

# RISING DAMP IN WALLS

## Diagnosis and treatment

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This Digest considers the causes of dampness in walls and offers a positive method for diagnosis of rising damp. It suggests possible remedial measures that can be taken to avoid rising damp such as providing a complete moisture barrier by insertion of a physical damp-proof course or the non-traditional method of chemical injection. The repair of plaster damaged by damp is also discussed.

Masonry walls built from brick, blockwork or porous stone which stand in water or saturated soil and which have been built without a physical barrier to the upward movement of moisture, can have rising damp to a height in excess of 1 m (Figure 1). The height depends on several factors including:

- rate of evaporation from the wall,
- pore sizes of the masonry,
- salts content both of the materials and from the soil,
- groundwater level and degree of saturation,
- use of heating within the property.

It is not necessary to quantify any of these parameters. It may be possible to modify the groundwater level by the introduction of land drainage around the building (see section on *Land drainage*, page 8).

### MECHANISM OF RISING DAMP

For water to rise in a wall, a supply must be available at the base. If the ground surrounding the wall is saturated, this condition is achieved, but if the ground is not saturated the soil will exert a suction that will oppose the upward capillary pull on the water in the wall. This suction is approximately equivalent to the negative pressure exerted by a column of water extending from the base of the wall to the water table. If the water table falls, the height of the moisture in the wall will drop to a new level provided there is sufficient time for equilibrium



Figure 1: Staining to wallpaper on a wall affected by rising damp

to become established. Each period of heavy rain on the ground at the base of the wall will produce a temporary condition of saturation and the water level in the wall will begin to rise again.

The level to which it rises depends on two factors: the amount of evaporation of water from a wet wall and on the resistance to the flow of moisture up the wall. If this resistance is high (as in a material with many fine pores), the effect of evaporation is most marked reducing the appearance of rising damp, but if the wall material has many coarse pores, the height of dampness will be only slightly affected by normal rates of evaporation.

Increasing the heat input to the structure will increase the rate of evaporation from the wall surfaces. The overall effect is to increase the rate of flow of water up the wall but because of the resistance to flow this is likely to be accompanied by a reduction in the height to which the moisture extends.

