

# Heating Problems Produced by Some of the Modern Methods of Building Construction

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THE early history of the modern sciences is more or less legendary and traditional, which leaves much to surmise. The primitive races in the valleys of the Tigris, Euphrates and the Nile, were many decades upon their way towards civilization, as we know it, before we began to learn anything of their history. This we know, however, that as the human family grew, it spread out and there are now branches of the original peoples in every quarter of the globe with remnants of their ancient mythology still observable. Sufficient for our purpose is the fact that we find human beings living under remarkable and severe conditions. The Eskimo in the far north, who is compelled to go without fire for months at a time, and the people of the Tropics who never see snow, and know nothing of frost. The ranges of temperature are from 60 below zero, to 120 degrees above—a full range of 180 degrees in the extremes.

The civilization of every country has been largely determined by the geographical conditions; the characteristics of the land and climate in which any race dwells, shape the mode of living and thus influence their intellectual culture.

It is said of Egypt that the climate is equable and of warm temperature, snow and frost being wholly unknown, while storm, fog and even rain are rare. This is true in a measure of the other valleys, so that while some protection against heat was necessary, there was no necessity to provide against inclement weather, hence the climate developed the qualities of their architecture.

The mention of the use of fire in their history is largely the sacrificial fires of their ancient philosophy. They recognized the part which the sun, the source of heat and light played, recognized it to this extent that it was a large part of their religion. The following extracts from a book on their ancient philosophies serves to show the veneration of that great luminary:

"The Syrian damsels sat weeping for an Adoni, mortally wounded by the tooth of winter." Adoni was the name of the mythical creature representing the sun. Indeed, the worship of the sun was the basis of all ancient religions. Almost every nation in the cradle of the human race had mythical being whose strength or weakness, virtues or defects more or less described in the sun's career through the seasons.

To those ancient peoples light and heat were profound mysteries, as indeed they are to us. As the sun caused the day and his absence the night, when he journeyed north, spring and summer followed him, and when he journeyed south, autumn, inclement weather, cold and long dark nights ruled the earth. As his influence produced the leaves and flowers and ripened the harvest and brought the regular inundation, he necessarily became to them the most interesting object of the material universe, author of life, heat and ignition. The sun was to them the efficient cause of generation, for without him there was no movement, no existence, no form. He was the imate fire of bodies, the fire of nature. He was to them immense, indivisible, imperishable and everywhere present. It was the need of his light and heat and of his creative energy that was felt by all men and nothing was more fearful than his absence. The sun's influence, so beneficent, caused it to become identified with the principal of all that was good."

North to them was the place of death. The abode of winter and desolation, and naturally so because with such an easy means of livelihood as was provided by irrigation and the fertile land of the valleys mentioned, there was little incentive to explore beyond the unknown north. But as time marched on and with the development of the present day civilization, we find in the north temperate zone, the place once looked upon with fear and trembling by the simple-minded ancients, the greatest race on the face of the earth, the Anglo-Saxon, whose sons successfully fought the enemy under every sky and in every climate, in peace as well, we can proudly think of the achievements of Scott at the South Pole, Perry at the North, Livingstone and Stanley in the heart of Africa, and countless others, and more intimately to Civil Engineers, Colonel Everest, who, nearly a century ago began the wonderful trigonometrical survey of India. As mentioned before, our geographical location has had a great deal to do with the development of that wonderful and mysterious "power of resistance," in fact, the medical fraternity has coined the phrase very much as we more generally speak of "the Human factor."

Going over the history of architecture, practically nothing is mentioned about any system or systems of heating, except in isolated cases. Quite evident the earliest race adapted themselves by food and raiment to withstand the ex-

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