the City of Düsseldorf, but also for the Gallery of the Province of Nordrhein-Westfalen and gives advice — outside the Düsseldorf area — to neighbouring museums without a studio of their own, as well as to private galleries and collectors. In view of the composition of the collections concerned, the emphasis is not so much on panel paintings from the middle ages, but rather on paintings by Dutch and Spanish seventeenth-century painters and eighteenth century Italian and French artists and particularly on German paintings from the nineteenth century. Much work is done on paintings from the Düsseldorf School in particular, because of their vulnerable painting technique.

Another point of special interest in the restoration work are the paintings by the 'Moderns', from about Picasso to Rauschenberg and, recently, the so-called 'objects' which make completely new demands on the restorer. They can hardly be regarded as 'pictures' in the original sense and from a conservation point of view they present very serious problems: the materials applied, the unstable properties of these materials and their susceptibility to outside influences call for special efforts and the development of new restoration concepts and methods.

The restoration work carried out in Düsseldorf can be divided into three main categories: restoration, scientific examination, and documentation. The restoration department also comprises facilities for the restoration of plastic art, paper and frames.