

Remote daylight distribution systems are inherently inefficient and the further they have to transmit the daylight and the more convoluted the path, the greater is the inefficiency (Littlefair, 1990; Littlefair et al., 1994). The efficiency of many remote distribution systems can also vary dramatically from clear to overcast skies. Nonetheless, where there is no other possibility of providing daylight to a space, remote distribution systems can be appreciated.



**Figure 7.11**

Internal and external views of two light pipe installations

### 7.5.6 Borrowed light

Borrowed light is a term used to describe the lighting of an enclosed internal space through a window that connects to an adjacent daylit space. Borrowed light rarely brings much daylight into the internal space but it does provide a connection with the outside and can be useful when the amount of light required in the internal space is less than in the daylit space, e.g. in a corridor.

## 7.6 Problems of daylighting

Daylighting can cause both visual, thermal and privacy problems.

### 7.6.1 Visual problems

The visual problems of daylighting are glare and veiling reflections. Glare is caused by a direct view of either the sun or the bright sky. Glare is usually experienced when facing a window in a façade receiving direct sunlight. Veiling reflections are most commonly experienced when sitting with ones back to a window, when the high brightness impinging on a computer screen reduces the contrast of the display.

The first step in overcoming glare is to ensure that the differences in luminance between the window or rooflight and the immediate surroundings are minimised. This can be done either by decreasing the luminance of the sky or by increasing the luminance of the window surround or both. The luminance of the sky can be reduced by fitting tinted, reflective or fritted glass. This can be effective for a bright sky but not for direct sunlight. The downside of such glazing is that it permanently reduces the availability of daylight. As a consequence, the view out can seem dull, particularly with an overcast sky.

As for increasing the luminance of the window surrounds, this means that the glazing bars should be of high reflectance, the edges of the window or rooflight aperture should be splayed back and the wall or ceiling in which the window or rooflight is installed should be of high reflectance and well illuminated (Figure 7.12). If this is not enough then the solution to both these problems is the provision of some form of shading device or screening (Littlefair, 1999; Dubois, 2003).