

# Newsletter

## ISLAMIC ACADEMY OF SCIENCES

Special Feature: AIDS



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## Water theme for 1994

### *Khartoum hosts preparatory meeting and conference*

The Science and Organising Committee of the 1994 IAS Conference concluded its first meeting at the National Centre for Research, Khartoum, Sudan.

The conference will be entitled "Water in the Islamic World: An Imminent Crisis," and will be convened in the Sudanese Capital, during 5-9 December 1994.

The conference is designed to achieve the following objectives:

- \* To assess the water security situation in the Islamic World, with particular reference to countries with immediate and short-term difficulties;
- \* To appraise a range of national water strategies and formulate solutions to upgrade any shortcomings in implementation or results;
- \* To highlight the major water related environmental problems confronting the Islamic and developing worlds, and assess strategies adopted to combat such problems;
- \* To recommend collective remedial measures that need to be adopted by governments in order to combine agricultural and water policies within a sustainable development context;
- \* To incorporate considerations of water into national S&T policies;
- \* To define R&D areas of importance in water sector in Third world countries;
- \* To develop innovative proposals for future activities in water resources management; and
- \* To facilitate the free exchange of views on the current national and regional water problems.

The conference will include around eighteen invited presentations as well as some free submission papers.

The committee proposed the following titles for some of the invited presentations:

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### **Jordan pays dues to Academy**

The Islamic Academy of Sciences has recently received the annual grant of the government of the Hashemite Kingdom of Jordan.

Dr Anwar Bilbeisi, the Academy's Executive Director General, expressed his appreciation of the initiative of the Jordanian government and lauded the continuous support Jordan and the Academy Patron Prince Al-Hassan accord the IAS, the Secretariat of which is based in Amman, Jordan.

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## IAS Patron receives Council

His Royal Highness Crown Prince Al-Hassan Ibn Talal has recently received the members of the Academy Council and its executive staff as well as Dr Enver Oren, Honorary Fellow of the Islamic Academy of Sciences.

At the meeting in which HRH formally inducted Dr Enver Oren, HRH detailed some ideas which he thought the Council might want to consider as part of its ongoing review of the programme of the Academy.

HRH specifically mentioned establishing cross boundary linkages between scientific institutions within the Ummah and others which operate internationally.

HRH also highlighted the role that the Muslim Scientific Community can play in projecting Islam within the context of the global changes stressing the importance of formulating development policies on the basis of human considerations.

In his presentation before HRH, Dr M A Kazi, President of the Academy, summarized some of the activities that the Academy had undertaken over the last two years and briefed HRH on its plans to convene an international conference on Water Resources in Sudan.

In his introduction of Dr Oren, the President mentioned the efforts that Dr Oren had volunteered to support the Academy and to print its Science Journal at his own printing press at no charge.

Dr Kazi expressed his hope that, with the help of Dr Oren, the Academy Journal would truly become the international Science Journal of the *Ummah*, and that the Academy would be enabled to undertake new activities and programmes.



## IAS participates in Science Week

The Higher Council of Science and Technology of Jordan together with the Combined Staff Command of the Jordan Armed Forces have recently concluded the Second Jordan Science Week, 1-5 August 1994.

The IAS was represented at this activity by Eng. Mounneef R Zou'bi, Technical Affairs Director, IAS.

The Week was designed to review a draft science and technology policy for Jordan and highlight some of the major activities and duties undertaken by the Jordan Armed Forces.

An attempt was also made to present the concise history of the development of some of the corps making up the Jordan Armed Forces.

Another activity planned to coincide with the Jordan Science Week was the Congress of the Network of Arab Scientists and Technologists Abroad (ASTA).

The ASTA is a private non profit, educational and scientific organisation of individuals of Arab origin who hold positions in scientific, research, educational, in-

dustrial and technological institutions, and who reside and work in the industrialized countries of North America, Western Europe and Japan.

Five technical workshops which preceded the Jordan Science Week were held with the help of ASTA, the HCST as well as a host of local institutions. The first of these was the programme held at the Applied Science University entitled "Computer Systems and Applications."

Another workshop which was also held at the Applied Science University was under the heading of Pharmacology II (Current Issues in Clinical Research).

A workshop entitled "Control, Power System and Electronics," was held at the Jordan Electricity Authority.

The University of Jordan also hosted a workshop entitled "Infrastructure and Innovative Energy Technologists."

Yarmouk University in Irbid hosted a workshop on "New Materials and Characterization," whilst the National Centre for Agricultural Research Technology Transfer played host to a Workshop on "Agricultural Sciences."



## IAS Council convenes

The Council of the Islamic Academy of Sciences, held its Seventeenth Meeting at Amman (Jordan) on Saturday, 18 June 1994.

The Council discussed the Academy's finances and future programme and activities as well as the preparations made for the 1994 Conference which will be hosted by the Sudan.

The Council agreed that the theme of the conference would be "Water in the Islamic World: An Imminent Crisis," and finalized a short-list of agencies that might be requested to join the Academy, in organising/sponsoring the conference.

The Council nominated His Excellency Rauf Denktash, President of the Turkish Republic of Northern Cyprus, as an Honorary Fellow of the Islamic Academy of Sciences, in recognition of His Excellency's commitment to science and technology, development and education in his country, and the support and patronage he has accorded to the growth of science and technology.

The Academy Council also discussed some of the proposed procedures for the election of the Academy Council.

The Academy Council is made up of the President of the Academy; Dr Mumtaz Kazi, Vice Presidents; Dr Mehmet Ergin, Dr Mohamad K Mahmoud, Dr Saleh Al-Athel Treasurer; Dr Fakhruddin Daghestani, the Secretary General; Dr Ali Kettani as well as the 1994 Conference Co-ordinator Dr Sulieman Gabir.

The Secretariat of the Academy was represented at this meeting by Dr Anwar Bilbeisi, Executive Director General as well as Eng. Mounneef R Zou'bi, Technical Affairs Director, IAS.

## EDITORIAL LETTER

### *National S&T Policies. Why?*

*Jordan has recently concluded its Second Science Week in which a draft national S&T policy was discussed and approved.*

*By all accounts, the policy is good and one in which a lot of work was put in.*

*It seems fair however for an observer to wonder as what is the target or objective of such a policy. Why should a developing country have an S&T policy? What would the objective of the policy be?*

*Dr Mahathir Muhammad addressing the plenary session of the 1992 Academy Conference in Kuala Lumpur indicated that the basic objective of the Malaysian S&T policy was to help Malaysia to become fully developed by the year 2020.*

*President John F Kennedy, in a presidential address in 1961, said that the objective of the US space programme (part of the US S&T policy) was to put a man on the moon before the end of the decade (of the sixties).*

*It therefore becomes clear that the objectives of any S&T policy need to be clearly stated as a foundation stone for its implementation and the public comprehension of it.*

*Is the objective, for instance, of an S&T policy to turn a society into a fully industrialized one which nourishes an export oriented economy? In agriculture, is the objective of the policy to achieve food security? In human resource development in S&T again, is it the achievement of the UNESCO ratio of the number of R&D personnel to population? In health, is the objective for example to lower the infant mortality rate in the country to say below 20 per 1,000.*

*There can be no doubt that the underlying objective of any development policy, particularly an S&T policy in the long term, is to achieve all of the above.*

*However it clearly would be beneficial if reasonable targets can be set at the outset as this would provide the team implementing the policy with a bench-mark on which they can base their rate of achievement and continuously appraise their policy and overcome any shortcomings in implementation.*

*An effort should be made also to market this target setting concept amongst the teams running secondary or supporting policies.*

*It is an unescapable fact that for a country to achieve a reasonable level of development she has to have an S&T policy of a kind.*

*It is a sad state of affairs to realize that only 15 or so OIC member countries can claim to have such a policy.*

*This situation calls for a massive effort on the part of scientists throughout the Islamic World to mobilize efforts so that each and every OIC country would have an S&T policy by the turn of the century.*



# Jordan adopts draft S&T policy

The Higher Council of Science and Technology of Jordan together with the Jordan Armed Forces organised the Second Jordan Science Week in Amman, Jordan, during the first week of August 1994.

Almost half of the discussion time of the conference was allocated to discussing the draft Jordan national science and technology policy and strategies document which was prepared by the Higher Council of Science and Technology and a host of experts.

The preparation of the draft Jordanian national science and technology policies and strategies comes in accordance with the text and spirit of the law that established the Higher Council of Science and Technology. This initiative provided a starting point for a comprehensive national dialogue aimed at enriching the final sophisticated conceptual expression of an ambitious plan of action for Jordan's progressive development.

The Higher Council of Science and Technology law no. 30, 1987, article 4, stipulated that the Council should aim to "build a national science and technology base, guide and develop it towards the achievement of economic, social and cultural development in the Kingdom." Article 6, paragraphs (a) and (b), of the law stipulated that the Council was to "exercise its rights to set up the public policy of science and technology (S&T), define its priorities and establish the relevant programmes and plans while following up on implementation and evaluation and setting the strategy suitable for the development of scientific and technological

potential within the Kingdom as well as preparing the scientific environment suitable to that end."

While this document harvests the long term efforts exerted by the Council's General Secretariat, a large cross section of institutions from the Jordan science and technology community, contributed to confirming and shaping the related principles and formulating their directives through the efforts of the consultative sectorial committees which were made up of delegates from ministerial and other governmental bodies alongside representatives of the private sector, universities and centres of scientific research.

Those who prepared this document took the particular nature of Jordan into account and undertook close contacts with those involved in Jordan's development drive. They also reviewed/screened the national experiences of a number of countries at differing global developmental levels. This document was prepared in the hierarchical/structural manner generally suited to the direction of the 1993-1997 Jordanian Development Plan and has maintained brevity (is uncluttered with detail) and directness of approach. It is made up of two main parts; the first represents an entry covering four headings: a general background, the general framework for policies and strategies, the major supporting elements and the requirements/pre-requisites for implementation. The second part is made up of four chapters covering the main elements of policies and strategies: human resources/manpower, in-

formation, research and development (R&D), and technology.

With the adoption of this document Jordan puts herself amongst the first ten Islamic countries which have such a policy.

The Islamic Academy of Sciences heartily commends the efforts of the staff of the General Secretariat of the Higher Council of Science and Technology for the work they all have done in preparing this document, and urges all OIC countries to follow this example.

## COMSTECH COURSE ON PLANT TISSUE CULTURE AND TRANSFORMATION

Based on the successful COMSTECH Course on Tissue Culture and Transformation run at the Centre of Excellence in Molecular Biology, this laboratory manual describes methods for the plant tissue culture and regeneration of plant. The methods are clearly laid out for easy use in the local environments. The book will prove invaluable to both the advanced level researcher and students wishing to study plant tissue culture and genetic transformation.

Price: \$ 10.00 Rs. 100.00

Available from COMSTECH  
3-Constitution Avenue,  
G-5/2, Islamabad  
Pakistan



(Continued from page 1)

- \* Water Resources and Water Balance in the Islamic World: An Overview;
- \* Water Resources in the Sudan (The Food Basket of the Arab World): Realities and Expectations;
- \* Socio-Economic Criteria for Water Resource Allocation in National Development;
- \* R&D Priorities for Water Resources Development and Management;
- \* Priorities of Human Resource Development in the Water Sector in Islamic Countries;
- \* Groundwater Utilisation in Arid Lands: Experiences (with particular reference to Agriculture): An Appraisal;
- \* Brackish Waters, Saline-resistant Plants and Saline Water Utilisation; and
- \* Israel and Arab Waters: Prospects for Peace or Conflict.

The meeting of the Science and Organising Committee was attended by the Co-ordinator of Conference '94, Prof. Suleiman Gabir FIAS, Prof. Subhi Qasem FIAS, Prof. Faysal Tag Eldin Abu Shama as well as Eng. Mounneef Zou'bi, Technical Affairs Director, IAS.

## A PROFILE OF AN INSTITUTION

### **Inter Islamic Network on Water Resources Development & Management (INWRDAM) resumes activities.**

The Inter-Islamic Network on Water Resources Development and Management (INWRDAM), was founded in 1987.

The Founding meeting for the establishment of this Network was held during July 1987, and was attended by representatives from Iraq, Pakistan, Tunis, Turkey, Niger, Mali and Jordan. Representatives of the Islamic Academy of Sciences (IAS), and the Islamic Foundation for Science, Technology and Development (IFSTAD), participated in the meeting which was held in Amman.

The INWRDAM is as a mandated non-political inter-governmental organisation working towards the development of all aspects of the water sector in its member countries.

The INWRDAM has recently moved to its new offices located in the premises of the Royal Scientific Society (RSS), for the Jordan Higher Council for Science and

Technology (HCST) has been chosen by the government of Jordan as the host country focal institution.

The INWRDAM is currently headed by its new President, Dr Hani Mulki, the Secretary General of HCST and Dr Murad Bino, who has recently been appointed as the Executive Director.

Some joint activities are planned between the IAS and INWRDAM, and infact Dr Murad Bino, Executive Director of the Network, has been invited to participate in the Eighth Conference of the IAS on "Water Resources in the Islamic World: An Imminent Crisis," Khartoum (Sudan), 5-9 December 1994.

As well as presenting a technical paper on "Water Saving Technologies," Dr Bino will make a short presentation about the Network, its programme of action and its planned activities.





# AIDS: A First-World Disease? A Third-World Problem? Options for the Future\*

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## INTRODUCTION

A little over 12 years ago, the scientific world was just learning of the emergence of a new disease, which at the outset, was far from being understood as the most serious pandemic that humanity has ever known.

The history of this disease is marked by great scientific feats, but unfortunately, also by serious errors of judgement in the public health domain and in the protection of individual rights.

The day in June 1981 a little more than 12 years ago will remain long engraved in our memories as the day when, in the great auditorium of the Centre for Disease Control in Atlanta, the first publications had just been announced on what was then called "GRIDS" or Gay-Related Immunodeficiency Syndrome. **This was the first error of judgement.**

For a whole year, throughout 1982, publications were describing devastating clinical pictures among young adults, particularly homosexuals, drug-abusers and/or prostitutes, and among children of what was beginning to be known as AIDS or Acquired Immunodeficiency Syndrome.

HIV, or the Human Immunodeficiency Virus, was not discovered until 1983 by a team at the Pasteur Institute of Paris.

What is unique in regard to this epidemic is that it has manifested itself more than any other disease, because of its treatment by the media and its widespread nature, highlighting the interdependence of health and development, of health and human rights, and of health and social inequalities.

It would have somewhat changed the relationships in the domain of knowledge between the usual repositories of knowledge and their potential disciples; as at the onset, everybody was at the same starting point.

It would have, above all, thoroughly changed the relationships between the repositories of knowledge, the givers of care and those requiring care, these last now requesting a right to have their say and participate in making decisions on the treatment. This is a completely new departure in the domain of health.

However, this disease has also revealed the weakness of our contemporaries, who thought themselves protected by science from any serious infection, and has resuscitated the old demons that fed on intolerance, ignorance and fear: proscription, culpabilization, and xenophobia. **This was the second error of judgement.**

Finally, again showing the lack of courage and the incredulity that

surface when a new challenge upsets certainties and disturb comfort, individuals and interest groups take refuge in denying the danger: "The devil is the other person"; "It only happens to others"; "This disease does not concern us". From omniscient America to the most traditional countries in Africa or in Asia, this old reflex has, unfortunately often come into play, causing the massive infection of numerous people by inhibiting the application of the sound principles of education and prevention to a disease long known to be sexually transmitted. **This is the third error of judgement.**

## AIDS, THE PRINCIPAL PANDEMIC IN TODAY'S WORLD

Of course, humanity has known devastating pandemics long before AIDS, such as the pandemic that has finally been overcome (smallpox), and others that are under a certain degree of control (plague and cholera).

Because the onset of this pandemic was described for the first time and better known in the West and within social groups among whom it was likely to spread, the rest of the world thought itself safe. The greater visibility of the

\* Paper presented at the Eighth International Conference of the Islamic Academy of Sciences, Health, Nutrition and Development in the Islamic World, Dakar, Senegal, 22-26 November 1993.

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\*\*\* Complete text of paper with illustrations and references will appear in the forthcoming Proceedings.



epidemic in the West is simply due to a better recording of cases (better technical and logistic means), and the decline in morbidity and mortality from the classic infectious diseases.

**It is nevertheless unwise to believe that it is primarily a disease of the West. It is the world's pandemic!**

Ten years ago, in 1983, after the discovery of the causal agent and the proof of its sexual transmission, public health specialists had already suspected that it would spread to the whole of the planet unless a vaccine or a remedy, which it was thought would be easy to find, intervened to stop the disease. Alas, there is neither a vaccine nor an effective remedy yet in hand, and, at the present time, because of its extent and its inexorable medium-term and long term progress, it is quite right to speak of it as the world's most important disease.

#### **ONSET AND RAPID SPREAD OF THE EPIDEMIC**

- 1981: description of AIDS  
1983: isolation of HIV, the causal agent  
1983-1985: development of tests to detect the virus.

In the light of the history of humanity's medical progress, it can be said that everything has gone very quickly, but it can also be said that the virus has also progressed very quickly. Thus, in the middle of the 80s, it was becoming clear that this new virus, a retrovirus with the special faculty of preferentially attacking the body's immune cells had begun to spread insidiously in North America, in Europe and in sub-Saharan Africa. The disease has spread so rapidly that 10 years later no continent has been spared.

The rapid explosion of this epidemic occurred at the end of the 70s and the beginning of the 80s in North America, Australia and Western Europe, among, first of all, the homosexuals and the bisexuals in the urban areas, and also in the Caribbean, Southern and Central Africa among men and women whose common feature was the multiplicity of their sex partners.

During this present year of 1993, it is estimated that more than 14 million HIV infections have occurred cumulatively in the world since the beginning of the epidemic.

Two HIV serotypes are at present known: HIV-1 and HIV-2. HIV-1 is predominant throughout the world, whereas it seems that HIV-2 is widespread in West Africa.

Their modes of transmission are identical and so are the clinical pictures of the disease once it manifested itself. However, it seems that HIV-1 is more easily transmissible, and that its clinical evolution is also more rapid.

#### **MODES OF HIV TRANSMISSION**

Epidemiological and laboratory surveys have established the three main modes of transmission, viz. the sexual route, blood and transmission from mother to child.

**Sexual transmission:** heterosexual, homosexual and bisexual modes of transmission are responsible for the largest number of infections. Aggravating factors are sexually-transmitted diseases (STD), multiple partners, sexual practices that cause injury and unprotected sexual intercourse. The sexual route is responsible for 70%-80% of infections throughout the world.

**Transmission through blood:** transfusion of blood and blood derivatives, the exchange or use of nonsterile injection equipment and the donation of organs. The part these play in the developed countries, is becoming continuously smaller. The situation in the underdeveloped countries is all the more intolerable. This route is responsible for 3%-5% of the total number of infections in the world.

**Transmission from mother to child:** there is a rate of 30%-40% in the African countries as against 20% in the developed countries. An advanced state of immunodeficiency, the conditions of delivery during childbirth, intrauterine infections and also breast-feeding are probably responsible for this high percentage in developing countries. This route is responsible for 5%-10% of the infections in the world. This mode of transmission is probably the most difficult to imagine on the part of the parents, but also the most difficult to tackle on the part of the public health decision-makers.

**There are no other modes of transmission of any epidemiological significance.**

#### **PROGRESS FROM INFECTION TO DISEASE**

One of the most alarming features of this epidemic for the public at large is the fact that there is quite a long and variable interval between HIV infection and the beginning of clinical symptoms. The experience so far acquired of this disease suggests that 50% of infected persons develop the disease at the end of 10 years. In the absence of other causes of death, almost all these persons will end up by dying of AIDS. Moreover, once the disease



has manifested itself, the average survival time lies between one and three years.

There is probably a difference in the natural evolution of the disease between the different serotypes HIV-1 and HIV-2. There are also factors that have not all been completely elucidated that may interfere in the course of events:

- a variability in the strains of virus;
- individual genetic susceptibility;
- concomitant and intercurrent infection.

These factors are probably the basis for cases of long survival by some infected persons and the fact that the course of the disease is more rapid in children and in adults over 40 years of age.

#### INTERACTIONS BETWEEN HIV INFECTION AND OTHER DISEASES

The most obvious are between:

**HIV infection and the sexually-transmitted diseases.** The classical STDs, particularly gonorrhoea, syphilis and chancroid, occur under the same behavioural conditions as those that expose the individual to infection by HIV. STDs, whether suppurative or ulcerative, but particularly the latter, without any doubt facilitate the ingress and transmission of HIV. The risk from a single sexual act is then 10 to 100 times higher.

Hence, the value of developing services to control the cosmopolitan STDs by supplying appropriate diagnostic techniques, affordable medicaments, counselling and condoms.

**Tuberculosis.** Latent infection with *Mycobacterium tuberculosis* may reach proportions of the order of 30%-50% in many developing countries. The resurgence of

endemic tuberculosis in some countries is creating something like a parallel epidemic where tuberculosis was almost under control. This is as true for the poor countries as for the rich.

The failure of immunity reactivates latent tuberculosis, making it aggressive, often miliary or multifocal, while the immune deficiency means that the person affected will carry more bacilli and be more sensitive to drug reactions, which often makes the tuberculosis bacillus resistant to anti-tuberculosis drugs. HIV also contributes to the spread of tuberculosis among those close to the patient and renders it the most frequent opportunistic disease in the Third World.

#### WORLD EPIDEMIOLOGICAL SITUATION AND TRENDS

As of June 1993, a total of 718,894 cases of AIDS have been cumulatively reported to the World Health Organization (WHO). Obviously, this represents only a small visible proportion of the real number of cases. In fact WHO estimates that the total number is a little over 2,500,000 AIDS cases in adults and children since the beginning of the epidemic to mid-1993; 80% of them occurring in the Third World.

Although the real and ultimate dimensions of the pandemic are unknown, it is estimated that by the year 2000, cumulatively a total of 30-40 millions HIV infections will have occurred and near 10 million AIDS cases occurred around the world. Pessimistic forecasts predict more than that.

Prevalence rates vary greatly from one country to another and, within a particular country from one geographical area to another,

or from the urban to the rural districts.

For certain urban areas of Central and Eastern Africa, rates of 30% have been reported, whereas in some rural zones of West Africa, the 1% mark has not been reached. Unfortunately, it is known that this situation is changing rapidly for the worse, in view of migratory movements, means of transport and the economic crisis.

Social groups whose sexual behaviour increases the risk of infection show, in places, alarming rates such as the 80% prostitutes in Central and East Africa. Others are more and more threatened, for example:

- those who carry or have relapses of sexually-transmitted diseases;
- patients with tuberculosis;
- young needy people and women;
- military personnel.

A closer look at the reported cases since the beginning of the epidemic reveals the following picture (classified according to the WHO Regions):

AFRICA	246 127
AMERICAS	371 086
EUROPE	92 822
WESTERN PACIFIC	5 058
SOUTH-EAST ASIA	2 002
EASTERN MEDITERRANEAN	1 799
TOTAL (as of 30 June 1993)	718 894

The lowest prevalence in the Islamic countries of the Eastern Mediterranean raises a few questions:

- Has Islamic morality protected and is it continuing to protect the populations? Some people think so.
- Is it a question of a time lag, due to the fact that the epidemic was



late in affecting these countries? Others think so.

The reality, perhaps, lies between these two hypothesis.

In any case, it is sub-Saharan Africa which has the highest prevalence, reaching a total of about 7-8 million out of the 13-14 million estimated infected persons worldwide.

Figures coming from South-East Asia bode ill. According to officials in certain countries in that Region the number of infected persons has now reached several million. The co-existence of high-class and mass prostitution with intravenous drug intake based on international traffic, without exaggeration, is a real time bomb. Very alarming percentages of seropositivity among prostitutes and young military recruits are now being put forward by the authorities in India and Thailand.

Uncertainties subsist as to what is happening in eastern Europe and the former Soviet Union, but all the ingredients are there, i.e., prostitution, intravenous drug abuse, economic stagnation and failure to find a model of society that will integrate the young people and ethnic minorities.

It will therefore be easily understood that these ingredients, which are also found in Latin America and perhaps to a lesser degree in the Near East, should not be considered as a "specific cultural feature" of Africa or the Caribbean. **That would be the fourth error of judgement.**

People must accept that it is by behaving responsibly that men and women can protect themselves effectively against AIDS but that no country in the world can claim to find refuge behind legislative and isolationist barriers that are proof against HIV.

In view of the initial explosion of AIDS among homosexuals or intravenous drug abusers in the developed countries, there is still a sex ratio "favourable" to men, whereas in the countries of the Third World, particularly in Africa, the sex ratio is 1:1. This is due to the preponderance of heterosexual transmission.

In the European countries and in the "Golden Triangle" in South-East Asia the spread of the epidemic seems to be maintained by infection due to the exchange of needles and syringes by drug abusers.

There are 14 million infections in the world: 13 million among adults and 1 million among children.

Meanwhile, only 700 000 cases of AIDS have been reported to WHO. This is due to failure to diagnose, delay in notification or perhaps refusal to notify. In reality one must expect more than 2.5 million cumulative cases of AIDS throughout the world since the beginning of the epidemic, of whom half have since died. Among these cases 0.5 million are children.

While in the Third World countries certain endemic diseases and devastating disasters can still divert, elsewhere, in the developed countries, AIDS is already the principal cause of death among young adults.

In the United States of America and in Australia AIDS is the first cause of death among men in the 25-44 age group. In the United States of America it is the fourth cause of death for women in the same age group.

In Switzerland AIDS is the second cause of death among men in the 25-44 age group, after suicide, and the second cause of death among women in the same age group, after cancer.

It is also the case in certain Third World countries that are seriously affected: over 50% of deaths among young adults are due to AIDS in some countries of southern Africa. WHO estimates that by the year 2000 infant mortality in these countries will reach 200-250 per 1000 live births.

There are therefore several reasons for saying that HIV/AIDS infection is a major problem in the Third World:

- the wide extent of HIV infection and of AIDS in all the Third World countries, a feature paralleled in only by the lack of means;
- the unchanging nature of the circumstances favouring the infection;
- the immediate impact on individuals and the family unit;
- the impact on health indicators and health systems;
- the medium-and long-term negative impact on development.

## **HIV/ AIDS INFECTION, A THIRD WORLD PROBLEM**

### **FACTORS INFLUENCING THE SPREAD OF THE EPIDEMIC IN THE THIRD WORLD**

#### **Behavioural factors**

It is certain that sexual behaviour is the most important determining factor in the spread of the epidemic of HIV infection and AIDS. This sexual behaviour comprises:

- the early age of sexual initiation;
- sexual promiscuity, or in other words, multiple sexual partners;
- the frequency of casual or commercial acts.

The chaotic processes of development of numerous countries in the Third World have unfortunately favoured these modes of



transmission, because of the glaring social inequalities, the uprooting of young people and the more rapid pauperization of women.

Sexual risk practices such as sodomy, which, according to recent studies, is a current practice in Latin America and in the paedophile tourism now in fashion, are the "vectors" that are the most "effective" in transmitting HIV. Certainly these practices have been somewhat amplified by modern commercialism and the copying of models from elsewhere but they have also existed in certain areas long before sexual tourism.

Failure to use condoms must be classified as dangerous practices: because of a simple psychological block among those beginning their sexual life, the uncaring or very dangerous thoughtlessness of the person who knows what to do but does not do it, and the wait-and-see attitude of the defenders of sexual taboos.

Is it still necessary to demonstrate the effectiveness *in vitro* and in the field in several places in Africa and Asia of the use of condoms? Moreover, it will easily be seen from the figures on the marketing and distribution of condoms in the Third World countries that there is a demand for them. It is for the decision-makers to facilitate the use of condoms and make them easy to obtain.

Finally, it is being confirmed that intravenous drug abuse is spreading rapidly in many parts of the Third World and that it is a potent ally of the sex industry in the propagation of HIV infection.

### **Biological factors**

Biological studies have shown a great difference in the variability of

viral strains from Africa, Europe or America. Research is nevertheless necessary to confirm that this genetic variability of the African strains could increase their virulence because of their greater affinity to cells or their greater capacity to attain high levels of virus in the blood.

The prevalence of the facilitating STDs is generally greater in the developing countries, particularly in the urban zones among those that can be called the "hard kernels", i.e., prostitutes and their customers, long distance drivers, seasonal workers and military men in condition of prolonged celibacy. Sexual promiscuity allied to a lack of care provides a fertile breeding ground for classical STDs and AIDS.

Certain traditional practices for erotic or preventive purposes may injure the vaginal wall and favour the penetration of HIV.

As an increasing number of women infected 5-10 years ago are reaching childbearing age, there will be a rapid increase in infections among children. The problem is all the more serious, in that, several independent studies have shown higher rates of materno-fetal transmission among Third World women (30-40%) than among European or North American women (15-20%).

### **Demographic factors**

Of course, a high proportion of the population made up of young people between 15 and 40 years of age can be an important aspect for the Third World, but the incursion into this world of a sexually transmitted disease coinciding with underemployment and the smaller

incomes of these young people is putting this unequalled potential in grave danger.

It is well-known how much seasonal or permanent migratory movements have contributed to enriching the big cities of the Third World with constantly renewed strata of young rural people facing increasing difficulties in finding lodging, work and medical care, while at the same time the ancestral values of good conduct and solidarity were becoming weaker. This phenomenon has favoured commercial sex, STDs and AIDS.

### **Socioeconomic and cultural factors**

These factors are most frequently linked with economic underdevelopment, but the cultural environment as elsewhere, can sometimes have positive or negative effects on the progress of the epidemic.

One of the most glaring aspects is the status of women. The fact that women are disadvantaged educationally, legally and economically puts them in a position of total dependence, which may even include dependence in the choice and practice of their sexual lives. There has been no action directed towards the sexual behaviour of the dangerous partner whether married or not. Little has been done on the choice of prevention; women have been induced to take to prostitution through necessity or by force and here and there they have been forced to submit to the now suicidal practice of levirate.

In many developing societies taboos on sexuality inhibit thought and education and thereby prevent any effective policy for preventing sexually transmitted diseases. It is also taboos that limit the promotion



and accessibility of the only means that is at present effective against HIV infection, i.e. the use of the condom.

Wars and the social disorders and poverty that they bring about lead to ruthlessness, and the adoption of risky sexual practices and banish any possibility of the most elementary care. It is this poverty that is causing the breakdown of families, forcing adults into incessant migrations and haplessly throwing millions of children onto the streets.

A community's organization and management influence the choices of strategies for protecting its health. Thus a lack of far-sightedness or political courage, such as the refusal of a scientifically valid, easy and cheap preventive method, may have lasting repercussions on the health of all.

However, in many of these developing societies some forms of behaviour, practices and social rules may contribute to reducing to a minimum, the spread of HIV infection and its disastrous consequences:

- family cohesion in the wide sense;
- solidarity and mutual assistance;
- sexual abstinence outside marriage (with all its limitations);
- strict faithfulness in monogamic or polygamic relationships;
- the practice of circumcision for hygienic purposes.

Of course, apart from the known limitations of these practices, they would only provide supplementary protection, not act as a barrier against sexually transmitted diseases, including AIDS.

The complete figure of variables which may influence the spread of HIV infection is proposed in the following table.

**Table: 2 Variables influencing the spread of HIV infection.**

<b>Behavioral variables</b>	<b>Demographic variables</b>
<ul style="list-style-type: none"> <li>- Rate of partner change</li> <li>- Sexual mixing patterns</li> <li>- Size of and rate of contact with "core" groups</li> <li>- Sexual practices (anal intercourse, intercourse during menses)</li> <li>- Level of condom use</li> <li>- Behaviour and infection rate of partners</li> <li>- Prevalence of injecting drug use</li> </ul>	<ul style="list-style-type: none"> <li>- Size of the population in the sexually most active age groups</li> <li>- Male to female ratios</li> <li>- Rate and growth of urbanization</li> <li>- Migration patterns</li> </ul>
<b>Biological variables</b>	<b>Economic and political factors</b>
<ul style="list-style-type: none"> <li>- Level of viraemia</li> <li>- Infectivity and virulence of HIV strains (strain variation)</li> <li>- Prevalence of other sexually transmitted diseases</li> <li>- Lack of male circumcision</li> <li>- Use of certain vaginal products</li> </ul>	<ul style="list-style-type: none"> <li>- Response to the epidemic</li> <li>- Performance of the health care system</li> <li>- Poverty, deprivation, lack of education</li> <li>- War and social disturbance</li> <li>- Women's status</li> <li>- Attitudes towards sex</li> </ul>

# SOCIOECONOMIC IMPACT

In addition to the pain and physical disintegration due to repeated attacks of opportunistic infections, AIDS will cause very profound and long-lasting psychological disorders in the absence of treatment, the certainty of death, but above all, having to face rejection and stigmatization. The first impact of AIDS is on the patient and his or her family. This impact is frightening, both physically and psychologically. It will also end by having an adverse economic impact due to the increasing needs for medical care.

What can be said of the survivors?

- A fate often more difficult for a widow than a widower: a sudden loss of resources and land; loss of family ties; and the women is often infected if not already at the stage of illness.

- As for orphans, there has never been talk before of orphans resulting from a particular disease, perhaps because the plague, smallpox or cholera had the "decency" not to leave orphans. But now AIDS orphans throughout the world, and particularly in Africa, are a major concern. Their number is outpacing the capacities for mutual assistance in the traditional extended family and even the capacity of certain countries that are most seriously affected to feed, lodge, clothe and educate millions of children, some of whom are infected, will need an unprecedented material commitment.

- In addition to widowers, widows and orphans, account must also be taken of the elderly, who will also have to be looked after.

AIDS has begun to put a great strain on certain values, both in the



northern countries and in those of the south: solidarity in testing circumstances is being replaced by apathy, suspicion, culpabilization and finally hostility with, as a consequence, an avalanche of ineffective measures and practices that infringe human rights.

As in certain large American cities, AIDS is now the main cause of death among young adults in some great African towns; elsewhere, in a country of South-East Asia, it is forecast that by the year 2000 nearly 30% of all deaths will be due to AIDS. This is an unprecedented fact in the history of human medicine.

In the same way, there is an increase in infant mortality in places where spectacular progress had been recorded for the last 30 years. Unfortunately, the decrease of diarrhoeal and measles mortality is being paralleled by AIDS increased mortality.

This will result not surprisingly, in a shortage of human resources, particularly at the three key levels of society: agriculture, mining and industry and finally technical, educational and management staff, which is so much needed.

## **IMPACT ON PUBLIC HEALTH SYSTEMS**

At the moment it is easy to see that the health structures of the Third World will have difficulty in resisting the epidemic surge. Indeed AIDS does not come alone to knock at the doors of hospitals or dispensaries, it causes a resurgence and aggravation of other diseases that were more or less under control: tuberculosis, pneumococcosis, salmonellosis-all opportunistic infections that are now common and feared.

The increased cost is already difficult to bear for the meagre public

health budgets of many countries, even those where investments in health had not been neglected.

The increased workload on health personnel and their fear of infection, whether justified or not together with the insignificant results of their efforts, are leading to a profound demoralisation that can be seen at every level: to the famous "burn-out" described in eastern and southern African hospitals.

However this impact does not affect the care givers alone, it also affects the patients and their families. Those who as doctors and carers have forged their experience in Third World countries, are well aware that if a minimum offer of care is not available in the face of such a large demand, the populations will desert the referral clinics and the health professionals will be deprived of any opportunity of delivering preventive messages either against AIDS or against curable diseases. The patients could take refuge in underground care practices that are sometimes as ineffective as they are dangerous.

## **PROSPECTS: THE GLOBAL STRATEGY**

To meet the challenge of HIV infection and AIDS, WHO launched, in 1987, the Global Programme on AIDS, whose main objectives are:

- 1) To prevent HIV infection;
- 2) To reduce the individual and social impact of the infection; and
- 3) To unite national and international efforts against AIDS.

Recently particular stress has been placed on:

- the need to take patients into care through the supply of health care on an adequate and equitable basis of health;
- to counter any discrimination and stigmatization and to observe the rules of ethics in preventive strategies and research efforts;
- to put into speedy effect strategies to reduce to a minimum the negative socio-economic impact of the pandemic.

To achieve this, the Programme is conducted not only from headquarters in Geneva but also from the regional offices and above all in conjunction with the member states of WHO that have asked for cooperation. Thus the Organization has helped 131 countries to put into effect national plans whose main component has invariably been information, education and communication.

WHO has also worked in concert with the NGOs and above all with such international organizations as UNDP, UNESCO, UNICEF, the United Nations Fund for Population Activities and the Bank for International Reconstruction and Development.

## **PREVENTING HIV INFECTION**

The main lines of prevention are:

### **1 ) Vaccine**

Of course, the most elegant, the most reliable and doubtless the most rapid method of preventing a virus infection is vaccination. In this connection three types of vaccines are envisaged for bringing the epidemic to a halt:

- a "preventive" vaccine: which protects uninfected persons from HIV infection;



- a "curative" vaccine: active immunotherapy halting the progress of the disease and thus reducing the viral burden and in the end possibly reducing transmission;
- a "perinatal" vaccine: curative for the mother receiving it, it prevents transmission to the fetus and the baby.

We must face up to a real fact: no vaccine, in particular no preventive vaccine, will have a significant impact on the AIDS pandemic if it is not appropriate and available for the developing countries in which nearly 90% of all new infections will occur by the year 2000.

In any case the trials to be carried out must follow irreproachable scientific and ethical guidelines and in particular not infringe individual rights; individuals will by definition have to be consenting volunteers. It is in this context that WHO will launch trials, whose methodological and logistic preparations are already in progress, in four areas: Uganda, Rwanda, Brazil and Thailand.

But the popular saying: "The most beautiful girl in the world can only give what she has" can be applied to a vaccine. This means that the best of vaccines cannot totally replace preventive methods, since it cannot be 100% effective and 100% vaccine coverage of population is difficult to achieve.

**The condom and again the condom!**

**Education and again education!  
Information and again information!**

## **2) Inducing a change in risk behaviour**

Experience has shown that changing a risk behaviour is possible, even if it is sometimes slow to get

off the ground: smoking and eating habits and taboos of mothers during the weaning period etc., are examples that should make us more patient but also more persevering on the road to success.

In this field, interventions aimed at women should be given preference since the social and economic conditions are known to be unfavourable to them particularly in the Third World countries:

- lower educational level;
- economic dependence;
- sociological pressure on sexuality;
- inability to influence the use of condoms.

For example a decisive step forward will have been taken in AIDS control on the day when the majority of women have achieved autonomy and freedom of choice in regard to preventive methods, whether mechanical or microbicide.

Inducing a change in behaviour is also necessary in the case of young people towards whom strategies which are beginning to show their value must be generally aimed: institutionalised sexual education (school environment) or group interventions in which the young people direct operations and report on their observations, conclusions and recommendations.

## **3) Better control of sexually transmitted diseases**

In view of the multiple role of classical STDs, their treatment is now a priority.

Stress is going to be placed on the widespread and systematic application of case management using algorithms based on the syndrome approach that does not necessitate the laboratory tests that are not available in many countries. The

same algorithms will guide health staff in their selection of therapy and their choice of drugs, a choice that must necessarily be from the list of essential drugs.

Of course, this approach presupposes establishing and maintaining functional health systems out to the most peripheral level as well as informing and referring to these systems the men and women who have most need of them.

In these services-rehabilitated and with improved morale-messages and educational sessions on sexuality will be given and condoms will be distributed by a "new look" personnel specially trained and retrained to eliminate the slightest hindrance to the attendance at the centres of women giving renewed confidence in them.

## **4) Prevention of transmission through blood**

It is a question of systematically:

- making rational and effective use of blood stocks;
- examining blood and its derivatives for HIV;
- carrying out injections and surgery under sterile conditions;
- scrupulously observing universal measures of protection of care personnel;
- reducing transmission among drug abusers using injectable drugs.

## **5) Prevention of perinatal transmission**

- encouragement of contraception in every seropositive woman and in so-called "discordant" couples;
- ensuring health care for pregnant women;
- providing appropriate counselling regarding breast feeding of a child born to a sero-positive mother.
- developing treatment protocols



using antiretrovirals accessible also to all settings in needs.

## REDUCING THE IMPACT OF HIV INFECTION AND AIDS ON THE INDIVIDUAL

Two components are essential in all countries, particularly in the poorest.

- counselling and psychological management of the HIV infected person or AIDS patient and his or her family;
- the provision of medicaments against the opportunistic diseases that predominate where anti-retroviral products are not accessible.

In this regard, when speaking of predominant opportunistic diseases in the developing countries it will be more and more necessary to take account of tuberculosis: about eight million new cases per annum in the world as a whole and three million deaths per annum; four to five million persons throughout the world have a double infection with HIV and the tuberculosis bacillus.

## REDUCING THE SOCIO-ECONOMIC CONSEQUENCES

Adverse consequences whose beginning can already be seen in certain countries:

- excess infant mortality in places where real progress had been made during the last 50 years;
- excess mortality among young adults, in both poor and rich countries;
- AIDS orphans, who are now estimated to number more than two million throughout the world and who may number more than eight million by the year 2000;

- destabilization of the health system; since in certain countries about 60% of hospital beds for adults are occupied by AIDS patients, and the direct or indirect costs due to the disease are beyond the possibilities of the public health budgets.

This destabilization is aggravated by the departure of overworked and demoralised personnel faced with the lack of means and the charnel house atmosphere in the overcrowded hospitals.

A solution will call for what will sometimes be an excruciating review of the options for development which considered investments in human health as a dead loss and will put a severe strain on international solidarity. **And yet solidarity is necessary!**

## UNITING EFFORTS

First of all, this must be done in each country where strategies must be defined on a multidisciplinary basis and where it will be absolutely essential to find resources from the country itself.

This is strongly encouraged by the national decision-makers most committed to combating AIDS and also by all the cooperation organisms.

The same consensus in uniting efforts is now sought and defended by the main international organizations. Their strategies aim mainly at reducing transmission and finding a way of responding to the demand for care but they are also quite aware of the imperative need to fight against denial, stigmatization and failure to respect rights and freedom because of a disease.

## CONCLUSIONS

In the 1970s and 1980s the world experienced an epidemic of HIV infections which without yet having attained its peak is unfortunately being paralleled by an epidemic of AIDS cases. This means that for many countries the worst is yet to come.

In our modern times, because of its global nature and because of the inevitably unfavourable prognosis written in invisible ink on the forehead of every patient, AIDS has upset many certainties.

Among the responses that are required from the most humble of those involved up to the most illustrious we should point out those widely advocated by the Global Programme on AIDS:

- an unprecedented political and financial commitment by the countries of the world in the often neglected domain of public health;
- the carrying-out of priority research on prevention comprising particularly research in socio-behavioural sciences, the improvement of service delivery in places where sexually transmitted diseases are treated and the provision of the best possible medical care;
- adherence of all interested parties to national defined priority research as they are defined for the interest of the sufferers and conducted in an atmosphere of real cooperation and in conformity with ethical standards recognized by all.

However, any action will be useless unless it is imbued with the concept of sound multi-partnership and unless all sectors and community leaders are integrated in the fight against AIDS.



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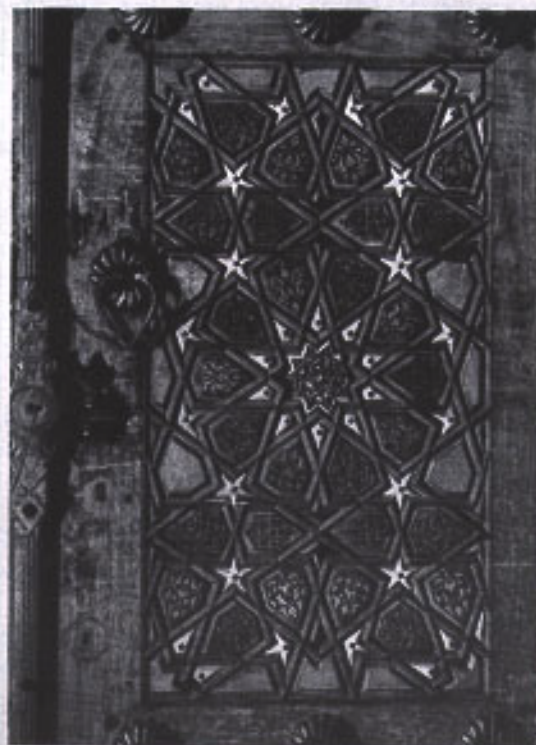
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## Arabic Islamic Thought published

The IAS has recently published Volume 3, Number 4 of the Arabic language version of COMSTECH's quarterly Journal "Islamic Thought and Scientific Creativity."

This publication, which is co-sponsored by the Royal Academy for Islamic Civilization Research (Al Albait Foundation), contains the following articles; "Semi-Quantitative Study of the Relationships Between Islamic Worldview and the Physical and Biological Sciences" by Prof. M.M. Qurashi, "Chinese Mathematics and its Influence on the Muslim World" by Dr Qaiser Mushtaq, "Early Muslim Contributions to Botany" by Dr Muhammad Hamidullah, "Muslim Contributions to the Science of Mechanics" by Dr Galal S. A. Shawki, "Understanding the Big Bang Cosmology in the Light of the Qur'an" by Dr M. Manzoor-i-Khuda, "The Origin and Development of Muslim Architecture and the Role of the Umayyads in its Growth" by Dr Abdul Qudus.

Volume 4, Number 1 of the Journal contains the following articles; "Towards an Islamic Renaissance" by Dr Muzaffar Iqbal, "Unified World Islamic Calendar: Science, Shari'a and Human Dimension" by Dr Mohammad Ilyas, "Regional Climatology of the Muslim World" by Dr Mirza Arshad Ali Beg, "A Holistic View of the Achievements of Early Muslim Scientists" by Dr Mohammad Sayeed Quraishi and Mrs Akhtar Imtiaz Quraishi.

Volume 4, Number 2 contains the following articles: "Education, Islam and the Challenge to Contemporary Muslim Societies" by Elma Ruth Harder, "State of S&T

Manpower in the Muslim World: From 2nd to 12th Century Hijra" By Dr M. M. Qurashi, "Present Water Resources and Water Balance in the Muslim World" by Dr Mirza Arshad Ali Beg, "Some Thoughts on the Decline of Muslim Science" by (late) Allama I. I. Kazi.

For Further information about the English language version of the Journal can be obtained from COMSTECH Secretariat, 3 Constitution Avenue Sector G-5/2, Islamabad, Pakistan.

Details of, and contributions to, the Arabicised version which carries the title "Al-Fikr Al-Islami Wa Al-Ibda' Al-Ilmi" can be addressed to the Islamic Academy of Sciences, PO Box 830036, Amman 11183, Jordan.







**Prof. Askar Akayev FIAS**

Prof. Akayev was one of the winners of the 1993 Fellowship elections of the IAS.

A Kyrgyz Doctor of Computer Sciences Prof. Akayev, who is 50, graduated from the Leningrad Precision Mechanics and Optics Institute in 1986.

At present, Prof. Akayev is the President of the Republic of Kyrgyzstan.

Among the previous posts occupied by Prof. Akayev was that of President of the Academy of Sciences of Kyrgyzstan.

In addition, Prof. Akayev was awarded the Kyrgyz Comsol Prize for the research he undertook in the development of a mathematical theory on the influence of warm conditions on computer memory units and reliability of their functioning. He has also been awarded the Grand Cross of the Association for Unity of Latin America, for his contributions to the development of peace and promotion of democracy.

Furthermore, Prof. Akayev has authored 100 scientific works and articles as well as one textbook.

Prof. Akayev is a member of the Scientific Council of the Academy of Sciences of the Former USSR as well as the Board of the Scientific and Engineering Societies of the Republic.



**Prof. Ahmad Marrakchi FIAS**

Prof. Ahmad Marrakchi is a Tunisian Founding Fellow of the Islamic Academy of Sciences, who obtained his PhD in Electronics from Toulouse University in 1966.

Prof. Marrakchi lists among his academic interests subjects such as Semi-conductors, Photovoltaic Solar Energy Conversion and Renewable Energy.

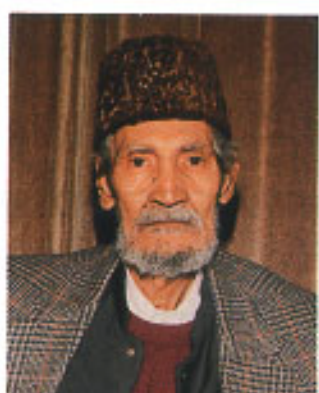
Prof. Marrakchi is the awardee of the Order of Chevallary of the Tunisian Republic and the Order of Chevallary of France.

Prof. Marrakchi started his career as an engineer and associate professor at the University of Toulouse (France) in 1962. He became a professor at the Faculty of Sciences, University of Tunis, 1966-1975.

Prof. Marrakchi was the Director of the National Engineering School for a further ten years (1975-1985). Currently, he is the Dean of Faculty of Technology at the University of Qatar at Doha.

Prof. Marrakchi is a member of the French Society of Electronics and the President and Founding Member of Tunisian Society of Electronics specialists.

Moreover, Prof. Marrakchi presented many of his scientific papers at international conferences, and has undertaken a number of projects in the area of education.



**Prof. Mohammad R Siddiqi FIAS**

Prof. Mohammad R Siddiqi is a Pakistani Founding Fellow of the Islamic Academy of Sciences, who obtained his PhD in Mathematical Sciences from Berlin and Leipzig Universities in 1931.

Prof. Siddiqi was an advisor at the International Islamic University, Islamabad, and Vice Chancellor of the University of Islamabad. He is a Founding member of the Pakistan Academy of Sciences.

Prof. Siddiqi authored numerous papers on mathematics some of which were published in recognised journals, as well as seven books dealing with mathematics and education.

His specific fields of scientific interest are theory of operations, theory of integral equation and theory of quantum mechanics.

Moreover, Prof. Siddiqi is the awardee of the Gold Medal for mathematical research which was awarded to him by the National Academy of Sciences, the Grosse Verdienst Kreuz which was awarded to him by the President of Federal Republic of Germany as well as the Sitara-i-Imtiaz, awarded to him by the President of Pakistan.

Apart from being a Founding Fellow of the IAS, Prof. Siddiqi is a Founding Fellow of the Indian Academy of Sciences as well as the National Academy of Sciences.





**Prof. Ahmedou Mostapha Sow FIAS**

Prof. Ahmedou Moustapha Sow is a Senegalese Professor of Internal Medicine at the Faculty of Medicine and Pharmacy, University of Dakar.

Prof. Sow was born in Saint Louis, Senegal. He got his Bachelor's Degree from the Science Faculty in Dakar, 1954, and continued his studies in Senegal, and in the former Yugoslavia from which he graduated from the International Course of Balkanic Medical Union, Sarajevo, Yugoslavia in 1967.

He became a professor of medicine, Emeritus Professor at Dakar University, in 1976, 1988 respectively.

Prof. Sow is the awardee of the First Prize Concours de L'Internat, Dakar and the Chevalier de l'ordre du Merite du Senegal.

His specific fields of scientific interests are chronic diseases mainly related to mode of life and their prevention by education.

Furthermore, Prof. Sow has more than 100 publications on different topics some of which he presented at many national and international conferences, including the Seventh IAS Conference on "Health, Nutrition and Development in the Islamic World," which was held in Dakar (Senegal), during 22-26 November 1993.

## *The Islamic Academy of Sciences IAS*

*The IAS is an independent, non-political, non-governmental and non-profit making organisation of distinguished scientists and technologists dedicated to the promotion of all aspects of science and technology in the Islamic World.*

*The establishment of the Islamic Academy of Sciences IAS was recommended, by the Organisation of Islamic Conference; OIC Standing Committee on Scientific and Technological Co-operation COMSTECH, and subsequently approved by the Fourth Islamic Summit held at Cassablanca, in 1984. The Founding Conference of the Academy was held in Jordan in October 1986.*

*The Government of Jordan graciously hosts the IAS at Amman, where the headquarters of the Academy started functioning in April 1987.*

*The main objectives of the Academy are:*

- \* To serve as a consultative Organisation of the Islamic Ummah and institutions in the field of science and technology.*
- \* To initiate science and technology programmes and formulate standards of scientific performance.*
- \* To promote research on major problems facing the Islamic countries and to identify future technologies of relevance for possible adoption and utilisation.*

## **IAS Newsletter**

*Published in English by the Islamic Academy of Sciences.*

### **Editorial Board:**

**Dr Anwar M Bilbeisi**

**Eng. Mounneef R Zou'bi**

The Editorial Board welcomes all articles, particularly short ones, and would consider the appropriateness of any material submitted for publication in accordance with IAS's own regulations.

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## New issues of Journal published

The Islamic Academy of Sciences has recently published Volume 6, Number 3 of its quarterly Science Journal.

The Journal which is partly sponsored by the Organisation of the Islamic Conference Standing Committee of Scientific and Technological Co-operation (COMSTECH) and by the IHLAS Gazetecilik Holding of Turkey.

This issue of the Journal contains more than 7 articles in subjects such as Chemistry, Nuclear Physics, Radiopharmacy, Biology, Microbiology, Mycology, Morphology, Toxicology and Dentistry.

Volume 6, Number 4 contains 10

different articles covering such topics as Radiopharmacy, Biochemistry, Microbiology, Ultrastructure, Trace Elements, Urology, Cardiology, Nephrology, Nutrition, Experimental Material

and Cancerology.

More details about the Journal and the articles it contains can be obtained from the editor; Prof. Naci M. Bor FIAS, Mithatpasa Cad., (Fax: 90.312.4259487).

## Muslim Scholars



### Abu Abdullah Al-Battani (850-929 CE)

Abu Abdullah Muhammad Ibn Jabir Ibn Sinan Al-Battani was born in Battan, near Harran on the Balikh river, which is one of the Euphrates tributaries.

Al-Battani was first educated by his father Jabir Ibn Sinan, who was also a well known scientist, then he moved to Raqqa, where he received his advanced education.

Al-Battani was a famous astronomer, mathematician and astrologer. He has been held as one of the greatest astronomers of Islam. He is responsible for a number of important discoveries in astronomy. His well known discovery is the remarkably accurate determination of the solar year as being 365 days, 5 hours, 46 minutes and 32 seconds which was very close to the latter estimates.

He wrote a number of books on astronomy and trigonometry. His most famous book was his astronomical treatise with tables, which was translated into Latin and was extremely influential in Europe, with translations produced in several languages.

(Taken from: *Personalities Noble*, National Science Council of Pakistan, edited by Hakim Mohammed Said).

\* Reference was made to "Arab and Islamic Scientific Heritage" by Prof. Ali Abdullah Daffa FIAS.

