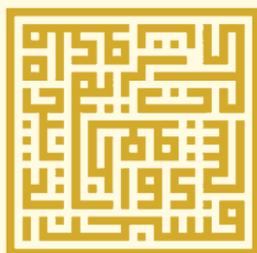


ISLAM

CREATOR OF
THE MODERN AGE



MAULANA
WAHIDUDDIN KHAN

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Translated by:
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PREFACE

The American astronaut, Neil Armstrong, was the first to set foot on the moon after a four-day space voyage on July 20, 1969. On reaching his destination, he uttered these words, which are now a part of history: “That’s one small step for man, one giant leap for mankind.”¹

Armstrong and his colleagues, Edwin Aldrin and Michael Collins, undertook this journey in a special rocket called Apollo 11. Then, in the final stage, they boarded a lunar vehicle called Eagle to land on the moon’s surface.

These vehicles, the Apollo and the Eagle, were not—as some of the more fanciful among us might imagine—two magic, flying chariots, but scientifically designed machines made following our observation of the unchanging laws of nature. Their ability to traverse such immense distances in space is entirely due to man’s correct application of his empirical knowledge.

These laws, the application of which would enable man to reach the moon, have existed throughout the universe since time immemorial, yet it took man centuries to discover them. Given the possibilities of nature, why did so many thousands of years have to elapse in the course of

man's development before he felt ready to launch himself into space?

The answer to this is the prevalence of polytheism, a creed that viewed things and creatures as deities and encouraged their worship. In ancient times polytheism dominated the entire world. Man considered the moon a deity, just as he held all other inanimate objects as gods. With its brilliant silvery light, the moon inspired man to bow before it rather than try to conquer it. Holding the moon to be sacred was a major obstacle to even thinking of conquering it.

Then, for the first time, in the 7th century, the supremacy of polytheism was brought to an end by the Islamic revolution, which replaced it with monotheism, making it the dominant creed of the times. This revolution was initially brought about in Arabia. Later, it continued its onward journey through Asia and Africa to Europe. More recently, it has crossed the Atlantic to gain a foothold in America.

In the Muslim world, this revolution was brought about through the influence of religion. With its particular circumstances, the western world began to develop this revolution along different lines, separating secular science from religion. Gradually, it was brought to its present culmination. The moon journey mentioned here is an obvious illustration.

Just as nationalization is an economic part of the philosophic system evolved by Marx, similarly, modern science is a

part of the Islamic revolution, which has been separated from its whole.

The same is true of all the sciences, which are now called natural sciences. The fields of these sciences had become forbidden territory because of the polytheistic view of the sanctity of all of nature's phenomena. Monotheism's revolution opened the doors of research and investigation by displacing nature from its sacred pedestal.

Thus began a new era of freedom to investigate nature. The slow, thousand-year maturation process finally culminated (towards the end at an ever-accelerating pace) in modern science and technology. Modern science is wholly the gift of the Islamic revolution – directly in its initial stages and indirectly in its later stages.

This truth has been generally acknowledged in one way or another. Many books which have come out in modern times, with titles like *The Scientific Achievement of the Arabs*, or *The Muslim Contribution to Civilization*, testify to its general acceptance.

Scholars agree that modern industrial progress owes its existence to Arabo-Muslim influences. A. Humboldt writes: "It is the Arabs who should be regarded as the real founders of physics."²

Philip Hitti writes in his book, *History of the Arabs* (1970): "No people in the Middle Ages contributed to human progress so much as did the Arabians and the Arabic-speaking peoples."³

Historians have generally accepted that it was the science which reached Europe through the Arabs (who were, of course, Muslims), which finally brought about the Renaissance (or the first awakening, to be more precise). Professor Hitti writes that Arabic translations of books available in different languages, as well as original works prepared by the Arabs in Arabic after the establishment of Bait al-Hikmah in Baghdad in 832, were translated into Latin. "This stream was re-diverted into Europe by the Arabs in Spain and Sicily, whence it helped create the Renaissance of Europe."⁴

The question remains to be answered, however, as to what brought about this mentality in the Arabs in the first place, considering that they had been submerged in the same backwardness which prevailed throughout the entire world of that time. There can be only one answer: the creed of monotheism was the cause of this mental and practical revolution. Other nations believed in polytheism, while the Arabs, after Islam's advent, had become imbued with the spirit of monotheism. This difference caused the divergence in their histories, one shaped by the course of events, the other shaping history itself.

This book aims to place a significant historical event in its correct perspective, i.e. to attribute the crucial Arabo-Muslim contribution to modern science to Islam itself rather than give all the credit for it to a Muslim nation, which

was formerly the practice. This is, thus, the explanation of a known event rather than the presentation of hitherto unknown facts.

This point can be illustrated by how India won its freedom in 1947. India's ability to liberate itself may be attributed to Gandhi and Nehru, but if we go into the matter in greater depth, we find it more proper to say that it was modern national and democratic ideas that helped India to win its freedom. This advent of a universal intellectual revolution, based on the principles of democracy and national independence in modern times, paved the way for the rise of a Gandhi or a Nehru, who was then in a position to launch a successful freedom movement. Had such a revolution in thinking not already taken place, the movements launched by our leaders would have had little chance of success.

The same is true of the subject under discussion. There is no doubt about it that the modern scientific revolution was set in motion by Arab Muslims. But the initial stimulus came from the new way of thinking made possible by Islam. Logically, the history of science can no longer extol the achievements of just one nation but must now show science in its true light as a gift of the religion, which the Almighty sent for the guidance of all mankind for all eternity.

Henri Pirenne has acknowledged this as a historical fact: "Islam changed the face of the globe. The traditional order of history was overthrown."⁵

PREFACE

This book is a brief introduction to this aspect of the Islamic revolution. I intended to present an exhaustive study of the subject, but the work of collecting information was progressing too slowly. Finally, I felt that the pressure of my engagements would not permit me to prepare such a comprehensive work as initially intended. I decided, therefore, to publish in book form whatever material was ready without delay.

If time and circumstances permit, more research will be done, and more data added, InshaAllah. But if that plan does not fructify, I hope this first impression will be helpful to anyone else who wishes at some future date to embark on the preparation of the second impression.

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16 April 1993
New Delhi, India

CHAPTER 1

ISLAM: CREATOR OF THE MODERN AGE

The year was 1965, and I was on a visit to Lucknow. I met a highly educated non-Muslim who did not believe in religion and considered religious discussions quite meaningless. During the conversation, he asked me, "If Islam had never come into being, would there have been anything seriously lacking in world history?" I spontaneously replied, "Yes. There would have been the same shortcomings as existed before the advent of Islam." My answer silenced him. Then he had to concede that from the historical standpoint, all that would generally come under the heading of progress had not existed in the pre-Islamic era. All this had come to the world only after the emergence of Islam. However, he still doubted how all progress was related to the historical event called Islam, or the Islamic revolution.

It is this historical question that this book endeavours to place in its proper perspective by making a thorough investigation of the connection between the Islamic revolution and modern developments. Accordingly, even those aspects of the subject have been dealt with which have only an indirect bearing on the issue.

There can be no doubt that Islam, in essence, is the discovery of such divine guidance as shows man the path to lasting success in the Hereafter. Scientific and industrial developments may not be *directly* related to the aims and objectives of Islam, but it is nevertheless an indisputable fact that they are significant offshoots of the Islamic revolution. Had the Islamic revolution never seen the light of day, scientific and industrial developments would have remained unrealized.

The primary purpose of a tree is to bear fruit. But, when it is fully grown, it also gives man shade. The same is the case with Islam. Islam's primary purpose is to open the door of divine guidance to human beings so they can come closer to their Lord. But Islam is a complete truth. And when such truth reveals itself, it not only becomes the source of all blessings for humanity—directly as well as indirectly, but it also gives guidance, which is of great practical utility.

FROM DARKNESS TO LIGHT

God created a perfect world. Then He created man in perfect form. Next, He commanded man to live in the world and use everything he found. Man was told, moreover, that there was only one Creator who should be worshipped. Man was to worship this God alone and none else besides Him.

But man went astray. He began to worship anything visibly prominent, such as rivers, mountains, etc. He could

not continue to make an invisible God the centre of his attention. Worse, his inclination towards visible gods went on increasing. Anything large and impressive was regarded either as a god or possessing divine attributes. On the one hand, this engendered the concept of the sacredness of certain personalities and, on the other, the practice of nature worship, or pantheism.

This worship of some thing or person other than God finally developed into *shirk* or polytheism. This *shirk* gradually came to dominate all aspects of belief and practice, finding its way into every household as a bearer of good omens and a nullifier of bad omens, thus becoming a part of all customs. Moreover, once belief in a divine king was added to all the other polytheistic beliefs, it became a necessary part of the political system.

This was the religion of the ancient world. Worship in those days was based wholly on *shirk*, to put it in religious terminology or, in common parlance, superstition.

All the prophets in the past had come with the mission of rectifying this perversion. In all ages, throughout the history of man, they called for the renunciation of *shirk* and the adoption of monotheism. Over one hundred thousand prophets were said (according to one of the Traditions) to have come to the world from the time of Adam to the time of the Messiah (Christ).⁶ But man was not willing to listen to what they had to say. The message of the prophets

was thus confined only to the proclamation of truth; it could not go so far as to bring about a revolution based on this truth.

Rooting out *shirk*, or superstition, was not a purely religious undertaking. On the contrary, it had a bearing on all human concerns. The truth is that this all-pervasiveness of superstition served as a hurdle to all kinds of human development.

Placing nature upon a pedestal of sanctity had completely discouraged an investigation of it. Without such investigation, scientific and industrial progress was not possible. Progress towards the general acceptance of human equality was likewise barred by beliefs concerning the superiority or inferiority of a man's birth, which had grown out of a variety of baseless suppositions, all governed by superstition. The emergence of all those factors, which today add up to enlightenment and progress, had been rendered impossible by a complete absence of scientific vision. Again, superstition was responsible for delaying the birth of such an outlook by many centuries.

Efforts on the part of the prophets over thousands of years proved that any struggle confined to intellectual or missionary fields was insufficient to extricate man from the grip of superstition. Moreover, even the governments of those times were founded upon superstitious beliefs. Therefore, the rulers' interests lay in the perpetuation of the age of superstition, so their subjects might continue to

be swayed by the belief in the divine right of kings. (This was so that they should not question their right to rule.) That was why they used all their military and political might to suppress any attempts to end polytheism and superstition through a missionary struggle.

Now the question arose as to what strategy should be employed to break down the barriers raised by vested interests. This was when the final Prophet, Muhammad, may peace be upon him, came to the world in the sixth century A.D.

God decreed that he be a *da'i* (missionary) and a *mahi* (eradicator). God entrusted him with the mission of not only proclaiming to the world that superstitious beliefs were based on falsehood but also of resorting to military action, if the need arose, to eliminate that system for all time.

Addressing the Prophet, the Quran observes:

We have revealed this book so that, by the will of their Lord, you may lead men from darkness to light (14:1).

This same mission of leading men from darkness to light had been entrusted to all the prophets. The sense, however, in which the Prophet of Islam was distinct from the others was that, in his case, God had decreed—since no Prophet was to come after him—that he should not just communicate the divine message to humanity and leave it at that, but that he

should also take practical steps to change the entire existing state of affairs.

The prerequisites for putting this plan into action were all provided by God. Moreover, God also guaranteed that any shortcoming in worldly resources would be amply compensated for by exceptional help from the angels.

This point has been made in the Hadith in different ways. One *hadith*, in particular, is quite direct in its wording: “I am the eradicator through whom God will obliterate unbelief”.⁷ Thus the Prophet was not just a *dai* but also a *mahi*. He was the caller to the faith, but he also had to compel people to answer his call. The Quran clearly states that besides human beings, God’s angels would help him accomplish his mission. This commandment of God was realized through the Prophet so that a whole new era could be ushered in.

According to the Quran, Adam was the first human being to exist on earth. God told him that his religion and that of subsequent generations would be monotheism. In this lay goodness in this world as well as in the Hereafter. For some generations, people followed the proper path, but soon the perversion set in. So it was now that God began to send prophets to the world (2:213).

Noah was born in Iraq about three thousand years before Christ. He was chosen as God’s messenger and entrusted with reforming his people by showing them the right path. Then from Noah to the Messiah, the apostles were sent

in succession. They made every effort to make people understand the error of their ways, but their listeners showed no willingness to be reformed (23:44).

The cause of this perversion lay in the inability of these people to see anything but externals, whereas monotheism demanded reverence for an unseen God. As a result, people, unfortunately, failed to find and worship this invisible God and instead made visible objects their deities. The first form of religion had been monotheism, but the perversion that set in in later times resulted in the world going toward polytheism. Monotheism is the greatest truth. All his affairs are set right when man believes in one God alone. When he forsakes this belief, all his matters go awry. Therefore, monotheism provides the measure by which to judge the rise and fall of all human beings.

The Quran tells us:

‘God is the Creator of all things. He is the Guardian. His are the keys of the heavens and the earth. Those that deny His revelations shall assuredly be lost. Say: would you bid me serve a god other than God, O ignorant men? It has already been revealed to you and those who had gone before you that if you worshipped other gods besides God, your works would come to nothing, and you would be among the losers. Therefore serve God and render thanks to Him.

They have not justly estimated the might of God. But on the day of Resurrection, He will hold the entire

earth in His grasp and fold up the heavens in His right hand. Glory be to Him! Exalted be He above the partners they set up with Him (39: 62-67).

The real extent of the harm done by deviation from monotheism will become apparent in the next life. Since monotheism is the reality of the universe, a departure from monotheism means, in effect, deviation from reality. The lives of those who deviate from reality will suffer from serious distortions not only in the next life, but also in the present world. This is the fact which is pointed out in the above verse.

The primary reason for this is that God-consciousness is ingrained in human nature. Due to his natural urges, man is forced to believe in God and surrender to Him. Man can refuse to believe in one God but cannot deny his nature. Consequently, those who do not believe in the Creator have to pay the price by believing (as one believes in God) in God's creatures. That is to say that, flying in the face of facts, they give to some creature or the other a status they ought to give only to God.

The Creator and the Master of this universe is God. Therefore, all true greatness belongs to Him alone. When man makes God his sole object of worship, he acknowledges greatness in One who truly deserves such obeisance. By recognising God's greatness, a man stands face to face with the truth. As such, his life becomes a true life, free from contradictions. His thinking and his actions both follow

the right course. His being comes into harmony with the universe of facts. There is no contradiction between him and this universe.

Whereas when a man takes something other than God to be great, when he accords to it a status which should be God's alone, the result is that his attitude becomes unreal. He becomes a thing displaced and disjointed, which cannot be in accord with the universe of facts. So his whole life, instead of taking the course of reality, takes the course of supposition.

Here is an example to illustrate this point. The Christians' belief in the Trinity made them suppose Christ, the son of Mary, to be God. Christ was, in reality, the son of Mary. But the Christians, exaggerating his importance, gave him the status of the son of God. They accorded to him the greatness of which only one God is deserving—He who is the creator of all human beings, including Christ.

As a result of this belief, they found themselves beset by great contradictions, one of which stemmed from their determination to view the solar system as a theological matter.

The ancient astronomer Ptolemy (90-168), who was born in Greece, carried out research in the time of Alexander the Great, writing a lengthy book in Latin in which he advanced the theory that the earth was static and that the sun, moon and planets revolved around it. Thanks to the patronage of

the Christians, this theory dominated people's minds until it was finally displaced in the 16th century by Copernicus.

As far as the Christians are concerned, the basic belief of Christianity is that of atonement, through which God ordained the salvation of the whole of humanity. The atonement event, so central to this creed, relates not only to humankind but to the whole universe. Since the most significant single act of atonement, that of Christ's crucifixion (as atonement for the sins of humanity), took place on earth, the earth, according to Christian theology, was assumed to be of the greatest importance in the universe and, therefore, its central point. This being so, Christians wholeheartedly supported Ptolemy's theory of geocentrism, giving it the status of a religious creed.

The Christians naturally opposed all attempts to prove the truth of the heliocentric theory. Only the research carried out by Copernicus, Galileo and Kepler ultimately proved this theory's falsity.⁸

According to *the Encyclopaedia Britannica* (1984), the scheme of salvation in Christian theology is a universal event. The act of atonement possesses a universal significance. It is related through human beings to animals. But the study of modern astronomy shows that the earth is no more than a small pebble in the vast sea of the universe. Given this fact, the meaning of Christ himself has lost some of its impact, and the divine act of salvation appears merely as a tiny episode in the history of an insignificant little star.⁹

The Creator, Master, Planner—all are only one God. Therefore, all greatness and power belong to Him alone. No one besides Him has any such greatness and power. As such, whenever any attempt is made to attach this greatness and sanctity to anyone else, such a concept comes into conflict with the whole universe, failing to fall into place in the universe as a whole.

This is why the concept of polytheism becomes an obstacle to human advancement, whereas the concept of monotheism opens the door to all kinds of progress for mankind.

THE CONCEPT OF ISLAM

According to the Quran, each prophet's message addressed to humanity did not vary. It remained, in essence, the same, namely, that there was only one God and that the people must worship Him alone. (7:59)

What is the meaning of *Ilah* (one God)? It means He is the greatest of all beings and should be the object of man's awe.¹⁰ Indeed, if man ponders over God's creation, he will be thrilled to the very core of his being. Such an experience generates a sense of sanctity, which is attributable to something that is mysteriously great and above and beyond human imagination. This feeling finds expression in worship. That is when man surrenders himself to that Great Power. For him, God is the one and only God. There is no deity save Him, nor is there any partner in His godhead.

Belief in the true God is the source of all virtue: belief in false gods is the source of all evil.

THE ROOT CAUSE OF ALL EVIL

To believe something to be sacred when it is not so is the root of all evil. In religious terminology, this amounts to polytheism. (The Quran 31:13) Polytheism must be regarded as the greatest injustice or *zulm*. *Zulm* in Arabic means, literally, the putting of something in the wrong place, in this case, assigning a value to something that does not merit it. *Shirk* (another Arabic word similar in meaning to, *Zulm*) is the greatest wrong, for it implies reverence for things which are not, in reality, sacred or worthy of worship. It accords to non-gods the place, which is the supreme prerogative of the one God.

The most significant harm in this iniquitous practice is that it changes man's focus of worship. He begins to revere such beings as are unworthy of reverence. The result is that man is deprived of his only support in the universe. He is unable to have the sustenance of divine blessings. And one who is denied divine blessings in this world is denied them likewise in the next. Because no other power save that of God can give these blessings to man.

The loss to humanity affects not only the eternal life but also our temporary stay here on earth. In ancient times man held many non-sacred things to be sacred, with the result

that he continued to suffer the deprivation of God's succour for many centuries.

The concept of polytheism gave birth to many odd beliefs and spawned a whole series of superstitions. For instance, lightning was taken to be a god's fiery wand. When the sun or moon went into eclipse, it was supposed that some malign force was at work, or that some diety had been beset by the powers of darkness, and so on.

This polytheistic concept of sanctity proved highly advantageous to religious leaders, who developed the accompanying superstitions into a whole set of 'religious' beliefs. Through these, they began to exploit people by making them believe that they (the religious leaders) were intermediaries between God and man. They inculcated the idea that to please them indirectly was to please God. The kings reaped the most significant benefit of all. Exploiting this mentality, which had been conditioned in the people, they developed the concept of god-king. In any society, the king is the richest and most powerful. He is distinguished, too, in many other respects from the common people. Taking advantage of this distinctive status, the kings instilled into the minds of the people that they were superior to common people and that they were, in fact, God's representatives on earth. Some said that they were a link between God and man. Others went further and pretended to be incarnations of God on earth. As such, they were supposed to possess

supernatural powers. They managed, in consequence, to wield absolute control over their subjects.

The Encyclopaedia Britannica (1984) says in its article on sacred kingship:

At one time, when religion was connected with the whole existence of the individual and that of the community and when kingdoms were in varying degrees associated with religious powers or religious institutions, there could be no kingdom that was not in some sense sacred.¹¹

When the ancient concept of polytheism invested the rulers with a sacred status, not one, but two great evils found their way simultaneously into society. The evil that power brings had reached its zenith. As Lord Acton (1834-1902) put it, "Power corrupts, and absolute power corrupts absolutely." If the public could not change rulers in a secular context in order to be rid of their oppression, how could they ever think of deposing those who ostensibly ruled as the vicegerents of God on earth or posed as His incarnations?

This political evil, which the French historian, Henri Pirenne, has termed 'imperial absolutism,' became a permanent obstacle to all progress. It was only when Islam broke the power of these ancient empires that it became possible to unlock the doors to human progress. Henri Pirenne's book, *History of Western Europe*, provides an informative study on this subject.

The gist of Henri Pirenne's thinking is that the ancient Roman Empire, which was spread over both sides of the Red Sea, had closed the doors to all human progress by imposing a strict curb on freedom of thought. Without this kind of absolute imperialism being brought to an end, freedom of thought could not have been achieved. When the human mind is shackled and cannot work in a free atmosphere, no beginning can be made to human progress. The writer also includes Persia as being guilty of such imperial absolutism. And we must remember that these two empires held sway over a significantly large part of the inhabited world of the time. Under imperial rule, no one had the right to think independently if this ran counter to the official tenets of imperialism. This is why no real beginning could be made on scientific enquiry after such a long period of intellectual suppression. Scientific thought was not to be countenanced throughout the empires of Persia and Rome. Only when the Prophet and his Companions broke these imperial powers—with as little bloodshed as possible—was free thinking legitimised, and the vast gates of progress were thrown open to humanity.

FREEDOM OF ENQUIRY

In his well-known book, *The Legacy of Islam* (1931), Baron Carra de Vaux acknowledges the achievements of the Arabs but relegates them to the status of pupils of the Greeks.

In his *History of Western Philosophy*, Bertrand Russell also sees the Arabs only as transmitters of Greek thought, i.e. that they brought Greek knowledge to Europe through their translations.

But this does not do justice to the academic attainments of the Arabs. It is true that the Arabs studied Greek literature and profited thereby. But what they transmitted to Europe was much more than they had received from Greece. The truth is that the ideas that sparked off the European Renaissance had not formed part of Greek thought. Had that been so, Europe's thinking would have been transformed much earlier. Then Europe would not have wasted a thousand years before it could have its Renaissance.

It is well known that the progress made by the Greeks was mostly in the fields of art and philosophy. Their contribution to the field of science—except for Archimedes' hydrostatics—was actually quite negligible.

It is indisputable that an atmosphere of intellectual freedom is essential for scientific enquiry and progress. But such an atmosphere did not exist in any of the countries of ancient times, and neither did it exist in Greece. Socrates, for example, was forced to commit suicide by drinking hemlock as a punishment for his encouraging free enquiry among the youth of Athens. And Archimedes was struck down by a Roman soldier in 212 B.C. while pondering over geometrical problems in the sand.¹² According to Plutarch,

in *The Ancient Customs of the Spartans*, the Spartans learned to read and write for purely practical reasons, and all other educational influences—books and treatises, as well as the discourses of learned men—were banned. As a result, the arts and philosophy flourished in democratic Athens, yet many artists and philosophers, Aeschylus, Euripides, Phidias, Socrates, and Aristotle, were either exiled, imprisoned or executed, or they took flight.

Aeschylus was accused of violating the secrecy of the Eleusinian mysteries¹³ (which had become part and parcel of Greek thought); his being put to death based on this accusation is further proof that the atmosphere for scientific progress did not exist in ancient Greece.

The fate of Pope Sylvester II (Gerbert), who was renowned for his erudition well illustrates the state of science prior to the modern, scientific age. He was born in 945 in France and died in 1003. He was well-versed in Greek and Latin and was famous for his scholarly achievements in various fields.

Gerbert was taken to Spain in 967 by Count Borrell of Barcelona and remained there for three years. There he studied the sciences of the Arabs and was greatly impressed by them. When he returned from Spain, he brought several translations of these books and an astrolabe. When he began teaching Arab science, logic, mathematics, astronomy, etc., he faced stiff opposition. The Christians attributed his learning to magical arts learned in Spain, some to the

devil's coaching. In such unfavourable circumstances, he died in Rome on May 12, 1003.¹⁴

From the beginning of recorded history, right up to the time of Islam, there had been no such concept as intellectual freedom. That is why we hear of only isolated instances of individuals who, in ancient times, were given to scientific thinking. And scientific thinking could not spread beyond those individuals. So for want of intellectual freedom, such thought was nipped in the bud.

Islam separated religious knowledge from physical knowledge for the first time in history. The source of religious knowledge, which came into general acceptance, was divine revelation (the authentic version of which is preserved in the form of the Quran), while complete freedom was given to enquiry into physical phenomena so that individuals could arrive at their conclusions independently.

The Sahih of Imam Muslim, the second most authentic book on Hadith, dating from the second century Hijrah, contains a chapter headed as follows: "Whatever the Prophet has said in matters of *Shariah* (religion) must be followed, but this does not apply to worldly affairs."

In this chapter, Imam Muslim recorded a tradition narrated by Musa ibn Talha on the authority of his father, who said: "I was with the Prophet when he passed by some people who had climbed up to the top of some date palms. The Prophet enquired as to what they were doing. He was told they were

pollinating the trees to fertilize them by touching the male to the female. The Prophet said,

“I don't think this will benefit them.’ When people learned of the Prophet's comment, they stopped the practice of pollination. The yield, however, was very low that year. When the Prophet came to know of this, he said, ‘If they benefit from pollination, they should continue this practice. I had only made a guess. It was an opinion. There is no need to follow my opinion in such matters. If, on the other hand, I say anything about God, it must be adhered to. Because I never say anything untrue when I am speaking of God.’”¹⁵

The same story is told by ‘Aishah, the Prophet's wife, and by Thabit and Anas, who were lifelong Companions of the Prophet. The Prophet told the date growers to adhere to their methods because “you know your world better.”¹⁶

According to this *hadith*, Islam separates religious matters from scientific research. In religious affairs, there has to be strict adherence to divine guidance. But in scientific research, the work must proceed according to human experience. This indeed marks the advent of the greatest revolution in the history of science.

THE ARAB IMPACT

In ancient times, there were certain individuals in different countries whose personal achievements in science were

considerable. However, due to a lack of cooperation and other adverse circumstances, their findings did not gain currency either at home or abroad.

In his book, *The Arab Civilization*, Moseoleban, a French historian, explains that in ancient times, although many nations became sufficiently powerful to dominate others—Persia, Greece and Rome ruling over eastern countries at different times—they were unable to exert their cultural influence on these countries to any appreciable extent. Neither their religion, language, sciences, or industries could take root and flourish. Not only did Egypt hold to its religion during the days of Roman rule, but the conquerors themselves adopted the religion and the architecture of the conquered. The buildings constructed in those periods were patterned on the architecture developed by the Pharaohs.

However, the goal that the Greeks, Persians and Romans could not achieve in Egypt was attained by the Arabs in a short time and without resorting to the use of force. This was despite the apparent difficulties for Egypt in adopting an alien nation's way of life and a new religion and language within the space of just one century, especially when it meant abandoning an ancient culture that dated back seven thousand years. Arabs exerted the same influence on African countries and Syria and Iran. As a result, Islam spread rapidly among these people. Even in those countries where the Arabs never ruled, where they came only as

merchants, Islam quickly spread, China being one of the notable examples.

No similar instance is found in the world history of such an influence being exerted by the conqueror on the conquered. Even countries with temporary contact with the Arabs came to adopt their culture. More surprisingly, communities like the Turks and the Mughals, who defeated Muslims, accepted their religion and culture and became their staunchest supporters. Even today, when the spirit of the Arab civilization is in decline right from the Atlantic Ocean to the Sindh River and from the Mediterranean Sea to the deserts of Africa, one religion and one language are still in vogue—the religion and the language of the Prophet.¹⁷

Moseoleban states, moreover, that the Arab influence was as visible in western countries as it was in the East. From the Arabs, the West acquired a culture while, in the East, the Arab influence affected everything from religion and languages to the arts, crafts and sciences. In the West, religion, crafts and industries were not significantly affected. However, there was more influence on the arts and sciences.

Through the Arabs, monotheism, and a civilization born under its influence, spread everywhere. Its impact was felt in major parts of the inhabited world of the time. Thus an atmosphere and an environment were produced where scientific research, leading to the conquest of nature's phenomena, could be freely and independently undertaken.

FOUR STEPS TO MODERNITY

In Islam, man has found true, unadulterated religion in the sense that it has swept away all the artificial barriers between God and man forever. Islam's sacred scriptures, the Quran and the *Sunnah* (the practice of the Prophet to be followed) rise like mighty towers to shed their light of guidance upon humanity for all eternity.

At various points, the Quran stresses that the religion sent by God to humanity in the shape of Islam is not only a source of guidance in the religious sense but is also a blessing in many other ways (6:157). One significant way it was a blessing was that it brought human history out of the age of darkness and caused it to enter the period of light. This revolution in thought unlocked the doors to innumerable worldly benefits. It is this second temporal aspect of the Islamic revolution, which the well-known western historian, Henri Pirenne, describes in terms of Islam having "changed the face of the globe. The traditional order of history was overthrown."¹⁸

The present era, which we think of as modern and advanced—the age of science and industry, freedom and equality—is a direct consequence of this aspect of the Islamic revolution, which is called a blessing in the Quran. But, like most other major historical developments, this period came about gradually, taking almost a thousand years to reach its culmination.

This gradual process may be broadly divided into four stages, the first three directly connected with the Islamic revolution. The fourth stage is indirectly related.

1. The period of the Prophet, 610-632;
2. The period of the Pious Caliphs, 632-661;
3. The period of Umayyads and Abbasids, 661-1492 (including Spain);
4. The modern revolution brought about in Europe, which started in the 15th century after the crusades under the influence of Muslim civilization.

MODERN MAN

Till the beginning of the present century, it had been generally understood in the civilized world that the secret of progress was to lead man from the traditional to the modern. But, having reached his destination, man has again fallen prey to frustration. His feeling now is that to achieve real progress, man needs to have a more profound philosophical base from which to make progress in the real sense. Various articles on this issue have recently been published under such headings as 'Shallow are the Roots,' etc.

Now, writers in the western world are taking up this issue. One of the more prominent is William E. Connolly, who authored *Political Theory and Modernity*.

Professor Connolly writes:

The whole project of modernity despite its stunning success, is highly problematic. This is because all attempts to fill the place which God was forced to vacate at the start of the project—with reason, with the general will, the dialectic of history—have been of no avail, and each has ended up in one kind of nihilism or another.¹⁹

Before the advent of Islam, the world was in the grip of polytheism. Polytheistic thoughts ruled men's minds. The creature had taken the place of the Creator. Man worshipped innumerable gods. As a result, his whole way of thinking had gone awry, and the door to all progress remained locked.

Then Islam came to the world. Its main objective was to put an end to polytheism and to give monotheism the place of predominance. After great sacrifice from the Prophet and his Companions, polytheism was indeed displaced forever, giving monotheism the ascendancy. The effect of this revolution was so far-reaching that monotheism remained in full force for almost a thousand years. Then came the emergence of modern industrial civilization. This civilization initially came into being in Western Europe under the influence of the Islamic revolution. Its influence later spread all over the world. The negative aspect of this civilization is its emphasis on materialism to the exclusion of all else. Its positive aspect is its continuation of the effect of the Islamic revolution in emancipating human thought.

JOURNEY TOWARDS PROGRESS

There were four centres of civilization before the advent of Christ—Persia, China, India and Greece. After the advent of the Prophet of Islam, the Abbasid Caliph, Al-Mansoor, built Baghdad in 762. He invited religious scholars and intellectuals from far and near and encouraged rendering books in various languages into Arabic. This work started under the patronage of the State. In 830, Al-Mamun established in Baghdad his famous Bayt al-Hikmah, a library, academy and translation bureau, and an astronomical observatory. The work of translation continued with such speed and on such a vast scale that, within eighty years after the establishment of Baghdad, most Greek books had already been rendered into Arabic.

During the Abbasid era, paper was being manufactured on a large scale, so there was no dearth of paper for writing books. For example, there were more than 400,000 books in the library of Cordova (Spain) in the tenth century, whereas in Europe at that time, according to the Catholic Encyclopaedia, the library of Canterbury was at the top of the list of Christian libraries with 1800 books in the 13th century.

Al-Mamun's astronomers performed one of the most delicate geodetic operations—the measuring of the length of a terrestrial degree. The object was to determine the size of the earth and its circumference on the assumption

that the earth was round. The measurement, carried out on the plain of Sinjar, north of the Euphrates, and near Palmyra, yielded 562 Arabic miles as the length of a degree of the meridian—a remarkably accurate result, exceeding the actual length of the degree at that place by about 2877 feet. This would make the earth's circumference 20,400 miles and its diameter 6500. Among those who took part in this operation were the sons of Musa ibn Shakir and al-Khwarizmi, whose tables, revised a century and a half later by the Spanish astronomer Maslamah al-Majriti and translated into Latin in 1126 by Adelard of Bath, became the bases for other works both in the East and the West. No less a feat was that of Al-Idrisi, who, as early as the 12th century, made a map of the world in which he even showed the source of the River Nile, which Europe did not discover till the 19th century. All these activities were going on in Islam when Europe believed that the earth was flat.

Ptolemy, the well-known Greek astronomer of the 2nd century, presented the earth-centred solar system theory in his famous book, *Almagest*. This concept dominated people's minds worldwide for about 1500 years until, in the 16th century, Copernicus, Galileo and Kepler conducted research which ultimately proved its falsity. But it was the Muslims who first transferred to Europe the concept of the earth being round and the almost correct concept of the causes of the ebb and flow of the tides.

If a wrong concept about the earth's revolution remained predominant for such a long time, it was due to the error of regarding something non-sacred as sacred. The Christians believed that the earth was a sacred sphere, the birthplace of God's son (Christ). Because of this belief, they found the notion that the earth was the centre around which the whole universe revolved precisely in accordance with their religious beliefs. This idea of the earth's sacredness came in the way of the Christians making any further investigation. They stopped adhering to this theory until the naked reality was finally forced upon them.

The Encyclopaedia Britannica (1984) says:

According to the old cosmology, the Earth was the centre of the universe, man was the highest creature of this Earth, and his salvation was the central event in heaven and on Earth. The discovery that the Earth is only one planet among others that rotate around the sun and that the sun is only an insignificant star among the innumerable galaxies of the cosmos has shaken the old understanding of man. If the Earth, compared to the huge expanses of the universe, was only a speck of dust in the structure of the macrocosm, Newton and others began to explore the question of how man, the dust of dust, could continue to claim the holy privilege that he and his fame were the goal and culmination of God's actions.²⁰

The Christians held Christ to be a part of the holy Trinity and developed the concept that the most important event

of history ever to take place on earth was the crucifixion of God's son for the atonement of man's sins. In this way, the earth came to hold a sacred position in their beliefs. They offered stiff opposition to any such thinking that could undermine the earth's central position. This belief came in the way of the free investigation of the solar system.

Holding the non-sacred to be sacred had thus locked the doors to all progress. Holding the moon sacred came in the way of nurturing the thought of man setting foot upon it, and keeping the river sacred went in the way of man ever planning to produce electricity by conquering the river. All such research and investigation could start only when natural phenomena could be brought down from their pedestal of sanctity to a level on which man could look at them as everyday things.

Before Islam, the stars were objects of veneration. But after the Islamic revolution, observatories were built, and the stars were subjected to observational research on a large scale, something which had never previously been attempted. The minerals embedded in the earth's crust were likewise regarded as sacred. But Muslims, having developed the science of chemistry, subjected them for the first time to scientific examination. The entire earth, for that matter, was considered to be a deity. (It was even thought that the sky was a male deity and the earth a female deity) The Muslims were the first to measure it to find its diameter and circumference. The sea, too, was an object

of worship, but the Muslims became the greatest pioneers in using it as a vast highway. Storms and the wind were held to be mysterious forces and, as such, were objects of awe and reverence. The Muslims set them to turn their windmills.

Mysterious stories were associated with trees; thus, the trees had become worthy of veneration. The Muslims started investigating them, and succeeded in enriching Dioscorides' Herbal by 2000 species.

The rivers, too, were held to be sacred and, therefore, alive. Boys and girls were, thus, sacrificed to these deities to please them. Muslims, however, used the same rivers for irrigation by making canals, thus ushering in a new age of agriculture.

In those days, Muslims were so ahead of other nations that when they were driven out of Spain, the astrolabes they left behind, using which they had studied heavenly bodies, were turned into the clock tower of a church, as the Christians did not understand their use.

It is a fact that in ancient times, polytheism and superstition held sway worldwide. And it is also true that polytheism and superstition were the major obstacles to all kinds of progress. Finally, however, the revolution based on monotheism, which was brought about in the wake of Islam, put an almost complete end to polytheism and superstition for the first time in history. Afterwards, as a natural result, human history took the path of progress.

In ancient times, certain countries produced creative men who could think independently of their environment. But due to the unfavourable atmosphere and hostile environment of the times, their efforts could not be brought to fruition. As a result, the buds of their knowledge withered away before they could flower. However, when the Islamic revolution produced a favourable atmosphere, it unleashed a mighty flood of knowledge, which had been kept pent up for thousands of years by the dam of superstition.

LEARNING AND ISLAM

Ptolemy II, who became the ruler of Egypt after Alexander the Great in the third century B.C., was a great patron of learning and founded a library in Alexandria, which contained about 500,000 books on different subjects. This collection is known in history as the great library of Alexandria.

It has been alleged—wrongly, as it happens—that this library was burned down at the behest of the second caliph, ‘Umar Farooq. It had been destroyed much earlier, in the fourth century A.D., long before the advent of Islam. According to *the Encyclopaedia Britannica*, “The library survived the disintegration of Alexander’s empire (1st century B.C.) and continued to exist under Roman rule until the third century A.D. . .”²¹

The truth is that Julius Caesar burned one-half of this library in 47 B.C. In the third century, Alexandria came under the domination of the Christians. Concerning the survival of

existing institutions, *the Encyclopaedia Britannica* states that “the main museum and library were destroyed during the civil war of the third century A.D. and a subsidiary library was burned by Christians in A.D. 391.”²²

However, this work erroneously links the library’s final destruction with the Muslim period. In its article on censorship, it has this to say:

In several stages, there are many accounts of the burning of part or all of the library at Alexandria, from the siege of Julius Caesar in 47 B.C. to its destruction by Christians in A.D. 391 and Muslims in 642. In the latter two instances, it was alleged that pagan literature presented a danger to the Old and New Testaments or the Quran.²³

The above attribution of the destruction of the Alexandria library to Islam has no basis. The first two extracts quoted above from *the Encyclopaedia Britannica* refute this. Islam, by its very nature, encourages the acquisition of knowledge. It has never been its aim to suppress or discourage it.

Philip Hitti states in his book, *History of the Arabs*:

The story that by the caliph’s order ‘Amr for six long months fed the numerous bath furnaces of the city with the volumes of the Alexandrian library is one of those tales that make good fiction but bad history. Julius Caesar burnt the great Ptolemaic library as early as 48 B.C. A later one, referred to as the Daughter library, was destroyed about A.D.

389 due to an edict by Emperor Theodosius. At the time of the Arab conquest, no library of importance existed in Alexandria, and no contemporary writer ever brought the charge against ‘Amr or ‘Umar. ‘Abd al-Latif al-Baghdadi, who died as late as A.H. 629 (1231 AD), seems to have been the first to relate the tale. We do not know why he did it; however, later authors copied and amplified his version.²⁴

Islamic civilization is based on monotheism and, as such, is quite distinct from other ancient cultures. It gave man freedom of thought—freedom which was hitherto totally lacking. Thanks to this freedom, learning had every opportunity to flourish. In other older civilizations, learning and learned people were commonly subjected to oppression. The attempt to place Islamic civilization parallel with other civilizations is an apparent historical injustice. However, this is not all that there is to the matter. Islam, not Europe, heralded the age of modern science. This is an undeniable historical event. During the Islamic period, learning was actively encouraged, and all fields produced scholars and researchers of repute. Historians have generally acknowledged this.

In an exhaustive book on the history of Islam, *The Cambridge History of Islam*, produced by Professor P.M. Holt and other orientalist, there is an article in volume 2-B, entitled “Literary Impact of Islam in the Modern West,” which shows the far-reaching influence exerted by Islam in the past on the learning and civilization of the western world.

The chapter concludes with these words: "... during the Middle Ages, the trend was almost entirely from East to West ...when Islam acted as the teacher of the West."²⁵

Another orientalist, the French Baron Carra de Vaux, underlines the achievements of the Arabs by stating that "the Arabs have achieved great things in Science." "However", he goes on to say, "we must not expect to find among the Arabs the same powerful genius, the same gift of scientific imagination, the same enthusiasm, the same originality of thought that we have among the Greeks; their science is a continuation of Greek science which it preserves, cultivates, and on many points develops and perfects."²⁶

Montgomery Watt, however, in his book entitled *The Majesty That Was Islam*, states that there is a tendency to belittle the work of the Arabs and to regard them as no more than transmitters of Greek ideas. He says that Arabs were much more than transmitters and that Arab science and philosophy contributed significantly to European developments.²⁷

This same author, however, makes another point, which is more open to objection than the remark that Arabs were mere transmitters. He writes: "Science and philosophy in Arabic came into existence through the stimulus of translations from Greek."²⁸

This statement that Greek science provided the stimulus to Arabs, so far as scientific ideas are concerned, is incorrect. It is not true that the Arabs read Greek translations, which

resulted in their beginning to think scientifically. The truth is that scientific thinking came to them through the Quran and the concept of monotheism. Later, they began studying translations of books from Greek and other languages, from which point they went on to the study of science and philosophy by carrying out their research.

Historians have said that there is no denying that the Arabs were the pupils of the Greeks in science and philosophy, but it is also true that once they had assimilated what was to be learnt from the Greeks, they went on to make important advances.²⁹

Medicine was probably the first Greek science to attract the Arabs because of its obvious practical importance. Then they developed it to establish medical colleges and hospitals, which did not exist in Greece. Not only was it taught in the colleges of Iraq, but a flourishing medical service accompanied it. The first hospital in Baghdad was founded in the year 800 on the initiative of the Caliph Harun al Rashid, and records have been preserved of the founding of four other hospitals there in the first quarter of the tenth century. A thirteenth-century hospital in Cairo is said to have accommodated 8,000 persons. It had separate wards for male and female patients, as well as for different categories of ailment. The staff included physicians and surgeons, pharmacists, attendants of both sexes and administrative officers, and, besides store-rooms and a chapel, there were facilities for lecturing and a library.³⁰

The Arabs thus made extraordinary advances in medicine through their research. The first important physician was Abu Bakr Muhammad ibn Zakariyya ar-Razi (d. 923), known in Europe as Rhazes. He wrote voluminously on many scientific and philosophic subjects, and over fifty of his works are extant. His most remarkable work, *Al-Havi*, was translated into Latin as the *Continens* (the comprehensive book). It was the first encyclopaedia of all medical science up to that time and had to be completed by his disciples after his death. For each disease, he gave the views of Greek, Syrian, Indian, Persian and Arabic authors, then added notes on his clinical observations and expressed a final opinion.

The most excellent writer of medicine was Ibn Sina or Avicenna. He was also one of the two greatest Arabic philosophers. His eminence in medicine was due to his ability to combine extensive theoretical knowledge and systematic thought with acute clinical observation. His vast *Canon of Medicine (Al-Qanun fi't-Tib)* was translated into Latin in the twelfth century and was used much more than the works of Galen and Hippocrates. It dominated the teaching of medicine in Europe until at least the end of the sixteenth century. There were sixteen printed editions of it in the fifteenth century, one in Hebrew, twenty in the sixteenth century and several more in the seventeenth. Roughly contemporary with Avicenna was the chief Arabic writer on surgery and surgical instruments, Abul Qasim az-Zohrawi (d. after 1009), usually known in Latin as Abulcasis.

While Arabic medicine thus reached its highest point in the early eleventh century, it continued to hold sway for centuries. The gift of careful observation did not disappear, and certain fourteenth-century Arab doctors in Spain wrote knowledgeably about the plague as they had experienced it in Granada and Almeria.³¹

Abdullah ibn Baytar (d. 1248) was Spain's best-known botanist and pharmacist in the Muslim world. He travelled as a herbalist in Spain and throughout North Africa and later entered the Ayyubid al-Malik al-Kamil service in Cairo as a chief herbalist. From Egypt, he made extensive trips throughout Syria and Asia Minor. One of his two celebrated works, *Al-Mughni fi al Adwiyah al-Mufradah*, is on materia medica. The other, *Al-Jami' fi al Adwiya al-Mufradah*, is a collection of "simple remedies from the animal, vegetable and mineral worlds embodying Greek and Arabic data supplemented by the author's experiments and research." It stands out as the foremost medieval treatise of its kind. Some 1400 items are considered, of which 300, including about 200 plants, were novelties. The number of authors quoted is about one hundred fifty, of whom twenty were Greek. Parts of the Latin version of Ibn al Baytar's *Simplicia* were printed as late as 1758 at Cremona.³²

After materia medica, astronomy and mathematics, the Arabs made their most significant scientific contribution to chemistry. This brought chemistry out of the sphere of alchemy and made it a regular science based on observation.

In the study of chemistry and other physical sciences, the Arabs introduced the objective experiment, a decided improvement over the hazy speculations of the Greeks. It was through them that the world was first introduced to the scientific method.

After al-Razi, Jabir ibn Hayyan (721-815) is ranked greatest in medieval chemical science. He more clearly recognized and stated the importance of experimentation than any other early alchemist and made significant advances in both the theory and practice of chemis.³³

Jabir's books were held as the final authority on chemistry in Europe until the fifteenth century. Jabir produced the initial ladder to the modern western chemistry of the eighteenth century. It is believed that Jabir wrote two thousand books on different sciences. So many scholarly books had never been written before the Muslim epoch by any single writer.

These are only some scattered and incomplete references. They are, however, enough to show that Islam, far from being hostile to learning, is keenly supportive of it. In ancient times, the anti-learning tradition was laid down by those religions which were based on polytheism and superstition. Islam ended polytheism and superstition and established a religion based on pure monotheism. There is, therefore, no question of Islam becoming the enemy of knowledge and research.

The progress of learning is anathema to polytheism. Polytheistic religions, therefore, attempt to block its path.

Monotheism, on the contrary, takes a very different stand, for the progress of learning verifies monotheism, thus establishing it all the more soundly. That is why monotheistic religion gives it every encouragement.

ISLAM: THE LIBERATOR OF THE MIND

In ancient times, an intellectual climate dominated by polytheism tended to encourage the spread of superstition worldwide. Such an atmosphere was necessarily unfavourable to the emergence of scientific ideas; that is why there was no country during that period where learning and science could progress. It was only when the Islamic revolution ended this age-old harnessing of the intellect to polytheism that attitudes began, effectively, to change.

ANCIENT GREECE

In ancient Greece, where every object had a god or goddess associated with it, the most significant influence on the human mind was that of mythology—a collection of innumerable legends about lofty, immortal beings and superhuman heroes. Although an aura of mysticism surrounded their origins and deeds, the early Greeks regarded the mythological creatures as historical realities of whom they remained in great awe. (Whole volumes have been written on this vast subject, including an encyclopaedia.)

Greek mythology formed the staple of most Greek poetry and drama. It also influenced the thinking of philosophers and historians to a marked degree. Moreover, medieval poets and nearly all English poets, from Shakespeare to Robert Bridges, turned to it for inspiration. But stimulating as it was to the arts and literature, it failed to provide the ambience in which men of science, in the modern sense of the word, could flourish.

The Greeks may have had the most illustrious civilization of ancient times, but they did nothing to set the processes of scientific thinking in motion, which came much later to Europe. If scientific thought reached Europe, it was entirely due to the stimulus given to it by the Muslims, for, up to that point, the concept of polytheism had acted as a deterrent to progress. The concept of monotheism, on the contrary, ushered in a whole new era of intellectual liberty.

ROMAN CIVILIZATION

The Encyclopaedia Britannica writes:

Towards the close of the pre-Christian period, the Roman Empire achieved dominance over the entire Mediterranean world. Rome presents a paradox to historians of science. This civilization, so sophisticated and modern in its politics and personalities, strong in the learned disciplines of the law, progressive in the state technologies of warfare and public hygiene, with direct access to the corpus of Greek science, nevertheless failed to produce a single scientist.³⁴

The article goes on to say that historians, attempting to explain the Romans' utter failure in science, suggest that "perhaps the social structure of Rome, combined with its long adherence to gross forms of magic, left no place for an appreciation of that peculiar commitment to the hard and hazardous road to knowledge and wisdom that lies through disciplined enquiry into isolated aspects of the natural world. Indeed, when one considers how few have been the cultures in which science has flourished, one may reverse the question and consider Rome as the normal and classical Greece as the surprising phenomenon to be explained."³⁵

Historians have failed to produce any convincing answer to this question. But the answer becomes apparent when we take into account the fact that the Romans were polytheists. Polytheism and idol worship stood in the way of their research and investigation in the field of science. The concept of the sanctity of all natural objects prevented them from making a conquest of them.

THE DAWN OF THE SCIENTIFIC AGE

The Encyclopaedia Britannica states under the heading "History of Science" that the present way of comprehending the natural world is very recent. Great past civilisations could achieve high levels of development in knowledge, religion and legal systems in the complete absence of a conception of science as it is now understood. Such were the civilizations of ancient Egypt, Mesopotamia,

India and the western hemisphere. Even the Hebrews, whose religion forms a large part of the basis of European civilization, were indifferent to science. Although some two and a half millennia ago, the Greeks created a system of thought similar to the scientific, there was little progress beyond their achievement and little comprehension of it in succeeding centuries. The incredible power of science and its pervasive influence on all aspects of life are thus very recent developments.

The dawn of European science has traditionally been located among the philosophers of the Greek city-states on the coast and islands of the eastern Mediterranean in the later sixth and fifth centuries B.C. Their work is known only through fragmentary references and brief quotations from authors who came later, perhaps hundreds of years later.

These brief references are very misleading. For example, the saying of the earliest known philosopher, Thales, "All is water," would appear to be a scientific sentence. But when taken as a whole—"All is water, and the world is full of gods,"³⁶ it assumes a superstitious character. (Thales was a philosopher who lived in the sixth century B.C. None of his writings or contemporary source materials survive. His name is included in the canon of the legendary seven wise men.)³⁷

For Greeks and Romans, there was only one barrier obstructing the path of science: their polytheistic thinking. This, indeed, had robbed them of the realistic bent of mind,

which is essential to scientific investigation. There was, therefore, no question of their ever making any progress in this field.

JOURNEY TOWARDS PROGRESS

Many great scientific minds were born in ancient times in the European country of Greece, one of them being Archimedes, who made great strides in hydrostatics, even inventing the simple machine—the water screw. But, strangely, these Greek scientific minds shone only temporarily, like meteors, and then disappeared. They failed to usher Europe, or even Greece, into the age of science and industry. A very long intellectual gap is found between the learning of the ancient Greeks and modern scientific Europe. While Archimedes invented the water screw as early as 260 B.C., the first machine press was not invented until 1450 by Germany's J Gutenberg. The interval between the two is more than one thousand five hundred years.

What was the reason for this gap? Why did ancient Greek science not continue in Greece or elsewhere in Europe? The answer is that before the Islamic revolution, the atmosphere was opposed to scientific research being freely carried out. It was not until the revolution brought about by Islam, based on monotheism, that all obstacles could be removed from the path of scientific progress. This was the first time in history that there had been such a liberation of the intellect.

Scientific progress, to be effective, must be a continuous process. However, the work of the Greek scholars, due to the unpropitious circumstances of the times, could not advance in this way. It shone forth momentarily, then disappeared from the scene. Then in the seventh century AD, when the Islamic revolution had put an end to the age of superstition, many favourable opportunities presented themselves to scientific research, which was subsequently carried on in an unbroken line right up to modern times.

Due to the earlier unfavourable atmosphere, the Greek scholars confined their work mainly to the field of theory. They did not carry out practical experiments. For instance, Aristotle wrote treatises on physics but did not carry out a single experiment throughout his life. While the Greek scholars contributed significantly to the field of logic, they made no worthwhile contribution to empirical science. The real beginning of science was made when the spirit of free enquiry was created in man. In ancient times, this spirit manifested itself sporadically on the part of individuals, but due to the hostile environment, this could not develop on a large scale.

An environment conducive to free enquiry emerged only after the monotheistic revolution of Islam. The whole atmosphere was instantly changed by it, paving the way for the investigation work to go on unhampered. This scientific way of thinking had its beginnings in Mecca. Then it spread to Medina and Damascus, from where it made Baghdad a

great centre of innovative thought. From Baghdad, it found its way to Spain, Sicily and Italy, finally spreading all over Europe. It went on spreading, ultimately changing the universal mind.

This evolutionary journey of learning had not been possible before the Islamic revolution. Before this, scientific thinking had taken place only at the individual level or in isolated areas, and due to the adversarial atmosphere, it failed to flourish. However, for the first time, Islam gave the world an atmosphere that actively fostered scientific progress.

CHAPTER 2

HOLDING SACRED THAT WHICH IS NOT SACRED

The noted anthropologist, Nathan Soderblom, observed in a work completed in 1913 that the notion of holiness formed the central concept of religion. Since then, the history of religions has been studied on a vast scale, with many scholarly books written on the subject in German, French, English and other languages. With very few exceptions, scholars agree that holiness is the basic tenet of religion, attributing such mystical qualities or powers to certain persons or things as are not ever found in ordinary creatures or objects. These mystical attributes cannot be explained by general, rational principles or concepts.³⁸

This concept of holiness is not imaginary; it is deeply ingrained in the nature of man. The feeling generated by it is adequately employed when it is concentrated exclusively on God. But it frequently happens that this urge within man is diverted to something not holy. As a result, the actual reverence for holiness, which should have been directed towards the Creator, finds its way instead towards some creature. The reason for this is God's invisibility. Unable to

see his Maker, man gives his attention to whatever else strikes him as most prominent in his immediate surroundings; he then begins to invest it with sanctity and worships it as if it were genuinely holy. In ancient times, this psychology produced polytheism in religious terminology and nature worship in academic parlance. This basic urge to worship impelled man from within to revere something holy. Consequently, he started worshipping anything, which made a significant visual impact upon him, e.g. stars, rain, animals, plants, water and fire. The concept of an exalted God existed as the prophets had taught man. But this concept came to be distorted to mean that God “was the Lord in heaven who had withdrawn from the immediate details of governing the world. This kind of high God, a hidden or idle, God— is one who has delegated all work on earth to these ‘nature spirits,’ which were the forces or personifications of the forces of nature.”³⁹

In general, scholars agree that the concept of holiness is the cohesive force in all religions. For a religion to hold together, some unique or extraordinary person or thing must be designated as sacred and stand at the apex of the sum of its beliefs. This cannot be explained in terms of general, rational principles.

The commonest human reactions to objects of sanctity are fear and fascination. Only the sacred can fulfil man’s deepest needs and aspirations. Thus, the reverence that man shows for whatever is held sacred is composed of

trust and fear. There is also the view that the acceptance of something as sacrosanct signals the boundaries of human effort, where man's inherent limitations prevent him from seeking any further.

The objects of man's reverence are disparate in nature, e.g. stones, animals, the sea, the sun, the moon, kings and other religious personalities. Whatever is held sacred is worshipped, and sacrifices are made to it. Rituals are observed to please it, escape its punishments and elicit its favours.

"Sacredness is manifested," observes *the Encyclopaedia Britannica*, in "sacred officials, such as priests and kings; in specially designated sacred places such as temples and images, and in natural objects, such as rivers, the sun, mountains, or trees. The priest is a special agent in the religious cult; his ritual actions represent divine action. Similarly, the king or emperor is a special mediator between heaven and earth and has been called by such names as the 'son of heaven,' or an 'arm of god'."⁴⁰

The Encyclopaedia Britannica lists the following important anthropologists as holding sacredness to be the basis of religion: Nathan Soderblom, Rudolf Otto, Emile Durkheim, Max Scheler, Gerardus Vander Leeuw, W. Brede Kristensen, Friedrich Heiler, Gustov Mensching, Roger Caillois, Mircea Eliade.⁴¹

Modern scholars of religion are right in saying that the basic idea behind religion is the concept of holiness, which

they claim is a natural feeling. However, when some other object besides one God is considered holy, this is the wrong application of a real, natural feeling. And this is the root cause of all kinds of evils. When man holds the non-holy as holy, he closes all doors to progress.

There are two aspects of holding the non-holy as holy. One is to consider all of nature as being sacred, while the other is to revere certain individuals as sacrosanct. Both kinds of evils have been found worldwide since ancient times. This has been the most significant reason for man's thinking having remained unscientific.

The notion of holiness is deeply rooted in human psychology. To define in a phrase such as psychology is extremely difficult, for the words used to express profound psychological states are more often symbolic than realistic. I would agree, in principle, that holiness is the focal point of religion. The existence of holiness is, nevertheless, real and not imaginary, as modern scholars of religion would have us believe.

The truth is that the urge to worship is a natural instinct every man is born with. Because of this deep inner urge, man wants to bow before something he considers sacred. There are two forms in which this feeling finds expression: one is monotheism, and the other is polytheism.

When a man holds one God sacred and worships Him as his Deity, he directs his feelings to the proper place. It is,

in reality, God who possesses the attribute of sacredness. 'Holding the one and only God sacred is acknowledging a great truth.

But the mistake man makes is to worship and revere whatever object he finds outstanding in this world or whatever he finds different from himself, imagining it to be sacred. This is the wrong use of the right feeling. This is giving a non-god what is due to the one and only God. In religious terminology, this is known as polytheism or, in common parlance, superstition.

It was this error of sanctifying mere things instead of God Himself which prevented the emergence of science for thousands of years in the past. When we believe in one God, no scientific or intellectual problem arises, for God is beyond our physical reach and our sphere of functioning. He is beyond the heavens, through which man cannot pass.

On the other hand, the material objects considered holy fall within the sphere of human action. And whenever these things have been surrounded with an aura of holy mystery, they have assumed too exalted a status to be subjected to scientific investigation. On the contrary, it is precisely in making an intellectual conquest of these things that science has had its beginnings.

All things other than God are mere creatures. These are generally known as natural phenomena. It is these phenomena which provide the groundwork for science.

To study them and to conquer and control them is what is meant by scientific procedure.

From ancient times, the phenomena of nature had universally been considered sacred; far from being objects of conquest, they all became objects of worship. It was this intellectual distortion which prevented scientific action for thousands of years in the past. The door to progress opened only when the revolution of monotheism changed human thinking and brought nature down from its pedestal of holiness.

AN EXAMPLE

Polytheism, a world-wide phenomenon in ancient times, is now mainly confined to the Indian sub-continent, where, with its emphasis on vegetarianism, it is still extant in a powerful, living form. However, it has come to be viewed as an obstacle to applying the results of modern academic research.

Just how large an obstacle became clear when in 1967, the eminent scientist Dr M.S. Swaminathan, the then Director of the Indian Agricultural Institute, New Delhi, made his views on nutrition known in an interview with an English daily. Speaking to a representative of UNI, Dr Swaminathan said, "India may have to face the danger of large-scale intellectual dwarfing in two decades if the problem of malnutrition and 'protein hunger' is not tackled soon." He explained that

while balanced nutrition was not new, its significance to brain development was a recent biological discovery.

“It is now clear that the human brain reaches 80% to 90% of its full weight by the age of four, and if children do not get adequate protein during this ‘critical period,’ the brain does not develop properly,” Dr Swaminathan stated and went on to say that comparative studies on the intelligence of different ethnic groups would in the future have to be viewed from this standpoint too. If the problems of malnutrition and protein hunger were not taken into hand immediately, “We may have to witness during the next two decades a growing acuteness of intellectual power in the developed nations, but a process of intellectual dwarfing in our own country. Every day’s delay in fighting protein hunger in the youth could lead to the creation of more than 10 million ‘intellectual dwarfs.” He added: “Much damage must have already occurred in recent years.” Asked for a solution to the problem, Dr Swaminathan said, “The message of protein-consciousness should be carried to the masses by government action and the mobilisation of public opinion.

He explained that pulses constituted the most important protein source in a vegetarian diet, whereas animal products like milk had proteins of a better quality. Protein needs would have to be assessed in terms of quantity and quality. About 80 amino acids were necessary for normal growth among protein components. He said that a deficiency of some of the acids like lysine and methionine was common

in a vegetarian diet, while the excess of leucine in Jowar had been the cause of diseases in certain areas where this cereal was the staple food. Though a larger consumption of animal products was desirable, their production was costly since much energy was wasted in converting plant products into animal food.⁴²

After the publication of this interview, the *Indian Express* brought out an editorial titled, 'Protein Hunger,' which said:

... when the union government decided to go in for a comprehensive policy of price support for foodgrains, it could hardly have been suspected that there could be 'protein hunger' in view of the plentiful supply of cereals.

As the Director of the Indian Agricultural Research Institute, Dr M.S. Swaminathan, has pointed out, an over-dependence on cereals could lead to a situation in which even well-fed people are under-nourished. Besides the physical handicaps from which those starved of proteins may suffer, the mental side effect of this, according to Dr Swaminathan, would be that the mental capacity of children would not develop properly.

Viewed in this light, a re-examination of the present agricultural policy is necessary. But the limitations within which the Government must act are also many. First, it is costly to transform farm produce into animal protein. Besides, even though the Government has conducted a campaign for balanced diets and higher consumption of meat, eggs and fish, people have been slow to change their eating habits.⁴³

People reacted strongly to Dr Swaminathan's statement. Some extremists even demanded his resignation, saying he was not fit for the presidentship of a national institute. With such an adverse reaction, Swaminathan had no choice but to remain silent. The matter became a closed topic.

The reason for this strong public reaction was that according to the traditional religion of India, taking a life is the worst possible sin. Since living things must be killed to produce non-vegetarian food, vegetarianism has become the order of the day.⁴⁴

India is rich in resources and opportunities. Yet, despite this abundance, it has yet to become a truly developed country. Chiefly to blame for this are the polytheistic constraints, which hinder the march of progress. Not until the country is set free of all such unrealistic limitations will India truly set its feet on the path of progress.

THE EMERGENCE OF SCIENCE

In Europe's history, the period from the sixth to the tenth century A.D. is known as the Dark Ages. This was a period when Europe was far from being civilized. "For Europe, it was a period of intellectual darkness and barbarity."⁴⁵

The term 'Dark Ages' applied only to Europe; when Europe was enveloped in the murk of the Dark Ages, the light of civilization shone brightly throughout the world of Islam. As Bertrand Russell puts it in his *History of Western*

Philosophy, “From India to Spain, the brilliant civilization of Islam flourished.”⁴⁶

This Islamic civilization, which entered Europe via Sicily and Spain, exerted a strong influence there, so much so that students from Western Europe started coming to receive their education in the Islamic universities of Spain. Many from the Muslim world likewise went to Europe. When Europeans realised that the Muslims had gone far ahead of them in education, they began to render books written by Muslim scholars into Latin. *The Encyclopaedia Britannica* says: “Most of the classical literature that spurred the European Renaissance was obtained from translations of Arabic manuscripts in Muslim libraries.”⁴⁷

In modern times, many scholars, for instance, Gustav Liban, Robert Briffault, J.M. Robert, Montgomery Watt, and so on, have acknowledged that it was the investigations and discoveries of the Arabs that paved the way for modern science in Europe. It would be correct to say that this is a universally known fact. The only point on which we must differ is that the event recorded as ‘Muslim history’ should come under the heading of ‘Islamic history.’ An event thus attributed to a people should have been attributed rather to God.

SOME EXAMPLES

In ancient times certain things were considered holy according to the polytheistic set of beliefs then prevalent. This mentality had closed the door to independent

thinking on natural phenomena. Then came the revolution brought about by monotheism. For the first time in human history, this produced the right atmosphere for freedom of enquiry. All things then began to be studied without any hesitation. The monotheistic revolution thus founded the very first original basis for scientific thinking along systematic lines. Scientific research had been carried out before this, but due to the unfavourable atmosphere, it had not been welcomed with approval or recognition. Without this, no further advances could be made in this sphere.

Galileo (d. 1442) is considered the inventor of the telescope. But the truth is that, long before his time, Abu Ishaq ibn Jundub (d. 767) had already made observations of the heavens. He had devised specific rules for observing distant objects, and by those rules, he had invented a telescopic instrument. This initial telescope was further developed by Galileo and was the forerunner of the now highly perfected electric telescope of modern times.

The basis of modern science is observation. But, in ancient times, several superstitious beliefs barred the way to such activity. However, Jabir ibn Hayyan (d. 817), understanding the importance of observation, used findings in his scientific studies, the written accounts of which were transmitted to Europe in translations. Thinking went on developing along these lines until it formed the basis for experimental science as it is known today.

The first person in history to advance the theory of inertia in material bodies was Abu 'Ali al-Hasan ibn al-Haytham (d. 1021). This discovery reached Europe, where scholars subjected it to further scrutiny. It was formulated much later, as Newton's law of motion, namely, that everybody continues in its state of rest or uniform motion in a straight line, except in so far as it is compelled by external forces to change that state. Then again, it was ibn al-Haytham who originally discovered that the path taken by a ray of light or other wave motion in traversing the distance between any two points is such that the time taken is a minimum. This discovery later became known as Fermat's principle of least time.

THE AGE OF THE EARTH

Scientists have not agreed on the date of man's emergence on earth. However, they have discovered some human skeletons, which they believe to date back to ten thousand years before Christ. The scientists do not, therefore, accept the assertions on this subject made by the Bible. According to the dates for the appearance of the human race given in the book of Genesis, Adam came to the world thirty-seven hundred years before Christ. The Jewish calendar, which follows the data contained in the Old Testament, places the dates very precisely. The second half of the Christian year 1975 corresponds to the beginning of the 5,736th year of the creation of the world. According to modern science, this is wholly unacceptable.

As it would appear from biblical narratives, the Christians had condensed the earth's lifespan to within a few thousand years. However, from the scientific point of view, the error of this calculation came to light in the eighteenth century when James Hutton, a great geologist, conducted his investigations. He devoted his whole life to studying the construction of the earth and its rocks, which showed that the earth's present form has evolved over millions of years. Charles Lyell's observations subsequently confirmed Hutton's theory. The first volume of his famous book, *Principles of Geology*, was first published in 1830. To a great extent, this book was responsible for the disappearance of the biblical time scale from all serious discussion. "Indeed, Lyell's books were largely responsible for convincing the world that the Bible could be wrong, at any rate in some respects—a hitherto unthinkable thought."⁴⁸

Concepts of the kind enshrined in the Bible were barriers to Europe's scientific progress. Moreover, anyone who dared to present any theory other than those approved by the Church risked being severely chastised because his theory was sacrilegious. But, in Islam, such unreal concepts had never gained currency. That is why no religious opposition presented itself when scientific research began in Islamic Spain.

GREEK SCIENCES

The modern age of progress began in Europe between the fourteenth and sixteenth centuries. This age is generally

referred to as the Renaissance, which means revival or rebirth. The Europeans associate this age of renaissance with Greece, a European country. So they present the modern era of Europe as being, in fact, a revival of the ideas of Greek antiquity. But the truth is that Europe went through a period of awakening rather than rebirth or revival. And this was the first time in the history of Europe that this had happened. Now scholars have accepted that the Renaissance of the West is a direct gift from the Arabs. Briffault writes:

The debt of our science to that of the Arabs does not consist of startling discoveries of revolutionary theories. Science owes a great deal more to Arab culture. It owes its existence.⁴⁹

He goes on to say:

It is highly probable that, but for the Arabs, modern industrial civilization would never have arisen at all.⁵⁰

The Encyclopaedia Britannica (1984) says that libraries formed essential features of Islamic society. There were many institutions which possessed more than one lakh books. Most of the classical literature that spurred the European Renaissance was obtained from translations of Arabic manuscripts in Muslim libraries.⁵¹

To some, the achievement of the Arabs is, at best, their transmission of the Greek sciences to Europe through translations. Professor Hitti puts it in these words:

This stream (of Greek culture) was redirected into Europe by the Arabs in Spain and Sicily, whence it helped create the Renaissance of Europe.⁵²

However, such an assertion is not correct, for what the Arabs had received from Greek philosophers was not experimental knowledge but theoretical argument. In other words, what they received from the Greeks was not science but philosophy. Science, as we now understand it, had never existed in Greece. Science, or knowledge based on experimentation, is the invention of the Muslims. The Muslims first attained knowledge through observation and then communicated it to other nations, particularly those in Europe.

Bertrand Russell has rightly said:

Science, ever since the time of the Arabs, has had two functions: (1) to enable us to know things and (2) to enable us to do things. The Greeks, except Archimedes, were only interested in the first of these...interest in the practical uses of science came first through superstition and magic.⁵³

He goes on to say:

To modern educated people, it seems evident that matters of fact are to be ascertained by observation, not by consulting ancient authorities. But this is an entirely modern conception, which hardly existed before the seventeenth century. Aristotle maintained

that women have fewer teeth than men; although he was twice married, he never verified this statement by examining his wives' mouths.⁵⁴

Citing further examples of this nature, Russell observes that Aristotle made many assertions about things without ever observing them and that his adherents continued to repeat them without putting them to the test of observation.

Scientists must observe and experiment on things in depth to know their nature correctly. But an atmosphere conducive to such procedures did not exist among the Greeks or other ancient nations. Instead, because objects other than God had sacredness attributed to them, they developed an aura of mystery and became sacrosanct in the eyes of the people. This resulted in magic, superstition and the worship of non-gods becoming widely prevalent.

These grave misconceptions stood in the way of scientific enquiry into the nature of things. When people believe that events take place by magic, or that natural phenomena have divine properties of a mystical nature, no thinking can develop which will lead to research on the nature of these things. In such an atmosphere, it is but natural that such a mentality will grow as will grovel to magic and superstition.

The Arabs of ancient times had similarly been held in thrall by superstition. It had also become a mental block for them, as in other nations. But when an intellectual revolution was brought about amongst them by Islam, this mental block

very soon evaporated. Now they began to look at things as they were, whereas, before this revolution, they had viewed the same objects as sacred and mysterious. This intellectual revolution produced among Arabs scientific thinking for the first time in human history. By developing this line of thought, they became the giver people; they gave to the whole world what, in modern times, is called science.

PHYSICAL SCIENCES

Arnold Toynbee, the renowned twentieth-century English historian, tells us that science is another name for exploiting nature. He then raises the question of why man took so long to control and exploit it when it had existed in our world for millions of years. Then, finally, he gives us the answer:

For ancient man, nature was not just a treasure trove of 'natural resources,' but a goddess, 'Mother Earth.' And the vegetation that sprang from the earth, the animals that roamed the earth's surface, and the minerals hiding in the earth's bowels all partook of nature's divinity, so did all natural phenomena—springs and rivers and the sea; mountains; earthquakes and lightning and thunder. Such was the original religion of all humanity.⁵⁵

When nature is regarded as an object of worship, it cannot, at the same time, be looked at as an object of exploitation, investigation and conquest. Referring to the historical fact mentioned above, Toynbee acknowledges that the age in

which nature was sacrosanct was brought to an end only with the advent of monotheism. The concept of monotheism brought nature down from being a deity set upon a high pedestal to being just another part of God's Creation. Now, instead of nature being held as objects of worship, they came to be objects of subjugation and conquest.

All the prophets had propounded this concept of monotheism in the past. However, it remained at the level of pronouncement at an individual level; it could not reach the stage of general revolution. The movement based on monotheism finally reached the stage of revolution only through the struggle of Prophet Muhammad and his Companions. After this, the tendency to regard nature as holy decreased to the point where it no longer existed; this was a necessary outcome of such a revolution. Now man started looking at nature with a view of exploring and exploiting it. This process developed positively over the centuries, sometimes slowing, sometimes accelerating, but finally ushering in our modern scientific age.

The Encyclopaedia Britannica states in its article, 'History of Physical Sciences,' that Greek science fell into jeopardy after the second century A.D. because the Romans were not interested in it. "Social pressures, political persecution and the anti-intellectual bias of the church Fathers drove the few remaining Greek scientists and philosophers to the East. There they ultimately found a welcome when the rise of Islam in the seventh century stimulated interest in

scientific and philosophic subjects. Most of the important Greek scientific texts were preserved in Arabic translations. Although the Arabs did not alter the foundations of Greek science, they made several significant contributions within its general framework, and when the interest in Greek learning revived in Western Europe during the twelfth and thirteenth centuries, scholars turned to Islamic Spain for the scientific texts. A spate of translations (from Arabic into Latin) resulted in the revival of science in the West. Scientists of the Middle Ages reached high levels of sophistication and prepared the ground for the scientific revolution of the sixteenth and seventeenth centuries.”⁵⁶

Moseleban asserts in his book *Arab Civilization* that Arab sciences reached Europe not through the crusades but through Andalusia, Sicily and Italy. In 1330, a translation institute was established under the patronage of Remond of Taletala, through which famous books were rendered into Latin from Arabic, and through these translations, a whole new world was opened up to Europe. This work of translation continued right up to the fourteenth century. The works of Ar Razi, Avicena and Averroes, and those of Galen, Hippocrates, Plato, Aristotle, Euclides, Ptolemy, etc., were translated from Arabic into Latin. Dr Guil Kirk, in his book on the history of this period, mentions more than three hundred books translated from Arabic into Latin.

Other western scholars have even more openly acknowledged this as a historical fact. Robert Briffault, for

example, has written that the Greeks produced a system, generalized it, and formulated it but that it was alien to their temperament to go into the labour of observation and experimental research. On the other hand, George Sarton, the famous chronicler of scientific advances, writes that the most fundamental and most distinctive success lay in fostering the latter activities and that what ultimately came to be called science was the result of a new method of experiment, observation and calculation originally brought into being by the Muslims.

This spirit of enquiry prevailed until the twelfth century and was transmitted to Europe through the Arabs. Modern science is the most incredible legacy of the Islamic civilization.

THE GIFT OF ISLAM

The two most important contributions of Islam in this connection were, firstly, to remove any mental block which could be an obstacle to progress, and secondly, to launch the new age of progress on a practical basis.

Removing the mental block meant displacing things from their pedestals of holiness. This task—undoubtedly the most difficult—was successfully performed during the period of the Prophet and the pious Caliphs who succeeded him.

Although a practical beginning had been made in the first phase of Islam, its systematic development occurred during

the Abbasid era with the establishment of the Bayt-al-Hikmah in 832. This work gained significant momentum during the Arab rule in Spain and Sicily. Finally, it reached Europe, where it gave the first impetus to the industrial revolution.

It is generally accepted that modern progress and its ramifications are related to the industrial revolution. It could be said that all progress has come in its wake. The industrial revolution is another name for exploiting the earth's hidden resources. For example, man mined coal and then converted it into energy. He harnessed the power of flowing water and converted that into electricity. He extracted minerals beneath the earth's surface and transformed them into machines. And this is how the industrial revolution came into existence.

Now, why was it that when all these resources had been available on the earth since time immemorial, man could not utilize them to found a developed civilization before the advent of Islam? There is only one answer: polytheism had placed an insurmountable barrier in his path.

What is polytheism? It is the worship of the phenomena of nature. Before the Prophet of Islam, in every period recorded in history, man had worshipped natural wonders, holding them to be imbued with divinity. All ancient civilizations—Greek, Egyptian, Roman and Persian—were polytheistic in their persuasions. All the outstanding things

of this world—earth, rivers, mountains, sun, moon or stars—were objects of worship for man. Only Islam was able to displace them from the pedestal of worship. Only then could that new intellectual departure be made, now known as the scientific revolution.

CHAPTER 3

MUSLIM CONTRIBUTION TO SCIENCE

An atmosphere of free investigation is essential to the progress of science. In former times, however, such an atmosphere was extremely rare, thanks to various man-made beliefs. There were many cases in those days of an intelligent, scholarly person discovering a certain truth while pondering over his subject, only to find people turning against him and his discovery because they found it clashing with their superstitious beliefs. That was why new, innovative thinking could not make any progress.

One of the most notorious examples of the suppression of new ideas in antiquity was the condemnation of the renowned Greek philosopher, Socrates, to death, by drinking hemlock in 399 B.C. He was accused of ignoring the gods the Athenians worshipped, making new inventions in religion, and corrupting the youth of Athens.

Another such example—as late as the seventeenth century—was that of Galileo (1564-1642), the Italian astronomer who offended the Church simply by endorsing the Copernican view of the planets moving round the sun. He was sentenced by a religious court and thrown into prison. When he saw that death awaited him, he was

forced to recant before the Inquisition. With both his hands on the Bible, kneeling solemnly, he withdrew his 'far-fetched' theory of the movement of the planets around the sun. He rejected this theory and said that he considered it 'abominable.'

This was not just an isolated incident but rather a symptom of the intellectual malaise created by the Christian scholars of those times. The search for new truths and the discovery of nature's secrets remained forbidden pastures to them for centuries. Such activities were reviled as black magic and a part of satanic teachings. In such circumstances, the processes of research and investigation could not be carried on with any success. In the Middle Ages, it was solely due to the Muslims that such work could be given any impetus, thanks to the Quran having removed the mental blocks that had stood in the way of people of other faiths, such as Galileo. An appropriate attitude to scientific matters began to be encouraged for the first time after the Islamic revolution. This process then went on unhampered, ultimately leading to the age of modern discoveries.

THE SOLAR SYSTEM

The astronomer who is said to have studied the solar system and presented the heliocentric theory for the first time was a Greek, known by the name of Aristarchus of Samos. Unfortunately, he died in 270 B.C. However, this theory of

the sun being at the centre and the earth revolving around it never gained popularity in those early times.

Then came the age of Ptolemy, who lived in the second century A.D. Ptolemy's astronomical system represented the earth as the fixed centre of the universe, with the sun, the moon, and other stars and planets revolving around it.

This geocentric theory of the universe appeared to conform with the beliefs the Christians had developed after Jesus Christ. These beliefs were given the final seal of approval at the famous Church Council held at Nicaea, a city in Asia Minor, in A.D. 325. After the acceptance of Christianity by Constantine the Great (280-337), the faith spread all over the Roman territory. Now vested with tremendous power, the Christians patronized, in particular, the theory of Ptolemy. The curtain of darkness fell over the heliocentric theory of Aristarchus.

The Encyclopaedia Britannica (1984) says of geocentricity: "There was no further scope for cosmology in the model, which continued to be taught and used almost everywhere until the 17th century."⁵⁷

It was not until 1495 that Copernicus concluded that the earth was not the centre of the universe. Finally, after a long period of research devoted to astronomical studies, he was forced to conclude that the planets revolved around the sun. But, fearing the opposition of the Church, he refrained from publishing his findings until 1543.

The Muslims, however, did not suffer from the error of regarding as sacred that which was non-sacred. They could reflect upon matters of scientific interest with open minds and in a purely academic way. They accepted the heliocentric theory without hesitation when they found it more rational.

Edward McNall Burns writes that the heliocentric theory developed by Aristarchus (310-230 B.C.), although destined to fall into oblivion for four hundred years, has become a fact. This is after many centuries of men's minds dominated by Ptolemy's geocentric theory.

Of all the subjects developed by the Spanish Muslims, there was none brought to a higher degree of perfection than science. In fact, in this field, their successes were such as having no parallel in history. They distinguished themselves in astronomy, mathematics, physics, chemistry, medicine, etc. As McNall Burns writes:

Despite their reverence for Aristotle, they did not hesitate to criticize his notion of a universe of concentric spheres with the earth at the centre, and they admitted the possibility that the earth rotates on its axis and revolves around the sun.⁵⁸

The Muslims arrived at the correct hypothesis of the solar system's functioning only because Islam had broken down the walls of conditioned thinking, which had acted as a barrier to man's intellectual progress. As soon as this artificial barrier was out of the way, the caravan of human

thought began its journey with a hitherto unimaginable rapidity. And thus, it finally brought us to the present century's spectacular scientific feats.

MEDICINE

Just as diseases have afflicted man in every age, so has the science of medicine always existed in one form or the other. In ancient times, however, the science of medicine never reached the heights of progress it did in the Islamic era and later in modern times.

It is believed that the beginning of the science of medicine—a beginning to be reckoned with—was made in ancient Greece. The two great physicians born in ancient Greece were Hippocrates and Galen. Hippocrates lived in the fifth and fourth centuries B.C. However, very little is known about his life. The historians of later times have estimated that Hippocrates was probably born in 460 B.C. and died in 377 B.C. On the other hand, some historians even doubt his being a historical figure. It has also been questioned whether the books on philosophy and medicine supposedly written by him were not written by someone else and later attributed to him.”⁵⁹

Galen is considered the second most important philosopher and physicist of antiquity. He was born probably in A.D. 129 and died in A.D. 199. Galen faced stiff opposition in Rome, and most of his writings were destroyed. The remainder

would also have been lost to posterity if the Arabs had not collected them in the ninth century and translated them into Arabic. Later, these Arabic translations reached Europe in the eleventh century, where they were translated from Arabic into Latin. *The Encyclopaedia Britannica* (1984) concludes its article on Galen: "Little is known of Galen's final years."⁶⁰

It is a fact that ancient Greece produced some excellent brains and some great thinkers in this field. But the respective fates of Galen and Hippocrates show that the atmosphere in ancient Greece was conducive neither to the rise of such people to their due eminence nor to the growth of medicine as a science. Moreover, different kinds of superstitious beliefs were an obstruction in the path of free enquiry; for instance, the attribution of diseases to mysterious powers and the sanctification of many things, such as plants, which had healing properties.

The science of medicine came into being in ancient Greece about 200 years before the Christian era and flourished for another two centuries. In this way, the whole period lasted about four or five hundred years. This science did not see any subsequent advance in Greece itself. Although a European country, Greece did not contribute anything to the spread of its medical science in Europe or modern medicine in the West. These facts prove that the atmosphere in ancient Greece was not favourable to the progress of medicine.

The Greek medicine brought into being by certain individuals (effort was all at the individual level, as the community did not give it general recognition) remained hidden in obscure books for about one thousand years after its birth. It was only when these books were translated into Arabic during the Abbasid period (750-1258), and edited by the Arabs with their original additions, that it became possible for this science to find its way to Europe, thus paving the way for modern medical science.

This is because, before the Islamic revolution, the world had been swept by superstitious beliefs and idolatry. The environment in those times was so unfavourable that whenever an individual undertook any academic or scientific research, he could never be sure of receiving encouragement. More often than not, he had to face severe antagonism. Indeed, whenever any scientific endeavour at the individual level came to the notice of the authorities, it would be promptly and rigorously suppressed. When diseases and their remedies were traditionally linked with gods and goddesses, what appeal could the scientific method of treatment have for the people? Only when the monotheistic revolution came to the world in the wake of Islam did the door open to that medical progress which saw its culmination in modern medical science.

As the Prophet said, "God has sent the remedy for every disease in the world except death."⁶¹ This saying of the Prophet was the declaration of the leader of a revolution.

No sooner did he announce this truth about medicine to the world than history began to be shaped by it in many practical ways.

AN EXAMPLE

Smallpox is considered one of the most dangerous diseases in the world. It is a highly contagious disease, characterised by fever and the appearance of small spots leaving scars in the form of pits. The symptoms include chill, headache, and backache. The spots appear about the fourth day. This is a fatal disease. Even if one survives the attack, the skin is scarred permanently.

According to current records, this disease was identified in Egypt in 1122 B.C. and is also mentioned in ancient Indian books written in Sanskrit. In the past, this disease gripped many countries in dangerous epidemics. Thousands of people fell prey to it. As far back as 1156 B.C., this disease was taking its toll on human life, there being visible evidence in the pock-marked face of the mummy of the Egyptian Pharaoh Ramses V, who died that year. (His embalmed body was found inside a pyramid.) Even then, it took thousands of years for this dreaded disease to be investigated scientifically.⁶²

Now we know that smallpox is a contagious disease resulting from virus infection, and such remedies have been discovered to ward off attacks, provided suitable precautions are taken in advance.

But it was not until the end of the ninth century, subsequent to the emergence of Islam, that this medical fact was unearthed for the first time. The first name, which became prominent in history in this connection, was that of the well-known Arab physician, Al-Razi (865-925), who was born in Ray in, Iran. In search of a remedy for the disease, he investigated it from a purely medical standpoint and wrote the first book on the subject, called *Al-Judri wa al-Hasba*. This was translated into Latin, the academic language of ancient Europe, in 1565 in Venice. It was later translated into Greek and other European languages and thus spread all over Europe. Its English translation, published in London in 1848, was entitled, *A Treatise on Smallpox and Measles*.

Researchers have accepted that this is recorded history's first medical book on smallpox. Before this, no one had ever done research on this topic.

After reading Al-Razi's book, Edward Jenner (1749-1823), the English physician who became the inventor of vaccination, was led to conduct a clinical investigation of the disease. He carried on his research over twenty years, ultimately establishing the connection between cowpox and smallpox. Then, in 1796, he carried out his first practical experiment in inoculation. This was a success, and the practice spread rapidly, despite violent opposition from certain quarters, until, in 1977, the UN announced that smallpox had been eradicated for the first time in history.

Now the question arises as to why such a long time had elapsed between the initial discovery of the disease and the first attempts to investigate it medically to find a remedy. The reason was the prevalence of shirk, the holding of something to be sacred when it is not, or the attribution of divinity to the non-divine.

Dr David Werner writes, 'In most places in India, people believe these diseases are caused because the goddess is angry with their family or community. The goddess expresses her anger through the diseases. The people believe that the only hope of a cure for these diseases is to make offerings to her to please her. They do not feed the sick child or care for him because they fear this will annoy the goddess more. So the sick child becomes very weak and either dies or takes a long time to get cured. These diseases are caused by virus infection. The child must be given plenty of food to keep up his strength to fight the infection.'

When Islam came to the world, it banished such superstitious beliefs about disease, announcing in no uncertain terms that none except God had the power to harm or benefit humanity. The Creator was the only being who had such power. All the rest were His creatures and His servants. After the Islamic revolution, such ideas gained ground; people began to think freely and independently of all superstitions. Only then did it become possible to conduct medical research into the disease to discover appropriate remedies.

Only after this intellectual revolution had come to the world did it become possible to make smallpox the subject of enquiry. Only then did it become possible for such people as Abu Bakr al-Razi and Edward Jenner to rise and save the world from this dreaded disease by discovering a remedy.

The real barrier to finding a cure was the generally accepted body of superstitious beliefs based on idol worship; these beliefs were swept away for the first time in history by Islam.

LINGUISTICS

On account of superstitious beliefs becoming attached to language, linguistics, as a science, stagnated for thousands of years. Writing of this failure, Dr Ernest Gellner, a linguist very aptly commented: 'Linguistic philosophy has an inverted vision which treats genuine thought as a disease and dead thought as a paradigm of health.'

In antiquity, people generally believed that writing was the gift of God, as in the Indian concept of "Braham lipi." Words and the form of speech were god's gift to man, and, as such, they commanded the highest veneration from humans. In his book *Sacred Calligraphy of the East*, John Stevens presents research carried out by himself, showing that the concept of 'sacred' calligraphy persisted for centuries. Scholars differed as to the origin of calligraphy, whether in Egypt, China, India, or any other place. One idea, however, was

universal: writing was divine. It was inherently holy. The writing was the speech of the gods.

That human languages have been the object of superstitions for thousands of years is a matter of historical record. It was supposed that certain languages had a divine origin and that their speakers enjoyed a special status above others. For instance, for centuries, the Greek language had been supposed to be superior to other languages, Greek being the language of the gods, while other languages were those of barbarians.

The same was the case with Hebrew. In the Jewish-Christian world, it was an age-old belief that Hebrew was God's language and the first language to be used. Wonderly and Eugene Nida, who have made a detailed study of the influences of Christian beliefs on languages, have made this analysis:

One of the factors which retarded linguistic progress was the belief among early Christian writers, and persisting well into the Renaissance era, that all languages were derived from Hebrew.⁶³

The concept of 'divine' language was wholly a product of superstitious beliefs, having nothing to do with reality. Whenever a language comes to being supposed to be a language of the gods, it becomes an object of reverence in people's eyes with the status of a sacred language. It can no longer remain an object of investigation. After this stage, making a critical analysis, advocating a new method to

develop it, or any other such progressive attitude towards it, are considered heretical and akin to sacrilegious. The people see all such efforts as presumptuous rather than as a sincere attempt to develop the language. This state of arrested development was typical not only of the ancient languages but of all other departments of thought, with numerous superstitious beliefs having stemmed the tide of intellectual progress. The revolution based on monotheism broke down this barrier for the first time in history. This revolution originated in Arabia and finally came to exert its influence worldwide. Human history then entered the age of realism, leaving behind the age of superstition.

The very moment when the Quran announced that there was no god, but the one God, the scientific way of thinking was set in motion. People began thinking about things independently of unrealistic mental barriers. This thinking went from strength to strength until it finally led to the scientific revolution.

The monotheistic practice of according the status of divinity to the one and only God, and denying sanctity to all else, divested all other creatures and things of any special status they may have had.

It was the 'divine' status of things which had been acting as a barrier to their becoming a subject of research and investigation. However, once all these things were shorn of their former divinity, they naturally came down to being

proper subjects for research and investigation. This unique achievement of Islam entitles it to be regarded as the creator of the modern age.

NUMERALS

The present system of numerals was first invented in India. That was in an age, however, when all that was traditionally established had come to be regarded as holy, while all that was invented was suspect. As such, this method of writing numerals could not become widely known and continued for a long time to remain hidden in privately owned books. Therefore, the new invention did not gain currency: people clung to the old method, considering it holy.

Having learnt that in the recently established Baghdad empire, great appreciation was shown for new inventions, an Indian traveller went in 771 to Baghdad, which was then under the rule of the Abbasid Caliph, Al-Mansur. The Indian pandit introduced into Baghdad a treatise on astronomy, a *siddhanta* (the Arabs called it *sind hind*) and a treatise on mathematics. By order of Al-Mansur, these books were translated into Arabic by Muhammad Ibn-Ibrahim al-Fazari, between 796 and 806. The famous Arab mathematician, Al-Khwarizmi (780-850), went through this translation into which the digit zero had been introduced. He found that with the nine Indian figures, 1-9, and the zero sign, any number could be written. Calling these the 'Indian' numerals, Al-Khwarizmi pronounced them the most satisfactory and advocated their general adoption.

Philip K. Hitti writes:

Al-Khwarizmi, writing in the first half of the ninth century, was the first exponent of the use of numerals, including the zero, in preference to letters. These numerals he called Hindi, indicating their Indian origin. His work on the Hindu method of calculation was translated into Latin by Adelard of Bath in the twelfth century, and *De numero indico* has survived, whereas the Arabic original has been lost.⁶⁴

In ancient times Roman numerals were in general use in Europe. In this system, letters were used to express numbers, a method adopted by the Greeks and some other ancient nations, and later by the Romans, who used the seven letters—M.D.C.L.X.V.I—in various combinations. For instance, figure 88 would be written as LXXXVIII. This was a cumbersome method and made calculation extremely difficult. The Europeans, however, regarded the Roman numerals as holy—a gift from the gods. As a result, they failed to revise their thinking in this matter. Regarding non-holy numerals as sacred was why they failed to progress in science and mathematics for several hundred years. Finally, the Islamic revolution dispelled the aura of sanctity surrounding the numeral and ushered in the era of scientific progress in Europe for the first time.

Leonardo of Pisa was the most distinguished mathematician of the Middle Ages. He helped introduce into mathematics the Hindu-Arabic numerals and the number sequence that bears his name.

Leonardo's life is little known beyond the facts in his mathematical writings. He was probably born in Pisa, Italy. During Leonardo's boyhood, his father, Guglielmo, a Pisan merchant, was appointed consul, or chief magistrate, over the community of Pisan merchants in the North African Port of Bugia (now Bejara, Algeria). Leonardo soon joined him. With a view to future usefulness, the father sent his son to study calculation with an Arab master. Leonardo later described his enjoyment in learning the art of the nine Indian figures. Leonardo also travelled to Egypt, Syria, Greece, and Sicily, studying different numerical systems and calculation methods but never finding one as satisfactory as the Arabic numerals.

When Leonardo's *Liber abaci* first appeared, Arabic numerals were known to only a few European intellectuals through translation of the writings of the ninth-century Arab mathematician and astronomer Al-Khwarizmi. Leonardo explained the notation by observing: "The nine Arabic figures are: 9 8 7 6 5 4 3 2 1. With these nine figures and with the sign 0, any number may be written, as is demonstrated below." The first seven chapters dealt with the notation, explaining the principle of place value, by which the position of a figure determines whether it is a unit, ten, hundred and so forth, and demonstrating the use of the numerals in arithmetical operations. The techniques were then applied to such practical commercial problems as profit margin, barter, money changing, conversion of weights, partnerships, and interest.

The *Liber abaci*, widely copied and imitated, drew the attention of the Holy Roman Emperor, Frederick II, a patron of science. Then, in the year 1220, Leonardo was invited to appear before the Emperor at Pisa, and there he propounded a series of problems, three of which Leonardo presented in his books. The first two belonged to a favourite Arabic type.

Wilfrid Blunt writes:

And supposing the tide of Islam had not been stemmed? Nothing so delayed the advance of science in the West as the clumsiness of the Roman numerals. Had the Arabic numerals, which had reached Baghdad from India towards the end of the eighth century, been soon afterwards introduced into and adopted by Western Europe, much of that scientific progress we associate with the Renaissance in Italy might have been achieved several centuries earlier.⁶⁵

AN EXPLANATION

For those who are interested in how the concept of zero originated in India, the Children's Book Trust, New Delhi, has published a 22-page booklet in English entitled, 'The Story of Zero,' which has been written for the general reader as well as for children by Dilip M. Salwai.

Before this invention, there existed no simple method of representing large figures. According to one method,

certain words were fixed for figures like Sahasara for 1,000, Aayota for 10,000, Laksha for 100,000, and Koti for 1,000,000. The invention of the zero revolutionized the science of mathematics; for now, it has become extremely easy to denote large figures.

Brahma Gupta (598-660), born in Multan, was the first notable person to work out a method of using the zero. However, his method had some shortcomings. Later, Bhaskar (1114-1185), born in Bijapur, wrote a book in Sanskrit called *Lailawati*, describing the zero concepts in simpler and more understandable terms.

R. K. Murthi, in his review of this book, writes: "It boosts our sense of national pride to note that the zero was conceived of in India."⁶⁶

The writer of *Story of Zero* tells us that "the Indian numbers first entered Spain, then Italy, France, England and Germany ... Indian numbers were adopted completely... Their adoption turned out to be the turning point in the history of mathematics and science."⁶⁷

It is true that the concept of zero indeed originated in India, but it is not true that it reached the western world directly from India: it was through the Arabs that it reached the West. That is why the West calls these numerals Arabic rather than Indian. *The Encyclopaedia Britannica* says:

Arabic numerals—the numbers 0 and 1,2,3,4,5,6,7,8,9 they may have originated in India but were introduced to the western world from Arabia.⁶⁸

The *Encyclopaedia Britannica* tells us, moreover, that these numbers became known to western intellectuals in the ninth century through the writings of the Arab mathematician, Al-Khwarizmi, whose explanations of numbers in Arabic reached Europe through Latin translations.⁶⁹

Bertrand Russell writes:

About 830, Muhammad ibn Musa al-Khwarizmi, a translator of mathematical and astronomical books from Sanskrit, published a book translated into Latin in the twelfth century under the title *Algorimi de numero Indrum*. From this book, the west first learnt of what we call 'Arabic' numerals, which ought to be called 'Indian.' The same author wrote a book on algebra, which was used in the West as a textbook until the sixteenth century.⁷⁰

In spite of the concept of zero having originated in India for several hundred years it received no recognition in India itself. It became generally known in India only when first the Arabs and then the West adopted it. *The Encyclopaedia Britannica* says: "The invention, probably by the Hindus, of the digit zero, has been described as one of the greatest importance in the history of mathematics. Hindu literature gives evidence that the zero may have been known before the birth of Christ, but no inscription has been found with such a symbol before the ninth century."⁷¹

It is true, then, that the concept of zero had first formed in the mind of an Indian. But at that period, India was

dominated wholly by polytheism and superstition. Everything was shrouded in mystery, and inventions were abhorred. That was why the concept of zero did not receive general recognition in ancient India. Instead, it was reduced to a mere discovery of an individual and thus failed to win public approval. The seed of India, neglected at home, did, however, fall on fertile soil in Muslim Baghdad, where it flowered into a tree and then, via Muslim Spain, spread all over Europe.

Yet, without Islam first putting an end to the concepts of polytheism and superstition, the concept of zero—like so many other innovative ideas—could not have been universally welcomed.

AGRICULTURE

The river was one of those phenomena of nature held to possess divine attributes. People believed that therein dwelt a mysterious spirit, which caused the water to move, and made it useful or harmful.⁷²

The river Skamandros in ancient Greece was so personified, according to Aeshines, a fourth century B.C. Greek orator. Girls bathed in it before marrying and said: “Skamandros, accept my virginity.” Magical rites in which water serves as a substitute for semen or the fertility of men are numerous.⁷³

Because rivers were held sacred in ancient times (even to this day, some are still held sacred), people began to

worship and offer up sacrifices to them. This concept of holiness hindered man in his conquest of nature. People saw rivers in the form of deities rather than in the form of physical objects to be exploited by common methods. That is why the use of river water in agriculture remained limited in antiquity. Astonishingly, the history of irrigation had its beginnings in relatively modern times.

With the onset of the Islamic revolution based on monotheism, it was revealed to man that the river was a creature and not a Creator; it was a servant and not the Lord. Only then was it possible for man to consider finding ways and means to exploit rivers on a large scale. That is why we come across the fact in history books that there is no precedent in any nation to the large-scale irrigation system developed by the Spanish Muslims.

The Spanish Muslims developed agriculture to such an extent that it became a regular science. They studied trees and researched the properties of soil. As a result, vast expanses of land, which had hitherto been infertile, were converted into orchards and lush green fields. It was a virtual green revolution.

Philip K. Hitti writes:

They dug canals, cultivated grapes and introduced, among other plants and fruits, rice, apricots, peaches, pomegranates, oranges, sugarcane, cotton and saffron. The south-eastern plains of the peninsula, especially favoured by climate and soil, developed

important centres of rural and urban activity. Here wheat, other grains, olives, and sundry fruits were raised by a peasantry who worked the soil on shares with the owners.

The agricultural development was one of the glories of Moslem Spain and one of the Arabs' lasting gifts to the land, for Spanish gardens have preserved to this day a "Moorish" imprint. One of the best-known gardens is the Generalife (from *Al-Janat al-Arif*, the inspector's paradise), a Nasrid monument of the late thirteenth century whose villa was one of the outlying buildings of the Alhambra. This garden, proverbial for its ample shade, falling waters and soft breeze, was terraced in the form of an amphitheatre and irrigated by streams which, after forming numerous cascades, lost themselves among the flowers, shrubs, and trees represented today by a few gigantic cypresses and myrtles.⁷⁴

Charles Sinobose, a French author, writes that the Spanish Arabs adopted the irrigation method by canals. They also dug large wells. Those who discovered new sources of water were given sizeable rewards. In Spain, they dug broad canals and subdivided them, resulting in the arid plain of Valencia turning into a vast tract of lush green. In addition, they established a permanent irrigation department, which supplied all kinds of relevant information.

Describing Muslim Spain, Bertrand Russell writes:

One of the best features of the Arab economy was agriculture, particularly the skilful use of irrigation,

which they learnt from living where water is scarce. To this day, Spanish agriculture profits from Arab irrigation works.⁷⁵

It is a fact that the Muslims who went to Spain brought about a veritable green revolution. There they established such irrigation systems for fields and orchards as were unprecedented in history. However, strangely enough, Bertrand Russell attributes this to their having lived in the past in desert areas, where water is scarce. This explanation is meaningless. The actual underlying cause of this feat is the monotheistic revolution, which overhauled the minds of Arabs. Before this, people had seen rivers, springs, and the sea in the form of gods. They held them to be objects of reverence rather than conquest. The Arabs, with their changed mind, saw these phenomena of nature in the form of God's creations. They saw them with the eye to conquering them for exploitation. This mental revolution enabled the Arabs to perform their historic feats in irrigation and agriculture.

How can we learn irrigation methods in the desert where water is scarce? Ignorant of the true source of this Arab skill, Bertrand Russell linked it, quite irrelevantly, to their life in the desert, sans water, instead of to their mental revolution, which had come about thanks to monotheism. The science of irrigation was developed not because of their desert life but because of their monotheistic thinking.

HISTORIOGRAPHY

The starting point in Arnold Toynbee's philosophy of history was his contention that the proper unit of historical study must be a civilization rather than the traditional unit, the nation-state.⁷⁶

Both these concepts, however, hinge on the same principle: that history should not focus solely on royal actions and prerogatives throughout the ages but should be a study of the sum of all activities of all groups of human beings, whatever the framework, political or civilizational, within which they interact. In the long history of mankind, this approach, developed only during the last few centuries, is relatively new. History, or historiography, is now equated with the 'man-story' as opposed to the 'King-story' of the pre-modern era. 'King-story,' made up of elaborate descriptions of kings, along with copious details of the palaces they occupied and the generals they commanded, had made no mention of the common man, even if his achievements were marked by greatness. The only man considered worthy of mention was the one whose head was adorned by a crown. Ancient history thus amounted to a belittling of humanity in general.

While real events relating to non-kings were regarded as undeserving of any mention, even legendary tales and concocted stories about the kings were preserved in writing as if they were great realities. Take, for instance, the building of Alexandria, the renowned coastal city

named after its founder, Alexander the Great. Many strange stories are associated with the foundation of this city. One of them concerns sea genies who were said to have put obstacles in the path of the building when the work was first started. As the story goes, Alexander decided to see what the genies were about. He gave orders for a large box of wood and glass to be made, and when it was ready, he had himself lowered in it to the bottom of the sea. There he drew pictures of the genies, and then back on land, he had metal statues cast to look precisely like the dragons. These statues were then laid under the foundations of Alexandria. When the sea genies came there and saw that genies like themselves had been killed and buried in the foundations, they became frightened and ran away. The fact that this tale gained currency shows the credulous state in which the whole world lived before the advent of Islam.

In old historical records, the most striking omissions are the lives and influence of the world's great prophets. Today people would find it very strange if a history of India's freedom struggle laid no stress on the role of Gandhiji or if a history of the erstwhile U.S.S.R. omitted Lenin altogether. But a far strange history is one bereft of all mention of those pious souls who were the messengers of God. The sole exception to this rule of omission is the Final Prophet, Prophet Muhammad. The reason for his prominent inclusion in historical records is that, by setting in motion the Islamic revolution, he was able to change precisely those factors—

the undemocratic, polytheistic and superstitious nature of society—which in the past had been responsible for such an astonishing lacunae in the writing of human history. There can be no doubt that it was the Islamic revolution which made it possible for historiography to proceed on scientific lines.

In known human history, Ibn Khaldun (1332-1406) is the only historian to have changed the pattern of historiography. He raised historiography from the level of mere King-story to the level of genuine man-story. “Kingology” was altered into sociology. The truth is that the science known today as sociology is the gift of Ibn Khaldun. He himself claimed that he was the founder of sociology, and there is no reason to dispute his claim.

Robert Flint acknowledged Ibn Khaldun’s greatness in a similar vein: “As a theorist on history, he had no equal in any age or country until Vico appeared, more than three hundred years later; Plato, Aristotle and Augustine were not his peers.”⁷⁷

It was indeed Ibn Khaldun who gave to Europe the modern science of history. And it was Islam who bestowed this gift upon him. The Islamic revolution produced Ibn Khaldun, and Ibn Khaldun produced the contemporary science of history.

Professor Philip K. Hitti writes:

The fame of Ibn-Khaldun rests on his *Muqaddama* (Introduction to his book on history). In it, he presented for the first time a theory of historical

development which takes due cognizance of the physical facts of climate and geography and the moral and spiritual forces at work. As one who endeavoured to formulate laws of national progress and decay, Ibn Khaldun may be considered the discoverer—as he claimed—of the true scope and nature of history, or at least the real founder of the science of sociology. No Arab writer, indeed no European, had ever taken a view of history at once so comprehensive and philosophic. By the consensus of critical opinion, Ibn-Khaldun was the greatest historical philosopher Islam produced and one of the greatest of all time.

In Book I of the *Muqaddamah*, Ibn Khaldun sketches general sociology; in Books II and III, a sociology of politics; in Book IV, a sociology of urban life; in Book V, a sociology of economics; and in Book VI, a sociology of knowledge. The work is studded with brilliant observations on historiography, economics, politics, and education. It is held together by his central concept of *asabiyah* or social cohesion. Thus he laid the foundation of a science of history which is not based just on the description of kings but is, in a vaster sense, based on the economics, politics, education, religion, ethics, and culture of the nation.⁷⁸

Historians had generally acknowledged that the science of history remained undeveloped before Ibn Khaldun's emergence and that he was the first person to develop a philosophy of history. *The Encyclopaedia Britannica* even goes so far as to say that "he developed one of the world's most significant philosophies of history."⁷⁹

The question arises as to how it became possible for Ibn Khaldun to discover something which had remained undiscovered for centuries. The answer is that other historians were born before the Islamic revolution, while Ibn Khaldun was born after it. Based on monotheism, Islam had brought about a revolution, eliminating the difference between King and the commoner. All human beings, the offspring of Adam and Eve, were held to be equal. It was, uniquely, this great revolution of equality that paved the way for an Ibn Khaldun—himself a product of this revolution—to lay the foundation of modern history in which the central position was held not by ‘royal figures’ but by humanity itself.

Polytheism was one belief that hampered the development of the science or art of history. The whole period before Islam was pervaded by polytheistic beliefs, which supported divine kingship. “The King has often stood as a mediator between his people and their god, or as the god’s representative.”⁸⁰ Some kings pretended to be incarnations of God, or even gods themselves, without feeling the need to rationalize their claims. They did so in order that by the ‘divine right of kings,’ their absolute sovereignty should never be questioned. Even when monarchs made no such claims, they were credited with divinity because it was universally associated with kings. Whenever ordinary people came upon anything that was out of the ordinary, they regarded it as supernatural, and if it was a person, they

took him to be a god or a manifestation of a god. Naturally, this mentality was not discouraged by the kings.

The ancient rulers, on the contrary, encouraged such superstitious notions so that people would continue to regard them as superior beings. In known history, the Prophet Muhammad, may peace be upon him, was the first ruler who refuted such superstitious beliefs, showing them to be without foundation. In this way, he led humanity along the path of enlightenment, eliminating the differences between men on an intellectual plane. He held as baseless all those suppositions and superstitions responsible for creating and perpetuating the slave-master mentality.

Towards the end of the Prophet Muhammad's life, Maria Qibtiya bore him a beautiful and vivacious son in Medina. The Prophet named him Ibrahim, after the Prophet Abraham. Ibrahim was just one and a half years old when, in the tenth year of Hijrah (January 632 A.D.), he died. It so happened that the death of Ibrahim coincided with a solar eclipse. From ancient times, one of the many prevailing superstitions was that the death of some king or other important personage caused solar and lunar eclipses. They were meant to show, they thought, that the heavens mourned the death of the exalted in station. At that time, the Prophet Muhammad was the ruler of Arabia; for this reason, certain of the Medinans began attributing the eclipse to the death of the Prophet's son. As soon as the Prophet heard of this, he refuted it. There are several

accounts of this incident in the books of Hadith. One of these was recorded as follows:

One day the Prophet came in great haste to the mosque. At that time, the sun was in an eclipse. The Prophet began to say his prayers, and by the time he had finished, the eclipse was over. Then, addressing the congregation, he said that people imagined that the sun and moon went into eclipse at the death of some important person, but that this was not true. The eclipses of the sun and moon were not due to the death of any human being. The sun and the moon were just two of God's creations, with which He did as He willed. He told them they should pray to God when they see an eclipse.⁸¹

When the whole of Arabia had come under the domination of Islam, the Prophet made a farewell Hajj pilgrimage in his last days, along with 1,25,000 Companions. During this pilgrimage, he delivered his historic sermon on the plain of 'Arafat, known as *Khutba Hajjatul Wida*, the address of the farewell pilgrimage.

This sermon was a declaration of human rights: "Hear, O people. All human beings are born of a man and a woman. All the apparent differences are only for the sake of introduction and identification. The most worthy before God is the one who is the most God-fearing. No Arab has any superiority over a non-Arab and vice versa. No black has any superiority over white and vice versa. *Taqwa* (piety) is the only thing determining one's superiority over

others.”⁸² The Prophet added, “My steps have trampled down all things of the period of ignorance before Islam.”⁸³ For the first time in ancient history, all sorts of inequality and discrimination were almost entirely eliminated.

Only then did a new civilization come into being in which all human beings were equal. Speaking of the successors of the Prophet, Abu Bakr and ‘Umar, Mahatma Gandhi noted, “though they were masters of a vast empire, they lived the life of paupers.”⁸⁴

This revolution was so powerful that even at a later period, when the rot had set in in the institutions of governments and the Caliphs had been replaced by “emperors,” the pressure of Islamic civilization was so great that none of these “emperors” could live in the style of the ancient monarchs. In Islamic history, there are many such instances. The following incident, which took place during the reign of Sultan Abdur Rahman II (A.D. 792-852), a powerful ruler of Muslim Spain, is an apt illustration.

This Sultan had a palace built for himself called *az-Zahra*, to the east of Cordova, which was of such immensity that the word palace was not adequate to describe it. This magnificent residence came to be known as *al-Madinah az Zahirah* (the brilliant town). But, despite being so powerful and living in such magnificence, the Sultan did not regard himself as being above the law.

It happened once that he missed one fast in the month

of Ramazan without having any excuse, which would be acceptable in terms of the *shariah*. He, therefore, assembled the ‘*ulama* (religious scholars) of Cordova and told them of his lapse. Then, he asked them to pronounce a religious verdict, enabling him to atone for it.

Al-Maqqari writes that one of the religious scholars present was Imam Yahya, who promptly decreed that the King should observe 60 continuous fasts in expiation. On leaving the palace, he was asked by one of the ‘Ulama why he had insisted on such a severe form of punishment when the *shariah* offered the alternative of feeding 60 poor people in atonement for one missed fast. Why had he not instructed the King to feed 60 poor people instead of requiring him to fast himself?

Angered by this question, Imam Yahya replied, “For a king to feed 60 poor people is no punishment.” As we learn from the annals of Andalusian history, Sultan Abdur Rahman II did accept the *fatwa* (verdict) of Imam Yahya, and did observe 60 continuous fasts. He showed no reaction whatsoever. He did not even dismiss Imam Yahya from his office.⁸⁵

This can be explained in terms of the impact of the Islamic revolution, which ended the difference between a subject and a ruler. It created such an atmosphere of human equality that no one could regard himself as superior to others. Not even a king dared to set himself apart from the commoners or to flout the law.

Before the Islamic revolution, it was accepted that the king was superior to the common man. For instance, the Byzantine emperor, Heraclius, a contemporary of the Prophet Muhammad, despite being a Christian, “had married his niece, Martina,—thus offending the religious scruples of many of his subjects, who viewed his second marriage as incestuous.”⁸⁶

It was known to the people that this marriage was illegal, yet there was no public outcry. This was because Heraclius was a king and above any judgement by human standards. As a king, he had the right to do as he pleased.

In ancient times, this extraordinary concept of the greatness of kings was so firmly implanted as a matter of superstitious belief that ordinary citizens had begun to consider their monarchs to be innately superior creatures. The observance of special rites and rituals by kings was aimed at reinforcing this way of thinking. The kings had thus, in their respective empires, achieved temporal greatness, which was parallel with God’s prerogative in the vastness of His universe. It was but natural that historiography should come under the influence of this concept of the ‘divine right of the kings’ so that, in practice, it became a chronicle of the lives of royal families with scant reference to the common man.

With the onset of the Islamic revolution in Arabia and neighbouring countries, objects of nature like the sun and moon were dislodged from their divine pedestals. In like manner, kings were removed from the seat of

extraordinary greatness. Now a king was just a human being like any other.

The influence of the Islamic revolution, which ultimately reached Asia, Africa and many European countries, paved the way for a new atmosphere on a universal scale. With the new way of thinking, the old king-centred mentality gave way to a man-centred ethos. As a result, prominent expression was given to a new approach to historiography in the writings of Abdur Rahman Ibn Khaldun, who, in the foreword to his *Kitab al-Ibar*, propounded his theory of how history should be written. This foreword, or *Muqaddamah*, is considered so important that it has been published many times in several languages.

The most eminent of the Mamluk historians was al-Maqrizi, a disciple of Ibn Khaldun. It was through him in the fifteenth century that Ibn Khaldun's theories were introduced to Egypt. Later, other Muslim countries came under their influence. Between 1860 and 1870, a complete rendering of the *Muqaddamah* was published in French, thus introducing his historical theories into Europe. These thoughts took root in Europe's soil, gaining tremendous popularity. Vico and other western historians developed this art, finally giving rise to the modern form of historiography.

CHAPTER 4

LIBERTY, EQUALITY, FRATERNITY

One of the most cherished dreams of philosophers and thinkers has always been the brotherhood of equality. The Prophet of Islam, however, was the first person to bring about a revolution, which, for the first time in history, actually established equality in practice. Serious scholars have generally acknowledged this. For instance, in his letter No. 175, Swami Vivekanand wrote that in his experience, “if ever any religion approached to this equality in an appreciable manner, it is Islam and Islam alone.”⁸⁷

If, throughout history, equality in practice had been the exception to the rule, it was because of the general acceptance of polytheism, which had proved a stumbling block to many other kinds of progress throughout the ages. Whereas the domination of polytheism had perpetuated inequality among human beings, the dominance of monotheism now established human equality.

The truth is that, in temperament and physique, human beings display many differences, whether inherited or acquired. For instance, one is black, another white, one is rich, another poor, one rules, and another is ruled.

According to the Quran, these differences exist as a matter of identification (49:13) and for the sake of differentiating one from another and not for discrimination. One might say that these differences are a matter of classification so that the world may be adequately organised. This does not mean then that some are of high while others are of low status. On the contrary, these differences only facilitate structuring the activities of a world that exhibits such incredible diversity.

Just as man had formed unrealistic concepts regarding physical phenomena under the influence of superstitions born of polytheistic beliefs, similarly, unrealistic notions about human beings also gained universal currency. Over the centuries, these concepts came to form part of the traditions of the peoples of the world. For instance, this concept of inequality led to the formation of the caste system in certain societies. As such, people were divided into high and low castes. Similarly, the concept was formed of the kings being the offspring of the gods, with the common people there only to serve them. In many societies, the concept was developed of some being superior and others being inferior by birth or race.

Discriminatory practices based on the concept of inequality had become prevalent under the influence of polytheism and, over the centuries, had become a permanent feature of human history. It even came to be believed that just as the night is destined to be dark and the day to be bright,

similarly, the division of human beings on the bases mentioned above could never be brought to an end. It had existed and always would exist eternally that being the will of the gods.

The domination of polytheism and superstition had to be overcome to usher in the age of equality. But even with the advent of thousands of prophets, it could not be brought into existence. Therefore, for the Prophet Muhammad, being the last of the prophets, it became imperative to terminate, once and for all, the domination of superstitious beliefs. In theory, each of the prophets, in turn, had demolished such views, but, in practice, people's interests had kept them alive so that superstition had not been overthrown. Therefore, God had to send His special succour to the Prophet Muhammad, who, along with his Companions, brought about the intellectual revolution that universally uprooted such dogmas. It was at that stage that the concept of inequality was rooted out forever.

In the address the Prophet made on the occasion of his last pilgrimage, he had this to say on the subject of ending polytheistic beliefs:

No Arab has superiority over a non-Arab, and no non-Arab has superiority over an Arab. No black man has superiority over a red and no red over a black. All are born of Adam, and Adam was born of the earth.⁸⁸

This declaration made by the Prophet was not just a sermon, unenforced by authority. It had the force of an official decree issued by the government of that time. It was not just a verbal injunction about 'what should be done' but was actual information about an already existing state of affairs. Its promulgation was meant to alert the ignorant and reinforce a social condition. All the artificial walls dividing humanity had crumbled. A new age had been ushered in in which there was no high or low status and no discrimination. It was an age in which one's status in society would be determined by character and deeds, not by accidents of birth or membership of a particular race.

A HAPPENING

In former times, when a man was discriminated against in society, he could not raise his voice, as he believed it was the result of his fate. He thought himself fated from birth to have that treatment meted out to him. But during the rule of 'Umar ibn al-Khattab (the second Caliph of Islam), an incident showed how the times had changed. The Muslims conquered Egypt during that period, and 'Amr Ibn al-'As was appointed its governor. One day a young Egyptian, a Copt, came before the Caliph with the complaint that the son of the Muslim governor had given him a whipping, all the while saying, "Take that! I am the son of a nobleman!" The only reason for this shameless conduct on his part was that the young Copt's horse had

beaten his horse in a race. Knowing of the egalitarianism brought about by the Islamic revolution, the boy had come to the Caliph to seek justice.

The Caliph immediately sent a special emissary to Egypt to bring Amr ibn al-‘As and his son without delay to Medina, the capital. When they arrived, they were both brought before the Caliph. Then the latter sent for the young Copt and asked him if this was the man who had beaten him. When the Copt replied in the affirmative, the Caliph handed him a whip and asked him to flog this ‘son of a nobleman.’ The Copt did so and flogged him till he felt that justice had been done. Then the Caliph asked him also to flog ‘Amr ibn al-‘As, the father of the young wrongdoer, as it had been his high status—as ‘Umar explained—which had encouraged the son to take his whip to him. But then the Copt said, “No, I have whipped the person who whipped me, and I wish no more than that.”

Then the Caliph, addressing the governor, said, “O ‘Amr, since when have you enslaved people who were born free?”⁸⁹

The revolution brought about by the Prophet Muhammad and his Companions caused the barriers of discrimination to be swept away worldwide. It saw the birth of a new age of human equality, which ultimately developed into modern democracy.

The States of former times were founded upon polytheistic beliefs. The people worshipped the sun and the moon, and

the rulers convinced the people that they were the offspring of these gods. People called the *Suraj Bansi* (the sun's offspring) and the *Chandra Bansi* (the moon's offspring) still survive in India. The rulers naturally wanted the people to continue to adhere to such superstitious beliefs, even to the point of believing that the sun and moon went into eclipse when the king died; for so long as they firmly cherished such thoughts, the kings could rule over them untrammelled by any fear of an uprising.

In this way, the rulers of antiquity had become staunch patrons of polytheism and superstition. When the Prophet, with his authority as ruler, announced that eclipses of the sun and the moon were purely physical happenings and were indeed not expressions of the greatness of particular human beings, this age-old reverence for natural objects and superstitious beliefs very soon disappeared. A new age commenced in which attributing divine qualities to mere things existing in the world around us gave way to realistic or scientific thinking in modern parlance.

But, this is not all that humanity had bestowed upon it by the Prophet Muhammad. In addition to this, there was the divine book, which emphasized the fact that all the things of the earth and the heavens had been subjugated, by God's Will, for the benefit of humanity (Quran, 31:20). This was what induced people to think that rather than bow before them, imagining them to be superior to man, they should harness them to meet human requirements.

THE CREATION OF THE NEW WORLD

The religion brought by the Prophet Muhammad was accepted throughout the length and breadth of Arabia. Later, it began spreading with astonishing rapidity until, within a century, it conquered Asia and Africa, finally reaching Europe. Leaving aside the continent of America, all the countries and all the seas and oceans of the world came, directly or indirectly, under the influence of the followers of this religion.

This process continued for a thousand years. From the Sukutu Caliphate of Nigeria to the Muslim Sultanates of Indonesia, and from the Ottoman empire of Turkey to the Mughal Empire of India, there existed one vast expanse of the globe where national and geographical boundaries, such as we have in modern times, were simply not known. Muslims, without any difficulty, could travel through this region for education, commerce and other purposes.

In the fourteenth century, Ibn Batuta, the well-known traveller of the Middle Ages, covered about 75 thousand miles during his journeying. He was able to go from one country to another without any feeling of being a stranger, and nowhere did he face the problem of unemployment. He came to India in the reign of Muhammad ibn Tughlaq (1325-51), where he was received with honours and gifts and later appointed Grand Qadi (Judge) of Delhi.⁹⁰

As a result of this universal revolution, all human beings could now be said to belong to one vast human brotherhood,

a concept which rapidly came to dominate thinking worldwide. It first dominated the society of Medina, then it formed its centre in Damascus, from which point it reached Baghdad. From Spain, it reached Sicily and then went to other European countries.

Although the greater part of Europe did not accept the Islamic concept of monotheism in respect of religion, however, leaving aside the religious aspect pertaining to the hereafter, the West accepted the worldly aspect of the Islamic revolution, another name of which is the Western scientific revolution. As regards the universe, they fully accepted the Islamic viewpoint, that is, the theistic concept of the universe, and they fully exploited it. The scientific and democratic process of Europe might be termed the “secular edition” of the monotheistic revolution of Islam.

The situation being such, it would be no exaggeration to say that if Islam were to be deleted from human history, all social and human progress should have to be deleted along with it. The world would then fall back into the Dark Ages, where it lay in intellectual shackles before the Islamic revolution came to bring enlightenment.

FREEDOM OF THOUGHT

In ancient times, civil liberties did not include freedom of thought. Censorship, in varying degrees of rigorousness, has been a worldwide phenomenon in all periods of history.

And whether communities have been large or small has made no difference. *The Encyclopaedia of Religion and Ethics* devotes no less than 25 pages to show, under the heading of ‘persecution’ how people worldwide have been denied this fundamental freedom at all stages of ancient history. “Ancient society was essentially intolerant” (p. 743). This meant that the common person’s thinking had to bow to the thinking of the ruling classes.

The Encyclopaedia Britannica also devoted eight pages to intellectual censorship, which was universally prevalent in antiquity. As a case in point, it cites the notorious example of how Chinese citizens were denied freedom of thought by Shin HuangTi, the Emperor who built the Great Wall of China. In the year 213, he ordered all books to be burnt, saving those dealing with harmless subjects such as medicine and agriculture. Five hundred scholars were executed, and thousands were banished. The punishment for failure to burn proscribed books within 30 days was branding and condemnation to forced labour.⁹¹

Other peoples who suffered similar oppression were the Spartans and the early Romans, Jews and Christians. According to Plutarch, in *The Ancient Customs of the Spartans*, the Spartans learned to read and write for purely practical reasons, and all other educational influences—books and treatises as well as meetings with learned men—were banned. The arts and philosophy flourished in democratic Athens, but many artists and philosophers, among them

Aeschylus, Euripides, Phidias, Socrates, and Aristotle, were exiled, imprisoned, executed, or took flight.⁹²

The office of Censor was established in Rome in 443 B.C. Criticism of the Roman authorities was akin to treason. The article says, "Treason included allusion, statement, and criticism. Philosophers and rhetoricians were twice banished by law, and edicts of the censors curtailed the political rights of actors. Many prominent citizens were persecuted for critical comments on the ruling class."⁹³

For almost three centuries after Christ, the Jews and Christians remained hostile to one another only because of differences in their religious beliefs. First, the Jews persecuted the Christians. When Christianity became the empire's religion in the fourth century, Christian officials persecuted the Jews.⁹⁴

One reason for the constraint on freedom of thought in the past was that an atmosphere of intellectual freedom would have jeopardized the whole social hierarchy, based as it was on religions which had been tainted by human interpolations. On the other hand, had free enquiry been fostered, the rulers would have been unable to maintain the veracity of such man-made beliefs as served their purpose. Consequently, those who attempted free and scientific enquiry in Europe's sixteenth and seventeenth centuries were subjected by the Church to severe persecution. It was fear on the part of the religious authorities of being overthrown, which led to the persecution of these would-

be scientists. Drapier has given details of these persecutions in his book entitled *Conflict between Science and Religion*. A more precise title would have been, 'Conflict between Science and Christianity.'

HUMAN INEQUALITY

Thinking, in ancient times, was heavily blinkered by polytheism. This was because it suited the rulers to have their subjects believe that the beings who occupied the thrones of this world were, in essence, different from ordinary human beings; that, in fact, the kings possessed divine attributes. In that way, the common people remained their subjects, while they themselves enjoyed the status of not just great lords, but of divinities.

Such polytheistic or superstitious beliefs had barred the way to freedom of thought. It was taken for granted that the king's judgement was the only possible judgement and that it must, therefore, be right. No one was privileged to form independent opinions, and if others were allowed to speak, it was only to corroborate the royal views. Such restrictive practices based on erroneous beliefs were responsible for stifling freedom of thought in ancient times.

With the advent of Islam in the seventh century, however, it was declared for the benefit of humanity that all greatness was the exclusive prerogative of God and that, in the eyes of God, all human beings were equal.

The Prophet Muhammad, declared not once, but on many occasions and in different ways that all were alike, all were brothers.⁹⁵

This, in religious terminology, is known as monotheism. The Prophet not only stated the truth, but also made it a reality by bringing about a total revolution based on human equality. In the first phase of his prophethood, his advocacy of this theory was purely verbal. But on achieving political domination in Arabia, he could put this theory into practice as ruler of a state. The Prophet said: “God has removed the pride of the Days of ignorance from you and boasting about lineage. (A person is either) a pious believer or a sinner, and the people are the children of Adam, and Adam is from dust.”⁹⁶ In this way, Islam ended discrimination between human beings based on race, colour, status, etc. People were then assigned a high or low level according to their moral worth.

FREEDOM OF EXPRESSION

The revolution set in motion by Islam based on monotheism brought into existence for the first time in human history a truly egalitarian social structure. It paved the way for a society where everyone enjoyed freedom of expression with no constraints whatsoever. Nothing of this nature had ever hitherto been experienced. Let us compare this with the human condition under Chosroes I, the Persian emperor who ruled the Sassanid Empire from 531 to 579. Chosroes

I was known as one of the just rulers of Persia, but even during his reign, a courtier was once bludgeoned to death in the Court at the instance of the King simply for having dared to criticize the royal policy. Such a punishment was not an exception. Any criticism or difference of opinion amounted to treason. The mildest punishment for this crime was instant execution.

Not only did Islam advocate freedom of thought and speech with unmistakable earnestness, but it also wrought such social changes as emboldened the people to break with ancient practices, thus enabling them to openly express their differences with and criticism of their chiefs and rulers.

The Prophet Muhammad may have had the status of a political ruler in Arabia, but still, he lived like any other ordinary man, and everyone was free to express himself in his presence. One such instance occurred on the Badr expedition. During the journey, the Prophet decided to encamp at a particular place. At that point, a man named Al-Hubab ibn al-Mundhir approached him and asked, "Have you chosen to halt here because you were guided by divine revelation, or is this halting-place purely a matter of your own personal opinion?" The Prophet replied, "I have chosen this place myself" At this, Al-Hubab ibn al-Mundhir said, "This is no place to halt. Move from here with all your Companions." Far from rebuking the man for this audacity, the Prophet asked him why he thought they should camp elsewhere. When he had heard his reasons, he immediately

agreed with him, and he and his Companions then set off to find another halting place. The fact that neither the Prophet nor his Companions took exception to Al-Hubab ibn al-Mundhir's behaviour illustrates the degree to which egalitarianism was encouraged by Islam.⁹⁷ (Details of this incident are available in the books on *Seerah*, the Prophet Muhammad's biography.)

This revolution, imbued with the spirit of Islamic monotheism, was so powerful that its effects continued to be felt throughout Islamic history. After the Prophet, anyone, irrespective of social status, could freely criticize the Caliphs during the period of the Pious Caliphs. The history of this period abounds in such instances.

This Islamic revolution had such far-reaching effects that even in the later period of Islam, when a form of monarchy had replaced the Caliphate, and throughout the entire fourteen-hundred-year span of Islamic history, there was never again a ruler who succeeded in placing curbs on the right to freedom of expression.

SOME INSTANCES OF RELIGIOUS TOLERANCE

The Islamic revolution brought about by the Prophet and his Companions did not remain simply a matter of religion, for the followers of Islam established powerful states far beyond the boundaries of Arabia. This process continued for a thousand years and affected the whole inhabited world of

that time. But never once was there any attempt to impose censorship on human thinking throughout that period. The people enjoyed total freedom of thought in all these new Islamic states. Here we shall quote some instances from Professor Arnold's book, *The Preaching of Islam*. First, there is an excerpt from a statement made by one of the Spanish Muslims who had been driven out of his native country. Protesting against the persecution of the Inquisition, he stresses, in contrast, the toleration of his co-religionists: "Our arms, it is true, are ever open to receive all who are disposed to embrace our religion, but we are not allowed by our sacred Quran to tyrannise over consciences..."⁹⁸

Then, on the subject of the Turks' religious tolerance, Professor Arnold says: "... at least for two centuries after their conquest of Greece (the Ottoman emperors) exhibit toleration such as was at that time quite unknown in the rest of Europe."⁹⁹ Macarius, Patriarch of Antioch in the seventeenth century, prayed for the Turks when he saw the fearful atrocities that the Catholic Poles inflicted on the Russians of the Orthodox Eastern Church. These are his words: "God perpetuate the empire of the Turks forever and ever! For they take their impost and enter into no account of religion, be their subjects Christians or Nazarenes, Jews or Samaritans."¹⁰⁰

Giving many further instances of the freedom of thought and expression during the Muslim period, Arnold has written that those Roman provinces which Muslims rapidly conquered suddenly found themselves in such an

atmosphere of tolerance as had been unknown to them for centuries. Such tolerance was quite striking in the history of the seventh century.

RELIGIOUS FREEDOM

There was another incident which took place during the rule of the Abbasid Caliph, al-Mamun (813-833). When al-Mamun came to know that the enemies of Islam declared that it owed its success to the sword and not to the power of argument, he summoned a great assembly of the leaders of all the religious bodies of the period. In this meeting, the Muslim scholars defended their religion against this accusation and the unbelievers acknowledged that the Muslims had satisfactorily proved their point. Professor Arnold says: "Al-Mamun himself was very zealous in his efforts to spread the faith of Islam ... but he did not abuse his royal power by attempting to force his faith upon others."¹⁰¹

One of the eminent participants in the great inter-religious assembly held in Baghdad was Yazdanbakht, a leader of the Manichean sect who had come from Persia. He held a disputation with the Muslim theologians, in which he was utterly silenced, so impressed was he by Islam's power of the argument. The Caliph then tried to induce him to embrace Islam. But Yazdanbakht refused, saying, "Commander of the Faithful, your advice is heard, and your words have been listened to; but you are one of those who do not force

men to abandon their religion.” Far from resenting the ill-success of his efforts, the Caliph furnished him with armed bodyguards so that he might not be exposed to insult from the fanatical populace.’¹⁰²

Under Islam, there is freedom for every thought and respect for every thinking man, irrespective of the fact that his thinking may be different from ours. This is because Islam grants freedom of thought and respects the upholders of all schools of thought.

THE MODERN AGE AND ISLAM

Freedom of thought is the *summum bonum* of the modern age and is generally thought to be the result of the western scientific revolution. This is indeed its immediate cause, but the scientific revolution (as explained in previous chapters) was the result of the Islamic revolution based upon monotheism.

The French philosopher, Jean-Jacques Rousseau (1712-1778), was one of the founders of modern democracy. His book, *The Social Contract*, begins with these words: “Man was born free, but I find him in chains.” The sentiment thus expressed—this lamentation over human bondage—is not, in fact, Rousseau’s gift to humanity. Instead, it echoes a more splendid utterance of the Islamic Caliph, ‘Umar Ibn-Khattab (586-644), which he made to his governor of Egypt: “O ‘Amr, since when have you enslaved people

whose mothers gave birth to them in freedom?"¹⁰³ The occasion for this rebuke was the flogging by 'Amr's son of a young Egyptian who had beaten him in a horse race, as recounted earlier..

The revolution to bring freedom and democracy to the people, which began in Europe and later spread to the rest of the world in modern times, is the second stage of that revolutionary process set in motion in the seventh century by Islam.

THE UNIVERSAL DECLARATION OF HUMAN RIGHTS

Article 18 of the Universal Declaration of Human Rights of the United Nations reads as follows:

Everyone has the right to freedom of thought, conscience and religion; this right includes freedom to change his religion or belief and freedom, either alone or in community with others and in public or private, to manifest his religion or belief in teaching, practice, worship and observance.

The Charter, of which the above article is an extract, is not an actual achievement of the United Nations but is instead a legacy from the Islamic revolution, which was brought into existence a thousand years before the United Nations came into being.

Islam, for the first time in human history, uprooted the

system based on polytheism, which was responsible for the mentality of discrimination between man and man. This unreal division had been at the root of much of the social injustice, which had prevailed, in ancient times.

While, on the one hand, Islam changed the human mind, on the other, it brought about a practical revolution on such a vast scale that it ushered in a whole new era of human freedom and human respect. Across the centuries, this revolution went from strength to strength, ultimately bringing Europe under its benign influence. There it culminated in modern freedom and democracy, which nowadays people tend to imagine, has existed for all time. But this democratic revolution of modern Europe is the secular version of the Islamic revolution, which was given its first impetus in seventh-century Arabia by God's final Prophet.

Seen in this historical perspective, Islam, from the scientific as well as the socio-economic point of view, is the actual creator of the modern age.

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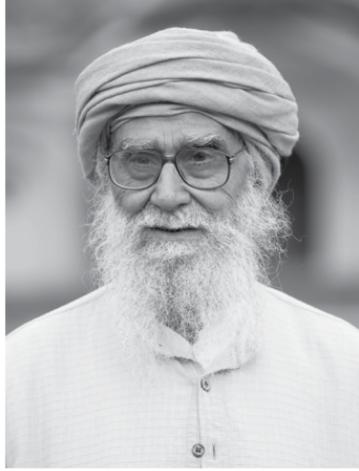
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Maulana Wahiduddin Khan (1925-2021) was an Islamic scholar, spiritual leader and peace activist. His work has received international recognition for his seminal contributions toward world peace. The Maulana authored over 200 books dealing with Islam's spiritual wisdom, the Prophet's non-violent approach, Islam's relation with modernity and other contemporary issues. His English translation of the Quran is widely appreciated as simple, clear and easily understandable. He founded Centre for Peace and Spirituality International in 2001 to popularize the culture of peace and share the spiritual message of Islam with people.

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