

INTRODUCTION

From my own marketing efforts over the past fifteen years I have found that there is a perception amongst the general community in Australia that solar energy is an exotic new source of power requiring further decades of research and development before becoming efficient and cost effective enough for practical application. Nothing could be further from the truth!

Whilst it is true that advances in solar science and technology are accelerating and becoming more widely publicised, (especially in the area of solar electricity generation) the origins of solar technology stretch back into ancient history, as exemplified by the astounding solar city of Priene, built by Greek colonists 2500 years ago on the southern slopes of Mount Mycale in what is now modern day Turkey.



Figure 1.1 The ruins of Priene

The city planners overcame adverse topography to ensure that almost all citizens obtained their share of Winter sun. The streets ran on an east west grid.

The Greeks were particularly sun-conscious, and this combined with their logical thinking and democratic ethos resulted in the wide spread application of superb solar architecture for private and public buildings throughout their sphere of influence.

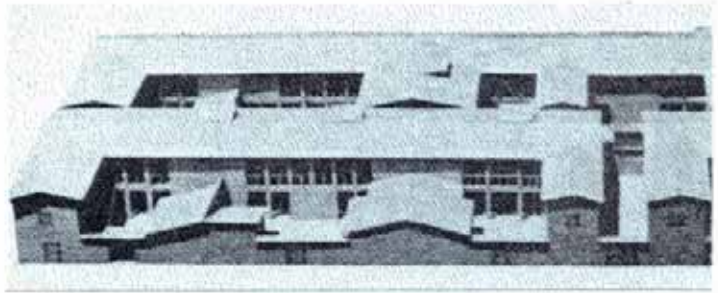


Fig 1.2 Typical Greek apartments.

Windows were concentrated on the sunny south side. Rows were spaced far enough apart to provide full entry for the low angle winter sun. During the summer the eave overhangs denied access to the high summer sun.

Excavations of ancient Greek sites prove that it was not just the odd building here and there. Moreover, this was solar engineering on a grand scale with entire streets, suburbs and cities all aligned to the winter sun so that rich and poor alike could benefit from the rays.

Other civilisations including (but not limited to) the Chinese, Egyptians, Persians, Incas and Romans developed highly sophisticated structures and building codes centred around solar energy. The Romans in particular, with the hindsight of Greek experience, combined with the advantage of plate glass glazing (which the Greeks never had) took solar architecture soaring to new limits, as displayed in the ruins of their huge public baths and other civic buildings.

For most of these cultures necessity was the mother of invention. At several points in their history, timber (and its derivative, charcoal) which was normally their only other energy source for heating, became extremely scarce. The Greeks had major deforestation problems by 500 B.C., and the Romans practically denuded the whole Italian peninsula by 100 A.D. They were even forced to commission a special fleet of ships called the *naviculari lignari* (wood ships) whose sole purpose was to sail around the Mediterranean, plundering forests and woodlands.

For three hundred years from the days of the emperor Augustus until the fall of Rome, solar energy became widely used throughout the