

Fig. 1. Cave outdoors

energy-saving and land-saving, temperature and humidity are very pleasant; ② offers protection against radioactive substances; ③ less pollution outside, very clean; ④ quiet and secure; ⑤ low maintenance; ⑥ low cost; ⑦ earthquake-proof, fire-proof, wind-proof, sound-proof; (Li, 2006) .

2. 2. Internal factors of the decline of traditional cave villages

1) Roof collapse: Rainwater attacks the top and the front part of caves, which causes the collapse. There are less rainfall in the northwest loess area (as a dry or semi-arid zones), but in the rainy season, sometimes heavy rain falls nonstop for several days. For example, according to incomplete statistics, 80,000 porous caves collapsed in Shaanxi province after a rainfall and caused casualties in 1988. (Fig. 2).

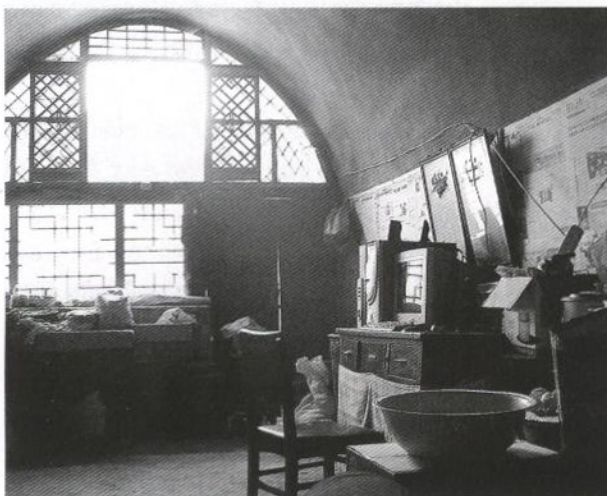


Fig. 2. Cave indoors

2) Moisture: Ventilation is bad in traditional caves. There is poor lighting in the rear and particularly high humidity in the summer. When moisture infiltrated into the caves, the temperature indoors lowers. Because of the high temperature outside, the difference between indoor temperature and outdoor temperature can be more than 10 degrees. The humidity inside can be above 90%. As a result, water can be condensed easily on the wall, which causes mould.(Sui, 1999).

3) Dim light indoors: The window in the front wall of the caves is usually small. The cave can be as deep as 15-30 meters. The cave wall is made of wheat straw and soil. It usually has been fumed into black yellow due to the perennial indoor cooking. (Sui, 1999.) Lights are being absorbed by the walls rather than producing reflection. The caves are very dark because of insufficient light source. However, stone caves, in general, have lime walls. Through the role of the reflection, the cave becomes brighter. Of course, the lighting of a cave is related to the depth of a cave. If a cave is seven to nine meters in depth, it will be more suitable.

4) Cover more area: It's a tradition not to cultivate on the roof of the cave for fear that plant roots may increase infiltration of rainwater or irrigation water, thus resulting in the collapse of the cave. If the front part of a cave sank 1 meter under the ground due to rain, farmers would repair it by scooping to the level. If the interior space is not big enough, they will dig inwards further. Year by year, more land is occupied.

5) Bad ventilation: The ventilation is bad in the cave since there are no windows in the upper and rear part of the cave. A proper air circulation is not formed. It is the only reason for cave occlusion.

6) Inconvenience in transportation: there are rarely any caves with brick courtyard or padded yard in the region. These areas may lack small stones and bricks. Therefore only a few steps can be seen on the entrance to the soil caves. Large areas are still covered by dirt roads. The roads are very muddy when it rains for several days.

7) Poor sanitation: the yard in front of a soil cave is a multi-functional yard. Not only people live in it, but also cattle, sheep, poultry chicken. Sundries and fuel wood pile up in the yard, and sometimes even in the cave.

8) Inadequate infrastructural construction: