THE SPIRIT OF ISLÂM

A HISTORY OF THE EVOLUTION AND IDEALS OF ISLÂM

WITH A LIFE OF THE PROPHET

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سخن کز بهر دین گوئي چه عبراني چه سرياني
مکان کز بهر حق جوئي چه جابلقا چه جابلسا

"What matters it whether the words thou utterest in prayer are Hebrew or Syrian, or whether the place in which thou seekest God is Jâbalka or Jâbalsâ."—*Sandi*

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CHAPTER IX

THE LITERARY AND SCIENTIFIC SPIRIT OF ISLÂM

تعلموا العلم فان تعلمه لله حسنة ، ودراسته تسبيح والبحث عنه
جهاد و طلبه عبادة ، و تعليمه صدقة ، وبذله لاهله قربة [1]

WE have already referred to the Arabian Prophet's devotion to knowledge and science as distinguishing him from all other Teachers, and bringing him into the closest affinity with the modern world of thought. Medîna, the seat of the theocratic commonwealth of Islâm, had, after the fall of Mecca, become the centre of attraction, not to the hosts of Arabia only, but also to inquirers from abroad. Here flocked the Persian, the Greek, the Syrian, the Irâkian, and African of diverse hues and nationalities from the north and the west. Some, no doubt, came from curiosity, but most came to seek knowledge and to listen to the words of the Prophet of Islâm. He preached of the value of knowledge : " Acquire knowledge, because he who acquires it in the way of the Lord performs an act of piety ; who speaks of it, praises the Lord ; who seeks it, adores God ; who dispenses instruction in it, bestows alms ; and who imparts it to its fitting objects, performs an act of devotion to God. Knowledge enables its possessor to distinguish what is forbidden from what is not ; it lights the way to Heaven ; it is our friend in the desert, our society in solitude, our companion when bereft of friends ; it guides us to happiness ; it sustains us in misery ; it is our ornament in the company of friends ; it serves as an armour

[1] The translation of this *Hadîs* is given in the text : " Acquire knowledge, etc."

against our enemies. With knowledge, the servant of God rises to the heights of goodnèss and to a noble position, associates with sovereigns in this world, and attains to the perfection of happiness in the next." [1]

He would often say, " the ink of the scholar is more holy than the blood of the martyr " ; and repeatedly impress on his disciples the necessity of seeking for knowledge " even unto China." [2] " He who leaves his home in search of knowledge, walks in the path of God." " He who travels in search of knowledge, to him God shows the way to paradise." [3]

The Koran itself bears testimony to the supreme value of learning and science. Commenting on the *Sûrat-ul-'alak*,[4] Zamakhsharî thus explains the meaning of the Koranic words : " God taught human beings that which they did not know, and this testifieth to the greatness of His beneficence, for He has given to His servants knowledge of that which they did not know. And He has brought them out of the darkness of ignorance to the light of knowledge, and made them aware of the inestimable blessings of *the knowledge of writing*, for great benefits accrue therefrom which God alone compasseth ; and without the knowledge of writing no other knowledge (*'ulûm*) could be comprehended, nor the sciences placed within bounds, nor the history of the ancients be acquired and their sayings be recorded, nor the revealed books be written ; and if that knowledge did not exist, the affairs of religion and the world, امور الدين و الدنيا, could not be regulated."

Up to the time of the Islâmic Dispensation, the Arab world, properly so called, restricted within the Peninsula of Arabia and some outlying tracts to the north-west and the north-east, had shown no signs of intellectual growth. Poetry, oratory, and judicial astrology formed the favourite objects of pursuit among the pre-Islâmic Arabs. Science and literature possessed no votaries. But the words of the Prophet gave a new impulse to the awakened energies of the race. Even within

[1] Tradition from the *Bihâr-ul-Anwâr* of Mulla Bâkir ibn Mohammed Taki *al-majlisi*, vol. i. chap. on Knowledge, handed down by the Imâm Ja'far as-Sâdik, also quoted from Mu'âz ibn-Jabal in the *Mustatraf*, chap. iv. ; also in the *Kashf uz-Zunûn* of Hâji Khalîfa, Fluegel's ed. p. 44.

[2] *Misbâh ush-Sharîat.*

[3] *Jâmi' ul-Akhbâr.*

[4] Koran, sura xcvi. ; see also other suras.

his lifetime was formed the nucleus of an educational institution, which in after years grew into universities at Bagdad and Salerno, at Cairo and Cordova. Here preached the Master himself on the cultivation of a holy spirit: "One hour's meditation on the work of the Creator [in a devout spirit] is better than seventy years of prayer."[1] "To listen to the instructions of science and learning for one hour is more meritorious than attending the funerals of a thousand martyrs,—more meritorious than standing up in prayer for a thousand nights;" "To the student who goes forth in quest of knowledge, God will allot a high place in the mansions of bliss; every step he takes is blessed, and every lesson he receives has its reward;" "The seeker of knowledge will be greeted in Heaven with a welcome from the angels;" "to listen to the words of the learned, and to instil into the heart the lessons of science, is better than religious exercises, . . . better than emancipating a hundred slaves;" "Him who favours learning and the learned, God will favour in the next world;" "He who honours the learned honours me." Ali lectured on branches of learning most suited to the wants of the infant commonwealth. Among his recorded sayings are the following: "Eminence in science is the highest of honours;" "He dies not who gives life to learning;" "The greatest ornament of a man is erudition."

Naturally such sentiments on the part of the Master and the chief of the Disciples gave rise to a liberal policy, and animated all classes with a desire for learning. The art of Kûfic writing, which had just been acquired by a disciple at Hîra, furthered the primitive development of the Moslems. It was, however, pre-eminently an age of earnestness and faith, marked by the uprise of the soul against the domination of aimless, lifeless philosophy. The practice of religion, the conservation of a devotional spirit, and the special cultivation of those branches of learning which were of practical value in the battle of every-day life, were the primary objects of the Moslem's attention.

The age of speculation was soon to commence; its germs were contained in the positive precepts of the Master; and even whilst he was working, the scholarly Disciple was thinking. The Master had himself declared that whosoever desired to

[1] *Jâmi' ul-Akhbâr.*

realise the spirit of his teachings must listen to the words of the Scholar.[1] Who more able to grasp the meaning of the Master's words than Ali, the beloved friend, the trusted Disciple, the devoted cousin and son? The gentle, calm teachings instilled in early life into the young mind bore their fruit.

In spite of the upheaval of the Arab race under the early Caliphs, literature and arts were by no means neglected in the metropolis of primitive Islâm. Ali and Ibn Abbâs, his cousin, gave public lectures on poetry, grammar, history, and mathematics; others taught the art of recitation or elocution; whilst some gave lessons in caligraphy,—in ancient times an invaluable branch of knowledge.

On Osmân's tragical death the Scholar was called by the voice of the people to the helm of the State. During his retirement Ali had devoted himself to the study of the Master's precepts by the light of reason. "But for his assassination," to quote the language of a French historian, "the Moslem world might have witnessed the realisation of the Prophet's teachings, in the actual amalgamation of Reason with Law, and in the impersonation of the first principles of true philosophy in positive action." The same passionate devotion to knowledge and learning which distinguished Mohammed, breathed in every word of his Disciple. With a liberality of mind—far beyond that of the age in which he lived—was joined a sincere devoutness of spirit and earnestness of faith. His sermons, faithfully preserved by one of his descendants, and his litanies or psalms, portray a devout uplooking toward the Source of All Good, and an unbounded faith in humanity. The accession of the Ommeyyades to the rulership of Islâm was a blow to the progress of knowledge and liberalism in the Moslem world. Their stormy reigns left the nation little leisure to devote to the gentler pursuits of science; and to this, among the sovereigns, was joined a characteristic idolatry of the past. Their thoughts were engrossed by war and politics. During the comparatively long rule of a century, the House of

[1] انا مدينة العلم علي بابها

"I am the city of learning, Ali is its gate."

Ommeyya produced only one man devoted to the cultivation of letters; and this man was Abû Hâshim Khâlid ibn Yezîd, "the philosopher of the Merwânian family," [1] as he has been called, who was set aside from the succession on account of his learning.

The jealous suspicion and the untiring animosity of the children of Abû Sufîan and Hind had obliged the descendants of the Prophet to live a life of humble retirement. "In the night of misery and unhappiness" they followed truly and faithfully the precepts of their ancestor, and found consolation in intellectual pursuits. Their ardent love of knowledge, their passionate devotion to the cause of humanity,—their spirit looking upwards far above the literalness of common interpretations of the law,—show the spirituality and expansiveness of Islâm.[2] The definition by the Imâm Ja'far as-Sâdik of sciences or knowledge gives some idea of their faith in the progress of man: "The enlightenment of the heart is its essence; Truth its principal object; Inspiration, its guide; Reason, its accepter; God, its inspirer; and the words of man its utterer." [3]

Surrounded by men whom love, devotion, and sympathy with their patience had gathered around them, the early descendants of the Prophet were naturally more or less influenced by the varied ideas of their followers. Yet their philosophy never sinks to that war of words without life and without earnestness which characterised the schools of Athens or Alexandria under the Ptolemies.

But though literature and philosophy were at a discount among the rulers, the example of the Imâms naturally exercised no small influence on the intellectual activity of the Arabs and the subject races. Whilst the Ommeyyades discouraged the peaceful pursuits of the mind, the children of Fâtima, with remarkable liberalism, favoured learning. They were not

[1] *Mâkhaz-i-'ulâm* of Moulvi Syed Kerâmat Ali. This learned scholar was nearly forty years curator of the Imambara at Houghly.

[2] See the *Hadîs-i-Ihlilaj*, from the Imâm Ali bin-Mûsa ar-Raza, reported by Mufazal bin-Omar Joufi, *Bihâr ul-Anwâr*.

[3] *Târikh ul-Hukamâ*, by Jamâl ud-dîn al-Kifti, founded upon another work bearing the same name, by Shihâb ud-dîn Suhrwardi; Shihâb ud-dîn was a Platonist—an Ishrâki—an idealist, and was condemned and put to death by the orthodox synod in the reign of Saladin's son. Compare the first *Khutba* of the *Nahj-ul-Balâghat*, and the traditions on knowledge in the *Bihâr ul-Anwâr*.

devoted to the past,—the *salaf* was not their guide. With the Master's precepts to light their path, they kept in view the development of humanity, and devoted themselves to the cultivation of science and learning in all its branches. Like the Master and the early Caliphs, the "Philosophers of the House of Mohammed" [1] received with distinction the learned men whom the fanatical persecution of Justinian's successors drove for refuge into foreign lands. The academies of philosophy and medicine, founded by the Nestorians at Edessa and Nisibis, had been broken up; its professors and students were refugees in Persia and Arabia. Many betook themselves—as their predecessors had done before, in the time of the Prophet and the Caliph Abû Bakr—to Medîna, which, after its sack by the Ommeyyades, had again gathered round Ja'far as-Sâdik a galaxy of talented scholars. The concourse of many and varied minds in the City of the Prophet gave an impetus to the cultivation of science and literature among the Moslems. From Medîna a stream of unusual intellectual activity flowed towards Damascus. Situated on the northern confines of the Arabian Desert, along the trade-route from Mecca and Medîna to Syria, Damascus had been associated from ancient times with the Ommeyyades; and the Syrian Arabs were closely allied by interest and kinship to the family whom they had assisted to elevate to the rulership of Islâm. The Ommeyyades had naturally fixed upon this city as the seat of their empire; and though shunned with horror by the devout Moslems, it formed the gathering place for the representatives of the many races who had come under the sway of Islâm. The controversies of Greek and Saracen furnished a strong incentive to the study of dialectics and Greek philosophy; and the invention of the diacritical and vowel points furthered the cultivation of grammar and philology. At this time flourished two Christian writers of note, who, fleeing before their orthodox persecutors, had taken shelter in Damascus. These were Johannes Damascenus and Theodorus Abucara. Their polemical writings against the Moslems, their rationalistic and philosophical disputes with their own orthodox brethren, joined to the influence of the Medinite school, which flourished under

[1] *Mâkhaz-i-'Ulûm.*

Mohammed al-Bâkir and Ja'far as-Sâdik, soon led to the growth of philosophical tendencies among the Saracens. For centuries Greek philosophy had been known to the Persians and the Arabs; the Nestorians had spread themselves in the dominions of the Chosroes since the beginning of Justinian's reign, but it was not until all the varied elements had been fused into an organic whole by Islâm that Greek science and culture exercised any real effect on the intellectual development of Western Asia. It was towards the close of the Ommeyyade rule that several Moslem thinkers came into prominence, whose lectures on subjects then uppermost in the minds of the people attracted great attention. And their ideas and conceptions materially moulded the thoughts of succeeding generations.

It was in the second century, however, that the literary and scientific activity of the Moslems commenced in earnest, and the chief impulse to this was given by the settlement of the Arabs in towns. Hitherto they had lived in camps isolated from the races they had subjugated. Osmân had laid a prohibition on their acquiring lands in the conquered countries, or contracting marriages with the subject nations. The object of this policy was apparent; it has its parallel in the history of all nations, ancient and modern. In British India and in French Algeria it is still in force. During the whole period of the Ommeyyade rule the Arabs had constituted the dominant element,—the aristocratic military caste amongst their subjects. The majority of them were occupied in warlike pursuits. The gentler avocations of learning and science were left to the suspected Hâshimis and the children of the Ansâr,—to the descendants of Ali, Abû Bakr, and Omar. The Arabs had carried with them into distant regions the system of clientage which had existed in Arabia, as it had existed among the Romans, from ancient times. Clientage afforded to the subjects protection and consideration; to the conquerors, the additional strength gained by numbers. Thus, both in the East and in the West, the leading families allied themselves with members of the prominent desert clans, and became the *maulas* or *clients*, not *freedmen*, as has been incorrectly supposed, of their conquerors. To these *clients*, besides the Hâshimites and the children of the Ansâr and Muhâjirîn, such as had

survived the sack of Medîna, was left scholarship and the cultivation of arts and sciences during the Ommeyyade rule. With the rise of the Abbasides commenced a new era. They rose to power with the assistance of the Persians; and they relied for the maintenance of their rule more upon the attachment of the general body of their subjects, than the fickle affection of the military colonists of Arabia. Abu'l Abbâs Saffâh held the reins of government for but two years. His brother and successor, al-Mansûr, though cruel in his treatment of the Fâtimides, was a statesman of the first rank. He organised the State, established a standing army and a corps of police, and gave firmness and consistency to the system of administration. The Arabs had hitherto devoted themselves almost exclusively to the profession of arms; the method of government adopted by al-Mansûr gave a new bent to their genius. They settled in cities, acquired landed properties, and devoted themselves to the cultivation of letters with the same ardour which they had displayed in the pursuit of war.

The rich and fertile valley of the Euphrates, watered by the two great rivers of Western Asia, has, from the most ancient times, been the seat of empire and the centre of civilisation. It was in this region that Babylon, Ctesiphon, and Seleucia had risen successively. Here existed at this epoch Basra and Kûfa, with their unruly and volatile inhabitants. Basra and Kûfa had, from the first conquest of the Moslems, formed important centres of commercial activity. The latter city was at one time the seat of government. To Basra and Kûfa had come all the active spirits of the East, who either could not or would not go to the depraved capital of the Ommeyyades. For the Abbasides, Damascus had not only no attraction, but was a place of peril; and the uncertain and fickle temperament of the people of Basra and Kûfa made those cities undesirable as the seat of government. Al-Mansûr cast about for a site for his capital, and at last fixed upon the locality where Bagdad now stands—a six days' journey by river from Basra.

Bagdad is said to have been a summer retreat of Kesrâ Anûshirvân, the famous monarch of Persia, and derived from his reputation as a just ruler the name it bears,—the " Garden

of Justice." With the disappearance of the Persian monarchy had disappeared the famous Garden where the Lord of Asia dispensed justice to his multitudinous subjects; tradition, however, had preserved the name. The beautiful site, central and salubrious, attracted the eyes of Mansûr, and the glorious city of the Caliphs arose, like the sea-goddess issuing from the waves, under the magic wand of the foremost architects of the day.

The Bagdad of Mansûr was founded in the year 145 of the Hegira on the western bank of the Tigris. Soon, however, another city—a new Bagdad—sprang up on the eastern bank under the auspices of the heir-apparent, the Prince Imperial of the Caliphate, who afterwards assumed the title of al-Mahdi. This new city vied in the splendour of its structures with the beauty and magnificence of the Mansurièh. In the days of its glory, before the destroying hordes of Chengîz sweeping over Western Asia had engulfed in ruin every vestige of Saracenic civilisation, Bagdad presented a beautiful and imposing appearance—a fit capital for the Pontiffs of Islâm.[1]

The beauty and splendour of the city, before its sack by the Mongols, have been immortalised in glowing lines by Anwarî—most brilliant of panegyrists :— [2]

"Blessed be the site of Bagdad, seat of learning and art—
None can point in the world to a city equal to her,
Her suburbs vie in beauty with the blue vault of heaven,
Her climate in quality equals the life-giving breezes of heaven,
Her stones in their brightness rival gems and rubies,

[1] For a description of Bagdad under the Abbasides, see *Short History of the Saracens* (Macmillan), p. 444.

[2] This English rendering gives an inadequate idea of the beauty of the original :—

خوشا نواحی بغداد جای فضل و هنر
که کس نشان ندهد در جهان چنان کشور
سواد او بمثل چون سپهر مینا رنگ
هوای او بصفت چون نسیم جان پرور
بخاصیت همه سنگش عقیق لولو بار

Her soil in beneficence has the fragrance of the amber,
The morning breeze has imparted to the earth the freshness of *Túba* (the tree of Paradise),
And the winds have concealed in her water the sweetness of *Kausar* (the spring of Eden),
The banks of the Tigris with their beautiful damsels surpass (the city of) *Khullakh*,[1]
The gardens filled with lovely nymphs equal Cashmere,
And thousands of gondolas on the water,
Dance and sparkle like sunbeams in the sky."

Its designation of the *City of Peace, Dâr us-Salâm*, was derived from a prophecy made by the astronomer-royal Noubakht, that none of the Caliphs would die within the walls of the city, and the strange fulfilment of this prognostication in the case of thirty-seven Pontiffs. The great number of holy men who have found their last resting-place within or about its walls, and whose tombs are objects of veneration to all Moslems, gave to Bagdad the title of *Bulwark of the Holy*. Here are the mausoleums of the greatest Imâms and the most pious Sheikhs. Here reposes the Imâm Mûsa al-Kâzim, and here lie buried Abû Hanîfa, the Sheikhs Junaid, Shibli, and Abdul Kâdir Ghilâni, the chiefs of the Sûfis.

In the midst of the monuments of the Imâms and Sheikhs stood those of the Caliphs and their consorts. Of the numerous academies, colleges, and schools which filled the city, two institutions surpassed all others in importance by their wealth

منفعت همه خاکش عبیر غالیه بو
صبا سرشته بخاکش طراوت طوبی
هوا نهفته در آبش حلاوت کوثر
کنار دجله ز ترکان سیمتن خلخ
میان رحبه ز خوبان ماهرخ کشمر
هزار زورق خورشید شکل بر سر آب
روان صفت که پراگنده بر سپهر شرر

[1] A city in Cathay famous for the beauty of its women.

and the number of their students. These were the Nizamièh and Mustansarièh; the first established in the first half of the fifth century of the Hegira by Nizâm ul-Mulk, the great Vizier of Malik Shah, Sultan of the Seljuks; and the second, built two centuries later, by the Caliph Al-Mustansir b'illâh.

"It is a remarkable fact," says the historian of Culture under the Caliphs, "that the sovereign who makes us forget some of the darker sides of his nature by his moral and mental qualities, also gave the impetus to the great intellectual movement which now commenced in the Islâmic world." [1] It was by Mansûr's command that literary and scientific works in foreign languages were first translated into Arabic. Himself no mean scholar and mathematician he had the famous collections of Indian fables (the Hitopadesa), the Indian treatise on astronomy called the *Siddhanta*, several works of Aristotle, the *Almagest* of Claudius Ptolemy, the books of Euclid, as well as other ancient Greek, Byzantine, Persian, and Syrian productions, translated into the language of the Arabs. Mas'ûdi mentions that no sooner were these translations published than they were studied with much avidity. Mansûr's successors were not only warm patrons of the learned, who flocked to the metropolis from all quarters, but were themselves assiduous cultivators of every branch of knowledge. Under them the intellectual development of the Saracens, in other words of the conglomerate races of the vast empire which constituted the Caliphate, proceeded with wonderful rapidity.

Each great nation of the world has had its golden age. Athens had her Periclean era; Rome, her Augustan age; so, too, had the Islâmic world its epoch of glory; and we may with justice look upon the period which elapsed from the accession of Mansûr to the death of Mu'tazid-b'illâh, with only a brief intermission during the reign of Mutawakkil, as an epoch of equal, if not of superior greatness and magnificence. Under the first six Abbaside Caliphs, but especially under Mâmûn, the Moslems formed the vanguard of civilisation. The Saracenic race by its elastic genius as well as by its central position,—with the priceless treasures of dying Greece and Rome on one side, and of Persia on the other, and India and

[1] Kremer, *Culturgeschichte des Orients unter den Chalifen*, vol. ii. p. 412.

China far away sleeping the sleep of ages,—was pre-eminently fitted to become the teacher of mankind. Under the inspiring influences of the great Prophet, who gave them a code and a nationality, and assisted by their sovereigns, the Saracens caught up the lessons of wisdom from the East and the West, combined them with the teachings of the Master, and "started from soldiers into scholars." "The Arabs," says Humboldt, "were admirably situated to act the part of mediators, and to influence the nations from the Euphrates to the Guadalquivir and Mid-Africa. Their unexampled intellectual activity marks a distinct epoch in the history of the world."

Under the Ommeyyades we see the Moslems passing through a period of probation, preparing themselves for the great task they were called upon to undertake. Under the Abbasides we find them the repositories of the knowledge of the world. Every part of the globe is ransacked by the agents of the Caliphs for the hoarded wealth of antiquity; these are brought to the capital, and laid before an admiring and appreciating public. Schools and academies spring up in every direction; public libraries are established in every city free to every comer; the great philosophers of the ancient world are studied side by side with the Koran. Galen, Dioscorides, Themistius, Aristotle, Plato, Euclid, Ptolemy, and Apollonius receive their due meed of appreciation. The sovereigns themselves assist at literary meetings and philosophical disquisitions. For the first time in the history of humanity a religious and autocratic government is observed to ally itself with philosophy, preparing and participating in its triumphs.

Every city in the empire sought to outrival the other in the cultivation of the arts and sciences. And governors and provincial chiefs tried to emulate the sovereign. Travelling in search of knowledge was, according to the precept of the Master, a pious duty. From every part of the globe students and scholars flocked to Cordova, to Bagdad, and to Cairo to listen to the words of the Saracenic sages. Even Christians from remote corners of Europe attended Moslem colleges. Men who became in after-life the heads of the Christian Church,[1] acquired their scholarship from Islâmic teachers. The rise of Cairo

[1] Such as Gerbert, afterwards Pope Sylvester II., who studied in Cordova.

under al-Muizz li-dîn-illâh added a spirit of rivalry to the patronage of learning on the part of the Caliphs of the Houses of Abbâs and Fâtima. Al-Muizz was the Mâmûn of the West —the Mæcenas of Moslem Africa, which then embraced the whole of the continent from the eastern confines of Egypt to the shores of the Atlantic and the borders of the Sahara. During the reign of al-Muizz and his first three successors, the arts and sciences flourished under the especial and loving protection of the sovereigns. The free university of Cairo, the *Dâr-ul-Hikmat* —Scientific Institute—established by al-Muizz, "anticipated Bacon's ideal with a fact." The Idrîsides at Fez, and the Moorish sovereigns in Spain, outvied each other in the cultivation of arts and letters. From the shores of the Atlantic eastward to the Indian Ocean, far away even to the Pacific, resounded the voice of philosophy and learning, under Moslem guidance and Moslem inspiration. And when the House of Abbâs lost its grasp on the empire of the East, the chiefs who held the reins of government in the tracts which at one time were under the undivided temporal sway of the Caliphs, extended the same protection to science and literature as the Pontiffs from whom they still derived their title to sovereignty. This glorious period lasted, in spite of the triumph of patristicism and its unconcealed jealousy towards scientific and philosophical pursuits, until the fall of Bagdad before the Tartar hordes. But the wild savages who overturned the Caliphate and destroyed civilisation, as soon as they adopted Islâm, became ardent protectors of learning!

What was the condition of learning and science in Christendom at this epoch? Under Constantine and his orthodox successors the Æsclepions were closed for ever; the public libraries established by the liberality of the pagan emperors were dispersed or destroyed; learning was "branded as magic or punished as treason"; and philosophy and science were exterminated. The ecclesiastical hatred against human learning had found expression in the patristic maxim, "Ignorance is the mother of devotion"; and Pope Gregory the Great, the founder of ecclesiastical supremacy, gave effect to this obscurantist dogma by expelling from Rome all scientific studies, and burning the Palatine Library founded by Augustus

Cæsar. He forbade the study of the ancient writers of Greece and Rome. He introduced and sanctified the mythologic Christianity which continued for centuries the predominating creed of Europe, with its worship of relics and the remains of saints. Science and literature were placed under the ban by orthodox Christianity, and they succeeded in emancipating themselves only when Free Thought had broken down the barriers raised by orthodoxy against the progress of the human mind.

Abdullah al-Mâmûn has been deservedly styled the Augustus of the Arabs. "He was not ignorant that they are the elect of God, his best and most useful servants, whose lives are devoted to the improvement of their rational faculties . . . that the teachers of wisdom are the true luminaries and legislators of the world."[1]

Mâmûn was followed by a brilliant succession of princes who continued his work. Under him and his successors, the principal distinguishing feature of the school of Bagdad was a true and strongly marked scientific spirit, which dominated over all its achievements. The deductive method, hitherto proudly regarded as the invention and sole monopoly of modern Europe, was perfectly understood by the Moslems. "Marching from the known to the unknown, the school of Bagdad rendered to itself an exact account of the phenomena for the purpose of rising from the effect to the cause, accepting only what had been demonstrated by experience; such were the principles taught by the (Moslem) masters." "The Arabs of the ninth century," continues the author we are quoting, "were in the possession of that fecund method which was to become long afterwards, in the hands of the moderns, the instrument of their most beautiful discoveries."

Volumes would be required to enumerate the host of scientific and learned men who flourished about this epoch, all of whom have, in some way or other, left their mark on the history of progress. Mâshallâh and Ahmed ibn Mohammed al-Nehâvendi, the most ancient of the Arab astronomers, lived in the reign of Mansûr. The former, who has been called the Phœnix of his time by Abu'l Faraj, wrote several valuable treatises on

[1] Abu'l Faraj.

the astrolabe and the armillary sphere, and the nature and movements of celestial bodies—works which still evoke the admiration of scientists. Ahmed al-Nehâvendi wrote from his own observations an astronomical table, *al-Mustamal*, which formed a decided advance upon the notions of both the Greeks and the Hindus. Under Mâmûn, the *Almagest* of Ptolemy was re-translated, and the *Verified Tables* prepared by famous astronomers like Send ibn Ali, Yahya ibn Abi-Mansûr, and Khâlid ibn Abdul Malik. Their observations connected with the equinoxes, the eclipses, the apparitions of the comets, and other celestial phenomena, were valuable in the extreme, and added greatly to human knowledge.

Mohammed ibn Mûsa al-Khwârizmi made a new translation, under the orders of Mâmûn, of the *Siddhanta*, or the Indian Tables, with notes and observations. Al-Kindi wrote two hundred works on various subjects—arithmetic, geometry, philosophy, meteorology, optics and medicine. Thoroughly versed in the language of the Greeks, he derived from the schools of Athens and Alexandria part of the information which he embodied in his invaluable treatises. "His works," says Sédillot, "are full of curious and interesting facts." Abû-Ma'shar (corrupted by the Europe of the Middle Ages into Albumazar) made the celestial phenomena his special study; and the *Zîj-abî-Ma'shar*, or the Table of Abû-Ma'shar, has always remained one of the chief sources of astronomical knowledge. The discoveries of the sons of Mûsa ibn Shâkir,[1] who flourished under Mâmûn and his two immediate successors, especially with respect to the evaluations of the mean movement of the sun and other astral bodies, are almost as exact as the latest discoveries of Europe. They ascertained with wonderful precision, considering the appliances they possessed, the obliquity of the ecliptic, and marked for the first time the variations in the lunar altitudes. They also observed and determined with remarkable accuracy the precession of the equinoxes, and the movements of the solar apogee (which were utterly unknown to the Greeks). They calculated the size of the earth from the measurement of a degree on the shore of the Red Sea—this at a time when Christian Europe was

[1] Mohammed, Ahmed, and Hasan.

asserting the flatness of the globe. Abu'l Hasan invented the telescope, of which he speaks as "a tube to the extremities of which were attached diopters." These "tubes" were improved and used afterwards in the observatories of Marâgha and Cairo with great success. Al-Nairèzi and Mohammed ibn Isa Abû Abdullah continued the great work of Mûsa ibn Shâkir's sons.[1] By the time al-Batâni appeared, the Moslems had evolved from the crude astronomy of the ancients a regular and harmonious science. Al-Batâni,[2] though surpassed by his successors, occupies a high position among astronomers, and a competent judge pronounces his *rôle* to be the same among the Saracens as that of Ptolemy among the Greeks. His Astronomical Tables, translated into Latin, furnished the groundwork of astronomy in Europe for many centuries. He is, however, best known in the history of mathematics as the introducer of the sine and co-sine instead of the chord in astronomical and trigonometrical calculations.

Among the numerous astronomers who lived and worked in Bagdad at the close of the tenth century, the names of two men, Ali ibn Amajûr and Abu'l Hasan Ali ibn Amajûr, generally known as Banû-Amajûr, stand prominently forward. They are noted for their calculation of the lunar movements.

Owing to the weakness of the central power, and an increasing inability to maintain the sway of the Caliphate in outlying and distant parts, there arose on the confines of the empire, towards the end of the tenth century, several quasi-independent chiefs. Spain had been lost to the Abbasides at the commencement of their rule; about this period the Banî-Idrîs established themselves at Fez, the Banî-Rustam at Tahârt, and the Banî-Aghlab at Kairowân in Africa. Soon, however, the whole of the northern part of that continent was brought under the domination of the Banî-Fâtima, and then another era of glory for arts and literature commenced. Fez, Miknâsa, Segelmessa, Tahârt, Tlemcen, Kairowân, but above all, Cairo, became centres of culture and learning. In Khorâsân the Tâherides,

[1] For their names, see *ante*, p. 374. Mohammed ibn Musa ibn Shâkir died in A.H. 259 (A.C. 873).

[2] Abû Abdullah Mohammed ibn Jâbir ibn Sinân al-Batâni was a native of Harran, died A.H. 317 (A.C. 929-30).

in Transoxiana the Sâmânides, the Buyides in Tabaristan and afterwards in Persia and Bagdad, as mayors of the palace, extended a lavish patronage to scientists and scholars. Abdur Rahman Sûfi, one of the most brilliant physicists of the age, was an intimate friend of the Buyide Ameer 'Azud ud-Dowla, deservedly called the second Augustus of the Arabs. Abdur Rahman improved the photometry of the stars. 'Azud ud-Dowla,[1] himself a scholar and a mathematician, welcomed to his palace as honoured guests the learned men who flocked to Bagdad from every part of the globe, and took part in their scientific controversies. Ja'far, the son of the Caliph Muktafi b'illâh, made important observations regarding the erratic movements of comets, and wrote a treatise on them; and other princes cultivated the sciences side by side with their subjects.

Under the Buyides flourished a host of astronomers, physicists, and mathematicians, of whom only two need be mentioned here, Al-Kohî and Abu'l-Wafâ. Al-Kohî studied and wrote on the movements of the planets His discoveries concerning the summer solstice and the autumnal equinox added materially to the store of human knowledge. Abu'l-Wafâ was born in 939 A.C. at Buzjân in Khorâsân; he established himself in Irâk in 959, where he applied himself chiefly to mathematics and astronomy. His *Zîj-ush-Shâmil* (*the Consolidated or General Table*) is a monument of industry and keen and accurate observation. He introduced the use of the secant and the tangent in trigonometry and astronomical observations. "But this was not all," says M. Sédillot; "struck by the imperfection of the lunar theory of Ptolemy, he verified the ancient observations, and discovered, independently of *the equation of the centre and the eviction*, a third inequality, which is no other than the variation determined six centuries later by Tycho Brahe." [2]

Under the Fâtimides of Egypt, Cairo had become a new intellectual and scientific centre. Here flourished, in the reigns

[1] To 'Azud ud-Dowla (Malik Fanâkhusrû) Bagdad owed several hospitals for the sick and refuges for orphans. He built magnificent mausoleums over the tombs of Ali and Husain at Najaf and Kerbela. He rendered navigable the river which flows by Shirâz by erecting the famous dyke called *Bend-emir*.

[2] Abu'l Wafâ died in A.H. 387 (A.C. 997).

of Azîz b'illâh [1] and Hâkim bi-amr-illâh, one of the master-spirits of the age, Ibn Yunus,[2] the inventor of the pendulum and the measurement of time by its oscillations. He is, however, famous for his great work named after his patron and sovereign, *Zîj-ul-Akbar-al-Hâkimi*, which soon displaced the work of Claudius Ptolemy. It was reproduced among the Persians by the astronomer-poet Omar Khayyâm (1079); among the Greeks, in the Syntax of Chrysococca; among the Mongols by Nasîr ud-dîn Tûsi, in the *Zîj-îl-Khâni*; and among the Chinese, in the astronomy of Co-Cheou-king in 1280; and thus what is attributed to the ancient civilisation of China is only a borrowed light from the Moslems.[3]

Ibn Yunus died in 1009, and his discoveries were continued by Ibn un-Nabdi, who lived in Cairo in 1040, and Hasan ibn Haitham, commonly called in Europe Alhazen, and famous for the discovery of atmospheric refraction. He flourished about the end of the eleventh century, and was a distinguished astronomer and optician. He was born in Spain, but resided chiefly in Egypt. He is best known in Europe by his works on optics, one of which has been translated into Latin by Risner. He corrected the Greek misconception as to the nature of vision, and demonstrated for the first time that the rays of light come from external objects to the eye, and do not issue forth from the eye, and impinge on external things. He determined the retina as the seat of vision, and proved that the impressions made upon it were conveyed along the optic nerves to the brain. He explained the phenomena of a single vision by the formation of visual images on symmetrical portions of the two retinas. He discovered that the refraction of light varies with the density of the atmosphere, and that atmospheric density again varies with the height. He explained accurately and clearly how in consequence of this refraction, astral bodies are seen before they have actually risen and after they have set, and demonstrated that the beautiful phenomenon of

[1] 'Azîz b'illâh was one of the greatest sovereigns Egypt ever had. "He loved his people as they loved him." He was married to a Christian lady, whose brothers, Jeremiah and Arvenius, held the posts of patriarchs, one of Jerusalem and the other of Alexandria. Both of them belonged to the orthodox or *melkite* sect.

[2] See Appendix III.

[3] Sédillot.

twilight was due to the effect of atmospheric refraction combined with the reflecting action of the air upon the course of the rays of light. In his book called the *Balance of Wisdom* he discusses dynamical principles, generally supposed to be the monopoly of modern science. He describes minutely the connection between the weight of the atmosphere and its density, and how material objects vary in weight in a rare and in a dense atmosphere. He discusses the submergence of floating bodies, and the force with which they rise to the surface when immersed in light or heavy media; he fully understands the principle of gravitation, and recognises gravity as a force. He knows correctly the relation between the velocities, spaces, and times of falling bodies, and has very distinct ideas of capillary attraction.[1]

In Spain the same activity of mind was at work from the Pyrenees to the Straits: Seville, Cordova, Granada, Murcia, Toledo, and other places possessed their public libraries and colleges, where they gave free instruction in science and letters. Of Cordova, an English writer speaks thus: "Beautiful as were the palaces and gardens of Cordova, her claims to admiration in higher matters were no less strong. The mind was as lovely as the body. Her professors and teachers made her the centre of European culture; students would come from all parts of Europe to study under her famous doctors, and even the nun Hroswitha far away in her Saxon convent of Gandersheim, when she told of the martyrdom of Eulogius, could not refrain from singing the praises of Cordova, 'the brightest splendour of the world.' Every branch of science was seriously studied there, and medicine received more and greater additions by the discoveries of the doctors and surgeons of Andalusia than it had gained during all the centuries that had elapsed since the days of Galen. . . . Astronomy, geography, chemistry, natural history, all were studied with ardour at Cordova; and as for the graces of literature there never was a time in Europe when poetry became so much the speech of everybody—when people

[1] The annalist 'Ayni says that at this period the public library of Cairo contained over two million books, of which six thousand treated exclusively of mathematics and astronomy. I have only mentioned a few of the names among the thousands of mathematicians and physicists who flourished during this epoch, when the scientific spirit of Islâm was at its zenith.

of all ranks composed those Arabic verses which perhaps suggested models for the ballads and canzonettes of the Spanish minstrels and the troubadours of Provence and Italy. No speech or address was complete without some scrap of verse, improvised on the spur of the moment, by the speaker or quoted by memory from some famous poet."[1] To these we may add the words of Renan: "The taste for science and literature had, by the tenth century, established, in this privileged corner of the world, a toleration of which modern times hardly offer us an example. Christians, Jews, and Musulmans spoke the same tongue, sang the same songs, participated in the same literary and scientific studies. All the barriers which separated the various peoples were effaced; all worked with one accord in the work of a common civilisation. The mosques of Cordova, where the students could be counted by thousands, became the active centres of philosophical and scientific studies."[2]

The first observatory in Europe was built by the Arabs. The Giralda, or tower of Seville, was erected under the superintendence of the great mathematician Jâbir ibn Afiâh in 1190 A.C. for the observation of the heavens. Its fate was not a little characteristic. After the expulsion of the Moors, it was turned into a belfry, the Spaniards not knowing what else to do with it!

Omar ibn Khaldûn, Ya'kûb ibn Târik, Muslimah al-Maghr'ibi, and the famous Averroes (Abu'l Walîd Mohammed ibn Rushd) are some of the physicists whom we may mention here. Nor was Western Africa inactive during this period: Ceuta and Tangier, Fez, and Morocco, rivalled Cordova, Seville, and Granada; their colleges sent out able professors, and numerous learned works testified to the indefatigable ardour of the Moslem mind in all departments of learning.

The beginning of the eleventh century saw a great change in the political condition of Central Asia. The rise of

[1] Stanley Lane-Poole, *The Moors in Spain*, p. 144. For a full account of Cordova, see *Short History of the Saracens* (Macmillan), p. 515.

[2] Renan, *Averroes et Averroism*, p. 4. The golden age of literature and science in Spain was under Hakam *al-Mustansir b'illâh* who died in 976 A.C. The catalogue of his library consists of forty-four quartos. He employed agents in every quarter of the globe to procure for him, at any price, scientific works, ancient and modern. He paid to Abu'l Faraj al-Isphahâni 1000 dinars of gold for the first copy of his celebrated Anthology (*Kitâb ul-Aghâni*).

Mahmûd,[1] the great Ghaznavide conqueror, *Yemîn ud-Dowla* and *Amîn ul-Millat*, "right hand of the empire" and "custodian of the Faith," brought Transoxiana, Afghânistân, and Persia under the sovereignty of Ghazni. He collected round him a body of scholars and litterateurs who shed a glorious lustre on his brilliant reign. Attached to the renovated "orthodoxy" of al-Asha'ri, and consequently piously inimical to the rationalistic school of thinkers, chary in his munificence to the poets who made his name famous in the annals of the world, he yet had the genius to perceive the merits of men like *Abû Raihân Mohammed ibn Ahmed* al-Beirûnî, philosopher, mathematician, and geographer. Firdousi, the prince of poets, Dakîki, and Unsuri. Al-Beirûnî's mind was encyclopædic. His work on astronomy, entitled after his patron Sultan Masû'd,[2] *al-Kânûn-al-Mas'ûdi*, *Canon Masudicus*, is a monument of learning and research. He travelled into India, and studied the language of the Hindus, their sciences, their philosophy and literature, and embodied his observations in a work which has recently been furnished to us in an English garb. The philosophical and scientific, not to say sympathetic, spirit which animates al-Beirûnî in the treatment of his subject is in marked contrast to the mode still in vogue among Western nations, and serves as an index to the intellectual character of Islâm. The Ἰνδικα [3] of al-Beirûnî shows the extent to which the Moslems had utilised the treasures of Greek learning, and turned them to fruitful purposes. Besides these two great works, he wrote on mathematics, chronology, mathematical geography, physics, and chemistry.

Al-Beirûnî communicated to the Hindus the knowledge of the Bagdadian school in return for their notions and traditions. He found among them the remains of Greek science, which had been transported to India in the early centuries of the Christian era, or perhaps earlier, during the existence of the Græco-Bactrian dynasties. The Hindus do not seem to have possessed any advanced astronomical science of their own; for, had it

[1] A.C. 996-1030. [2] The son and successor of the Conqueror.

[3] *Fi't Tahkîk mâ li'l Hind*; see *Short History of the Saracens* (Macmillan), p. 463. Another remarkable work of his is the *Âsâr ul-Bâkièh* or the Vestiges of the Past, translated into English by Dr. Sachau.

been otherwise, we doubtless would have heard about it, as Sédillot rightly observes, from the Greek writers of the times of Alexander and the Seleucidæ. They, like the Chinese, borrowed most of their scientific ideas from foreign sources, and modified them according to their national characteristics.

Under the successors of Mahmûd learning and arts flourished abundantly. The rise of the Seljukides and their grand munificence towards scholarship and science rivalled that of the golden days of the Abbaside rule. Tughril, Alp Arslân, Malik Shah, and Sanjar were not only remarkable for the greatness of their power, the clear comprehension of what constituted the welfare of their subjects, but were equally distinguished for their intellectual gifts and ardent enthusiasm in the cause of learning. *Jalâl ud-dîn* Malik Shah [1] and his vizier, Khwâja Hasan *Nizâm ul-Mulk*,[2] collected round them a galaxy of astronomers, poets, scholars, and historians. The astronomical observations conducted in his reign by a body of savants, with Omar Khayyâm and Abdur Rahman al-Hâzini at their head, led to the reform of the Calendar which preceded the Gregorian by six hundred years and is said by a competent authority to be even more exact.[3] The era which was introduced upon these observations was named after Malik Shah, the *Jalâlian*.

The destructive inroads of the Christian marauders who called themselves Crusaders was disastrous to the cause of learning and science in Western Asia and Northern Africa. Barbarous savages, hounded to rapine and slaughter by crazy priests, they knew neither mercy for the weakness of sex or age, nor the value of letters or arts. They destroyed the splendid library of Tripoli without compunction; they reduced to ashes many of the glorious centres of Saracenic culture and arts. Christian Europe has held up to obloquy the apocryphal destruction of the Alexandrian library, which had already been burned in the time of Julius Cæsar, but it has no word of blame for the crimes of her Crusaders five centuries later. The calamities inflicted by the Crusaders were lasting in their effect; and in spite of the endeavours of Saladin and his sons to restore the intellectual life of Syria, it has remained dead from that day to this.

[1] 1073-1092 A.C. [2] *i.e.* the Administrator of the Empire. [3] Sédillot.

In the interval which elapsed between the rise of Mahmûd and the fall of Bagdad, there flourished a number of philosophers and scientists, among whom shine the great Avicenna (*Abû Ali* Husain Ibn-Sîna),[1] Fath ibn Nâbeghah Khâkâni,[2] Mubashshar ibn Ahmed,[3] and his son Mohammed.[4]

The eruption of the Mongols upon the Saracenic world was not like the invasion of the Roman empire by the northern barbarians. These had proceeded slowly; and in their comparatively gradual progress towards the heart of the empire they had become partially softened, and had to some extent cast off their pristine ferocity. The case was otherwise with the hordes of the devastator Chengîz. They swept like overwhelming torrents over Western Asia. Wherever they went they left misery and desolation.[5] Their barbarous campaigns and their savage slaughters put an end for a time to the intellectual development of Asia. But the moment the wild savages adopted the religion of the Prophet of Arabia a change came over them. From the destroyers of the seats of learning and arts they became the founders of academies and the protectors of the learned. Sultan Khoda-Bendah (Uljaitû-Khan), sixth in descent from Chengîz, was distinguished for his attainments and his patronage of the sciences. But the fearful massacres which the barbarians had committed among the settled and cultured population of the towns destroyed most of the gifted classes, with the result that, though the great cities like Bokhâra and Samarcand rose again into splendour, they became, nevertheless, the seats of a narrower culture, more casuistical and theological than before. And yet the Mongols protected philosophers like Nasîr ud-dîn Tûsi, Muwayyad ud-dîn al-Orezi of Damascus, Fakhr ud-dîn al-Marâghi, Mohi ud-dîn al-Maghribi, Ali Shah al-Bokhâri, and many others. The successors of Hulâku tried thus to restore to Islâm what their ancestor had destroyed. Whilst the Mongols in Persia were employed in making some amends to civilisation, Kublai Khan transported to China the learning of the Arabs. Co-

[1] Died in 1037 A.C.
[2] Died in 1082 A.C.
[3] Died in 1135 A.C.
[4] Died in 1193 A.C.
[5] For a full account of the havoc and ruin caused by the Tartars, see *Short History of the Saracens*, pp. 391-400.

Cheou-king received in 1280 from Jamâl ud-dîn the tables of Ibn-Yunus, and appropriated them for Chinese purposes.

Ibn-Shâthir, who lived in the reign of Mohammed ibn Kalâun, the Mameluke sovereign of Egypt, developed still further the mathematical and astronomical sciences. And now arose on the eastern horizon the comet-like personality of Timûr. "From his throne in Samarcand this Titan of the fourteenth century called into being the greatest empire ever seen in Asia, and seemed to extinguish in his one resistless will the immemorial antagonism of Irân and Tûran." He was a patron of science and poetry, himself fond of the society of the scholars and artists of his day, an author, as well as a legislator of no mean order.[1] Magnificent colleges, splendid mosques, vast libraries, testified to the taste for letters of this remarkable man. His vast system of colonisation filled the great cities of Eastern Asia, especially Samarcand, with the splendour of all the arts and sciences known to the West. Timûr established "the most brilliant empire known to the history of Islâm, except that of the Ommeyyads in Spain, and that of the first Abbasides in Arabistan." Jâmi, master of sciences; Suhailî, translator of Pilpay; Ali Shèr Ameer, were some of the men who shed lustre on the reigns of his successors. The college founded by his consort, Bibi Khânam, and known by her name, still strikes the observer as one of the most imposing and most beautiful products of Saracenic architecture. Timûr's son, Shah Rukh Mirza, imitated his father in the cultivation and patronage of arts and letters. His peaceful reign of nearly half a century was remarkable for high intellectual culture and scientific study. When he transported his government from Samarcand to Herat, the former city lost none of its splendour. Ulugh Beg, his son, charged with the government of Transoxiana, maintained the literary and scientific glories of Samarcand. Himself an astronomer of a high rank, he presided at the observations which have immortalised his name. The tables in which those observations were embodied complete the cycle of Arabian thought. Ulugh Beg is separated by only a century and a half from Kepler, the founder of modern astronomy.

[1] The *Malfûzât-i-Timûri* ("The Institutes of Timûr") are couched in the style of the old Assyrian and Kyânian monarchs.

It was, however, not astronomy only which the Moslems cultivated and improved. Every branch of higher mathematics bears traces of their genius. The Greeks are said to have invented algebra, but among them, as Oelsner has justly remarked, it was confined to furnishing amusement "for the plays of the goblet." The Moslems applied it to higher purposes, and thus gave it a value hitherto unknown. Under Mâmûn they had discovered the equations of the second degree, and very soon after they developed the theory of quadratic equations and the binomial theorem. Not only algebra, geometry, and arithmetic, but optics and mechanics made remarkable progress in the hands of the Moslems. They invented spherical trigonometry; they were the first to apply algebra to geometry, to introduce the tangent, and to substitute the sine for the arc in trigonometrical calculations. Their progress in mathematical geography was no less remarkable. The works of Ibn-Haukal, of Makrîzî, al-Istakhri, Mas'ûdi, al-Beirûnî, al-Kumi and al-Idrîsî, Kazwînî, Ibn ul-Wardi, and Abu'l Fedâ, show what the Saracens attained in this department of science, called by them the *rasm-ul-arz*. At a time when Europe firmly believed in the flatness of the earth, and was ready to burn any foolhardy person who thought otherwise, the Arabs taught geography by globes.

The physical sciences were as diligently cultivated. The method of *experimentation* was substituted for theorising; and the crude ideas of the ancients were developed into positive sciences.[1] Chemistry, botany, geology, natural history, among others occupied the attention and exercised the energies of the ablest men.

Chemistry, as a science, is unquestionably the invention of the Moslems. Abû Mûsa Jâbir (the Geber of Christian writers)[2] is the true father of modern chemistry. "His name is memorable in chemistry, since it marks an epoch in that science of equal importance to that of Priestley and

[1] Humboldt calls the Arabs the real founders of the physical sciences.

[2] Abû Mûsa Jâbir ibn Hayyân was a native of Tarsus. Ibn Khallikân says "Jâbir compiled a work of two thousand pages in which he inserted the problems of his master (the Imâm) Ja'far as-Sâdik which formed five hundred treatises"; see also the *Târîkh-ul-Hukama*.

Lavoisier." He was followed by others, whose originality and industry, profoundness of knowledge, and keenness of observation, evoke the astonishment of students, and make them look with regret upon the inertness of the latter-day Moslem. The science of medicine and the art of surgery, the best index of a nation's genius and a severe test to the intellectual spirit of faith, were developed to the highest degree. Medicine had undoubtedly attained a high degree of excellence among the Greeks, but the Arabs carried it far beyond the stage in which their predecessors in the work of civilisation had left it, and brought it close to the modern standard. We can give here but a small conception of the work done by the Saracens for several centuries in this department of human study, and in the development of the natural sciences.

The study of medical substances, the idea of which struck Dioscorides in the Alexandrian school, is, in its scientific form, a creation of the Arabs. They invented chemical pharmacy, and were the first founders of those institutions which are now called *dispensaries*.[1] They established in every city public hospitals, called *Dâr ush-Shifa*, "the house of cure," or *Mâristân* (an abbreviation of *bîmâristan*, "the patient's house") and maintained them at the expense of the State.

The names of the Arab physicians in the biographical dictionary of Abû Usaibi'a fill a volume. Abû Bakr Mohammed ibn Zakaria ar-Râzi (known to mediæval Europe as Rhazes), who flourished in the beginning of the tenth century,[2] Ali ibn-Abbâs,[3] Avicenna (Abû Ali Husain ibn-Sîna), Albucasis (Abû'l

[1] The persons in charge of the dispensaries were under the control of Government. The price and quality of medicine were strictly regulated. Many dispensaries were maintained by the State. There were regular examinations for physicians and pharmacists, at which licences were given to passed candidates. The licence-holders were alone entitled to practise. Compare Kremer and Sédillot.

[2] This great physician, surnamed Râzi, from the place of his birth, Rai (ancient Rhages), filled successively the office of principal of the public hospitals at Rai, Jund-Shapur, and Bagdad. He wrote the *Hâwî*, which Sédillot calls "un corpus medical fort estimé." His treatises on smallpox and measles have been consulted by the physicians of all nations. He introduced the use of *minoratives*, invented the seton, and discovered the nerve of the larynx. He wrote two hundred medical works, some of which were published in Venice in 1510. Ar-Râzi died in A.H. 311 (A.C. 923-4).

[3] Ali ibn-Abbâs flourished fifty years later than Rhazes. He published a medical work, consisting of twenty volumes, on the theory and practice of

Kâsim Khalaf ibn Abbâs), Aven-Zoar [1] (Abû Merwân ibn Abdul Malik *ibn Zuhr*), Averroes (Abu'l Walîd Mohammed *ibn Rushd*),[2] and Aben-Bethar (Abdullah ibn Ahmed ibn Ali *al-Beithâr*, the *veterinary*),[3] are some of the most brilliant and most distinguished physicians who have left an enduring impression on the world of thought. Albucasis was not only a physician but a surgeon of the first rank. He performed the most difficult surgical operations in his own and the obstetrical department. In operations on women, we are informed by him, in which considerations of delicacy intervened, the services of properly instructed women were secured. The ample description he has left of the surgical instruments employed in his time gives an idea of the development of surgery among the Arabs.[4] Avicenna was unquestionably the most gifted man of his age; a universalist in genius, and encyclopædic in his writings. A philosopher, mathematician, astronomer, poet, and physician, he has left his influence impressed on two continents, and well deserves the title of Aristotle of the East. In spite of patristic jealousy, his philosophic ideas exercised an undisputed sway for several centuries in the schools of the East as well as of Europe. Avicenna is commonly known in Asia as *the Sheikh par excellence*.

medicine, which he dedicated to the Buyide Ameer 'Azud ud-dowla. This work was translated into Latin in 1227, and printed at Lyons in 1523 by Michel Capella. Ali ibn-Abbâs corrected many of the errors of Hippocrates and Galen.

[1] Ibn Zuhr or Aven-Zoar was one of the most distinguished physicians of his age. Born at Penaflor, he entered, after finishing his medical and scientific studies, the service of Yusuf bin Tâshfin, the great Almoravide monarch of Africa, who covered the rising physician with honours and riches. Ibn Zuhr joined, like Albucasis, the practice of medicine with surgery. He was the first to conceive the idea of bronchotomy, with exact indications of the luxations and fractures, and discovered several important maladies with their treatment. His son followed in his father's steps and was the chief surgeon and physician of Yusuf bin Tâshfin's army.

[2] Averroes was the Avicenna of the West. His life and writings have been given to the world by Renan. He was a contemporary of Ibn Zuhr, Ibn Bâja, and Ibn Tufail. Of Averroes and his contemporaries we shall have to speak in the next chapter.

Besides these may be mentioned Abu'l Hasan ibn Tilmîz, author of *Almalihi*; Abû Ja'far Ahmed ibn Mohammed at-Tâlib, who wrote on pleurisy, etc.; and Hibatulla.

[3] Al-Beithâr travelled all over the East to find medicinal herbs, on which he wrote an exhaustive treatise. The Arab physicians introduced the use of the rhubarb, cassia, senna, camphor, the pulp of the tamarind (*tamr-hindi*—Indian date), etc.

[4] In lithotomy he was equal to the foremost surgeons of modern times.

He was born in the year 980 A.C. at a village called Afshanah, in Transoxiana, of which place his father was the governor. He finished his medical studies in Bokhâra at the age of eighteen, when commenced an extraordinary political and philosophical career. His tenacity in refusing the liberal offers of Mahmûd the Conqueror to join his service led to his expulsion from the Ghaznavide dominions. He soon became the vizier of Shams ud-dowla, Ameer of Hamadân, and afterwards of 'Ala ud-dowla, Ameer of Isphahân, where he pursued his scientific and philosophical studies, and wrote his great works, the *Kânûn* and the *Arjûza*, afterwards the foundation of all medical knowledge.

The Greeks possessed crude notions of anatomy, and their knowledge of pharmacy was restricted within a very narrow compass. The Moslems developed both anatomy and pharmacy into positive sciences. The wide extent of the empire enabled researches and investigations in every quarter of the globe, with the result that they enriched the existing pharmacopœia by innumerable and invaluable additions. Botany they advanced far beyond the state in which it had been left by Dioscorides, and augmented the herbalogy of the Greeks by the addition of two thousand plants. Regular gardens existed both in Cordova and Bagdad, at Cairo and Fez for the education of pupils, where discourses were delivered by the most learned in the sciences.

Ad-Damîrî (Aldemri) is famous in the Moslem world for his history of animals—a work which forestalled Buffon by seven hundred years.

Geology was cultivated under the name of *'Ilm-i-Tashrîh-ul-Arz*, "the science of the anatomy of the earth."

The superiority of the Moslems in architecture requires no comment, for the glorious remains of Saracenic art in the East and in the West still evoke the admiration of the modern world. Their religion has been charged with their backwardness in painting and sculpture, but it must be borne in mind that the prohibition contained in the Koran is similar to the Levitical commandment. It was but a continuation of the Mosaic Law, which had so effectually suppressed the making of "graven images" among the Jews, and its signification rests upon the

inveterate idolatry of the pre-Islâmite Arabs. To the early Moslems, therefore, painting and statuary were odious and unlawful, as emblematic of heathenism, and this deeply implanted iconoclasm undoubtedly saved them from relapsing, as other nations had done, into idolatry. But with the gradual development of the primitive commonwealth into a civilised and cultured empire, and with the ascendency of learning and science, the Moslems grasped the spirit of the prohibition, and cast off the fetters of a narrow literalism. No doubt the spirit of rationalism, which so deeply influenced the early Abbaside and Spanish Caliphs, was the actual cause of the impetus given by them to art. Hence throughout the Moslem world a taste for painting and sculpture arose simultaneously with the progress of literature and science. The palaces of the Caliphs, the mansions of the sovereigns who followed in their footsteps, and the houses of the grandees were decorated with pictures and sculptures.

To the Prophet's prohibition of graven images or painting in mosques the world is indebted for the art of arabesque—which possesses such peculiar charm in the decoration of Oriental buildings, and which has been widely adopted by Western art. With the gradual enlightenment of the Moslems by contact with the arts of other nations, animals and flowers, birds and fruits were introduced into arabesque; but the figures of animated beings were throughout absolutely interdicted in the decoration of places of worship. In purity of form and simplicity of outline, in the gracefulness of design and perfection of symmetry, in the harmony of every detail, in the exquisiteness of finish and sublimity of conception, Moslem architecture is equal to any in the world, and the chaste and graceful ornamentation with which so many of the grandest monuments are adorned, indicates a refinement of taste and culture surpassing any of the great monumental relics of ancient Greece or modern Europe. Another branch of Moslem decorative art is that of ornamental writing, which is so often utilised with remarkable effect in the adornment of mosques, mausolea, and palaces, where whole chapters of the Koran are carved or inlaid round domes and minarets, doors and arches, testifying to the same religious earnestness, yet in a purely monotheistic spirit, as the pictures of saints and martyrs which decorate Christian churches.

Before the promulgation of Islâm the profession of music among the Arabs was confined to the slaves of both sexes imported from Syria and Persia, or to the class of hetairai called *Kyân*. The Prophet had discountenanced, for obvious moral reasons, the songs and dances of these degraded women. But under the Abbasides and the Spanish Arab kings, when music was elevated to the rank of a science, and its cultivation was recognised as an art, a love for music spread among all classes of society. A large literature grew up on the subject; songs were collected and classified according to their melodies and keys, and the musical instruments of the ancients were improved and new ones invented. The sharp conflict between Rationalism and Patristicism, between Idealism and Literalism, which marked the middle of the twelfth century, drove this sweetest of arts back into the arms of the servile classes or forced it to seek a refuge in the chapels of the dervishes.

A large general literature existed on the subject of commerce, agriculture, handicraft and manufacture, the latter including every conceivable subject, from porcelain to weapons of war.

In historical research the Moslems have not been behind any other nation, ancient or modern. At first attention was devoted chiefly to the history of the Prophet, but soon the primitive idea widened into a broad conception. Archæology, geography, and ethnology were included in history, and the greatest minds applied themselves to the pursuit of this captivating branch of study. Between the simple work of Ibn-Ishâk and the universal history of Ibn-Khaldûn there is a great difference, but the intervening space is occupied by a host of writers, the product of whose labours supplies some index to the intellectual activity of the Saracenic nations under the inspiration of Islâm.

Balâzuri, who died in 279 A.H. (A.C. 892), was born at Bagdad, where he lived and worked. His "Conquest of the Countries" (*Futûh ul-Buldân*) is written in admirable style, and marks a distinct advance of the historical spirit.

Hamadâni, who flourished towards the end of the third and the beginning of the fourth century of the Hegira, gave to the

world a comprehensive history of Southern Arabia, with an account of its tribes, its numerous remains of interest, with explanations of their inscriptions, as well as the ethnography and geography of Yemen. It is, however, in the monumental works of Mas'ûdi, of al-Beirûni, of Ibn ul-Athîr, of Tabarî, of Ibn-Khaldûn, called by Mohl the Montesquieu of Islâm, of Makrîzî, Makkari, Abu'lfedâ, Nuwairi, and Mirkhond that the mental vigour of the Moslem races in this department of knowledge is found in full play. These men were not specialists only; they were encyclopædists—philosophers, mathematicians, geographers, as well as historians. Mas'ûdi was a native of Bagdad, but by descent a Northern Arab, who in his early youth travelled and saw the greater part of the Mohammedan world. He first went to India, visited Multan and Mansûra, then travelled over Persia and Kerman, again went to India, remained for some time at Cambay (Kambâja) and the Deccan, went to Ceylon, sailed from there to Kambalu (Madagascar), and went from there to Oman, and perhaps even reached the Indo-Chinese Peninsula and China. He had travelled far in Central Asia, and reached the Caspian Sea. After finishing his travels, he lived for some time in Tiberias and Antioch, and afterwards took up his abode in Basrah, where he first published his great work, called the *Murûj-uz-Zahab* (مروج الذهب). Afterwards he removed to Fostat (old Cairo), where he published the *Kitâb ut-Tanbîh*, and later the *Mirât-uz-Zamân*, or the *Mirror of the Times*, a voluminous work, which is only partially preserved.[1] In the *Murûj-uz-Zahab* (the "Golden Meadows") "he tells the rich experiences of his life in the amiable and cheerful manner of a man who had seen various lands, experienced life in all its phases, and who takes pleasure, not only in instructing, but in amusing his reader. Without burdening us with the names of the authorities, without losing himself in long explanations, he delights in giving prominence to that which strikes him as wonderful, rare, and interesting, and to portray people and manners with conciseness and anecdotic skill."

[1] I am told that the Library in Vienna contains a historical work by the same author consisting of some thirty volumes which bears the name of the *Akhbâr-uz-Zamân*. Perhaps this is the same work as *Mirât-uz-Zamân*.

Tabari (Abû Ja'far Mohammed ibn Jarîr), surnamed the Livy of the Arabs, who died in Bagdad in 922 A.C., brought his work down to the year 302 of the Hegira (914 A.C.). It was continued to the end of the twelfth century by al-Makîn or Elmacin.

Ibn ul-Athîr (ابن الاثير), surnamed *Izz ud-din*, "glory of religion," was a native of Jazîreh-banî-Omar, in Irâk, but resided chiefly at Mosul, where his house was the resort of the most distinguished scholars and savants of the time. His universal history, known as the *al-Kâmil*, which ends with the year 1231 A.C., may be compared with the best works of modern Europe.

Makrîzî[1] (Taki ud-din Ahmed) was a contemporary of Ibn-Khaldûn. His works on Egypt furnish a vivid picture of the political, religious, social, commercial, archæological, and administrative condition of the country.

Abu'lfedâ, whom we have already mentioned as a geographer, was the Prince of Hamah at the commencement of the fourteenth century. Distinguished alike in the pursuit of arms as in letters, gifted with eminent qualities, he occupies a prominent place among the scholars and scientists of the East. The portion of his great work which deals with the political and literary history of Islâm, and its relations to the Byzantines from the eighth to the twelfth century, is extremely valuable.

Ibn Khaldûn flourished in the fourteenth century of the Christian era. Born in Tunis in 1332, he was in the midst of all the revolutions of which Africa was the theatre in the fourteenth century. His magnificent history is preceded by a Prolegomena, in itself a store-house of information and philosophical dissertation. In the Prolegomena he traces the origin of society, the development of civilisation, the causes which led to the rise and fall of kingdoms and dynasties; and discusses, among other questions, the influence of climate on the formation of a nation's character. He died in the year 1406 A.C.

The Arabs invented the mariner's compass, and voyaged to all parts of the world in quest of knowledge or in the pursuit of commerce. They established colonies in Africa, far to the south in the Indian Archipelago, on the coasts of India, and on the Malayan Peninsula. Even China opened her barred gates

[1] Died in 1442 A.C.

to Moslem colonists and mercenaries. They discovered the Azores, and, it is even surmised, penetrated as far as America. Within the confines of the ancient continents they gave an unprecedented and almost unparalleled impulse in every direction to human industry. The Prophet had inculcated labour as a duty; he had given the impress of piety to industrial pursuits; he had recommended commerce and agriculture as meritorious in the sight of the Lord. These precepts had their natural result; the merchants, the traders, the industrial classes in general, were treated with respect; and governors, generals, and savants disdained not to call themselves by the title of their professions. The peace and security with which caravans travelled the empire; the perfect safety of the roads; the cisterns, and tanks, and reservoirs, and rest-houses which existed everywhere along the routes—all aided in the rapid development of commerce and trade, and arts and manufactures.

The Arabs covered the countries where they settled with networks of canals. To Spain they gave the system of irrigation by flood-gates, wheels, and pumps. Whole tracts of land that now lie waste and barren were covered with olive groves, and the environs of Seville alone, under Moslem rule, contained several thousand oil-factories. They introduced the staple products, rice, sugar, cotton, and nearly all the fine garden and orchard fruits, together with many less important plants, such as ginger, saffron, myrrh, etc. They opened up the mines of copper, sulphur, mercury, and iron. They established the culture of silk, the manufacture of paper and other textile fabrics; of porcelain, earthenware, iron, steel, and leather. The tapestries of Cordova, the woollen stuffs of Murcia, the silks of Granada, Almeria, and Seville, the steel and gold work of Toledo, the paper of Salibah were sought all over the world. The ports of Malaga, Carthagena, Barcelona, and Cadiz were vast commercial emporiums for export and import. In the days of their prosperity the Spanish Arabs maintained a merchant navy of more than a thousand ships. They had factories and representatives on the Danube. With Constantinople they possessed a great trade, which ramified from the Black Sea and the eastern shores of the Mediterranean into the interior of Asia, and reached the ports of India and China

and extended along the African coast as far as Madagascar. "In the midst of the tenth century, when Europe was about in the same condition that Caffraria is now, enlightened Moors, like Abul Cassem, were writing treatises on the principles of trade and commerce." In order to supply an incentive to commercial enterprise, and to further the impulse to travel, geographical registers, gazetteers, and itineraries were published under the authority of Government, containing minute descriptions of the places to which they related, with particulars of the routes and other necessary matters. Travellers like Ibn-i-Batûta visited foreign lands in quest of information, and wrote voluminous works on the people of those countries, on their fauna and flora, their mineral products, their climatic and physical features, with astonishing perspicacity and keenness of observation.

The love of learning and arts was by no means confined to one sex. The culture and education of the women proceeded on parallel lines with that of the men, and women were as keen in the pursuit of literature and as devoted to science as men. They had their own colleges;[1] they studied medicine and jurisprudence, lectured on rhetoric, ethics, and *belles-lettres*, and participated with the stronger sex in the glories of a splendid civilisation. The wives and daughters of magnates and sovereigns spent their substance in founding colleges and endowing universities, in establishing hospitals for the sick, refuges for the homeless, the orphan, and the widow.[2]

The division and jealousy of the Arab tribes, which had prevented the assimilation and fusion of their several dialects, had nevertheless conduced to the enrichment of the national language as spoken in Hijâz, and the annual conflux of people

[1] One well-known institution of this kind was established in Cairo in 684 A.H. by the daughter of the Mameluke Sultan Malik Tâher.

[2] Zubaida, the wife of Hârûn, founded several such refuges; and the hospital built by the wife of 'Azud ud-dowla rivalled her husband's. The daughter of Malik Ashraf, known as the Khâtûn, erected a splendid college at Damascus. Another college was founded by Zamurud Khâtûn, wife of Nâsir ud-dowla of Hems.

Many Moslem ladies were distinguished in poetry. Fâtima, the Prophet's daughter, holds a high rank among poets. So does the daughter of Aurangzeb, Zèb un-nisâ, surnamed *Makhfî*. When Urquhart travelled in Turkey, three of the most celebrated living poets were ladies, and one of them, Perishek Khânam, acted as private secretary to Sultan Mustafa.

at Okâz, with the periodical contest of the poets, had imparted to it a regularity and polish. But it was the Koran—" a book by the aid of which the Arabs conquered a world greater than that of Alexander the Great, greater than that of Rome, and in as many tens of years as the latter had wanted hundreds to accomplish her conquests ; by the aid of which they alone of all the Shemites came to Europe as kings, whither the Phœnicians had come as tradesmen, and the Jews as fugitives or captives ; came to Europe to hold up, together with these fugitives, the light to humanity ;—they alone, while darkness lay around, to raise up the wisdom and knowledge of Hellas from the dead, to teach philosophy, medicine, astronomy, and the golden art of song to the West as to the East, to stand at the cradle of modern science, and to cause us late epigoni for ever to weep over the day when Granada fell," [1]—it was this book which fixed and preserved for ever the Arabic tongue in all its purity. The simple grandeur of its diction, the chaste elegance of its style, the variety of its imageries, the rapid transitions, like flashes of lightning, which show the moralist teaching, the philosopher theosophising, the injured patriot denouncing in fervent expressions the immorality and degradation of his people, and withal the heavenly Father calling back through His servant His erring children,—all mark its unique character among religious records. And the awe and veneration with which the greatest poets of the day listened to its teachings, show how deeply it must have moved the people. Delivered at different times,—in moments of persecution and anguish, or of energetic action, or enunciated for purposes of practical guidance,—there is yet a vitality, an earnestness and energy in every word, which differentiates it from all other Scriptures. Lest it be thought we are biassed in our opinion, we give the words of the great orientalist whom we have already quoted : " Those grand accents of joy and sorrow, of love, and valour, and passion, of which but faint echoes strike on our ears now, were full-toned at the time of Mohammed ; and he had not merely to rival the illustrious of the illustrious, but excel them ; to appeal to the superiority of what he said and sang as a very sign and proof of his mission . . . The poets

[1] Deutsch.

before him had sung of love . . . Antara, himself the hero of the most famous novel, sings of the ruin, around which ever hover lovers' thoughts, of the dwelling of Abla, who is gone, and her dwelling-place knows her not. Mohammed sang none of these. No love-minstrelsy his, not the joys of this world, nor sword nor camel, not jealousy or human vengeance, not the glories of tribe or ancestors, nor the unmeaning, swiftly and forever-extinguished existence of man, were his themes. He preached *Islâm*. And he preached it by rending the skies above and tearing open the ground below, by adjuring heaven and hell, the living and the dead."

Another great writer speaks of the Koran in the following terms : " If it is not poetry,—and it is hard to say whether it be or not,—it is more than poetry. It is not history, nor biography. It is not anthology, like the Sermon on the Mount ; nor metaphysical dialectics, like the Buddhist Sûtras ; nor sublime homiletics like Plato's conferences of the wise and foolish teachers. It is a prophet's cry, Semitic to the core ; yet of a meaning so universal and so timely that all the voices of the age take it up, willing or unwilling, and it echoes over palaces and deserts, over cities and empires, first kindling its chosen hearts to world-conquest, then gathering itself up into a reconstructive force that all the creative light of Greece and Asia might penetrate the heavy gloom of Christian Europe, when Christianity was but the Queen of Night." [1]

In general literature, embracing every phase of the human intellect, ethics, metaphysics, logic, rhetoric, the Moslem writers may be counted by hundreds. In poetry, the fertility of the Moslem mind has not been yet surpassed. From Mutanabbi the Arab (not to go back to the poets who flourished in the time of the Prophet) to Hâlî the Indian, there is an endless succession of poets. Mutanabbi flourished in the ninth century, and enjoyed the patronage of Ameer Saif ud-dowla (Abu'l Hasan Ali bin Hamdân). He was followed by Ibn-Duraid,[2] Abû-Ula,[3] Ibn Fâridh,[4] Tantarâni,[5] and others. The Spanish Arabs were nature's poets ; they invented the different kinds of poetry, which afterwards were adopted as models by the

[1] Johnson.
[2] Died in A.C. 933.
[3] Died in A.C. 1057.
[4] Died in A.C. 1255.
[5] Died in A.C. 1092.

Christian nations of southern Europe. Among the great poets who flourished in Spain the name of Ahmed ibn Mohammed (Abû-Omar)[1] is the most famous. We have already mentioned the poets who lived under Mahmûd; Firdousi, who brought back to life the dead heroes of Irân, rivals the fame of the sovereign whom first he praised and afterwards satirised. Under the later Ghaznavides and the Seljukides flourished the lyric poets Suzeni,[2] the creator of the Persian metrical system, and Watwât; the panegyrists Anwarî,[3] Khâkânî,[4] and Zahîr Fâryâbi;[5] the great mystics, Sanâï,[6] whose *Hadîka* is valued wherever the Persian language is known and appreciated, and Farîd ud-dîn 'Attâr;[7] and the romancist Nizâmi, the immortal bard of Khusrû and Shîrîn and of Alexander. Under the Atâbegs, who rose to power on the decline of the Seljukides, flourished the moralist Sa'di and the mystic Jalâl ud-din Rûmi. Under Timûr lived the sweet singer Hâfiz (Shams ud-dîn), called the Anacreon of Persia. These are but a very few of the names famous in the realm of poetry. The pages of Ibn-Khallikân, and of Lutf Ali Âzar[8] speak more eloquently of the poetical genius of the Moslems.

Such were the glorious achievements of the Moslems in the field of intellect; and all was due to the teachings of one man. Called by his voice from the abyss of barbarism and ignorance in which they had hitherto dwelt, with little hope of the present, with none of the future, the Arab went into the world, to elevate and civilise. Afflicted humanity awoke into new life. Whilst the barbarians of Europe, who had overturned an effete empire, were groping in the darkness of ignorance and brutality, the Moslems were building up a great civilisation. During centuries of moral and intellectual desolation in Europe, Islâm led the vanguard of progress. Christianity had established

[1] A.C. 1175, A.H. 569. [2] A.C. 1177, A.H. 573.

[3] Anwarî's panegyric on Sultan Sanjar is one of the finest poems in the Persian language. The Hindustâni poet Sauda in the *Kasîda* in honour of Âsaf ud-Dowla of Oudh has imitated Anwarî with great success.

[4] A.C. 1186, A.H. 582. [5] A.C 1201, A.H. 598.

[6] A.C. 1180, A.H. 576. [7] A.C. 1190, A.H. 586.

[8] The *Âtesh-Kadèh* ("Fire Temple") of Lutf Ali Âzar is the lives of the Persian poets from the earliest times, with specimens of their poetry.

itself on the throne of the Cæsars, but it had failed to regenerate the nations of the earth. From the fourth century of the Christian era to the twelfth, the gloom that overshadowed Europe grew deeper and deeper. During these ages of ferocious bigotry Ecclesiasticism barred every access through which the light of knowledge, humanity, or civilisation could enter. But though jealously shut out from this land of fanaticism, the benignant influences of Islâmic culture in time made themselves felt in every part of Christendom. From the schools of Salerno, of Bagdad, of Damascus, of Cordova, of Granada, of Malaga, the Moslems taught the world the gentle lessons of philosophy and the practical teachings of stern science.[1]

The first manifestation of Rationalism in the West occurred in the province most amenable to the power of Moslem civilisation. Ecclesiasticism crushed this fair flower with fire and with sword, and threw back the progress of the world for centuries. But the principles of Free Thought, so strongly impressed on Islâm, had communicated their vitality to Christian Europe. Abelard had felt the power of Averroes' genius, which was shedding its light over the whole of the Western world. Abelard struck a blow for Free Thought which led to the eventual emancipation of Christendom from the bondage of Ecclesiasticism. Avenpace and Averroes were the precursors of Descartes, Hobbes, and Locke.

The influence of Abelard and of his school soon penetrated into England. Wycliffe's originality of thought and freedom of spirit took their rise from the bold conceptions of the former thinkers. The later German reformers, deriving their notions on one side from the iconoclasts of Constantinople, and on the other from the movements of the Albigenses and the Wycliffites, completed the work which had been commenced by others under foreign rationalistic influence.

While Christian Europe had placed learning under the ban of persecution; while the Vicar of Christ set the example of stifling the infant lispings of Free Thought; while the priests

[1] The impetus which Islâm gave to the intellectual development of mankind is evidenced by the fact that the Arabs were joined in the race for progress by members of nationalities which had hitherto lain absolutely dormant. Islâm quickened the pulse of humanity and awakened new life in communities which were either dead or dying; see Appendix III.

led the way in consigning to the flames thousands of inoffensive beings for mere aberration of reason; while Christian Europe was exorcising demons and worshipping rags and bones—learning flourished under the Moslem sovereigns, and was held in honour and veneration as never before. The Vicegerents of Mohammed allied themselves to the cause of civilisation, and assisted in the growth of Free Thought and Free Inquiry, originated and consecrated by the Prophet himself. Persecution for the sake of the faith was unknown; and whatever the political conduct of the sovereigns, the world has never had superior examples in their impartiality and absolute toleration of all creeds and religions. The cultivation of the physical sciences—that great index to the intellectual liberty of a nation—formed a popular pursuit among the Moslems.

The two failures of the Arabs, the one before Constantinople and the other in France, retarded the progress of the world for ages, and put back the hour-hand of time for centuries. Had the Arabs been less keen for the safety of their spoils, less divided among themselves, had they succeeded in driving before them the barbarian hosts of Charles Martel, the history of the darkest period in the annals of the world would never have been written. The Renaissance, civilisation, the growth of intellectual liberty, would have been accelerated by seven hundred years. We should not have had to shudder over the massacre of the Albigenses or of the Huguenots, or the ghastly slaughters of the Irish Catholics by the English Protestants under the Tudors and the Protectorate. We should not have had to mourn over the fate of a Bruno or a Servetus, murdered by the hands of those who had revolted from their mother-church. The history of the *auto-da-fe*, of the murders of the Inquisition, of the massacres of the Aztecs and the Incas; the tale of the Thirty Years' War, with its manifold miseries,—all this would have remained untold. Above all, Spain, at one time the favoured haunt of learning and the arts, would not have become the intellectual desert it now is, bereft of the glories of centuries. Who has not mourned over the fate of that noble race, exiled by the mad bigotry of a Christian sovereign from the country of its adoption, which it had made famous among nations? Justly has it been said, "In an ill-omened hour the Cross

supplanted the Crescent on the towers of Granada." The shades of the glorious dead, of Averroes and Avenpace, of Wâlâdèh and Âyesha, sit weeping by the ruined haunts of their people—haunts silent now to the voice of minstrelsy, of chivalry, of learning, and of art,—only echoing at times the mad outcries of religious combatants, at times the fierce sounds of political animosities. Christianity drove the descendants of these Moslem Andalusians into the desert, sucked out every element of vitality from beautiful Spain, and made the land a synonym for intellectual and moral desolation.[1]

If Maslamah had succeeded in capturing Constantinople,—the capital of Irene, the warm advocate of orthodoxy and cruel murderess of her own son,—the dark deeds which sully the annals of the Isaurians, the Comneni, the Palæologi, the terrible results which attended the seizure of Byzantium by the Latins, above all, the frightful outburst of the unholy wars, in which Christian Europe tried to strangle the nations of Asia, would probably never have come to pass. One thing at all events is certain, that if Constantinople had fallen into the hands of the Moslems, the iconoclastic movement would not have proved altogether abortive, and the reformation of the Christian Church would have been accomplished centuries earlier. Providence willed otherwise. The wave of Free Thought, which had reached the Isaurian emperors from the Islâmic regions, broke upon the rocks of ignorance, superstition, and bigotry; its power was not felt until the combined action of the schools of Salerno and Cordova—the influence of Averroes, and perhaps of some Greeks who had imbibed learning at the Saracenic fountain—had battered down the rampart of Ecclesiasticism.

Islâm inaugurated the reign of intellectual liberty. It has been truly remarked, that so long as Islâm retained its pristine character, it proved itself the warm protector and promoter of knowledge and civilisation,—the zealous ally of intellectual freedom. The moment extraneous elements attached themselves to it, it lagged behind in the race of progress.

But, to explain the stagnation of the Moslems in the present

[1] For the economic condition of Spain and the state of arts and learning under the Arabs, see *Short History of the Saracens*, pp. 474-580.

day, it is necessary to glance back for a moment at the events that transpired in Spain, in Africa, and in Asia between the twelfth and the seventeenth centuries. In the former country, Christianity destroyed the intellectual life of the people. The Moslems had turned Spain into a garden; the Christians converted it into a desert. The Moslems had covered the land with colleges and schools; the Christians transformed them into churches for the worship of saints and images. The literary and scientific treasures amassed by the Moslem sovereigns were consigned to the flames. The Moslem men, women, and children were ruthlessly butchered or burnt at the stake; the few who were spared were reduced to slavery. Those who fled were thrown on the shores of Africa helpless beggars. It would take the combined charity of Jesus and Mohammed to make Islâm forget or forgive the terrible wrongs inflicted by the Christians of Spain upon the Andalusian Moslems. But the punishment was not long in coming. Before the world was a century old, Spain's fire had sunk into a heap of ashes!

In Western Africa, the triumph of Patristicism under the third Almohade sovereign,[1] and the uprise of Berber fanaticism turned back the tide of progress, arrested the civilisation of centuries, and converted the seats of learning and arts into centres of bigotry and ignorance. The settlement of the Corsairs on the Barbary coast and the anarchy which prevailed in Egypt under the later Mamelukes, discouraged the cultivation of peaceful knowledge. In Asia the decadence of the Timûride dynasty, the eruption of the wild and fanatical Uzbegs, and the establishment of their power in the capital of Timûr, destroyed the intellectual vitality of the people. In Persia, under the Safawis, literature and science had begun

[1] On the decadence of the Fâtimide power in Western Africa there arose a dynasty descended from a *Marabout* or saint of the country, hence called Almoravide or *al-Murâbatia* (المرابطية). To this family belonged Yusuf ibn Tâshfin, the patron of Ibn-Zuhr. His son and successor was defeated and killed by Abdu'l Momin, the founder of the dynasty of Almohades (*al-Muwahidîn*, الموحدين, the *Unitarians*), who sacked and destroyed Morocco and Fez. They were akin to the Wahâbis and the *Ikhwân* of Central Arabia, and probably not very different from the Mahdists of Lybia. The first two sovereigns of this dynasty, Abdu'l Momin and Yusuf, encouraged learning and arts; in the reign of Ya'kûb al-Mansûr, the third Almohade king, fanaticism became rampant.

to breathe once more; but this renaissance was only temporary, and with the irruption of the barbarous Ghihzais the renovated life of Irân came to an end. A deathlike gloom settled upon Central Asia, which still hangs heavy over these unhappy countries, and is slowly lifting in Afghanistan.

Under Selim I., Solyman and the Murads, learning received support in the Ottoman dominions; but the Osmanlis were on the whole a military race. At first from ambition, afterwards from sheer necessity and for self-preservation, they had been at war with a relentless foe, whose designs knew no slackening, whose purpose was inscrutable. That enemy has disappeared, but the nation has still to fight for its existence. Letters and arts, under such conditions, can make but little progress. Dealing with the charge of obscurantism, often levelled against Islâm, M. Gobineau makes the following pregnant observation: "Imagine in any European country the absolute predominance of military and administrative despotism during a period of two hundred and fifty years, as is the case in Turkey; conceive something approaching the warlike anarchy of Egypt under the domination of foreign slaves—Circassians, Georgians, Turks, and Albanians; picture to yourself an Afghan invasion, as in Persia after 1730, the tyranny of Nâdir Shah, the cruelties and ravages that have marked the accession of the dynasty of the Kajars,—unite all these circumstances with their naturally concomitant causes, you will then understand what would have become of any European country although European, and it will not be necessary to look further for any explanation of the ruin of Oriental countries, nor to charge Islâm with any unjust responsibility."

From the time of its birth in the seventh century up to the end of the seventeenth, not to descend later, Islâm was animated by a scientific and literary spirit equal in force and energy to that which animates Europe of our own day. It carried the Moslems forward on a wave of progress, and enabled them to achieve a high degree of material and mental development. Since the eruption of the Goths and the Vandals, the progress of Europe has been on a continuous scale. No such calamity as has afflicted Asia, in the persons of the Tartars or the Uzbegs, has befallen Christendom since Attila's retreat

from France. Her wars, cruel and bitter, fierce and inhuman, have been waged on equal terms of humanity or inhumanity. Catholics and Protestants have burnt each other; but Europe has never witnessed, since the wholesale butcheries of the poor Spanish Moors, the terrible massacres committed by the Tartars in all the centres of civilisation and culture, in which fell the gifted classes who formed the backbone of the nation.[1]

And now,

پرده داری می کند در قصر قیصر عنکبوت
بوم نوبت می زند بر گنبد افراسیاب

The spider holds watch in the palace of Cæsar,
The owlet beats the drum on the tower of Afrâsiâb.

[1] The sack of Bagdad by the Mongols exemplifies what happened in other cities, but in order to give a true conception of the fearful atrocities perpetrated by the savages, it requires to be painted by another Gibbon. For three days the streets ran with blood, and the water of the Tigris was dyed red for miles along its course. The horrors of rapine, slaughter, and outraged humanity lasted for six weeks. The palaces, mosques, and mausoleums were destroyed by fire or levelled to the earth for their golden domes. The patients in the hospitals and the students and professors in the colleges were put to the sword. In the mausoleums the mortal remains of the sheikhs and pious imâms, and in the academies the immortal works of great and learned men, were consumed to ashes; books were thrown into the fire, or, where that was distant and the Tigris near, were buried in the waters of the latter. The accumulated treasures of five centuries were thus lost for ever to humanity. The flower of the nation was completely destroyed. It was the custom of Hulâku, from policy and as a precaution, to carry along with his horde the princes and chiefs of the countries through which they swept. One of these princes was Sa'di bin Zangi, the Atabek of Fars. The poet Sa'di had, it appears, accompanied his friend and patron. He was thus an eye-witness to the terrible state of Bagdad and its doomed inhabitants. In two pathetic couplets he has given expression to its magnitude and horrors, see Appendix II.

CHAPTER X

THE RATIONALISTIC AND PHILOSOPHICAL SPIRIT OF ISLÂM

إِنَّ اللَّهَ لَا يُغَيِّرُ مَا بِقَوْمٍ حَتَّىٰ يُغَيِّرُوا مَا بِأَنْفُسِهِمْ [1]

LIKE all other nations of antiquity, the pre-Islâmite Arabs were stern fatalists. The remains of their ancient poetry, sole record of old Arab thought and manners, show that before the promulgation of Islâm the people of the Peninsula had absolutely abandoned themselves to the idea of an irresistible and blind fatality. Man was but a sport in the hands of Fate. This idea bred a reckless contempt of death, and an utter disregard for human life. The teachings of Islâm created a revolution in the Arab mind; with the recognition of a supreme Intelligence governing the universe, they received the conception of self-dependence and of moral responsibility founded on the liberty of human volition. One of the remarkable characteristics of the Koran is the curious, and, at first sight, inconsistent, manner in which it combines the existence of a Divine Will, which not only orders all things, but which acts directly upon men and addresses itself to the springs of thought in them, with the assertion of a free agency in man and of the liberty of intellect. Not that this feature is peculiar to the Moslem scripture; the same characteristic is to be found in the Biblical records. But in the Koran the conception of human responsibility is so strongly developed that the question naturally occurs to the mind, How can these two ideas be

[1] "God changes not as to what concerns any people until they change in respect to what depends upon themselves."