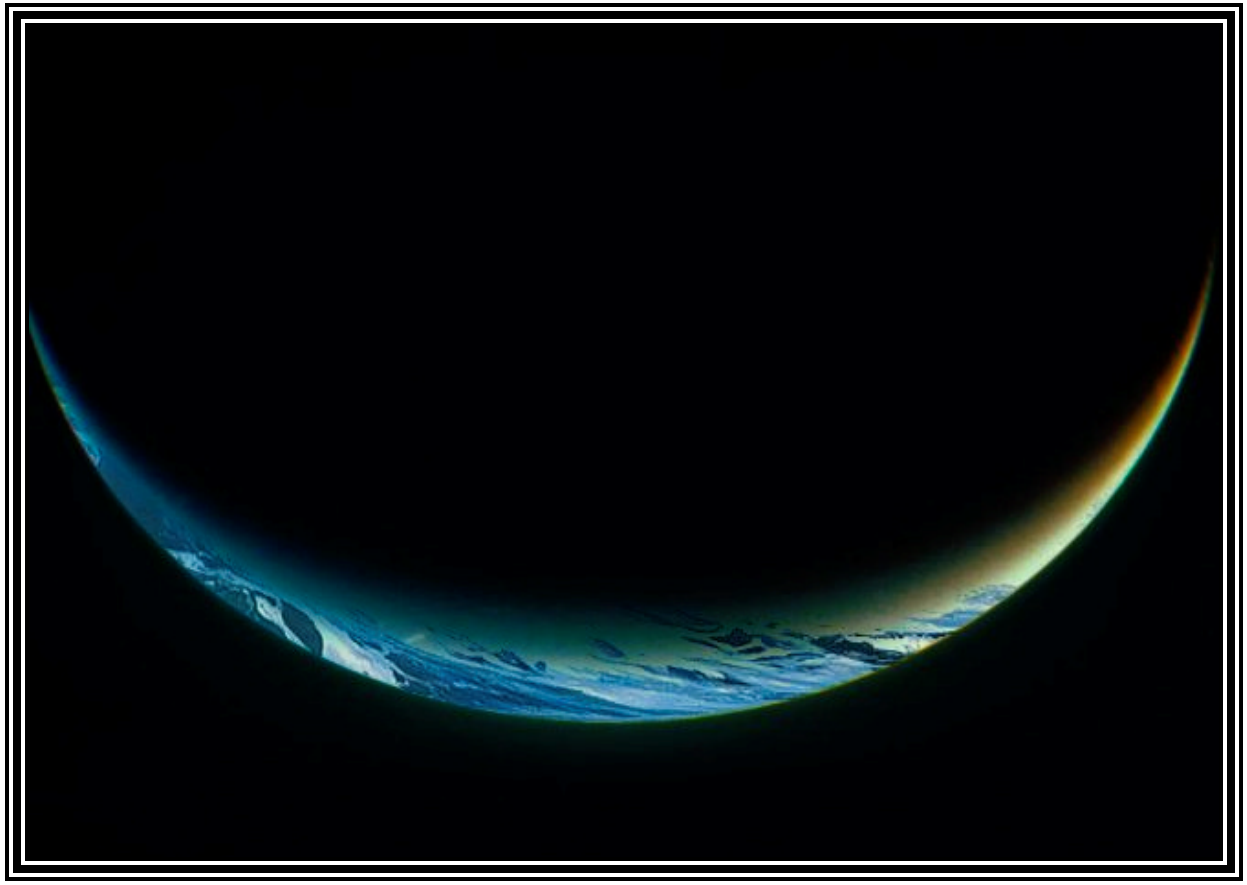
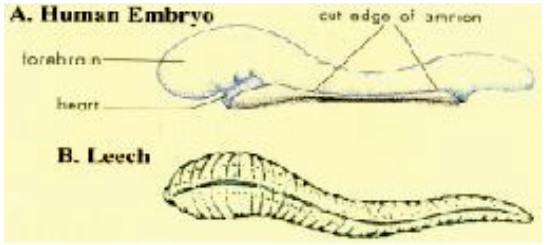
Muslims & Science

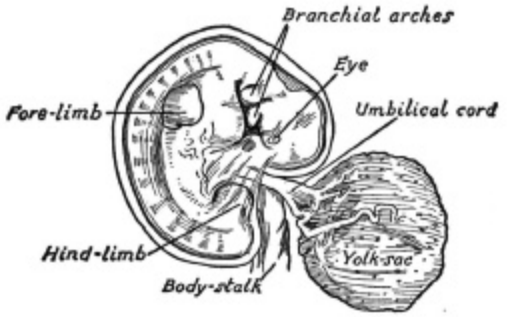
By Soumy Ana

http://www.ummah.net/islam/taqwapalace



Embryology 1





Allah ﷻ says in the Qur'aan about the stages of the creation of Man:

> Man we did create from a quintessence (of clay); Then we placed as (a drop of) sperm (nutfah) in a place firmly fixed; Then we made the sperm into a clot of congealed blood ('alaqah); Then of that clot we made a (fetus) lump (mudghah); then we made out of that lump bones and clothed the bones with flesh; then we developed out of it another creature. (Qur'aan 23:12-14).

The Arabic word **'alaqah** has three meanings. The first meaning is **"leech".** The second is **"a suspended thing".** The third meaning is **"a blood clot".**

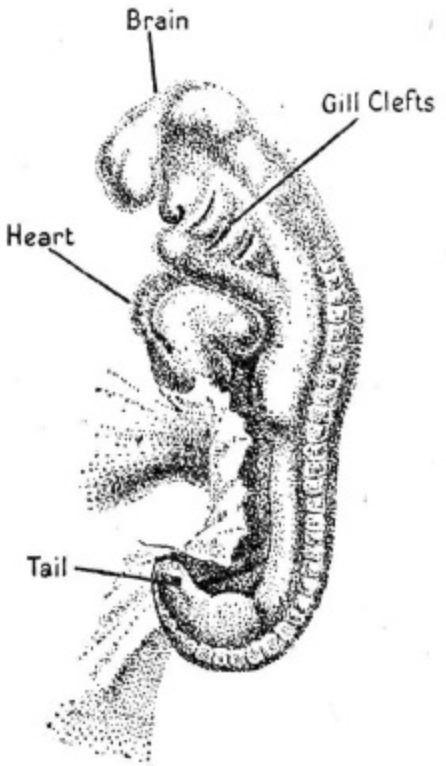
In comparing the fresh-water leech to the embryo at the **'alaqah stage**, Professor Moore found a great similarity between the two. He concluded that the embryo during the 'alaqah stage acquires an appearance very similar to that of **leech**. Professor Moore placed a picture of the embryo side by side with the picture of a leech, and he presented these pictures to scientists at several conferences; nobody could contest the evidence.

The second meaning of the word 'alaqah is "a suspended thing", and this is what we can see in the attachment of the embryo during the 'alaqah stage to the uterus (womb) of the mother. The third meaning of the word 'alaqah is "a blood clot". It is significant to note, as Professor Moore stated, that the embryo during the 'alaqah stage goes through well known internal events, such as the formation of blood in closed vessels, until the metabolic cycle is completed through placenta. During the 'alaqah stage, the blood is caught within closed vessels and that is why the embryo acquires the appearance of a blood clot, in addition to the leech-like appearance. Both descriptions are miraculously given by a single Qur'aanic word 'alaqah. How could Muhammad have possibly known that by himself?

Professor Moore also studied the embryo at the mudghah (chewed-like substance) stage. He took a piece of raw clay and chewed it in his mouth, then compared it with a picture of the embryo at the mudghah stage. Professor Moore concluded that the embryo at the mudghah stage acquires the exact appearance of a chewed-like substance.

Several Canadian periodicals published many of Professor Moore's statements. In addition, he presented three television programs, in which he highlighted the compatibility of modern science with what has been contained in the Qur'aan for one thousand and four hundred years. The book, **"The Developing Human"** written by **Professor Keith Moore** has been translated in eight languages. This book is considered a scientific reference work, and was chosen by a special committee in the United States as the best book authored by one person.

Embryology 2

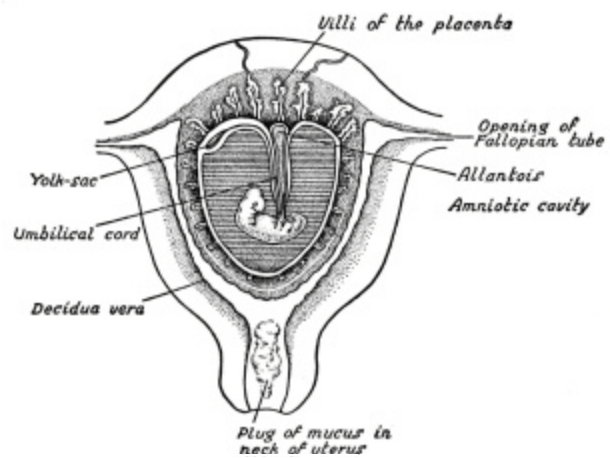


Professor Moore states in his book about the Middle ages that: "Growth of science was slow during the medieval period, and few high points of embryological investigation undertaken during this age are known to us."

It is cited in the Qur'aan, that human beings are produced from a mixture of secretions from the male and the female. Several references are made to the creation of a human being from a sperm drop, and it is also suggested that **the resulting organism settles in the woman like a seed, six days after its beginning** (the human blastocyst begins to implant about six days after fertilization.)

The Qur'aan also states that the sperm drop develops - into a clot of congealed blood - (an implanted blastocyst or spontaneously aborted conceptus would resemble a blood clot.) Reference is also made to the leech-like appearance of the embryo. The embryo is not unlike a leech, or bloodsucker, in appearance. **The embryo is also said to resemble – a chewed piece of substance - like gum or wood (somites somewhat resemble the teeth marks in a chewed substance.)"** The developing embryo was considered to be human at 40 to 42 days and no longer resemble an animal embryo at this stage (the human embryo begins to acquire human characteristics at this stage, as shown on the side pictures. The Qur'aan also states that the embryo develops with **- three veils of darkness.** This probably refers to (1) the maternal anterior abdominal wall, (2) the uterine wall, and (3) the amniochorionic membrane.

Embryology 3



In one of the conferences he attended, Professor Moore stated the following:

> "The embryo develops in the mother's womb or uterus protected by three veils, or layers, as shown in this next slide. (A) represents the **anterior abdominal wall**, (B) **the uterine wall**, and the (C) the **amniochorionic membrane**.
> Because the staging of human embryo is complex owing to the continuous process of change during development, it is proposed that a new system of classification could be developed using the terms mentioned in the Qur'aan and Sunnah. The proposed system is simple, comprehensive, and conforms with present embryological knowledge.
> The intensive studies of the Qur'aan and Ahadeeth in the last four years have revealed a system of classifying human embryos that is amazing since it was recorded in the seventh century A.D. Although Aristotle, the founder of the science of embryology, realized that chick embryos developed in stages from his studies of hens' eggs in the fourth century BC, he did not give any details about these stages.
> As far as it is known from the history of embryology, **little was known about staging and classification of human embryos until the twentieth century**. **For this reason, the descriptions of the human embryo in the Qur'aan cannot be based on scientific knowledge in the seventh century. The only reasonable conclusion is that these descriptions were revealed to Muhammad from Allah. He could not have known such details because he was an unlettered man with absolutely no scientific training.**

Embryology 4

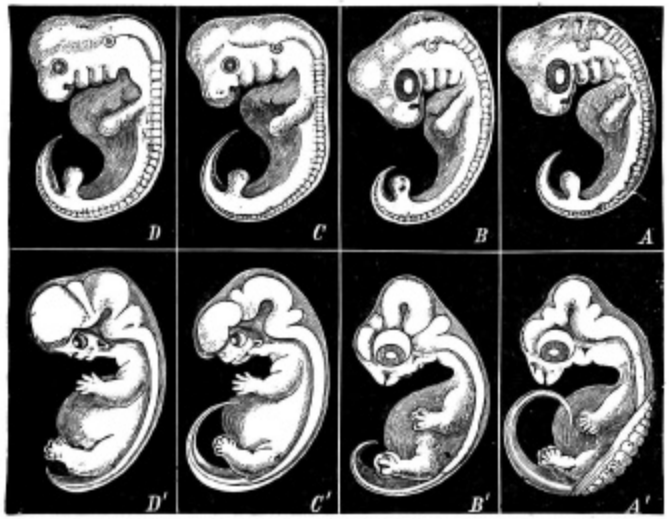
Some Aayahs (Qur'aanic verses) give a rather comprehensive description of human development from the time of the commingling of the gametes through organogenesis. No such distinct and complete record of human development such as classification, terminology, and description existed before its revelation in the 7th C. In most, if not all, instances, this description antedates by many centuries the recording of the various stages of human embryonic and fetal development recorded in the traditional scientific literature.

Some among the Christians insist that Christ must have had a father, as a virgin birth is "scientifically impossible". They argue this, and perhaps they do not know that there could be a creation without a father. The Qur'aan replied to them and has used as an example the creation of Adam. Allah said about the similitude of Jesus before Allah is as that of Adam;

"He created him from dust, then said to him: "Be": And he was. " (Qur'aan 3:59).

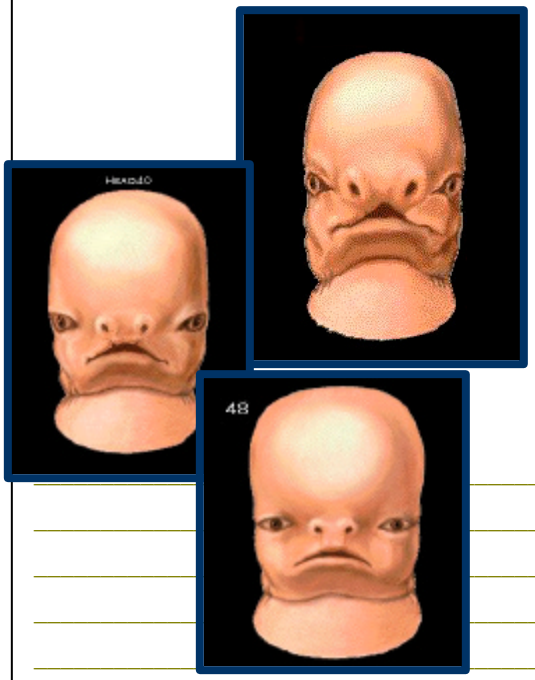
Modern science now revealed that many animals and beings in this world are born and reproduced without fertilization from the male of the species. For example, a male bee is no more than an egg which has not been fertilized by the male, whereas the egg which has been fertilized by the male functions as a female. Moreover, male bees are created from the eggs of the queen but without fertilization by a male. There are many other examples such as this in the animal world. Moreover, man today has the scientific means of stimulating the female's egg of some organisms so that this egg develops without fertilization by a male. Let us read the words of Professor Goeringer:

"In another type of approach, unfertilized eggs of many species of amphibians and lower mammals can be activated by mechanical (such as pricking with a needle), physical (such as thermal shock), or chemical means by any of a number of different chemical substances, and continue to advance to stages of development. In some species, this type of parthenogenetic development is natural."



FOETI OF DIFFERENT ANIMALS—SHOWING THE COMMON PLAN OF NATURE.
(A, A', of tortoise, at four and six weeks; B, B', of the chick, at four and eight days; C, C', of the dog, at four and six weeks; D, D', of the human being, at four and eight weeks.)

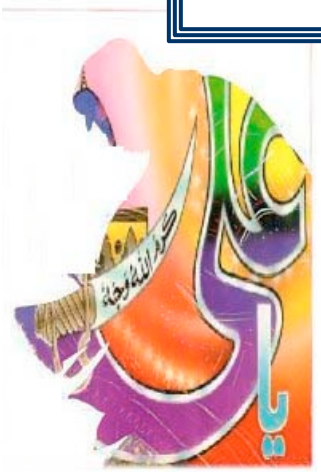
Embryology 5



When forty-two nights have passed over the conceptus, Allah sends an angel to shape it and create its hearing, vision, skin, muscles and bones. Then the angel asks: O Lord, male will it be or female? And Allah decides what He wills and the angel records it. **[Saheeh Muslim, Kitaab Al-Qadar]**

This picture (left), shows a fetus in the 35th day, which does not take a human form. And the following picture, shows the same fetus in the 42nd day. *"So far, Dr. Persaud says, we cannot discern a human shape. One week later, during the seventh week, immediately after 42 days, the picture is completely changed as we see below."* The prophetic hadeeth in this respect says:
"When forty two nights have passed over the conceptus, Allah sends an angel to shape it and create its hearing, vision, skin, muscle and bones."

Promiscuity



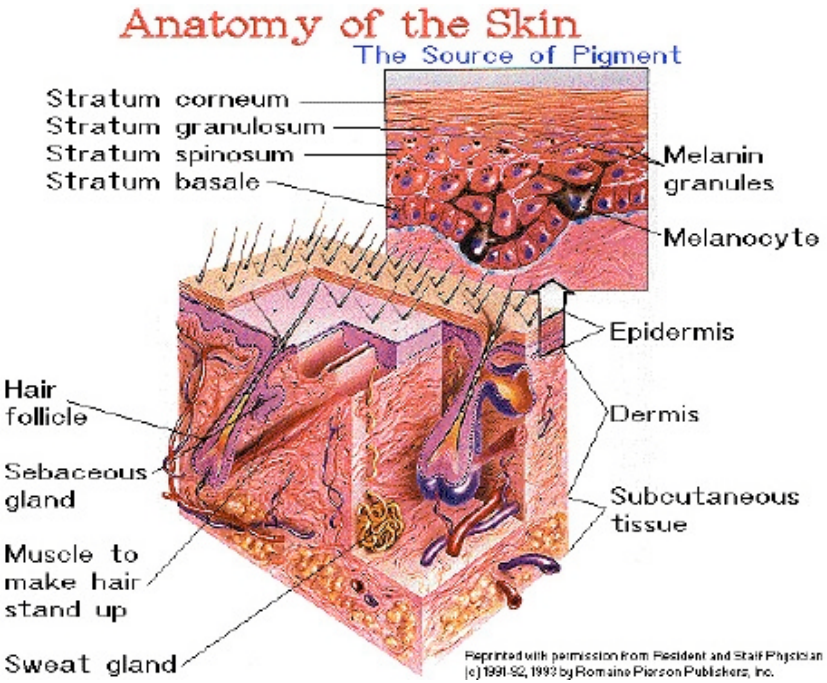
Dr. Persaud presented many researches concerning the relationship between both the Qur'aan and the Sunnah and modern science. The following is another hadeeth which Professor Persuad studied and made it the subject of one of his presentations:

If lewdness exists among people and then appears as a common and open practice, plagues and new diseases which did not exist before will spread among them. **[Ibn Maajah, Al-Hakim]**

Let us listen to Professor Persaud's explanation of this hadeeth:

"It is widely accepted that these malignant changes in the uterus cervix are related to the age of the woman, frequency of intercourse, and the number of partners. Several pidemiological studies have clearly indicated a significant correlation between exposure to multiple sexual partners and the high incidents of cervical carcinoma. The consequences and dangers of promiscuous sexual relationships and deviant sexual practices have been expressed in this Hadeeth some 1400 years ago. The word 'lewdness' encompasses adultery, fornication, I am told: homosexuality, bestiality, and all other sexual perversions, and it is not wide stretching of an imagination that we should consider Herpes and AIDS as clear examples of new diseases, and indeed at the present time new diseases for which we have no cure. It seems to me that Muhammad was a very ordinary man. He could not read or write. In fact, he was illiterate. We are talking about 1400 years ago, you have someone who was illiterate making profound pronouncements and statements which are amazingly accurate about scientific nature. I personally cannot see how this could be a mere chance, there are two many accuracies and, like Dr. Moore, I have no difficulty in my mind in conceiving that this is a divine inspiration or revelation which led him to these statements."

But Allah bears witness that what He has sent unto thee He sent with His (own) knowledge. [Qur'aan 4:66]



Those who reject our signs. We shall soon cast into the fire; as often as their skins are roasted through. We shall change them for fresh skins, that they may taste the chastisement: for Allah is Exalted in Power, Wise (Qur'aan 4:56).

The skin is the center of sensitivity to burns. Thus, if the skin is completely burnt by fire, it looses its sensitivity. It is for this reason that Allah will punish the unbelievers on the Day of Judgement by returning to them their skins time after time, as He, the Exalted and Glorified, said in the Qur'aan:

Dr. Tagasone, specialist of the skin, said about this Qur'anic verse: "Yes I agree. This knowledge about sensation had been known long before. Because it says that if somebody does something wrong, then he will be punished by burning his skin and then Allah puts a new skin in him, cover him, to make him know that the test is painful again. That means they knew many years ago that the receptor of pain sensation must be on the skin, so they put a new skin on."

Scientist Reverts to Islam

Dr. Tagata Tagasone: Laa Ilaaha Illallah Muhammad Rasool Allah!

This man is uttering the Islamic creed **(Shahaadah)** and declaring that he is becoming a Muslim. This occurred during the Eighth Saudi Medical Conference, which was convened in Riyadh. He is Professor Tagata Tagasone, formerly Head of the Department of Anatomy and Embryology at the University of Shiang Mai in Thailand. He is now the Dean of the College of the Medicine at the University.

Professor Tagasone was presented some Qur'aanic verses and Prophetic Ahadeeth which deal with his specialization in the field of anatomy. He commented that they also had in their Buddhist books very accurate descriptions of embryonic developmental stages. We told him that we were very anxious and interested to see those descriptions and learn about these books. A year later, Professor Tagasone came to King Abdul Aziz University as an outside examiner. We reminded him of the statement he made one year before, but he apologized and said that he in fact had made that statement without ascertaining the matter. However, when he checked the Buddhist books he found that they contained nothing of relevance to the subject.

Upon this we presented to him a lecture written by Professor Keith Moore about the compatibility of modern embryology with what is contained in the Qur'aan and the Sunnah and we asked Professor Tagasone if he knew of Professor Keith Moore. He replied that he knew him of course, adding that Professor Moore was one of the Most world-renowned scientists in that field.

When Professor Tagasone studied this article he also was greatly astonished, so astonished that he reverted to Islam.

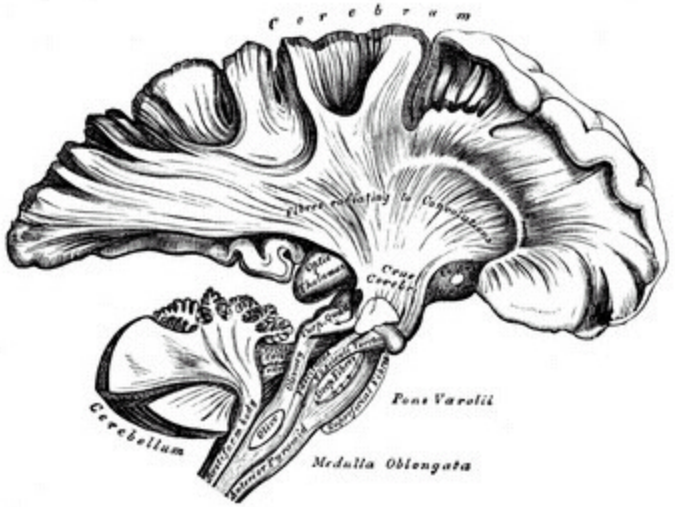
Cerebrum

Allah said in the Qur'aan about one of the evil unbelievers who forbade the Prophet Muhammad (sallallahu 'alaihi wa sallam) from praying at the Ka'abah:

> Let him beware! If he does not stop, We will take him by the naasiyah (front of the head), a lying, sinful naasiyah (front of the head)! [Qur'aan 96 :15-16]

If we look into the skull at the front of the head, we will find the prefontal area of the cerebrum. What does physiology tell us about the function of this area? A book entitled, ***Essentials of Anatomy & Physiology,*** says about this area: The motivation and the foresight to plan and initiate movements occur in the anterior portion of the frontal lobes**, the prefontal area.** This is a region of the association cortex. The book also says: In relation to its involvement in motivation, **the prefrontal area is also thought to be the functional center for aggression.**

So, **this area of the cerebrum is responsible for planning, motivating, and initiating good and sinful behavior, and is responsible for telling lies and speaking the truth.** Thus, it is proper to describe the front of the head as lying and sinful when someone lies or commits a sin, as the Qur'aan said: ...a lying, sinful naasiyyah (front of the head)!
Scientists have only discovered these functions of the prefrontal area in the last sixty years, according to Professor Keith Moore.



The mountains shatter before the words of Allah

Heavens

=

Earth

Professor Kroner chose an example from the Qur'aan which proved to him why the Qur'aan could not have come from Muhammad himself. The example, which Professor Kroner chose is a description in the Qur'aan of the fact that this universe had its beginnings in one single entity. Allah, may He be Exalted and Glorified, said:

Do not the unbelievers see that heavens and the earth were joined together [***ratqan***], before we clove them asunder? We made from water every living thing… [Qur'aan 21:30]

The meaning of ***ratqan*** in this verse, as Ibn Abbas, Mujaahid, and others said, may Allah be pleased with all of them, is that the **heavens and the earth were stuck together or blended together, and that they were later separated from each other.** Professor Kroner used this as an example to prove that no human being during the time of Prophet Muhammad (sallall'alaihi wa sallam), could have known this.

Geology

We asked professor kroner to describe the geological conditions of Arabia. 'Was Arabia full of orchards and rivers?' He said, During the Snow Age. And it is further known that the North Polar icebergs are slowly moving southwards. When those polar icebergs become relatively close to the Arabian Peninsula, the weather will change and Arabia will become one of the greenest and wettest parts of the world. We asked him: 'Will Arabia become the land of orchards and rivers?' He said: 'Yes, it is a scientific fact.' This astonished us, and we wondered how he could state this as a scientific fact while it was related to the future and we asked: 'Why?' He said: 'Because the new Snow Age has actually started. And we can see the snow scrawling once again from the North Pole southwards. In fact, the polar snow is now on the way to get closer to the Arabian Peninsula. We can see the signs of this in the snow blizzards striking the northern parts of Europe and America every winter. Scientists have other signs and information proving the actual beginning of another Snow Age. It is a scientific fact.'
So we said to him: 'What you have just mentioned has only been known to scientists after a long series of discoveries and with the help of specialized instruments. But we have already found this mentioned by the Prophet Muhammad (sallallahu 'alaihi wa sallam) 1400 years ago. He said in a Hadith transmitted by Saheeh Muslim: The last Hour will not come upon us until the lands of the Arabs are once again pasture lands and filled with rivers.'
Kroner finally affirmed:
"If you combine all these and you combine all these statements that are being made in the Qur'aan in terms that relate to the earth and the formation of the earth and science in general, you can basically say that statements made there in many ways are true. They can now be confirmed by scientific methods, and in a way you can say that the Qur'aan is a simple science text book for the simple man, and that many of the statements made in there at that time could not be proven but that modern scientific methods are now in a position to prove what Muhammad said 1400 years ago."

The lowest point on earth

Allah, may He be Exalted and Glorified, said in the Qur'aan:

Alif Laam Meem, the Romans have been defeated**, in the lowest part of the land (*adnal-ardh*),** but after defeat they will soon be victorious.

(Qur'aan 30:1-3).

The term **"adna"** means both **nearer and lowest**. The commentators of the Qur'aan, May Allah be pleased with all of them, were of the opinion that **"adnal-ardh"** meant **the nearest land to the Arabian Peninsula**. When we investigated the lowest part of the earth, we found that it was exactly the same spot that witnessed the battle in which the Romans were defeated. When we informed Professor Palmer about this, he contested saying that there were many other areas which are lower than the one referred to in the Qur'aanic verse. He gave examples and names of other areas in Europe and in the United States. We assured him that our information was verified and correct. He had with him a topographical globe that showed elevations and depressions. He said that it would be easy with that globe to ascertain which was the lowest spot on earth. He turned the globe with his hands and focused his sign on the area near Jerusalem. To his astonishment, there was a small arrow sticking out towards that area with words: "the lowest part on the face of the earth." Professor Palmer was even more astonished when he found that the Qur'aan talks about the past and describes how creation first began; how the earth and heavens were created; how the water gushed forth from the depth of the earth; how the mountains were anchored on land; how vegetation first began; how is earth today, describing the mountains, describes its phenomena, describes the changes on the surface of the earth as witnessed in the Arabian Peninsula. It even describes the future of the land of Arabs and the future of the whole earth. At this, Professor Palmer acknowledged that the Qur'aan is such a wondrous Book which describes the past, the present, and the future. Like many other scientists, Professor Palmer was hesitant at first. But soon later he was forthcoming with his opinions. In Cairo, he presented a research paper dealing with the inimitable aspects of geological knowledge contained in the Qur'aan. He said that he did not know what was the state of the art in the field of science during the days of the Prophet Muhammad.

He declared: "But from what we know about the scanty knowledge and means at that time, we can undoubtedly conclude that the Qur'aan is a light of divine knowledge revealed to Muhammad (swas)."

Pharmaceutics 2


بسم الله الرحمن الرحيم

الحمد لله الذى خلق بلطيف حكمته بنية الانسان واختصه بما علمه من بديع البيان وعرفه
ما فى الارض من جماد ونبات وحيوان وجعل له أسبابا لحفظ الصحة واماطة الداء يستعملها
بتصريفه فى حالتى عافيته ومرضه بين الدواء والغذاء فحمده حد الشاكرين ونصلى على
أنبيائه اجمعين (وبعد) فانه لما رسم بالاوامر المطاعة العالية المولوية السلطانية الاعظمية
الملكية الصاحبية النجمية لازالت نافذة فى المغارب والمشارق وأرزاقها شاملة للكافة
الخلائق وبواترها ماضية فى قمع الاعداء والمفارق بوضع كتاب فى الادوية المفردة تذكر فيه
ماهياتها وقواها ومنافعها ومضارها واصلاح ضررها والمقدار المستعمل من جرمها او
عصارتها أو طبيخها والبدل منها عند عدمها قابل عبد عتباتها وغذى نعمتها هذه الاوامر
العالية بالامتثال وسارع الى الانتهاء اليها فى الحال ووضع هذا الكتاب مشتملا على ما رسم به
وعرف بسببه وأودع فيه مع ذلك أغراضا يتميز بها عما سواه ويفضل على غيره بما اشتمل عليه
وحواه (الغرض الاول) بهذا الكتاب استيعاب القول فى الادوية المفردة والاغذية المستعملة
على الدوام والاستقرار عند الاحتياج اليها فى ليل كان أو نهار مضافا الى ذلك ذكر ما ينتفع به
الناس من ثمار ودثار واستوعبت فيه جميع ما فى الخمس مقالات من كتاب الافضل
ديسقوريدوس بنصه وكذا فعلت ايضا بجميع ما أورده الفاضل جالينوس فى الست مقالات من
مفرداته بفصه ثم ألحقت بقولهما من أقوال المحدثين فى الادوية النباتية والمعدنية والحيوانية
ما لم يذكراه ووصفت فيها عن ثقات المحدثين وعلماء النباتيين ما لم يصفاه وأسندت فى جميع
ذلك الاقوال الى قائليها وعرفت طرق النقل فيها بذكر ناقليها واختصصت بما تم لى به

الاستبداد

Frontispage of a printing in 1875 at the Bulaq press in Cairo of Ibn al-Baytar (d. 248/646 H)' s book.

The largest and most popular of materia medica manuals was that by Ibn al-Baytar (also known as al-Mutlib - d. 1248/646), who was born in Malaga in the kingdom of Granada, Spain, towards the end of the 12th century and became `Chief of Botanists' in Cairo in the first half of the 13th century. His Arabic treatise, The ***Comprehensive Book on Materia Medica and Foodstuffs*** (Kitab al-Jami` li-mufradat al-adwiyah wa-al-aghdhiyah), was an alphabetical guide to over 1400 simples taken from his own observations as well as from 150 written sources that he names. His manual formed the basis of many subsequent manuals on medicinal substances, including that written in the 18th-century by Muhammad Husayn ibn Muhammad Hadi al-`Aqili al-`Alavi, a practitioner in India and grandson of a well-known Indian practitioner.

Ibn al-Baytar got many of his early ideas from Birundi and Ibn Sina.

In pharmacy laboratories, druggists prepared medicines according to directions found in the Treatise on Medicinal Drugs by Biruni (Abu Raihan Muhammad al-Biruni - 973 - 1048 C.E.). Biruni was a contemporary of (lived at the same time as) the famous doctor Ibn Sina and they corresponded.

The Muslims made great advancements in the field of pharmacology. They experimented with various herbs and other drugs, and anesthetics used in India. The Arabs established the first drugstores and wrote the first encyclopedias of drugs and medicines. Baghdad had at one time as many as eight hundred sixty-two registered pharmacists, all of whom had passed formal examinations.

Public Health Inspectors (Muhtasib)

The Muhtasib was an Inspector of Public Services. **Some of his responsibilities included seeing that correct weights and measures were used by merchants (so no one would be cheated), insisting upon proper street cleaning, seeing that a dangerous building was condemned, ensuring a supply of clean water, and other related matters. A number of books were written as guides to help an inspector perform his duties.**

He made regular inspections on all the shops in the city at all times, and arrested offenders.

Muslim science recognized the importance of clean food and drink in the prevention of disease.

All slaughtering of animals was to be carried out in public slaughterhouses. The sale of the meat from sick animals was forbidden. At the end of the day, butchers and fish sellers were supposed to clean up their area and dispose of bad or unpreserved meat scraps beyond the city limits.

The Muhtasib also inspected public eating houses. All pots of food had to be kept covered against flies and insects. If a man was repeatedly charged with a serious offense against the community, such as selling poisoned goods, the Muhtasib could have him **executed**.

The importance of milk and water as sources of communicable diseases was also recognized in the Arab World. The best water was from wells as opposed to the river water. Water was sold around the city of Baghdad in large jars that had to be kept covered, and it was strictly forbidden to drink from the main jar or to dip one's hand into it. Furthermore, all the jars had to be scrubbed daily with boiling water and dried.

The public baths were also inspected for hygiene. People with skin diseases or leprosy were excluded.

All dairies had to be **whitewashed** and paved.

Since 931, unlicensed doctors, surgeons, blood-letters, and pharmacists were not allowed to practice medicine, others were closely checked for honesty. The Muhtasib gave the **Hippocratic Oath** (an oath doctors took promising to do their best to cure their patients, first started by Hippocrates, the famous Greek doctor).

[See for reference: "The Muhtasib" by Caroline Stone in ARAMCO World Magazine, Sept.-Oct., 1977.]

Ibn Sina (980 - 1037 A.D.)

Ibn Sina's portrait is in the hall of the Faculty of Medicine in Paris

At the age of ten, he already had memorized the Qur'an. During the next six years he studied Muslim law, philosophy, natural science, logic, geometry, and advanced mathematics.

At the age of 17, he started to study medicine and found it "not difficult".

By the age of 18 he had a reputation as a great **physician** and cure the king in exchange for using the royal library.

He cured many amirs, from Ray (Iran) to Isfahan.

He declared to his friends: "I prefer a short life with width to a narrow one with length," he replied. Worn out by hard work and hard living, Ibn Sina died at the age of 58 years.

Ibn Sina's most important medical work is the ***al-Qanun al-Tibb*** ("Canon" or Encyclopedia of Medicine) which represents the **final bringing together of Greek and Arabian thoughts on Medicine**. He wrote about such matters as **fatal illnesses**, ideas about cleanliness and **hygiene**, remedies and cures, **anatomy**, and **cardiac** drugs.

He pointed out the importance of **diet**, climate, and environment on health, and the surgical use of **oral anesthetics**. Ibn Sina advised **surgeons** to treat cancer in its earliest stages and to remove all the diseased tissue.

He recommended the testing of new drugs on animals and humans.

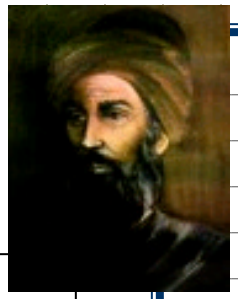
Ibn Sina noted the close relationship between emotions and the physical condition and felt that music had a definite effect on patients.

He diagnosed a "love sickness" in a Prince by noticing a fluttering in the **pulse** when the name of his beloved was mentioned.

The Encyclopedia was translated into Latin. It became the textbook for medical education in the schools of Europe from the 12th-17th century.

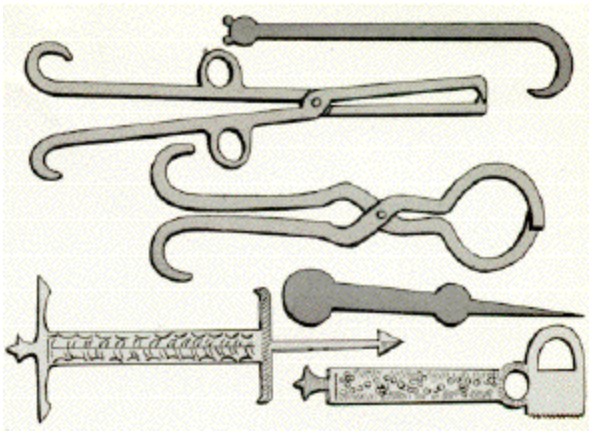
Ibn Sina is known as the 'doctor of doctors'.

Al-Zahravi (963-1013 AD) Or Albucasis



He is called the "father of surgery".
Abul Qasim al-Zahrawi is known as **Albucasis** to the West. He was a famous surgeon at the court of Caliph al-Hakam II in Baghdad. Students and patients flocked to him from the Muslim world and Europe.
He wrote a Medical Encyclopedia which contained 30 sections of **surgical knowledge and illustrations of 200 surgical instruments, most of which he designed himself**. The **Encyclopedia was required reading for physicians, and even five centuries later it was being used as the standard textbook on surgery in universities in Europe.**

Al-Zahravi also performed many delicate operations such as **caesareans** and was also the first to use silk thread for stitching wounds.



Pharmaceutics 1

In the field of materia medica and its applications, Islamic writers surpassed their earlier models, primarily because their broader geographic horizons brought them into contact with drugs unknown to earlier peoples, such as camphor, musk, sal ammoniac, and senna. In later Arabic works, medicinals were used that came from as far afield as China, Southeast Asia, the Himalayas, southern India, and Africa.

Islamic medicine was built on tradition, chiefly the theoretical and practical knowledge developed in Greece and Rome. Galen (d., ca. 210 AD) and Hippocrates (5th century BC) were pre-eminent authorities, followed by Hellenic scholars in Alexandria.

In order to make the Greek tradition more accessible, understandable, and teachable, Islamic scholars translated, then ordered and made more systematic the vast and sometimes inconsistent Greco-Roman medical knowledge by writing encyclopedias and summaries.

Thus, it was through Arabic translations that the West learned of Hellenic medicine.

Avicenna's *Canon of Medicine*, was very popular in Europe, and during the fifteenth and sixteenth centuries, the *Canon of Medicine* was published more than thirty-five times!

Books were illuminated. Even if Muslims transferred the making of the paper from China, they innovated by using linen instead of expensive and less durable parchment and papyrus.

Muslims have always based their technology, science and art on what pre-existed, then refined it and gave them a practical and stylized form.

Illuminated opening of The Storehouse of Medicaments by the 18th-century physician Muhammad Husayn ibn Muhammad Hadi al-`Aqili al-`Alavi.

Poisons

The topic of poisons was of great interest in both antiquity and the medieval world and it also generated its own literature.

Snake and dog bites as well as the ill effects of scorpions and spiders and other animals caused much concern, while the poisonous properties of various minerals and plants, such as aconite, mandrake, and black hellebore, were exploited.

Galen and Dioscorides were considered ancient authorities on the subject, and many spurious treatises on the subject were attributed to them. Numerous Islamic writers discussed poisons and particularly theriacs, the antidotes for poisons.

Poisons

A unique copy of an Arabic treatise on antidotes for poisons written in 1270 (669 H) in Syria by `Ali ibn `Abd al-`Azim al-Ansari. The opening shows part of the 33rd chapter in which the author lists treatises that he consulted.

A particularly important Arabic treatise on antidotes for poisons was written in 1270 (669 H) in Syria by `Ali ibn `Abd al-`Azim al-Ansari. The treatise provides information regarding medical learning in the Crusader States as well as the plants that the author describes as having been found in Syria at the time. Moreover, al-Ansari incorporated into the study extensive quotations from other treatises on plants and antidotes. Among these were the writings of the 10th-century Egyptian physician **al-Tamimi** and the Syrian **physician Rashid al-Din al-Mansur ibn al-Suri**, who died in 1243 (641 H). The latter is known to have prepared an illustrated herbal with figures drawn from plants he observed on his travels. Both the illustrated herbal by Ibn al-Suri and the treatise on antidotes by al-Tamimi are lost today, making the citations given by al-Ansari our only source of information regarding their contents.

Chemistry

Islamic physicians not only contributed to the recording of new medicinal substances and compound remedies, but also, in collaboration with other artisans, developed new equipment for the pharmacy. `**Albarello'** is the name given to drug jars having a waisted form with slightly concave sides which became popular in Europe from the 15th century onward. The design employed by the pharmaceutical potters of Europe was taken directly from the medieval Islamic world, for the earliest examples preserved today were made in Syria near the end of the 12th century. The contracted waist of these jars allowed them to be easily removed from a row when set side by side on a shelf. They were used for storage of a variety of herbs, roots, seeds, spices and other medicinal substances.

Chemistry 2

Ink drawings of a triple alembic, with 3 distilling heads, only the top one having a delivery tube. The lower drawing shows a cold still or `Moor's head still' in which the distillate when it rises is cooled by water placed in a trough at the top of the alembic. From an alchemical commentary on a poem composed in Spain by Ibn Arfa` Ra`s (d. 1197/593 H).

Many of the techniques employed in drug production were also part of the realm of alchemy. **The Arabic word al-kimiya**, from which we derive the word alchemy, **was used for both chemistry and alchemy**, and no clear distinction was made between the two activities. A wide range of chemical processes was undertaken by both the druggist and the alchemist, and the workshops would be stocked with a large number of vessels such as alembics (the head of a distilling device), cucurbits (the lower part of the distilling apparatus), receiving vessels, funnels, water-baths, filters, and crucibles, in addition to the mortars and pestles for pulverizing and crushing substances and braziers and stoves for heating them. In the distillation process, a substance would be heated in the cucurbit and the distillate would form in the alembic and pass through the delivery tube into a receiving vessel.

Eating Habits

Obesity is a major American tragedy, a form of malnutrition, affecting million of people, of all age. 99% of obesity is due to overeating.

Allah advises as to be moderate in quantity.

" But waste not by excess for God loves not the wasters." Qur'an 7:31

"Eat of the good things we have provided for your sustenance, but commit no excess therein, lest my wrath should justly descend on you, and those whom descends my wrath do perish indeed."Qur'an 20:81

According to one Hadith of Prophet Mohammed (P.B.U.H.) **we are advised to leave one third of our stomach empty after finishing a meal.**

One may understand this Hadith by looking at a blender/mixer in the kitchen and see how it works. One can break it after stuffing it to the top and then turning the machine on. After all, what is stomach, if not a blender, grinder, mixer and food processor, all in one !!

Furthermore, researchers discovered that obesity often leads to laziness and bad temper because the body is constantly overloaded. What about waking up at Fajr, etc…?!

Eating properly

Certain types of food i.e. fruits are especially emphasized in Quran (36:57, 43:73, 16:67, 50:68)
"And the fruits of date palm and grapes you get wholesome drink and nutrition: Behold in this is a sign for those who are wise." Qur'an 16:67

Fruits are low in calorie, high in vitamins and minerals, and fiber and sugar is fructose and not sucrose. In a recent study by Dr. Anderson fructose has been shown to cause no rise in blood sugar and even lowers the high blood sugar of diabetics.
Honey is fructose.

"O you mankind: Eat of what is lawful and good on earth." Qur'an 2: 168

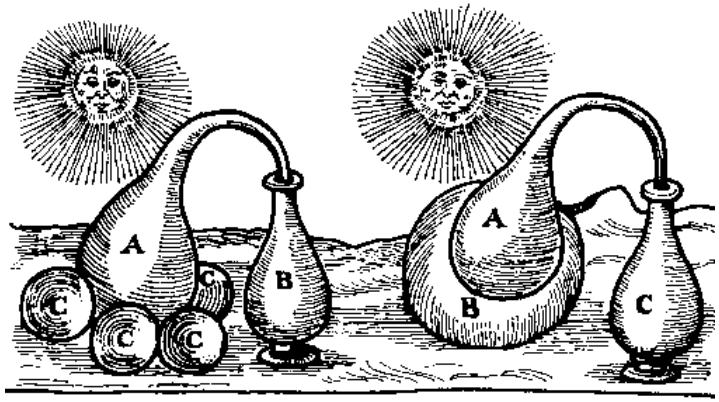
"Eat of the things which god has provided for you lawful and good, but fear God in whom you believe" Qur'an 5:91.

Forbidden to Muslims are dead meat, blood and flesh of swine (5:4) and intoxicants (5:93 and 2:219). Science so far has not confirmed any beneficial effects to the prohibitions. The blood and meat of the dead could be full of germs and other harmful elements like antibodies. The pork meat is high in cholesterol, salt and may have worms, and alcohol and other intoxicants cloud our mentation, our inhibition and interfere with our normal capacity of judging good and bad. Therefore, a person under the influence of alcohol may want to take off his dress, engage in unlawful sexual acts, become violent and abusive without even knowing what he is doing. On medical damages due to alcohol, whole books have been written.

One of the favorite foods in Paradise will be fruits!

Distillation

One Muslim invention that deserves particular mention is the alembic.
An alembic, or distillation flask, was used in alchemy and early chemistry. It was also one of the alchemists' signs for glass (shown below) drawn in many different ways.
A retort or alembic was a glass vessel with a long, tapering, down-angled neck or beak, used for heating up liquids and letting the gas out via the beak into a cooled flask for condensation.



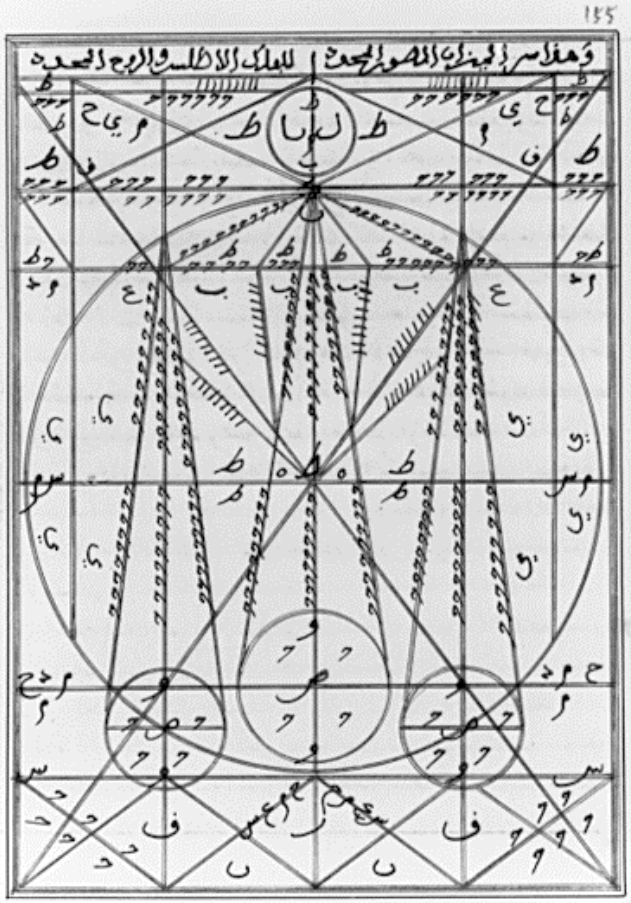
A. Shows the retort.
B. Shows the receiver.
C. Crystal bowls.

Another retort with its receiver standing in a marble or iron mortar directly opposite the sun.

A. Shows the retort.
B. The marble or iron mortar
C. The receiver.

Distillation was one of the most important processes in Islamic chemical technology and was employed for both medicinal preparations and a variety of other technological and industrial uses, including the preparation of acids and the distillation of perfumes, rose-water and essential oils. As the equipment and processes of alchemy developed -- with its methods of evaporation, filtration, sublimation, crystallization, and distillation -- they came to influence pharmacy and medical chemistry.

Alchemy

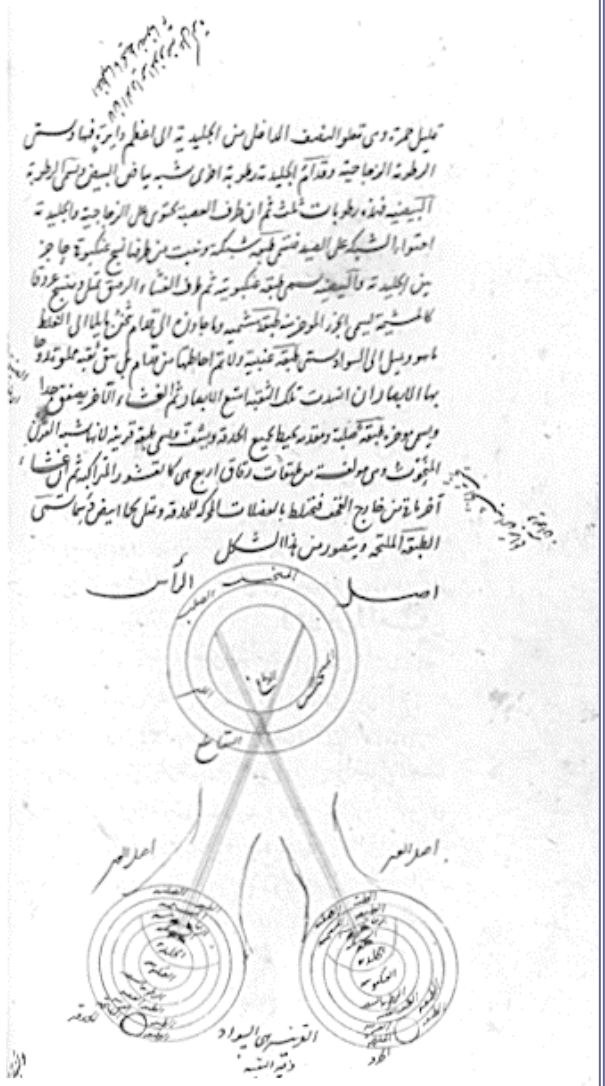


A chart used to determine the `balance' of a substance's attributes. From the alchemical treatise by `Izz al-Din Aydamir al-Jildaki (d. 1342/743 H).

The formative Arabic treatises on alchemy were those under the name **of Jabir ibn Hayyan, an 8th-century** polymath familiar to Western readers as Geber. In these writings there was elaborated for the first time the idea of an elixir that served as a general medicine or life-giving potion. Numerous subsequent books were composed on alchemy, including some by the physician **al-Razi in the late 9th century**.

One of the last Arabic alchemical treatises -- and the most comprehensive -- was that by the Egyptian alchemist **`Izz al-Din Aydamir al-Jildaki, who died in 1342 (743 H)**. His treatise *The Proof Regarding Secrets of the Science of the Balance* (Kitab al-Burhan fi asrar `ilm al-mizan) was concerned to a large extent with the classification of plants, animals, and minerals, and with the concept of `balance'. The alchemist attempted to assess the `balance' of any given substance by a system employing numerology, the 28 letters of the Arabic alphabet, and the numerical value of the name of the substance in order to determine the proportional structure of the substance's attributes -- that is, heat, dryness, coldness, and fluidity.
Al-Jildaki's treatise represents the mystical and allegorical trend in alchemy, but it is also evident that the author had much experience with practical chemical operations and substances.

Ophthalmology



A commentary on the Mujiz or Concise Book of Ibn al-Nafis, called The Key to the Mujiz and composed in Arabic by al-Aqsara'i, who died in 1370 (771H).

Islamic physicians displayed particular concern and skill in the diagnosis and treatment of eye diseases, perhaps because blindness was the major cause of disability throughout the Islamic lands. Often, illnesses of the eye developed because of the wind constantly blowing sand in the eyes of the local people. Nearly every medical compendium had chapters on eye diseases, but the most comprehensive coverage was to be found in the large number of monographs devoted solely to the subject.

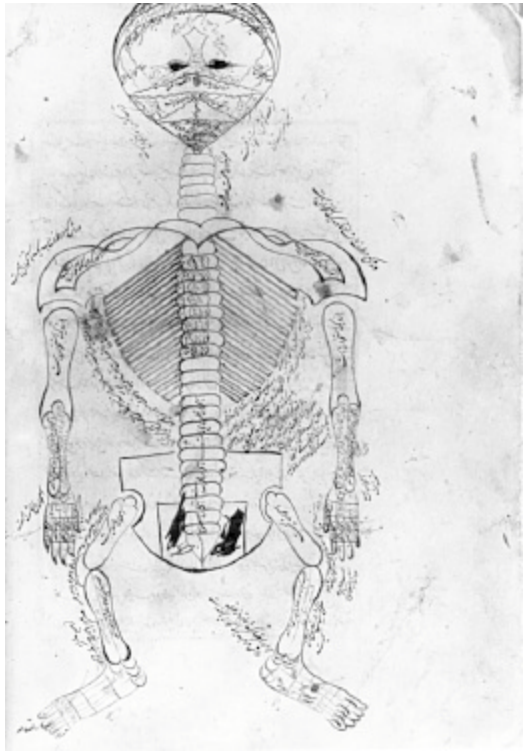
In the 9th century the physician-translator Hunayn ibn Ishaq wrote monographs on ophthalmology, including the influential *Ten Treatises on the Eye* that showed considerable advancement in knowledge over that in the Greco-Roman treatises preserved today. One of the most highly regarded of ophthalmological manuals was that covering *130 eye ailments* written by **`Ali ibn `Isa al-Kahhal (d. 1010/400 H)** who practiced in Baghdad. For reasons as yet unknown**, there was during the 12th and 13th centuries unprecedented interest in composing Arabic treatises on ophthalmology.** In Spain **Muhammad ibn Qassum ibn Aslam al-Ghafiqi,** of whom essentially nothing is known, wrote a Guide to Ophthalmology that was illustrated with instruments. In Cairo the oculist **Fath al-Din al-Qaysi, who died in 1259 (657 H)** wrote *The Result of Thinking about the Cure of Eye Diseases* (Natijat al-fikar fi `ilaj amrad al-basar). Al-Qaysi was one of a three-generation family of court physicians in Cairo and was himself `Chief of Physicians' in Egypt and physician to two Ayyubid rulers, including Saladin.

Anatomy 1

The anatomical sections of the Canon of Medicine by Ibn Sina (d. 1037/428 H)

Naturalism is fought against in Islam, except when absolutely needed, that is why medical drawings show bodies that barely look humans.

Anatomy 2



The skeleton, drawn in red and black ink, viewed from behind with the head hyperextended so that the face looks upward. .

Human dissection is not accepted in Islam. The sanctity of a Muslim after he dies is the same as when he is alive. The body has to remain in its integrality.

Thus, knowledge of anatomy in medieval Islam was firmly based on observation, and the anatomical writings by the 2nd-century Greek physician Galen, who to a large extent argued from analogy with animal structures. All the major Arabic and Persian medical encyclopedias had sections on anatomy, summarizing the Galenic anatomical concepts. These were occasionally illustrated with schematic diagrams of the eye or the cranial sutures or the bones of the upper jaw. No full-page anatomical illustrations of the body are preserved from the Islamic world before those which accompanied the Persian treatise composed by Mansur ibn Muhammad ibn Ahmad ibn Yusuf ibn Ilyas, in his illustrated treatise, often called `Mansur's Anatomy,' 14$^{th}$C. AD (7$^{th}$ HJ). It consists of an introduction followed by 5 chapters on the 5 `systems' of the body: bones, nerves, muscles, veins and arteries, each illustrated with a full-page diagram. A concluding section on compound organs, such as the heart and brain, and on the formation of the fetus.

Miswak, The Traditional natural toothbrush

Natural, safer, and more effective than synthetic toothbrushes.

Dental Benefits:

Strengthens gums
Effectively removes plaque, and yellowness of teeth
Prevents tooth decay
Cleans, and brightens teeth
Removes bad odor

Physiological Benefits:

Improves the sense of taste
Sharpens memory, and intelligence
Assists in digestion
Improves the eyesight
Improves the health, and luster of the face of the continual user

A must for dental and oral health and hygiene.

How To Use it?

It's easy to use. Simply scrape off bark from the tip (½"), then chew the tip gently until brush-like. Start brushing horizontally untill squeaky clean.
Store vertically upside down.

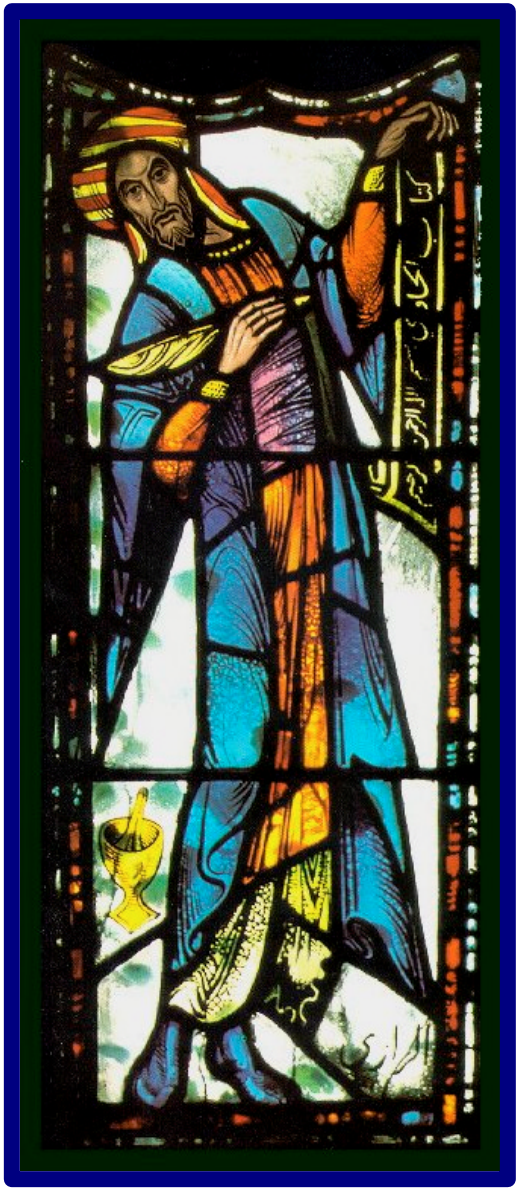
Miswak

The Root of a tree known in Arabic as ‘Arak’ (Salvadora persica), and in Urdu, as ‘Peelu’, more commonly known as the ‘toothbrush tree’. The Miswak has a rich, and well-documented usage history, resplendent with intrinsic medicinal value and benefits. Known throughout the Middle-East and Asia, from time immemorial, up to the present, with a promising future in terms of its medicinal benefits and advantages.

Most significantly it was a constant practice of Prophets upon awakening, before sleep, when entering or leaving the house, after meals, before recitation of the scriptures, and most importantly before every ablution and prayer. Muslims use it on the recommendation of Prophet Muhammad (Peace & Blessings be upon him), who said to the effect that:

‘Were it not that I might over-burden the Believers I would have ordered them to use Siwak (Miswak) at the time of every Prayer’. **(Abu Dawood)**
‘Four things are from among the practices of the Prophets: Circumcision, Perfume, Miswak, and Marriage’. **(Ahmad + Tirmidhi)**
‘Make a regular practice of Miswak for verily it is the purification for the mouth and a means of the pleasure of the Lord’. **(Bukhari)**

By contrast with the conventional plastic toothbrush, the Miswak, is most user and environmental friendly, and can be used any time, anywhere. It completely dispenses with the need for toothpaste squeezing, vigorous brushing, and foaming at the mouth. Scholars have mentioned as many as 70 medicinal and spiritual benefits related to the Miswak. Dental Research has revealed that it contains as many as 19 natural substances, which are beneficial to dental health. Its natural antiseptics have a bactericidal action, killing harmful microorganisms in the mouth that would, if gone unchecked, promote plaque formation, tartar build-up, and caries. The tannic acid it contains has astringent qualities, which protects the gums from gingivitis, and eventual abscess formation under the root of the affected teeth. Its aromatic oils increase salivation that help in the process of digestion. Because of its built-in-antiseptics, the Miswak needs no cleaning, and because its bristles are parallel to the handle rather than perpendicular, it can reach more easily between the teeth, where a conventional plastic toothbrush often misses.



This stained glass window in the **Princeton University Chapel** commemorates the contribution of al-Razi to the science of medicine.

Al-Razi

Abu Bakr Muhammad bin Zakaryya al-Razi is known as the unchallenged chief physician of the Muslims, the Arab Galen, the most brilliant genius of the Middle Ages.

He was a famous medical practitioner and teacher who pioneered several discoveries in pre-modern chemistry, having for the first time divided substances into animal, vegetable, and mineral. His famous book entitled "Kitab al-Asrar" (Book of Secrets) deals with substances, equipment, and processes, thus establishing the "laboratory manual" literary genre. The chemical processes mentioned by al-Razi include distillation, calcination, solution, evaporation, crystallization, and more.

Health care

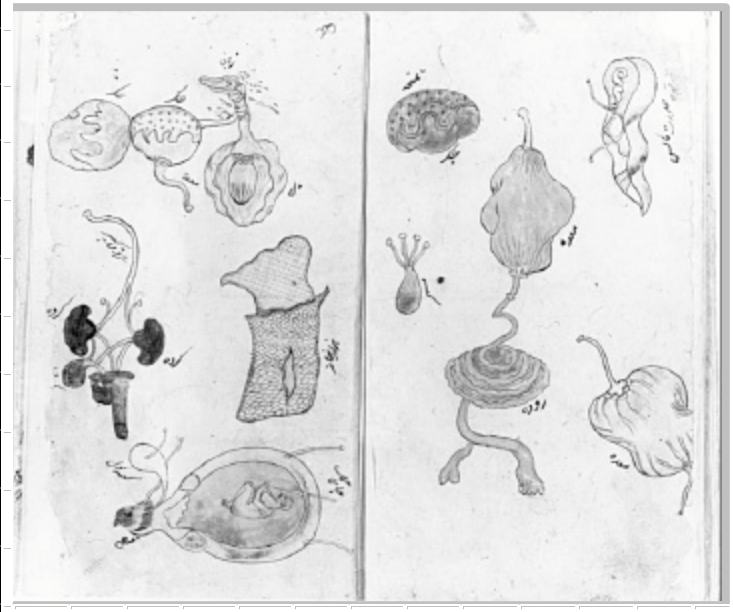
Many of the common chronic illnesses, coronary heart disease, hyper-tension, diabetes, peptic ulcer disease, obesity and depression have common man-made etiology, that is rich food, too much food, too much salt, too much sugar, smoking, stress and alcoholism. If we give up excessive salt, sugar and cholesterol from our diet, and do not drink and smoke, and be active, it is possible that - the pump (heart) won't be rusted from inside.

What should a Muslim do when disease is confirmed?
A. Accept it as a will of God as kaffara for his sin, and ask him to remove the affliction.
"If God touches thee with affliction, none can remove it- but He: if He touches thee with happiness He has power over all thing." Qur'an 6:17

B. Many Muslims won't seek early medical attention, contrary to the Prophet's practice and teaching. In Christianity there is a sect believing in faith healing who have let their members die rather than go to the physician.
Usamah Bin Shareek (Ra) Reports:
"I was with the Prophet (P.B.U.H.) and some Arabs came to him asking "O Messenger of Allah, do we take medicine for any disease.-"-He said, "Yes, 0 You servants of Allah take medicine as Allah (SWT) has not created a disease without creating a cure except for one. They asked which one, he replied old age'.

C. Increase your knowledge of health and disease, of medications and side effects. This knowledge is not a monopoly of doctors. You can have it, and use it in preventing the illness, recognizing it early when symptoms appear, seeking early medical attention, then monitoring the course of disease, implementing the treatment (i.e. knowledge of diet for diabetics) and recognizing side effects of the medicine.

Individual organs drawn in inks and opaque watercolors. Two of six leaves of anatomical drawings appended to a Persian translation of an Arabic medical compendium. On the right hand page are the liver with gallbladder, the stomach with intestines, the testicles, and detail of the stomach. On the left are a composite rendering of the tongue, larynx, heart, trachea, stomach and liver; a composite drawing of the ureters, urethra, kidneys, testicles, and penis; and a composite rendering of the bladder with female genitalia, womb and foetus. Undated, probably 18th century India.



Hospitals 2

All the hospitals in Islamic lands were traditionally financed from the revenues of pious bequests called *waqfs*. Wealthy men, and especially rulers, donated property as endowments, whose revenue went toward building and maintaining the institution. The property could consist of shops, mills, caravanserais, or even entire villages. The income from an endowment would pay for the maintenance and running costs of the hospital, and sometimes would supply a small stipend to the patient upon dismissal. Part of the state budget also went toward the maintenance of a hospital. The services of the hospital were to be free, though individual physicians might charge fees.

Little detailed information is available regarding the hospitals as teaching institutions. We have accounts of teaching at certain hospitals, such as the `Adudi hospital in Baghdad, but how many hospitals had such formal classes is not known. Clinical training at bedside in a hospital, whether as an apprentice or through formal instruction, was, however, a part of medical learning for a substantial number of formally trained physicians. In the medical writings, such as the encyclopedia by al-Majusi, there was frequent encouragement of students to acquire clinical training.

Medicinal Muslim Plants

Account Of Selected Drugs And Its Survival In European pharmacop

Common Name	Scientific Name	Arabic Name
Pomegranate	Fruit of Punica granatum L.	رمّان
Saffron	sativus L.	زعفران
Cyperus	Cyperus longus L.	سعد
Aloe	Aloe vera L.	صبر
Tamarisk	Tamarix gallica L.	طرفاء
Jujube	Fruit of Zizyphus sativa Gaer.	عنّاب
Agrimony	Agrimonia Eupatoria L.	غافث
Venus's hair	Adiantum capillus-Veneris L.	كزبرة البئر
Rose	Rosa gallica L.	ورد
Fenugreek	Trigonella Foenum-graecum L.	حلبة
Long pepper	Piper longum L.	دار فلفل
Common ginger	Zingiber officinale Rosc.	زنجبيل
Common cinnamon	Cinnamomum Zeylanicum Nees.	سليخة
Spikenard	Nardus stricta L.	سنبل
Liquorice plant	Glycyrrhiza glabra L.	سوس
Lily	Lilium candidum L.	سوسن
Jasmine of poetry	Jasminum officinale L.	ياسمين
Common barley	Hordeum vulgare L.	شعير
Black cumin	Nigella sativa L.	شونيز
Roman laurel	Laurus nobilis L.	غار
Pumpkin	Cucurbita pepo L.	قرع
Cubeb pepper	Piper cubeba L.	كباب
Caper bush	Capparis spinosa L.	كبر
Clover dodder	Cuscuta Epithymum Murr.	كشوث
Plantain	Plantago mayor L.	لسان الحمل
Sweet marjoram	Origanum Majorana L.	مرزنجوش
Myrtle	Myrtus communis L.	آس
Sabin	Juniperus sabina L.	ابهل
Citron	Citrus medica L.	اترج
Prune	Fruit of Prunus domestica L.	إجّاص
Assarabecca	Asarum europaeum L.	أسارون
Stoechas	Lavandula stoechas L.	أسطوخودس
Euphorbium gum-plant	Euphorbia officinarum L.	أفربيون
Absinthium	Artemisia absinthium L.	أفسنتين
Opium	Papaversomniferum L.	أفيون
Melilot	Melilotus officinalis Lam.	إكليل الملك
Anise	Pimpinella anisum L.	أنيسون
Chebulic myrobalan	Terminalia chebula Retz.	إهليلج كابلي
Hara nut tree	Terminalia cetrina Roxb.	إهليلج أصفر
Belleric myrobalan	Terminalia Bellerica Roxb.	إهليلج بليلج
Wild chamomile	Matricaria chamomilla L.	بابونج
Venus's hair	Adiantum capillus-Veneris L.	برشاوشان
Melon	Cucumis Melo L.	بطّيخ
Violet	Viola adorata L.	بنفسج
Tamarind	Fruit of Tamarindus indica L.	تمر هندي
Walnut	Fruit of Juglans regia L.	جوز
Wild mustard	Sinapis arvensis L.	خردل
Common cinnamon	Cinnamomum Zeylanicum Nees.	دار صيني
Fennel	Foeniculum vulgare Miller.	رازيانج
Water nymph	Nymphaea Lotus L.	نيلوفر

Add your own list below: