

RECOGNISING MUSLIM HERITAGE - continued

metal into another is possible by an alteration in the admixture of the elements, and, finally, that base metals may be turned into noble ones by means of a precious substance often called the fifth element or quintessence.

Muslim scientists, Ibn Sina and Ibn Khaldun, for instance, attacked such beliefs. Ibn Sina, for instance, in *The Book of Minerals*, denounces the artisans who dye metals in order to give them the outside resemblance of silver and gold. He asserts that fabrication of silver and gold from other metals is 'practically impossible and unsustainable from a scientific and philosophical point of view.' Ibn Khaldun, for his part, denounces the frauds who apply on top of silver jewellery a thin layer of gold, and make other manipulations of metals.

Together with Al-Razi, they rid the science of its folkloric side to give it its modern outlook. Al-Razi also divided substances into animal, vegetable, and mineral. The mineral substances include mercury, gold, silver, pyrites, glass etc; vegetable substances were mainly used by physicians. More importantly, Al-Razi's Book of secrets foreshadows a laboratory manual, besides dealing with substances, equipment and processes. In such laboratory was practiced distillation and sublimation and was developed much of the chemical apparatus in use up to about 1650. Al-Razi's laboratory, in fact, still includes many items still in use today.

Before al-Razi, Jabir Ibn Hayyan improved methods for evaporation, filtration, sublimation, distillation, and crystallization, describing scientifically the two principal operations of chemistry: calcination and reduction, and knew how to prepare chemical substances like sulphide of mercury, arsenious oxide and lead carbonate.

Paper Industry

Paper, originally, was brought by the Muslims from China. From an art, the Muslims developed it into a major industry. At a time when the scribes of Christian Europe were reduced to the necessity of erasing the works of classic authors to obtain parchment for the preservation of pious homilies and monkish legends, the mills of Xativa were producing great quantities of paper, much of which, in texture and finish will compare not unfavourably with that obtained by the most improved process as of modern manufacture.

This product was indispensable among people of

intellectual tastes like the Hispano-Arabs and its demand was enormous. By the year 1000 paper was in general use throughout the Islamic world, not only for books, but as wrapping material and napkins as well. The paper mills constructed in Damascus were the major sources of supply to Europe, which as production increased, became cheaper and more available, and better quality.

By making use of this new material, paper, and manufacturing it on a large scale, devising new methods for its production, the Muslims: 'accomplished a feat of crucial significance not only to the history of the Islamic book but also to the whole world of books.'

Textile Industry

Textiles were exceptionally important in the art and economy of Islam from the early times. Their role has been compared to that of steel in the modern industrial economy, and it has been estimated that in the Middle Ages textile manufacture and trade may have occupied a majority of the working population. There were 3,000 weavers in Cordova alone.

The full array of textile fibres was available in the Islamic world. Wool and linen were produced in quantity from Iran to Spain, and additional supplies of the latter were imported. Cotton, native to India was probably first produced on a large scale in the Mediterranean after the Muslim advance; especially in Syria and Palestine. The Muslims eventually took crop and industry to Western Christendom.

On top of the various textile expressions derived from Arabic, some towns and cities were internationally recognised for their product. Shiraz was famous for its woollen cloths, Baghdad for its baldachin hangings and tabby silks; Khuzistan for fabrics of camel's or goat's hair; Khurasan for its sofa covers, Tyre for its carpets, Boukhara for its prayer rugs, Herat for its gold brocades.

