

SCIENCE AND CULTURE

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THIS SPECIAL ISSUE ON MEDICAL SCIENCES

SCIENCE and Culture, the mouthpiece of Indian Science News Association was founded as early as in 1935 by the eminent scientists like Acharya Prafulla Chandra Ray, Debendra Mohan Bose, Meghnad Saha and others. Their object was not only to spread science among the masses but also to temper the society with scientific culture. Since then it has published numerous articles on a variety of topics related to different disciplines as well as constructive suggestions to tackle the social problems. Medical science was no exception. So when I was approached to edit a special issue on 'Medical Sciences' I immediately agreed as I thought that it is a great honor for myself being part and parcel of Medical Faculty. Further, it is a sacred duty to serve Indian Science News Association whose objective was to spread the science-based knowledge in the society.

It is rather difficult to trace the history of development of medical sciences through various stages of civilization, starting from the primitive and ending in most modern approaches but it can be surmised that it was practiced in one form or other in the most ancient cultures like Arabic, Chinese, Latin, Roman, Greek, Indian so on and so forth. The medical practice has been intimately connected with the human society which is composed of individuals linked through a network and where one's well-being has to be looked after by others. For this reason only sometimes various types of cult and magical feats came into practice in guise of medicine which has done lot more damage than help to the society. However, eventually this has indirectly helped to eradicate the blind faith and develop proper medical practice.

Ours is a nation of 1000 million people. The increased incidence of non-communicable diseases like cardio-thoracic diseases, diabetes mellitus, thalasemia, arsenic poisoning *etc.* are very alarming and thus throw a new challenge to the

medical fraternity. An age-wise, area-wise and state-wise survey of such disease incidence in the population shows some new and interesting picture. It will be shocking to know that 10% of our child population is mentally retarded to varying degrees. The need of the hour is to take control of the situation and handle carefully with full dedication. Diseases which were not heard of some 50 years back are now in the rise and at such an alarming rate in certain localities that we are almost put to a hopeless situation. We, being in the medical community can not lose heart and sit quietly. Our temporary failure must be seen as a challenge to work with renewed vigor and pursue our activities to find a solution to handle comprehensively any such incidence in the near future.

Other than medical experts molecular biologists, biochemists, biotechnologists and others have now a greater role to play. We knew Garner and Allard's visualization that a child may be born with any one of over hundred "inborn errors of metabolism" since early 20th century. The cause and remedies of such human inborn errors have been started to be solved recently. I am a strong believer that the day is not far off when we will make a real break-through in tackling the cases more competently. While looking back, from the history of development of mankind and human health care, I can see that whenever any new break-through was made against any disease, sudden appearance of a new disease had thrown a new challenge. The medical community along with others knew their responsibility and had accepted the challenge. Their untiring research activities led to the discovery of many new drug molecules and avenues of new therapy.

Like any other discipline Medical sciences grew through trial and error coupled with successes and failures. In spite of all round development in medical sciences this is true even today in the modern scenario. However, we are

now passing through a very critical stage and there is almost volcanic eruption of the knowledge in medicine. Although it is not destructive but definitely fraught with danger and the society is bound to question the scientists, in general and medical scientists, in special "Were these at all relevant?" Medical science, specially being the most beneficial to the human society as a whole its members have the right to take stock of the developing knowledge of various disciplines like medicine, surgery, pathology, microbiology, physiology, biochemistry etc. Since it is impossible to do the total survey in limited space I have decided to make a sort of sample survey through this particular issue in hand.

This particular issue has been planned to focus on the recent development in medical sciences to tackle the unsolved problems with special reference to hereditary diseases. It has now been possible to think of some of the approaches due to the sequencing of DNA of a large number of pathogens as well as the human genome. The leading article '*Whither medical sciences*' deals with some of the new approaches being made due to the advent of gene therapy. Emphasis has been laid on the benefit derived from the sequencing of the pathogens which will help to develop new vaccines. This is followed by a review on '*Buoyance of stem cell research*' which has been initiated, inspite of lot of controversies, because of its futuristic role in 'Regenerative Medicine'. The next article on '*Protein folding and conformational diseases*' combines the basics of protein folding from chemical and biological points of view along with the conformational diseases which arise due to wrong protein folding, focusing on certain diseases, specially hereditary, including Alzheimer which is of great concern now as the human life span is gradually increasing. As mentioned above, gene therapy is practically the talk of the day. Therefore the next article on '*Gene therapy and cardiovascular diseases : concepts, scope and perspectives*' is a pointer to certain issues mentioned in the leading article. The review on '*Atherosclerotic heart disease and free radicals*' is again a combinatorial paper between the basic studies on free radicals followed by their involvement in certain type of heart diseases. The next two articles are somewhat of a departure from the earlier presentations but are of special importance from their points of view. The one

on '*Bioartificial kidney*' is quite a departure from kidney transplantation which is at present the only alternative to deal with total kidney failure. In the new biological approaches there is better hope but those, however, need lot of perfection. This is only a specific example of what is being done in another area of 'Regenerative Medicine'. The next one on '*Bioterrorism : role of clinical laboratory in meeting the challenge*' is a timely discussion in the face of the new challenge the society is facing, which is worse than the war. However, this article has focused on quick preventive measures to meet the challenge for obvious reasons. The next two articles again are some diversions but not quite. The paper on '*Bilirubin metabolism molecular and metabolic considerations*' like others has discussed some basics of metabolism and effects of aberrant metabolism resulting in some very common diseases. Same approach has been undertaken in the article on '*Role of chromium in human metabolism with special reference to type 2 diabetes*' which is also one of the most common diseases. The article on "*Wonder worm C. elegans*" for the work on which Nobel Prize in Physiology or Medicine was awarded last year is an example of a simple organism which is at much lower rung of the ladder of evolution. This is an example to show beyond doubt that the evolution of the human is a continuous process over billions of years guided by natural selection. Incidentally the sequencing *C. elegans* DNA was instrumental to the sequencing of human genome. The last article on '*Molecular Medicine and Medical Education*' has been included to focus on the intense debate going on whether it is wise to introduce Molecular Medicine as a separate discipline in the medical curriculum or integrate its teaching with regular teaching program. With the progress of teaching of science, in general, it needs to be more pinpointed to avoid burdening the student. This is more true in case of medical sciences. Although attempt has been made to cover a wide spectrum of Medical Sciences in the special issue but it is not practically feasible to do that without making a compromise. In the past articles of medical interest were published in this journal from time to time and it is being assumed that similar articles will be published in the future as well. □

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Guest Editor