A. General Outline of Development

Human inventiveness has been notably successful in manufacturing a great range of building supplies out of earth. These include primary structural materials, e.g. brick; secondary materials, e.g. mortar; revetments / cladding / teguments, e.g. roofing tiles (designed intrinsically for protection, water proofing etc., but inevitably acquiring an ornamental significance) as also items entirely of ornamental virtue, e.g. acroteria etc.; additionally there are important items connected with the auxiliary services essential to functional buildings (heating, water supply and drainage etc.). The gamut of these products of earth and clay—their nature and function—have been discussed in detail (v Vol. 2, Chap. 4). Accordingly in the present connection of construction discussion will be limited to structural considerations alone.

The earth materials concerned are plastic earth (tauf / puddled mud); compressed earth (terre pisée) and brick. However, in fact, the treatment resolves into a discussion of brick construction. Although there are indications that brick construction evolved from a prior use of plastic earth, and construction in plastic earth survived strongly into modern times, yet there is little surviving material evidence of plastic earth construction in the ancient world to justify any detailed discussion of the subject. Similarly although there is literary evidence of terre pisée construction in Roman times and the use of terre pisée has survived strongly into contemporary building construction, yet there is virtually no reported archaeological evidence of terre pisée construction in the ancient world to justify any discussion on this score. To repeat, the following remarks will deal with ancient brick construction.
An obvious statement continually repeated is that brick is the most versatile of building materials—meaning that it is equally effective for building a small cabin as for building a great cathedral. Considered in a little more detail this means that the same small prefabricated earth units of roughly standard form conjoined with a building procedure which is of the simplest and most uniform (v Chap. 3, pp. 49–52 *supra*) serves for all construction projects. Since this statement applies generally in the ancient world wherever brick construction was practised, it suggests that the widespread development of brick construction in the ancient world was brought about by diffusion.

As distinct from the multiple functions served by other earthen building materials, structural brickwork is used in two instances: as upstanding load bearing masonry, and as devices for spanning across an open space. In the former instance significant construction procedure resolves into the question of bonding, while in the latter there is a possible choice between three procedures: corbelled brick, pitched brick and radially set brick.

1. *Neolithic Origins*

Whatever prior use may have been made of mud plaster or mortar (cf Vol. 2, pp. 90–96), the use of mud brick as a structural material evolved contemporaneously over a wide area of the Ancient Middle East (the Levant to Iran) at the beginning of the Neolithic Age contemporary with round house building, ca 8th Millennium BC (O. Aurenche, “L’Origine de la Brique dans le Proche Orient Ancien,” *pass*). There is surviving material evidence to show that at this period bold experimentation was afoot (cf P.B.L. Smith, “Architectural…. Experimentation at Ganj Dareh”); but, in effect, the standard product adopted was the hand modelled mud brick, obviously conceived in the image of field stones of various forms previously found convenient for building purposes. Following this there was no great delay (i.e. still in Early Neolithic times, ca 7th Millennium BC) before the first form moulded mud bricks appeared in various parts of the region (v O. Aurenche, *La Maison Orientale*, I p. 294). The replacement of hand modelled mud bricks by form moulded mud bricks did not proceed uniformly, and in some areas (e.g. Cyprus) hand modelled mud bricks long remained in use where elsewhere form moulded bricks were current. The progress in building construction afforded by form moulded bricks was very significant indeed, since the standardisation of form facilitated the close and regular bonding of the mud brick in load bearing walls (cf Sauvage, pp. 105–07). As to roofing the early round house structures there is sufficient indication to show that this could be by corbelling inwards to produce the long lived Beehive House form. Additionally it is possible that round house structures were also roofed by mud plastered timber framing of various forms (v G.R.H. Wright, “The Antiquity