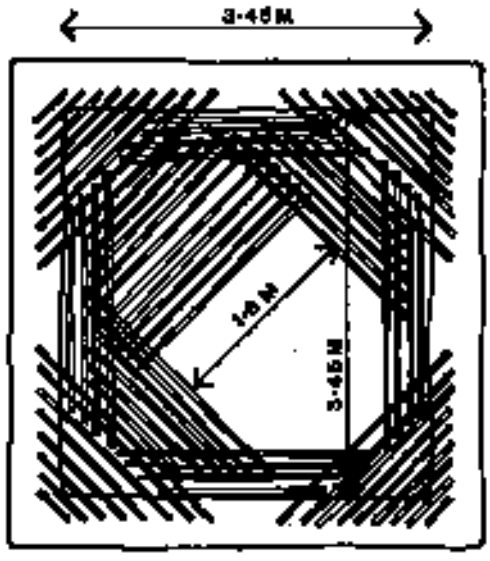


Figure 9.11 Structural module: spanning a space of 3.45 m square

9.11

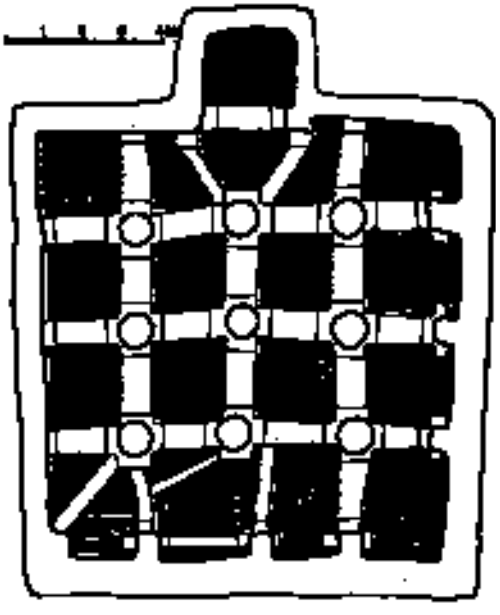


Figure 9.12 Roof plan of the mosque at Kazaure

9.12

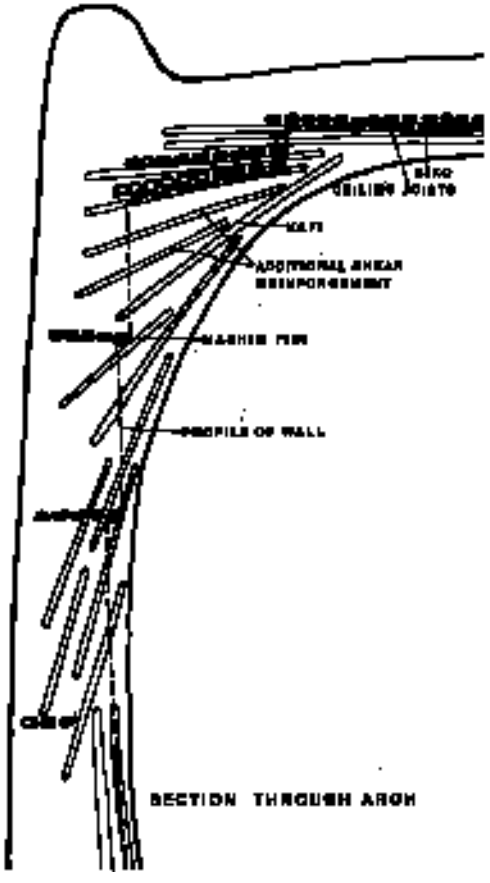
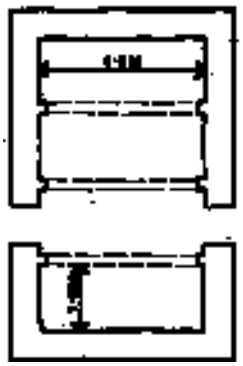


Figure 9.13 Section through an arch showing the reinforcement

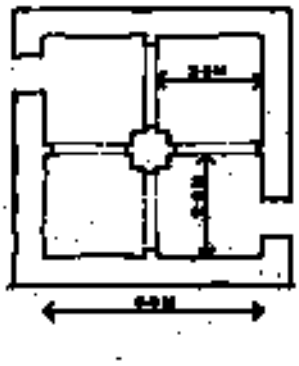
9.13

destroyed by the white ant, a termite found in large numbers in West Africa.

The economic span for *azara* is about 1.8 metres or 6 feet. It is the discipline of this 6-foot module which is the basis of Hausa construction technology. Figures 9.7 to 9.11 are sketches showing the way in which a flat or slightly domed roof can be formed using *azara* joists and corbels. The maximum size for such a space is about 3.5 metres square. Figure 9.12 is the roof plan of a



9.14



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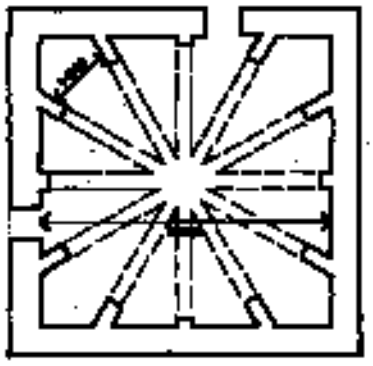
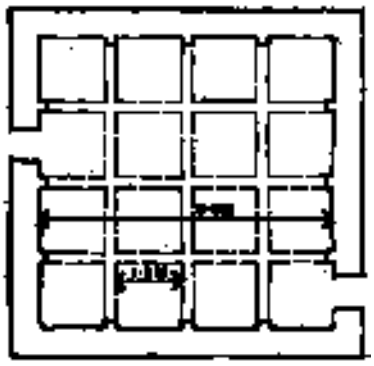


9.16

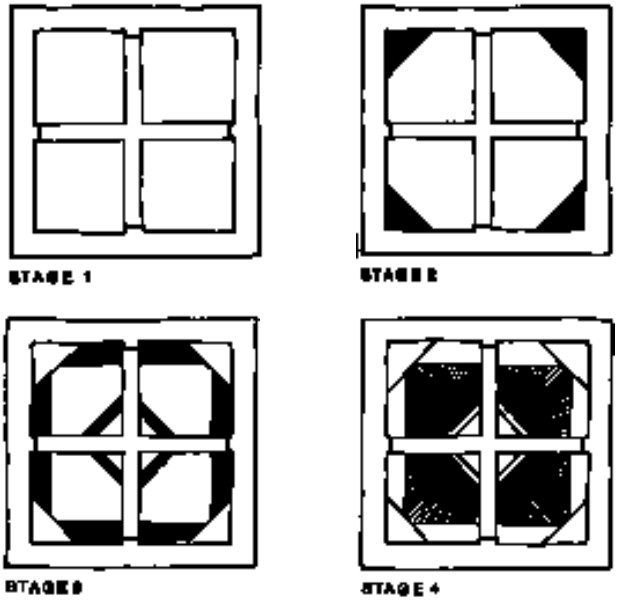


9.17

mosque in Kazaure which employs this system of roofing supported on a number of reinforced mud columns. The result is a hypostyle hall similar to the temples at Luxor dating from Pharaonic times.

The Hausa have developed a system of mud arches for constructing unobstructed spaces up to 8 metres square. Figure 9.13 is a section through the arch. The Hausa arch is not a true arch in the structural sense of the word, but simply a series of reinforced corbels placed one on top of the other until they meet at the centre and apex of the room. Figures 9.14 to 9.17 show the various arrangements for the use of arched construction. Figure 9.18 illustrates the stages in the process of building a simple domed roof supported on arches. Most of the load of the roof is transferred directly to the walls by the sloping joists, thus reducing the load at the apex of the arch, one of its most vulnerable points (Moughtin, 1985).

Figures 9.19 and 9.20 illustrate the structural complexity of the Friday Mosque, *Masallacin Jumma'a*, in Zaria. It is probably the high point of Hausa constructional achievement. The mosque was built sometime in the 1830s by Babban Gwani Mallam Mikaila, the first chief builder of Hausaland under Fulani rule after the *Jihad* fought to purify Islam. The six domes, *tulluwa*, of the mosque demonstrate all the subtleties of Hausa structural



9.18

Figure 9.14 Arch construction: room 4.5 m wide
Figure 9.15 Arch construction: room with central pillar
Figure 9.16 Arch construction: kafin laima construction
Figure 9.17 Arch construction: daurin guga construction
Figure 9.18 Process of arch construction