

Industrial Progress of the Muslims

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The achievements of Muslims in the industrial field had not been less spectacular than those in the political and intellectual spheres. The Muslims during the Caliphate of Abbasids and Omayyads in Spain had developed their industries to such a high degree of perfection that their finished products were viewed with wonder at the imperial-courts of Europe. The watch presented by Harun-ar-Rashid to Charlemagne, emperor of France was regarded as an object of wonder.

Their manufactured goods had captured the markets of the known world, and their fabrics formed the favourite dresses of the ladies of the imperial houses of Europe. But, the west has always taken pains to minimise the achievements of Muslims, and John William Draper has rather gone out of the way in his outspoken book *The Intellectual Development of Europe* when he says, "I have to deplore the systematic manner in which the literature of Europe has contrived to put out of sight our scientific obligations to the Mohammedans.

Surely, they cannot be much longer hidden - The Arab has left his intellectual impress over Europe, as, before long, Christendom will have to confess; he has indelibly written it on the heavens, as anyone may see who reads the names of the stars on a common celestial globe"

The genius of the Arabs, who formed the vanguard of human civilization during mediaeval times, manufactured novel things and organised large-scale production of commodities which were liberally supplied to different parts of the world. Their enterprising merchants carried their finished products to the outermost parts of the world. The merchant navy of Muslim Spain alone comprised 1,000 ships.

Abbasids

The Abbasid Caliphate provided the most congenial atmosphere for the intellectual, cultural and industrial developments of the Muslims. It was in this period that the Arabs were given the fullest opportunity to display their talents in-different walks of life. Harun and Mamun were the greatest patrons of arts and sciences during mediaeval times. Mutasim is particularly known for the interest he exhibited in the industrial enterprises of his empire. He had many industrial-projects executed during his lifetime and a large number of factories were established in Iraq. Manufactures of every kind were encouraged and fostered. The glass and soap made in the factories of Basrah were famous throughout the world. During the reign of Mutasim Billah, a

large number of factories sprang up round about Baghdad and in other important cities of Iraq. The paper industry particularly received much impetus, and in important paper factories, skilled workmen from Egypt were employed. Persia was noted for her gold and embroidery work, which was carried on in all the big cities. High class fabrics including satin brocade, silk and

carpets were manufactured in Islamic domains and were in great demand all over the world. Kufa was famous for its silk and silk handkerchiefs known as kuffiyeh. Khuzistan (ancient Susiana) produced superfine cloth. "The beautiful brocade of Tester", says an eminent orientalist, "the rich carpets of Korkub and the silks and satins of Sus were in request all over the world. The other provinces were equally famous for their splendid manufactures. Susangrid

contained a royal factory for gold embroidery of damask, camel-hair fabrics and carpets. It also produced embroidered curtains made of spun silk (kazz) for the sultan, and raw silk, camel and goat hair materials. Here were manufactured splendid cloaks of spun silk, considered superior to the striped woollen cloaks of Shiraz. The wealthy cities of Khorasan were active in the production of brocades carpets, rugs, hangings, coverings for cushions, and woollen fabrics of all kinds. In short every city in the empire had its own particular manufacture in metal, glass, wool, silk or linen.

Syria was famous for its manufacture of glass, and as early as the second century of the Hejra parti-coloured and enamelled glass was produced" Jundeshapur was the seat of the first observatory and the first college of natural sciences in the world. This college gave an impetus to the development of industry and commerce.

The chemical research in this college led to the knowledge of sugar refining which was successfully applied to sugar industry in Khuzistan and later on in Spain. Spain produced high class sugar. The commodities exported during Abbasid Caliphate were agricultural produce, glass, hardware, silk, textiles, perfumes of all kinds, rose water, saffron, syrup, oil, etc.

Spain

The Muslim kingdom of Spain had become a very prosperous State due to the extensive industries developed there and the large-scale production carried on in the factories. Her revenues obtained through commercial duties, according to a European author, exceeded the entire revenues of all the Christian states of Europe taken together. "Spain under the Caliphate" according to - Philip K. Hitti, "was one of the wealthiest and most thickly populated lands of Europe". Cordova, the capital of the Moorish State had 13 thousand looms and a flourishing leather industry.

The art of tanning and embossing leather had been developed to a high degree of perfection

and from here it spread-to Morocco, England and France as the terms 'Cordovan', 'Cordwainer' and 'Morocco' indicate. The celebrated Spanish historian Maqarri has written that high class woollen and silken fabrics were manufactured not only in Cordova, but also in Malaya, Almeria and other towns. Almeria also produced glassware and brasswork.

Sericulture was much developed in Spain. According to Ibn Khatib, Valencia was the home of pottery. Mining industry was fully developed. Jaen and Algrava were famous for their mines of gold and silver, Cordova for its iron and lead and Malaga for its rubies. According to Ibn Hauqal 'Toledo like Damascus was known throughout the- world for it's swords? "The art of inlaying steel and other metals" says a celebrated western orientalist "with gold and silver and decorating them with flower patterns, which was introduced from Damascus, flourished in several European and Spanish centres and left a linguistic heritage in such words as 'damascene' 'damaskeen', French 'darnasquiner' and Latin 'damschina'.

Muslim Spain was a leading State in textile industry. It produced high class cotton, woollen and silken fabrics, which captured the European markets. Cordova had 13,000 and Almeria 4,800 looms, "In the development of sumptuous textile arts" writes Philip K. Hitti "which made Arabic speaking people the leading fabric makers and silk mercersin the mediaeval world, the Arabs of Spain had a share but in carpet making Spain offered no serious competition to Eastern, specially Persian market"

The word muslin has been derived from the word 'mussolina' a cotton fabric supplied to Italy from al-Mausil, The fine silken fabric supplied by Baghdad to Italy was called Baldacoo or Baldachin and it was used in the decoration of big churches of Europe. Similarly during the 13th and 14th centuries, A.D. Granada, the capital of the last Muslim kindgom in Spain supplied European dress shops with grenadines. Muslim workmen were mainly responsible in setting up textile industry in France and Italy.

The Moors had converted the barren lands of Spain into a garden and agriculture was developed to a high degree. Agricultural industry also flourished in Spain. Seville alone had several thousand oil factories. Besides the textiles and agricultural industries, paper, Porcelain earthenware, iron, steel and leather industries were carried on on an extensive scale. The tapestries of Cordova, the woollen stuffs of Murcia, the silk of Granada, Almeria and Seville, the steel and gold work of Toledo and the paper of Salibat were sought all over the world.

It was the Arabs who introduced the manufacture of silk and cotton fabrics in Spain. They had specialised in the art of dyeing and had invented black dyeing with indigo. The glazed tiles used in the palaces of Alhambra and the fine vases still found there bear ample testimony to their perfection in the manufacture of porcelain. The manufacture of gun-powder,sugar, and

paper were introduced into Spain by Muslims.

Persia

Among eastern Muslim countries, Persia was noted for its fabrics and carpets. Even upto the present day, Persia has maintained an extensive carpet industry and Persian carpets are considered to be the best in the world. The Persians have proved themselves masters of decorative designs and colour applications since time immemorial. Their fine arts including potteries, tiles and other decorative things reached a high degree of excellence. Hunting and garden scene were woven on Persian carpets and rugs.

India

During the reign of the great Mughals and even afterwards Muslims were the pioneers in cottage industries. Even today almost all the cottage industries in the Indo-Pak subcontinent are in Muslim hands. The muslin of Dacca, the woollen rugs (shawl) of Kashmir, the silken fabrics of Benares, the embroidery of Lucknow, the silver work of Bidar, the potteries of Multan, the furniture of Bareilly and the brassware of Moradabad are manufactured and maintained by Muslim craftsman.

Fine Arts

"In the ceramics, another art as ancient as Egypt and Susa" says Gaston Migeon, "the reproduction of human form and of animals and plants as well as geometric and epigraphic figures attained a beauty of decorative style unsurpassed in any other Muslim art" Beautiful Kashani tiles with flowers painted on them were a speciality of Persia which were in great demand all over the world. "Among the Treasures of the Louvre", writes Philip K. Hitti, "the British Museum and the Arab Museum of Cairo are exquisite pieces from Samarra and Al-Fustat including plates, cups, vases, ewers and lamps for home and mosque use, painted with brilliant radiant lustres and acquiring through the ages metallic glazes of changing rainbow hue".

Decorative articles of luxury were produced on a large scale in Persia, Iraq, Spain and Egypt and they adorned the palaces of the nobles and rulers of the world. A goblet of the palace of Fatimids was sold for 360 dinars. Decorative writings were painted on glasses which were hung in palaces and mosques.

The jewellery industry also flourished during the time of the Abbasids. Harun-ar-Rashid had purchased a ruby for 40,000 dinars and Yahya Ibn Khalid once offered 70,00,000 dirhams for a

jewel box. Persia and Spain were the great centres of fine arts industries. The Hispano Moresque school excelled in metal work. One of such relics of the time of Hisham II (976--1009 A.D.) is preserved on the high altar of the cathedral of Geroma in the form of a wooden casket sheathed with silver gilt plating patterned in responsory with scroll like foliation. According to a European writer in the application of coloured glazes to earthenware, Muslims were from an early period past masters. In Europe Valencia was the centre of ceramics and pottery industries. The potteries of Muslim Spain were later imitated in the Netherlands and Italy. Glazed and coloured tiles were also produced in Spain and exported to European countries. Exquisite pottery was made in Toledo, Cordova, Malaga and Valencia.

Textiles

Textile industry flourished in almost all the Muslim countries. The fine woollen, cotton and silken fabrics including rugs, tapestries, satin, brocade (dibaj), sofa (sllffbt) and muslin manufactured in Muslim countries were matchless and were exported to all parts of the civilized world. These fabrics were in great demand in the Imperial palaces of the East and the West. Persian carpets are still considered the best in the world. Writing in the Legacy of Islam, J. H. Kramers says "But at the time of Islamic prosperity it had made possible a development of industrial skill which brought the artistic value of the products to an unequalled height....It is curious to note, too, that the State robes of mediaeval German Emperors bore Arabic inscriptions"During the Abbasid Caliphate carpets and textiles manufactured in Iraq and Persia maintained a high standard of workmanship. A rug costing 13,00,00,000 dirhams, set with jewels was made for the mother of al-Mutasim. A fabric called Tabi was introduced by the Arabs into Spain, which had a good market in Italy and other European countries. A number of factories were established in Tawwaj, Fasa and other cities of Faris where fine textiles, brocades, carpets and robes were manufactured. Tester and Susa, towns in Khuzistan had factories for the embroidery of 'damask', a silken cloth originated in Damascus--which was used to make curtains. Among the specialities of Khuzistan were woollen fabrics made of goat and camel hair and spun silk cloaks. Shiraz, the famous city of Persia was known throughout the East for its woollen cloaks and brocades. Khorasan and Armenia manufactured tapestries, sofas, curtains and cushion covers, while Bokhara was noted for its prayer rugs. Egypt also produced high class fabrics including Dabigi and Tinnisi which had a high reputation in the world markets.

Other Industries

A large number of finished products and other articles were exported from Muslim countries. Even the small province of Transoxiana exported among other things soap, carpets, copper lamps, felt-cloaks, fur, amber, honey, scissors, swords, looms, tables, sofas, lamps, vases, earthenware and kitchen utensils. The Syrian towns specially Sidon and Tyre were noted for their fine glass and metal vessels which were sought all over the world and were used as articles of utility and luxury.

Ibn Batuta found Damascus as the centre of Mosaic and Kashani industry, which were used for decorative purposes in the construction of palatial buildings. The paper manufactured in Samarkand was considered to be the best in the world. The first paper factory in Baghdad was established by the end of 8th century A. D. Paper mills were founded in Egypt, Morocco and Spain before the end of 12th century A. D.

"From Muslim Spain" says a European writer, "in the 12th and 13th centuries, the manufacture of paper finally worked its way into Christian Europe". The Abbasid caliph al-Mustasim Billah was a great patron of industries. The keen interest shown by him led to the rapid industrialization of Iraq and other countries. He opened big soap and glass factories in Baghdad, Samarra and other towns.

Mining

Mines were worked in almost all the Muslim countries. The rich mines of Spain yielded iron, copper, lead, gold, silver and rubies. Transoxanian mines yielded marble, mercury, rubies, asbestos and azurite. Karman had big lead and silver mines. Pearls were obtained from Bahrain, carnelian from Sana, turquoise from Neshapur, rubies from Badakhshan, iron from Mt.

Lebanon, kaolin and marble from Tabriz. Syria and Palestine had large sulphur mines. Capable engineers and miners were employed in the iron mines of Khorasan (Persia) and lead and silver mines of Karman (Persia). Georgian mines yielded bitumen and naphtha. Thus the mineral resources of the Muslim countries were fully tapped and worked. The countries noted for their mining industry were Persia, Spain, Caucasia, Transoxiana and Palestine.

Ship Building

Arabs who were the greatest sailors and mariners of mediaeval times carried on an extensive sea-borne trade between the East and the West. To meet this increasing sea-borne commerce, ship-yards were built in all the important ports of Muslim countries, which were called Darul Sanayeh, The ports of Abla and Siraf in the Persian Gulf, Tunis on the North African Coast,

Dania in Spain, Sus in Morocco, Palermo and Messina in Muslim Sicily, Bari in Muslim Italy and Acre in Syria had ship building factories.

During the Omayyad caliphate such a factory was founded in Ashbilia (Syria) and during the reign of Abbasids a big ship building yard existed in Sus. The celebrated conqueror Saladin had established a large ship building yard in Beirut to enable him to meet the challenge of the crusaders. Egypt had several ship building yards. The first of this kind was established in 54 A.

H. in Egypt. The Fatimid caliphs had ship building factories in Cairo, Alexandria and Diametta. The skill of Muslim craftsmen has now been acknowledged by liberal European writers. Writing in his well known work Intellectual Development of Europe John William Draper says, "They (Arabs) also promoted many important branches of industry improved the manufacture of textile, fabrics, earthenware, iron, steel, the Toledo sword blades were everywhere prized for their temper.

The Arabs, on their expulsion from Spain, carried the manufacture of a kind of leather, in which they were acknowledged to excel, to Morocco, from which country the leather itself has now taken its name. They also introduced inventions of a more ominous kind gunpowder and artillery. The canon they used appeared to have been made of wrought iron. But perhaps they more than compensated for these evil contrivances by the introduction of mariner's compass". R. Briffault says, "By and by the manufactures of the East were introduced and imitated in the Christian Europe. Silk looms were established in Norman Sicily. Venice copied with the aid of native craftsmen the glassware of Antioch, Lyons the 'Damasks', Paris the 'Tapis Surrasins' and Rheims the linen of Syria. The rich dyes of the East were brought to Bruges, where they were used to prepare English wool for the market. The wares of Spain and Majorica led to the establishment of Italian factories for the manufacture of majolica. Sugar factories were ."

"transferred from Sicily to Italy and from Spain to south France