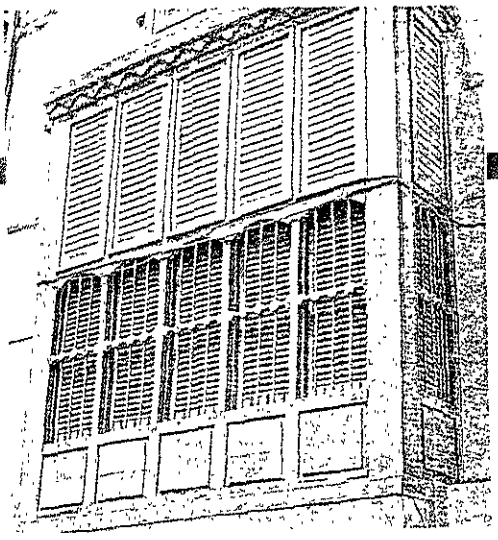
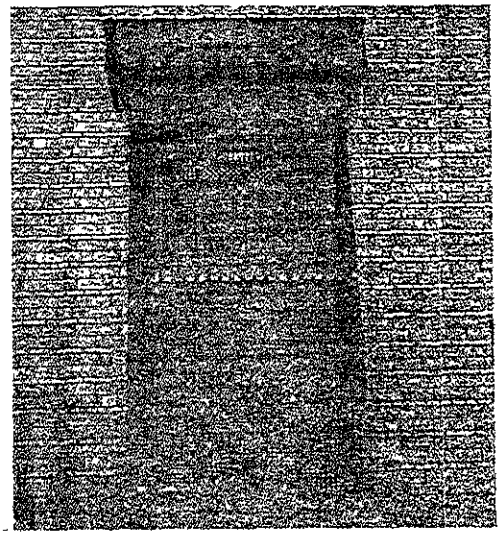
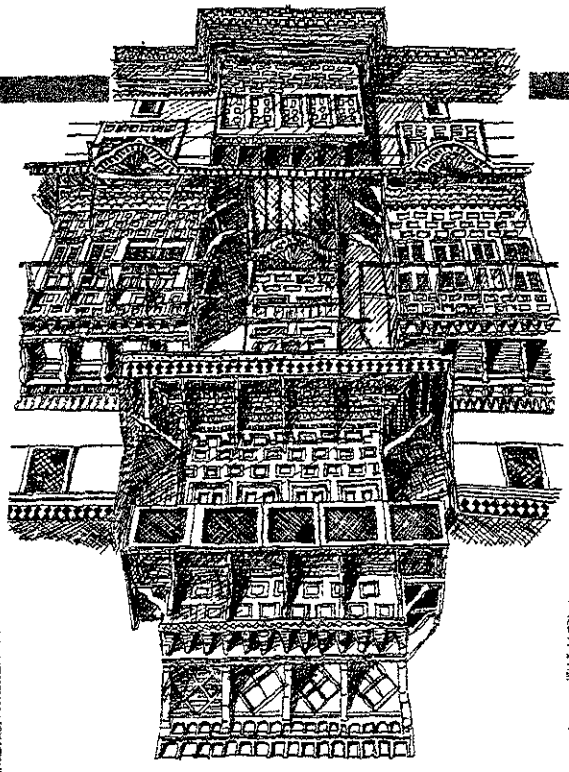


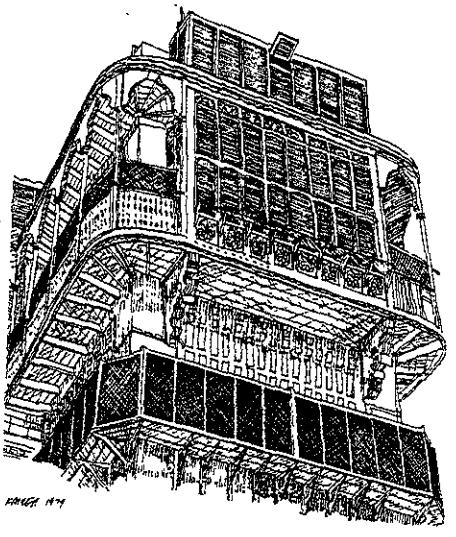
Old Rowshan



New Mashrabiah



Highly complex and decorative ventilation system crowds the facades of old houses in Jeddah



A rich merchant's house in Jeddah . A antilevered and corbelled balcony six floors above provides for the family to relax and enjoy on - and off - shore breezes

Housing characteristics in Hot Humid Region

from : Shelter in Saudi Arabia
By : Kaizer Talib

ities case study from the Arab Kingdom of Saudi Arabia - Jeddah, Gizan, Yanbu

Climatic Characteristics (example jeddah: location N 21° 29', E 39° 12')

Average Daily Maximum - Hot-humid climate, with average maximum temperature rising to 42° C during the summer months of May, June, July, and August.

Average Daily Minimum - Temperatures are relatively mild during the winter months of December and January - average 15° C.

Rainfall - irregular rainfall of 12 cms during October and April.

Average Relative Humidity - High humidity throughout the year of 75 to 80 per cent. (Northern part of this zone shows some composite climate characteristics during the dry period. See appendix for climatic zone maps.)

Background

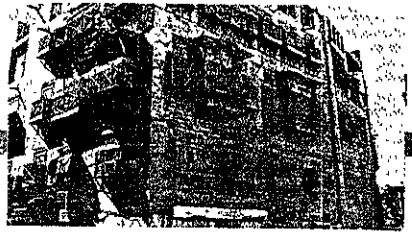
The west coast of Saudi Arabia along the Red Sea is extremely humid throughout the year. The proximity of a large body of water and the humid conditions influence a narrow belt of 12 to 15 kilometers along the coast. Beyond this humid belt, composite climatic characteristics may be observed due to the meeting of the hot-humid coastal belt and the hot-dry hinterland beyond. In Hijaz, the Western Province of Saudi Arabia, the vernacular architecture evolved into a refined building art and technology. Jeddah played a prominent role as a trading port, and thus cross-culturalization between the trading Middle-Eastern, Asian and European nations enriched the arts and architecture of Hijaz. Also, the Hajj pilgrims who came from various parts of the world brought their skills and exchanged ideas with the local people. In addition, building activities in Egypt across the Red Sea influenced the construction skills of the people of Hijaz. For example, *rowshans* and *mashrabiyas* (projecting screened windows) which are prominent features of Hijaz architecture, came from Egypt through Jeddah.

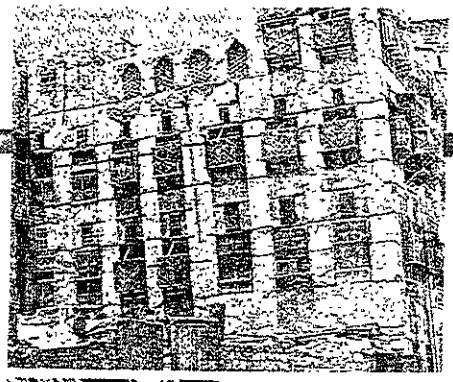
Rowshans or *mashrabiyas* fulfilled two main functions. Transparent wooden screens allowed cross ventilation and provided privacy for the family life from the outside. Rowshans also became decorative over a period of time and acquired popularity and prestige. This in turn influenced architecture in hot-dry Mecca and Medina as well as in the uplands of Taif, where *rowshans* are to be found in vernacular buildings.

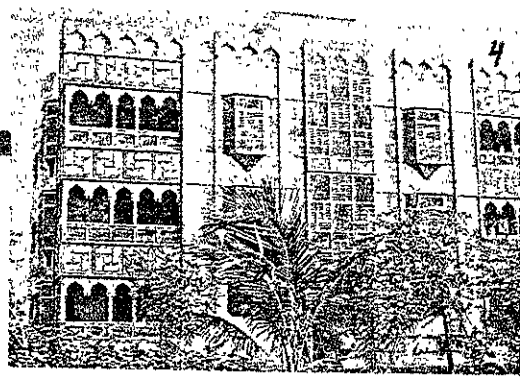
Egyptian artisans worked on the west coast but not the east where skilled artisans came from the Indian sub continent. During the Ottoman occupation of Saudi Arabia, architecture design and building technology were influenced by the activities of the Turkish garrisons. Intermarriage and the intermixing of cultures and of differing technological skills in Hijaz produced architecture demonstrating a better use of materials and a superior technology. The materials used here are also more permanent ones such as coral stones and imported wood. Tall, airy and light handsome structures up to seven stories high that were built for the rich merchants of Jeddah still stand in their magnificence after two to three hundred years.

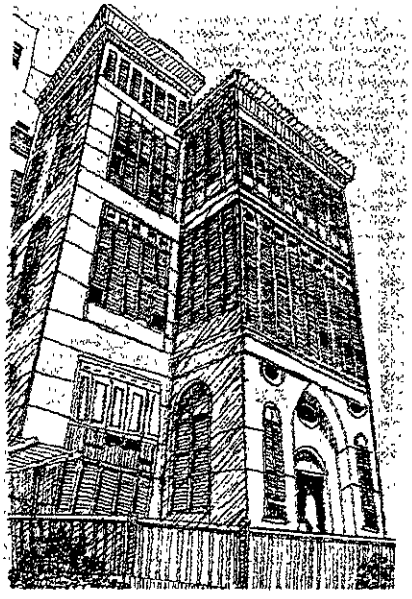
Rowshans or Mashrabiyas

The rowshans or mashrabiyas were developed in response to the hot-Humid climate of the western coast along the Red Sea. In this climate cross-ventilation is a necessity in buildings and for this reason transparent facades of decorative wood screens were created. The desire for privacy, however, required that large openings be screened so that one was able to see from within without being seen from outside. From these two requirements, climate and privacy, emerged the design of *rowshans,* and other types of

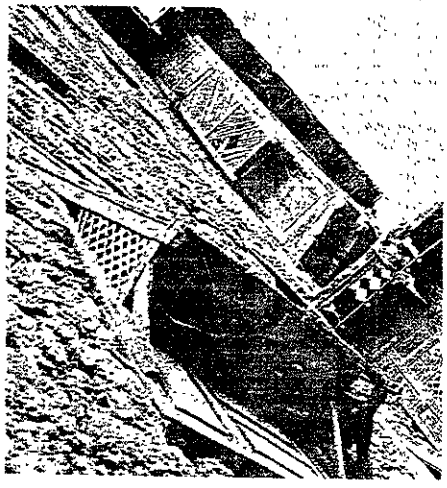




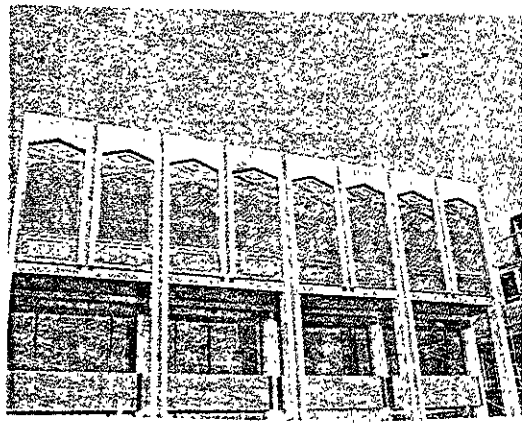




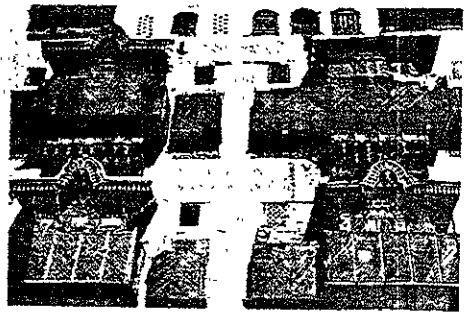
Traditional multi-storey house in Jeddah with rowshans and windows with wooden louvers



A window known as magic eye for privacy as well as catching up world currents of breeze



Less detailed and simplified wooden rowshans that could be manufactured in large numbers on new houses



Mashrabiya - covered facades of Jeddah houses

louvered or screened windows. The *rowshans* may be described as a projected bay-window with decorative wooden screens as enclosures. The *rowshans* were constructed entirely of cantilevered timber framework and were often installed over the openings after prefabrication with the desired decorations and finish. On most houses the seasoned wood of *rowshans* is left exposed, while in some cases it is painted.

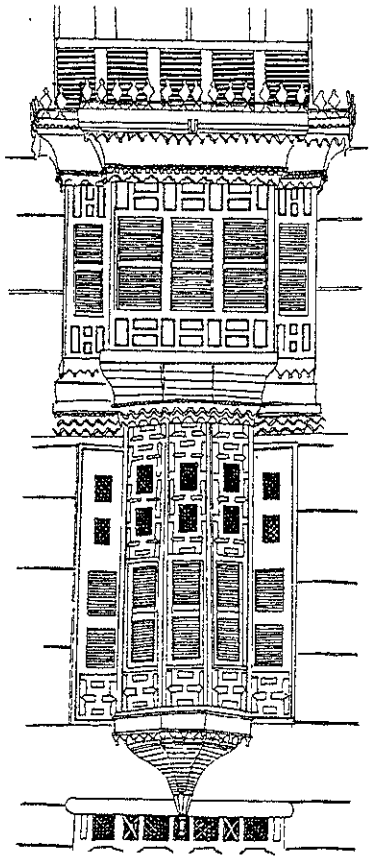
The *rowshans* are also designed to shield earthern ware jars (called sharbah or jarrah in Arabic) filled with water, which provide evaporative cooling in the dry climate of Mecca and Medina. However, the main purpose of the *sharbah* or *jarrah* is to provide cool water.

The *mashrabiyas* may be described as a complete assembly of *rowshans* on a facade, one above the other. On large houses of important and rich families, they may cover the whole facade; even windows which do not project would be louvered or covered with decorative screens. Such openings are simply known as windows (*tagah* or *nafezah* in Arabic). There are various other types of windows, such as the one illustrated here, which opens downward and may act as a windscoop. It also allows one to look down to the street without being visible. Sometimes such a window is called a 'magic eye'.

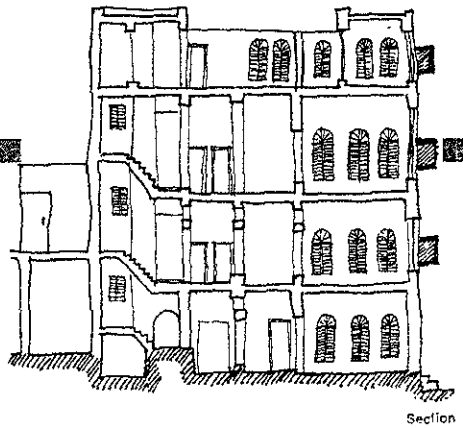
Traditional Climatic Design Response

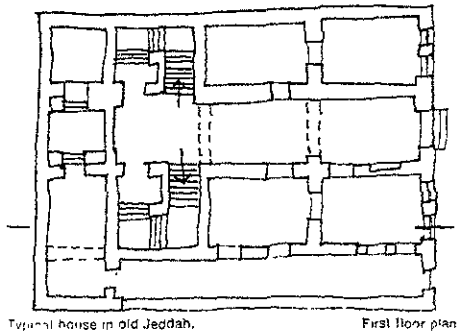
The vernacular architecture of Saudi Arabia responds to the hot-humid climate of the region basically by the following techniques:

- construction of tall, airy structures which allow cross-ventilation;
- invention of *rowshans* - projected bay windows enclosed with decorative wood screens - which provide cross-ventilation as well as privacy for family life;
- frame structures with transparent infill facades of wooden screens called *rowshans*;
- a skeletal structure of heavy columns built from coral stones and wood framed floors and roof which allows the building to be light and airy;
- the use of coral or gypsum as a bonding



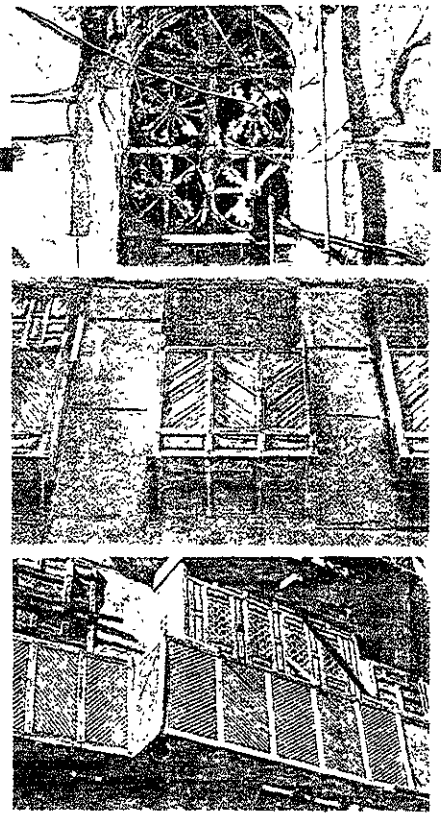
Intricate detail of old Rowshans





Typical house in old Jeddah.

Use of mashrabiya in Medina as screens for glare and privacy (climate)



Typical house in old Jeddah

material in stone construction and as a sealant. Gypsum is also used as plaster and for water proofing;
- an internal plan which gives each room cross-ventilation through access to external facades and which places sleeping and family rooms on upper floors to take advantage of on-shore and off-shore breezes;
- the construction of buildings apart from each other, where possible, to allow free movement of air around the building. Where this is impossible as in congested areas of Jeddah, building facades compete with each other to project as many *rowshans* and screened windows as possible. Sometimes entire streetscapes are composed of dozens *of rowshans ;*
- wider streets allow passage of air except in the densely built, poorer sections.

The building materials used on the west coast around Hijaz are superior in quality to those in the Central, Northern and Eastern regions. One of the main reasons for this was trade. Jeddah has been a trading port for centuries, and the people of Jeddah were basically traders and merchants. In Jeddah, for example, the line of intercontinental trade allowed importation of building materials not available locally such as teak, mahogany and *sisam* wood.

Jeddah was also an important inlet for the Hajj pilgrims and its citizens benefited from a mixed, mercantile economy, which was in contrast to the agrarian base of the oasis villages, the landlocked regions of the Central Province or oases of the east coast. In the Eastern Province, for example, the main building material is stone rubble adobe with materials derived from the palm trees - both a reflection of an agrarian economy. In Jeddah, however, the rich merchants built with coral stones dug from the Red Sea and used expensive wood and artisans from faraway places such as India, North Africa, Java, Burma, East Africa and southern Europe. It was possible to build five - to six - storey structures using superior stone and timber technology. The rich merchants could also afford to construct and decorate their buildings by employing *muhendish* (engineers) and artisans, a practice which was not possible in agrarian communities where individuals helped build each other houses in the community.

In Mecca, Medina, and Taif, where *rowshan* architecture similar to Jeddah's was adopted (even though the climatic characteristics are different) prosperity came through trading on the caravan routes used by the Hajj pilgrims. Mecca and Medina as well as Taif (located only 80 kilometers from Medina) became important cities for pilgrims. Mecca and Medina were, and still are, the main centers for pilgrims, but the Hajjis also passed through Taif and route from southern Arabian countries such as Yemen and indeed still do so. Taif, with its historical background and magnificent Ibn Abbas Mosque, is an attractive summer resort due to its upland climatic characteristics at an elevation of approximately 2,000 meters above sea level. The rich merchants of Jeddah built their summer homes in Taif so that it became and continues to be the summer capital of the Kingdom.

The courtyard, a characteristic architectural feature in the hot-dry region, is non-existent in Jeddah, except for some very large houses which require cross-ventilation. The courtyard in such large houses in Jeddah helps create a large interior space emphasizing the interiority of the Arab house. The courtyard in such situations is highly decorative, and it may contain fountains which further enhance the introverted environment of the houses. In large, palatial houses courtyards may also help achieve cross-ventilation. The buildings in Jeddah are tall and may contain apartments for an extended family or may act as a single large house for a rich family. It is not unusual to find a four - storey house, and some very rich merchants built houses six to seven storeys. As we have seen, tall houses allowed better penetration of offshore and onshore breezes near the Red Sea.

Synopsis

* Subject of the Issue :

Museums (distinguished architectural view)

The issue deals with the importance of museums and their different kinds, including artistical, heritage, scientifical, environmental archeological museums. The subject also deals with the museum's architectural philosophy, its elements, design basis, lightening, and the different ways of exhibiting . (P. 10)

* Projects of the Issue :

- El-Noba Museum

Arch. Dr. Mahmoud El-Hakim

The museum reflects the historical importance of El-Noba and its monuments, as a result of cultural heritage, customs and traditions of El-Noba inhabitants. All these elements were summed in El-Noba museum with an architectural form appropriate to the nature of the place. This form consists of different levels of sandy rocks, granite similar to the western temple of "Hatshipsout". The museum has 3 levels containing exhibition Halls stores, library, administration office, laboratory, services, besides the educational section & rooms for technical equipments. Also the exterior exhibition comprising the Nobian House, water stream & the open theatre. (P. 16)

- Art Museum - Pheonix - Arizona

Arch. Todd Williams and Associates

The museum building is divided into 3 main sections. First section, the museum and exhibition halls and different services. In which you can find the Asian Arts and development of Art generally through the last 3 centuries. The exhibits are placed in an open space covered by a large ballon for temporary exhibiting.

The second building is divided into two, first : a large theatre, second : a library attached to the museum and the different services. We notice the existence of a space connecting the three sections in one frame.. (P. 20)

- Development & Design of Mokhtar Museum

Arch. Wissa Wasef

In. Arch. P. Dr. Wafaa Omar Moslem

The designer made a new design for the museum fence, with a new gate in which there are places for tickets selling and souvenirs. The fence was simply designed, so that it would not affect the museum facade and be suitable to the museum pharonic style. He also changed the bridge clodding, renewed the exhibition hall, and isolated the worn-out floorings. (P. 26)

- Michael Karlos Museum : Emory University - Atlanta

Arch. Michael Graves

The museum is included among the Emory University Premsis in a historical building was designed by the architect Henry Harnspostal in the year 1916 and renovated on the year 1985 by architect Michael Graves. An extension was made to it in order to include all its necessary needs.(P. 30)

- Bahrain National Museum

Arch. Knud Holsher

The Bahrain museum which took one of the most attractive and prestigious plots in the city. The museum's design reflects high international standards in contemporary building and also honours Islamic architectural traditions, it consists of 4 exhibition halls, an educational center, an administrative area with researcher laboratories. (P. 33)

* Interior Design :

Santa-Fe Villa - Texsas

Designer : Anita Lodivici

Watching the house from the outside, you notice the slanting walls with mud finishings, it is so much intersected that it looks like the rocky mountains forms. The inner space to the entrance was floored with adobe bricks, and marble together with rocks and there are plants between them. (P. 28).

*Technical article :

The Negative Development of Egyptian Rural Areas . (P. 36)

Dr. Mohamed Abdelbaki Ibrahim