Global Science Research Journals
ISSN: 2437-1904 Vol. 3 (4), pp. 125-130, September, 2015

http://www.globalscienceresearchjournals.org/
Global Journal of Art and Social Science Education

Review

Arabs contribution in advancing science and scientific research in the middle ages in Europe

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Abstract

The present life is the outcome of several joint civilized efforts over many successive ages. One of these efforts is the important role that Arabs played in the service of human civilization in general and in the development of science and scientific research during the Middle Ages in Europe in particular. The present study aims bring into light Arabs contribution in the development of anatomy during the middle ages in Europe. The study arrives at the following results: (1) Translation: Arabs were not merely literal translators, rather were writers able to recreate what they were translating. Thus, Arabs translations contributed in the development movement of old translated book which in turn helped advance anatomy. (2) Research: Arabs adopted the scientific approach in conducting research and experiments. Thus, Arabs were the first who explored the experimental approach in science where by they used a scientific approach based on induction, deduction and experiment. Moreover, they did not only conducted experiments, they also paid attention to theory that precedes experiment considering that an experiment is an application to theories arrived at in research. In brief, Arabs play a significant role in setting the principle of theory and practice which are considered an important foundation for all scientific progress though out ages. 3- Books writing and discovery: the most prominent Arab scholars in anatomy are abu hamifa addaynuri (895 CE) who wrote (On anatomy) , abu-Ja'far mohammad bin ahmad Al-Fafqi (1165CE) who wrote (on medications), Ab-Al-Abbas bin arumiyah (1240CE) who wrote (An explanation of medications names in Dys coredes book), (A comprehensive book of medications) and (Al-Mughni on medications), Abu Bakr ahmad bin wahshiya who mrote (Nabatean cultivation), Mohammad bin Abi Bakr bin Abi-Taleb Al- ansari Addimashqi who wrote (Al-Multaqaet on romans and Nabatean cultivation), Ibn Al-Awwams book (cultivation) and Dawood Al-Antaki (1599CE) who wrote (The Gem on experimented food items). Many Arabic books on anatomy were also translated into european languages such Ibn Al Bitar'S (A comprehensive book on medications). The study recommends that a chapter of civics course, which is taught at Universities in Jordan, should be devoted to explaining the role that Arabs played in science development during the middle Ages in Europe. This will contribnte in consolidating Arab nationalism , the sense of belonging and giving, self confidence and trust in history, and the sense of belonging to this great nation to contribute in the development of our Arab society for a prosperous life and future.

Key words: Arabs, advancing science, scientific research, middle ages

INTRODUCTION

The reading of current reality which is related to our urgent need to strengthen our awareness of the historical and analytical studies of the experiences of past of our nation in science and scientific research, so that the accumulation of experiences, do not start from scratch whenever our resolve to move forward on this path (El Hassan bin Talal, 1986).

At the stage of awareness, and in this era the researcher and the student has to be reconsider the cultural and historical data makes it a heritage flows into

new life, including inexhaustible source of material and moral gain; So this search came to hire bright of Arab heritage in the nation's service aspects in this important stage of our nation's history which we hope to be bright.
Arabs has paid considerable attention with botany, and they wrote a lot of scientific works, they based their study on this careful observation and inspection and the continuation of tracing the life of the plant, excelled in and developed it, They are the first of foundations this science and a thousand in it, they have the scientific innovations and new combinations sophisticated, and they have an excellent gesture in the follow-up of workers in this field where they put the calculation system and monitoring of product. This system moved to Europe, nor the word "Calculated" is still used in the Spanish language nearly Arab origin (Abdul Rahman: 1977).

We must know that science - a facet of civilization - does not stand out in the nation suddenly, cut off from the previous Nations efforts, but from nation to nation. And the virtue of every nation is what increases it in public heritage of humanity (Farrukh 0.1970, p. 9).

Importance of the Study

Contemporary life proceeds concerted multi-cultural efforts over long periods of successive, Among these efforts, the role played by the Arabs in the human civilization service, have had their hands outstretched in raising the scientific movement and Orientalism prospects of many different knowledge, accompanied by a scientific view and methods of empirical research as well as theoretical positions in the general fields of knowledge, this has helped their role in advancing the scientific development of a large and serious help, but the Arabs neglect to appreciate their role in this area, has not exercised there with adequate care of him as the face of their worthy faces to stay, and freedom to conservation, so they lose much of it , and did not give for scientific research which's they gave him from the Humanities care such as history, literature, language and philosophy (Abdul Rahman 0.1977, p. 7) For these reasons and others and to contribute to highlight the role of the Arabs in the progress of science during the Middle Ages in Europe, so this study came centered on Botany.

Without the other sciences, and targeted to the statement that the Arabs were not dependent on others in this science, but translated , transferred, drafters, modified , added, discovered and has grown to have a civilization marked by genius , comprehensiveness, depth and originality, even become their compositions auditor in the role of science in Europe during the Middle Ages, which shows clearly the contributions of our ancestors scientists in the scientific development that has seen Europe at that stage.

We have also sought diligently to discover the elements that created the greatness of the Arab nation in the past, for all the people to know his status in the real history of civilization because of all the people of peoples is the history of civilization, every nation that does not have a civilization and history.

Limitation of the study

This research was limited to the study of the Arab contribution to the advancement of botany and scientific research during the Middle Ages in Europe.

Study Approach

The researcher used the descriptive analytical method for the contribution of Arabs in the progress of botany and research Alglma during the Middle Ages in Europe.

Study Terms

First: Science: All researchers agree that the science theoretical search, meaning that that an effort to know and understand that surrounds the nature phenomena, that nature include both human and monuments surrounding it (Hulle, 1959).

The dynamic definition of science: a series of interlocking rings of concept theory and tires that have evolved and grown as a result of observation and experimentation. It is more conducive to a series of observation and experimentation (Lainont, 1952)

Second: the history of science: the importance of the history of science emitted from the impossibility of separation from science itself says by Herbert dongle DINGLE, because science is a process through time, and incompatible with the real-time nature or the eternal nature of both traditional philosophies.

If found of scientists unaware of its history, it inevitably unstuck in his mission because there will not be a realistic understanding of science, or rather there would be no science, without his constant criticism of any historical criticism (Sarton, 1952).

Third: scientific research: is the primary method by which to reach a solution to a specific problem, or the discovery of new facts by accurate information, and that scientific research is the only way to find out about the world, and is a scientific research term translated from English (Scientific Research),so the scientific research based on the scientific method, and scientific method is based on the organization methods set out in the observation and recording of information and describe the events and the formation of hypotheses. It is an organization steps aimed at the discovery and translation of the facts (Assaf and Mazahreh 0.2010).

This results in an understanding of the intuitions and trends, theories and works on presence of applied science through laws and theories. Keyword (s) could be defined as a set of information for something specific and always be linked to science and different ways of knowing.

Fourth: human and science: Ibn Khaldun believes that the human is characterized by the thought than animals,

and he does not cease thinking, and this thought arises sciences industries. Human wants to collect what does not have so they goes back to whom has previous knowledge or has more knowledge and takes it. And when the man got the necessary of the causes of his pension and then stayed with him capacity of money and time and activity, went to the collection of science and industrial and humans science are two classes: naturally class guided by the human idea such as science wisdom (logic, engineering, botany and astronomy and philosophy) and transferred class (such as language, religion, history) takes human for bearing legitimate, there is no room for the mind in this type of science but in the sub-detail (Farrukh, 1970).

Fifth: botany: science looking for properties of the type of plant and wonders, forms and benefits and disadvantages, with the theme of the type of plant and its usefulness and its utility to cure them (Abdul Rahman, 1977).

Sixth: the Nabateans Agriculture: this Nabateans farming attributed to the ancient inhabitants of Babylon and named Nbta to elicitation water for Cereals and cultivation of the land, commonly prominence they are called as well as the Chaldeans, and it was a civilian and Science of the Nabateans and ethics were lost over time, leaving only minor effects in the Arabic language (Isa,1944).

LITERATURE REVIEW

Arabs contacted other nations as a result of the Arab conquests, and these nations have passed through different cultural experiences, so they began mixing between the Arabs and them, so the Arab thought and taste mated with tastes and ideas was reached along way of progress and civilization This mixing lead to the advent of an elegant civilization that eventually crystallized in the Abbasi era and the Andalusi era afterwards (Abdel-Rahman, 1977) and through this mixing leaked ideas and Greek philosophy as well as the Greek flag to the Arabs was not long until prevailed in the Arabic language and has become the common language for all peoples of ancient civilization emerged many Arab literature supports this mating and mixing between the Arabs and peoples.

The first transfer of the Arab civilization was at the hands of Khalid bin Yazid 704 AD when the old Astefn transfer workmanship book and books on medicine and the stars and chemistry since the beginning of the Abbasid Caliphate, the State has focused on the movement of translation, sponsored and helped them (Smolts, 1970).

It is worth mentioning that the transport and movement of translation into Arabic was characterized by its own trait, a Ansbabha from the start on the translation of scientific books primarily (al-Tikriti, 1976) and the movement of transport and translation has been a good results led to a lot of scientific development in the Arab civilization, it characterized by genius and comprehensiveness and depth and originality, and at a higher level than previous civilizations that history has ever known (Farrukh,1970).

Arabs started classification and codification in the second half of the second century of migration. And was among those who were interested in the codification of the implant, plants , trees, fruits, pulses and others. Baghdad, Basra and Kufa, and the other was the seat of the scientists who worked in these areas was the scientists themselves take to the desert for investigation and scrutiny in regard to the names of the plant (Isa, 1944).

The interest of the scientific Arabs plant began in the early Abbasid era, and Dioscorides book "Greek" in the plant's first books that were transferred to the Arabic language, and has transferred Astefn ben Basil in the time of Caliph al-Mutawakkil (Abdul Rahman, 1977).

Arabs based on their study of botany on accuracy of observation and inspection and the continuation of tracking , Rashidun al-Suri carried with him a photographer equipped with dyes, and go to places where plants abound, and then see, check and show it to the photographer also is considered the color, the amount of paper , sprig , assets and portray carefully and accurately, he portrayed by the time the leaves appearance and the emergence of seed and time of crusty then he portrayed it in different stages of growth to be achieved has completed and knowledge more clear (Ibn Abi Usaibia, 1965).

By using the experimental method Arab scientists could study a lot of natural plants that are not studied before, and they entered in medical drugs and were able to generation some plants that were not well-known such as black flawer, and earn some plants drug characterization in the medical impact, and to bring some items from India and others to Iraq and sham (term ,1961). Where Arabs interested in plants and trees, cared for them much of what they need from these plants to graze their cattle, and the names of these plants was take a great deal of their language, where contacted closely by it, notation with it, and preserved in their divan (Isa 0.1944, p. 8).

The scientists who wrote the names of plants (abed al Rahman 1977: 330):

- Khalil bin Ahmed Faraaheedi (769 m)
- Nadar bin Shamil (819 m)
- Abu Obeida al-basri (823 m).
- Asma'i Abu Saeed Abdul Malik bin al-kreeb (831 m)
- Abu Said Zaid ibn Aws al-Ansari (830 m)
- Abu Obeida al-Qasim bin Salam (837 m)
- Abu Abdullah Muhammad ibn Ziyad known as Ibn ale'aabi Kufi (845m)
- Abu Yusuf Yaqub ibn Ishaq bin Skeet (857 m)
- Abu Hanifa Aldeanora (895 m)
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- Abu Musa Suleiman bin Mohammed bin Ahmed al-Baghdadi, known al- ahmady (917 m)

RESULTS AND DISCUSSION

The well-known to us from the past is only a small part, and this study is one of the studies that highlights on the historical development of botany and achievements of the Arab mentality in this field in the extended period of early Islam and ended at the end of the Abbasid era, to highlight the Arab contribution to the progress of this science during the Middle Ages in Europe. And i has made efforts to investigative and analyst in a academic scientific to gain access to the achievements of our Arabs ancestors and to indicate their effective role in the discovery and development aspects of botany and their contribution to the scientific renaissance in Europe in the Middle Ages, and after studying the literature search and scrutinized and discussed, it has emerged that the Arabs of the authenticity of humanitarian and scientific heritage, which the world Heritage gleaned from it for a long period of time has emerged from this study, the following results:

First, in the field of translation and transportation

Scientific weight to the translation movement of the Arabs, which was a gesture of a lofty scientific renaissance, where Arabs laid down the rules of civilization then on the basis of the experiences of others and various activities, Translator was fount that Arabs stand on it's limbs, taking - as estimated - take advantage of it in botany. They were not leap impassive but they wording were able to creation and new composition to many thing they carriage, which was development of the old movement of thought which contributed transferred later in the development and progress of botany in Europe.

Abdul Rahman (1977) mentioned and we are going with him to the work of Ibn al-Bitar in plant form the totality a long-term of tremendous progress, but its impact in Europe was a little, since the writings of Ibn al-Bitar appeared late at a time when the Arabic translation of the Latin currents take the final stamp. However, its influence in the Arab world was great, his works has been studied a comprehensive study, and the Pharmacy scientists has benefited from it , where spread its influence in the Maghreb, Persia, India (Abdul Rahman,1977).

Second, in the area of scientific research

Arabs used method of scientific research and experimental tight, which is a scientist approach that still used in all fields of knowledge, represented in the following evidence:

A) Ibn Bitar has a scientific mind tends to experiment, believes in seen, observation, deduction (Aljunbulati, and Altawansa, 1964).

B) the Arabs were the first to detect the experimental method in science "Chemistry", and they are without debate put the scientific basis of this approach as well as their material can be considered as advanced scientific basis to chemical scientific Research (Abdul Rahman, 1977).

C) Arabs pursue scientific method of research and translation, so many of their studies and their research came precise and clear their results do not differ from the findings of modern science. They have taken a scientific approach based on induction and measurement and representation. Their mission was not to stop at just the experience but also was interested in theory that should be preceded by, considering the experience is method of the application of what settles it to consider the subject matter. Some specialists, Kvedman E.; Wiedman and Schramm M.;Schram has been able, to indicate the status of Arab scientists in the establishment of the experiment and theoretical law and their impact in Bacon and Leonardo da Vinci and other (Abdul Rahman,1977). There is no doubt that all the revivals begin with science, especially experimental science.

If the Arabs were the heirs of the ancient Egyptians, Alabablin , Greeks, Romans and Indians by virtue of environmental, social and historical regression -They were more effective in enriching modern science including gave him the scientific data and the capabilities was taught in Western universities until recently (Abdul Rahman,1977).

Third: Arab scientists' celebrities in botany and their compositions

A. Abu Hanifa Aldeanora - who died in 895 AD: Was the first Arab authors in Botany (Ibn Abi Usaibia, 1965.703) has a book in botany considered the most famous books in this area, It investigated what it came from a plant in the Arabic language, and he was explain these words scientifically explanation after the plant Note and preview it by himself, and has increased too much on what he found from previous researchers, the book became mayor of linguists who came after, , They took from him, not only transport from him to the written language , but quoted him as larger wrote medical vocabulary as drugs vocabulary Ibn al-Bitar (Isa 0.1944, p. 23). Most of this book has, but the article reserved and scattered in the books of language and science (Farrukh, 1970).

B. Abu Ja'far Muhammad bin Ahmed Alvafiqi (1165 m) Of the people of Al-Andalus his book in the individual drugs, investigated the what the Dioscorides and Galen verbally brief and clear gloss, also said the renewed late to speak in single drugs, this book come combining what he said and constitution botanists up to him when needed (Ibn Abi Usaibia,.1965).

C. Abu Abbas bin turkeys: daid in 1240 of Ahmed bin Mohammed bin Moufarrej al nabati. Of the people of Seville in Andalusia mastered the knowledge of botany and medicine and its benefits, and the difference in their descriptions, and the variability of their habitat, and

D. journeyed in Egypt and the Levant and Iraq, and studied a lot of plants that abound in the country of Morocco.) Abdul Rahman 0.1977, p. 332). His works include: the interpretation of the individual drugs names from the book of Dioscorides (Ibn Abi Usaibia 0.1965, p. 538) and a book of travel stories in which he stated his journey in orient, single out the plants that he saw on his way during the trip (Abdul Rahman, 1977).

E. Ibn al-Bitar: to Ziauddin Almagay Andalusian Ibn al-Bitar, who died in 1248 AD visited Spain, Morocco, North Africa, the Levant and Asia ,and he studied the book Dioscorides fully polished and well done (Ibn Abi Esbaah ,1965).

Ibn Abi Esbaah Met with him in 1235 in Damishg and worked with him in the collection and study of plants in the Levant, he said in his book "The eyes of the news in layers doctors" and I've seen him in Damascus a lot of plants in the Themes, , And brought several books in the individual drugs Like a book Dioscorides and Galen and others, and he was mention first what Dioscorides said in his book, and then mentions a sentanse from the sayings of latecomers and differed concerning it, and placements of mistake and the suspicion that occurred to some of them in it, and he was mentions medication only appointed in any article is from the book of Dioscorides and Jalinoides (Ibn Abi Osabieh, p. 602,).

His compositions: Inclusive medicine book in the individual drugs, investigated the drugs and their names and individual strengths and benefits, and point out the right and the suspicion with which signed (Ibn Abi Esbaah, 1965) based on his studies and his experiences, and his transfer to the scientists who preceded him (al-Naimi,1976), and this book contains more than 1,400 varieties of different drugs, arranged by alphabet, of which 300 items did not address discussed any book previously, this book was published in Cairo in four parts in 1875 and translated into French in 1877 by Lucien Leclerc and into German by JV Sontheimer, and Ibn al-Bitar another book on the same subject is a book "singer in the individual drugs; and article ranking depending on the drug treatment system in contrast to his inclusive article arranged alphabetically (Abdel-Rahman ,1977).

F. Abu Bakr Ahmed bin whshya : it is the first of the books of the Arabs for Agriculture in his book B "of Nabatiyeh Agriculture" (kaer allah, 1946).

G. Muhammad ibn Abi Bakr ibn Abi Talib Ansari al damascus: known as sheikh Hittin of His compositions It is marked by "Durr captured in the science tillage rum and Nabati" (Abdul Rahman,1977).

H. bin alawaam (Abu Zakaria Yahya bin Mohammed bin Ahmed bin alawaam al eshbeli: He lived in the late sixth century, from his compositions, "Agriculture," a book of two parts where thirty-five chapter, a special theme of agriculture for each chapter (Isa,1944) in this book he combining scientific evaporation in Greek and Arabic books, and between his scientific experiments, then he introduced accurate description to (585) species of plant (Abdul Rahman,1977).

I. Dawood Antiochian in 1599 AD: resided in Egypt, has a number of compositions composed of more than twenty-six, mostly in medicine, including his book "Al-Durra elected as true of proven food" (al-Baghdadi, 1965)

RECOMMENDATIONS

Our interest in the scientific heritage should be accompanied by a similar interest in the experiences of nations that have preceded us, coupled with a capacity skyline reflected in scientific policy technological comprehensive far-sighted, , and inclusion here means to take all the implications of development efforts to create a creative community product and not a consumer society that Arabs have built a great edifice to scientific civilization which was characterized by distinct personality and originality, and had a radiation detector lighted pathways global thinking, and lighted pathways ignorance and backwardness and delays in the middle and modern eras, Their works were supported in European science institutes to the end of the seventeenth century. Perhaps this study was able to along with many other studies show an important aspect of the status of Arabs and their role in the progress of science and scientific research in Europe in the Middle Ages. The study recommends allocating section of the course national education in Jordanian universities and also in Arab universities to highlight and clarify the unique role of the Arabs in the development of science and scientific research in Europe, the Middle Ages, and then in the whole world, and to instill national Arab spirit that contribute to the stimulation of the Arab citizen for the betterment and excellence and creativity.

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