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REDEEMING THE PLEDGE

“Few countries in the developing world”, said Prime Minister Manmohan Singh, “have been able to implement such far-reaching reforms within the framework of a parliamentary democracy,” referring to India’s reform programme. Dr. Manmohan Singh, who as finance Minister had initiated the reform process, feels that such a reform programme will be enduring only when it enjoys “the widest possible social and political support”.

Nearly half-a-century ago, India’s first Prime Minister Jawaharlal Nehru explained the essence of parliamentary democracy in a memorable speech in the Lok Sabha: “Parliamentary democracy demands many virtues. It demands, of course, ability. It demands a certain devotion to work. But it demands also a large measure of co-operation, of self-discipline, of restraint,” said Nehru adding that the system of Parliamentary democracy embodies the principles of change and continuity. The author of the famous *Tryst with Destiny* gave full credit to the people for making the democratic experiment successful in India. “It has functioned with a large measure of success in this country because our people have the spirit of democracy in them,” he said. It would, however, be hazardous to assume that people’s spirit would always remain high and patience inexhaustible when those in power continue to use public office for personal gain and private benefit.

All that reminds us of ‘faded golden’ age in which India was a role model for the just then liberated countries of the third world. Where have we gone wrong since then? Scholars and experts generally refer to some major failures of the Nehruvian era such as the inability to control population growth and check corruption and the lack of will to introduce land reforms. The decade that followed witnessed three wars and the sudden death of two Prime Ministers. The political system survived these shocks and crises, only to be tested by a series of unhealthy developments in the years that followed. Institutions raised and nurtured with diligence came under assault. Established norms and conventions were set aside. The gravest threat to the system occurred when national emergency was clamped in 1975. The intensity of the damage was such that India still remains a flawed democracy.

India may have emerged as the world’s largest democracy. But some scholars describe it as an electoral democracy only. They seem to endorse the view that India is a ‘functioning anarchy’. The rating given by Freedom House to Indian democracy is low on several counts. Transparency International has placed India at 73 on the scale of corruption and recent surveys lowered the place to 90 among the 145 nations surveyed. In simple words it means that India is among the most corrupt countries in the world.

Fifty seven years after freedom was won, India has 250 million people – almost the population of the United States – living below the poverty line. One fourth of the world’s poor live in India. Female illiteracy, infant mortality and malnourishment among children are alarmingly high. Services such as water supply, electricity and sanitation are beyond the reach of millions of people. Poverty and unemployment continue to be formidable challenges. HIV infections threaten to assume epidemic proportions. India’s rank according to the Human Development Index continues to be low.

The dark cloud has, however, a silver lining. India is fast emerging as a software giant. The United States and European Union place India on par with China as the two emerging giants in the 21st century with both the Asian countries maintaining a steady growth rate. But comparisons with China need not be stretched too far. As stated by Nehru then and Manmohan Singh now parliamentary democracy takes time to produce results though half a century is a period long enough for any country to be able to translate its goals into achievement.

India is on the threshold of a great future. *Tryst with Destiny* was a pledge made to the nation in 1947. It was given Constitutional sanctity and legitimacy in 1950. Gandhiji, the Father of the Nation, wanted to wipe out every tear from every eye. The time has come to redeem the pledge. It is the hour of reckoning for India. The sooner our leaders and administrators wake up to the reality the better it will be, not only for the one billion people of India, but for the entire world.

- The Editor

“Our basic questions are after all economic and the land question is the most important of all” - JAWAHARLAL NEHRU

CYBER CRIMES - SOME STRAWS IN THE WIND-I

- Prof.R.Venkata Rao
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The word 'Cyber space' was coined by William Gibson in his science fiction novel, NECROMANCER, published in 1984. It has subsequently become widely used as a means of denoting the apparent or virtual location within which electronic activities are undertaken. The imaginary location where the words of the parties meet in conversation is what is referred to as cyberspace.

CRIME may be defined as "taking or attempting to take or doing or attempting to do any act by means of process which is not accepted by the norms of the society or by unfair means"

CYBER CRIME can be defined as "Any crime, with the help of computer and telecommunication technology, with the purpose of influencing the functioning of computer or computer systems".

Current estimates indicate that there will be over 1000 million users connected to the Internet by 2005. Out of these users, 0.5% i.e., 5 million represents the true threat as people who can steal things of value from organizations. It is difficult to identify that culprit, as the Net can be accessed from any part of the globe. The field is wide open for hackers. Hence, cyber crimes are considered to be "White collar crimes".

In India today, computers have become an integral part of the fast developing society. Already computers are being used in banking, manufacturing, health care, defence, law enforcement, there is no end to the list. This new phenomenon called computer revolution however has a darker side also. Computer network is the interconnection of communication lines or any other communication facility with a computer through remote terminals or a system consisting of two or more inter related computers. All such data networks and hundreds of applications such as the World Wide Web and E-mail that run on networks are in the hands of cyber criminals. In other words, cyber crime means an act committed by a person who knowingly or recklessly or without authorization alters, deletes, tampers with, damages, destroys or takes data intended for use by a computer system whether residing within or external to a computer system.

Some of the cyber crimes, that usually relate to Internet are discussed hereunder.

a) Harassment and stalking on the net: this has been defined as " the practice of harassing individuals via electronic mail or other computer based communication to the point where they feel as threatened as if they were being

watched, followed or spoken to in person". Cyber stalking is a relatively new form of electronic crime. Its victims are mostly invisible and its violence is primarily verbal.

- b) Viruses: A virus is a cracker programme that searches out other programs and infects them by embedding a copy of itself in them so that they become corrupted. When these programmes are executed, the embedded viruses are executed too, thus propagating the infection. Many nasty viruses, written by particularly perversely minded crackers, do irreversible damage like nuking the entire user's files.
- c) Mischief: The computer viruses and worms may just be the modern plague that afflicts the upcoming millennium. People are sending viruses across as mail attachments or downloads from sites that destroy the computers.
- d) Data diddling: False data entry, changing data before or during their input into system.
- e) Hacking: Exploiting known vulnerabilities in security systems.
- f) Password sniffing: Automated guessing of phone numbers, user Ids and passwords.
- g) Trojan horse: A method of inserting instructions into a computer programme so that the program performs an unauthorized function while performing a useful one.
- h) E-Mail Bombings: Sending numerous or large e-mail messages to one person without his consent is considered as E-mail bombings.
- i) Logic Bomb: A program that caused the system to crash at a specific time.
- j) Pornography: It is nothing but obscenity on the net. Performing a variety of sexual acts and establishing criminal internet.
- k) Forgery: The electronic messages are susceptible to alteration or tampering and forgery.
- l) Identity theft: Another kind of crime on the internet is Identity theft. Obtaining credit cards and loans in some one else's name etc.
- m) Software piracy: Software piracy occurs when software gets copied without permission from the copyright holder.
- n) Data theft or Industrial Espionage: All Organizations have their own secrets. This confidential information and trade secrets are stolen by competitors of the company for their advantage.

Various surveys reveal that most of the cyber crimes are committed by people ranging in age from 19 to 30 who have no previous criminal record. Teenagers are getting addicted to internet browsing. If the same trend continues, the day is not far off for establishing clinics for their cure. It is not exaggeration to say that computer and internet are spoiling the human relations to a certain extent. The cyber criminals

are considered to be bright, highly motivated, outwardly self confident and willing to accept challenges. To prevent this type of activities, United States of America has enacted the Communication and Decency Act.

The World Wide Web (WWW) is peeping into every home and community across the globe challenging the sovereignty of civilized communities. The crimes stated above are only few. Their list is endless. The computer has not only made information easier to collect, store, generate and process but has also made it easier to steal.

The most common motivations for committing computer crimes are :

- Personal or financial gain
- Entertainment or fun
- Revenge
- Challenge
- Accidental happenings
- Misunderstanding
- Human greed etc.

PREVENTION OF CYBER CRIMES:

Some of the new technologies for preventing Cyber Crimes are:

FIRE WALL: Firewall implemented with secure standards will not allow any intruder into the system.

SET: Secure Electronic Transform is the new technology for credit card on Internet. This involves cryptographic algorithms to encrypt the credit card numbers so, it cannot be seen on the internet.

CRYPTOGRAPHY: Cryptology is the study of tools, techniques and methodologies protecting data from unauthorized access. Two major aspects of Cryptology are Cryptography and Cryptoanalysis. Cryptography deals with strategies and schemes for protecting the data by placing it in such a manner that it can be used only by using a secret key and become totally meaningless to any one without access to the key. This is known as Encryption or Encipherment. An authorized user with knowledge of key can recover the original data by reverse process known as Decryption or Decipherment.

DIGITAL SIGNATURES: The Information and Technology Act has recognized the importance of Digital Signatures. Ordinary electronic signature does not assure authenticity and integrity of the electronic information. A Digital signature assures integrity of the electronic information. A Digital signature assures integrity of the contents of a message. It is not like a manual signature where the user signs on any Electronic format. The signature is signed with magnetic ink or special purpose pens. Many states in US and other parts of the world are following digital signatures based on Public Key Infrastructure (PKI).

HASH FUNCTION OR HASH ALGORITHMS: Hash algorithms can be combined with public-key cryptosystems to produce digital signatures that guarantee the authenticity of a set of input data. A public key is that which is freely disseminated to everyone and a private key that is known to only its holder. A public key cryptosystem is a method of encrypting and decrypting information that relies on two inputs keys i.e., public key and private key.

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Sec.5(b) of the Banking Regulation Act defines Banking and its kinds. The kinds of Banking are:

- Mass Banking
- Class Banking
- Wholesale Banking
- Retail Banking
- Fund Based banking
- Non-fund based banking
- Paper based banking
- Non paper based banking
- On-line banking and
- Off-line banking

On-line banking deals with on-line debit cards, credit cards and on-line fund transfer. Whereas off-line banking deals with Automated Teller Machines (ATMs), Electronic purse and debit cards. . The banking crimes are categorized into two types.

- 1) ATM CARD CRIMES
- 2) CREDIT CARD CRIMES

1) ATM CARD CRIMES: Many of the credit card crimes will also relate to ATM card crimes. The 'sticky card, Fake ATM machines, Usage of portable ATM machines lead to number of crimes which cannot be noticed by an ordinary man.

2) CREDIT CARD CRIMES: The credit card crimes like Replica card, borrowed card, Double Card, overcharging and faulty card trick etc., though seem to be harmless are causing loss to the users as well as banks.

3) BANKING FRAUDS: One of the major sources of banking fraud is through hacking into the databases for illegal transfer from one account to another.

(to be continued)

CHANGING TRENDS IN MEDICAL EDUCATION AND MEDICARE AN INTROSPECTION

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Old order changeth yielding place to new is a regular phenomenon, which is truth nothing but truth now or ever.

Change is inevitable; and in the last 15-20yrs the change occurred all over the world in every field of activity, more so in Medicine, which is beyond any body's imagination. Probably in the years to come the change in every profession field, may be much more rapid than what it was before. Both in medical education and medicare, there are rapid changes which is worth noting by one and all, medical or otherwise. What exactly and precisely this metamorphosis is interesting too. medical education and medicare are inseparable, inter-dependable and indisposible as two wheels of a cart, bicycle etc. So one should never think of these two as separate and independent entities for discussion. Medical education is to offer better medicare and vice versa, to suit the needs of society at large.

Medical education: A few decades back, the duration of medical course was 5 1/2 yrs (2 1/2 yrs. Preclinical & 3 yrs clinical) and one year optional House Surgeney. Later it was reduced to 5yrs (2yrs Preclinical and 3 yrs clinical) and compulsory, rotating Internship and then to 4 1/2 yrs (1 1/2 yrs Preclinical and 3yrs clinical) and compulsory rotating internship. Unless the student produces a satisfactory compulsory rotating internship certificate, the M.B.B.S. degree is not awarded. Now the duration of medical course is 4 yrs (1 yr Preclinical and 3 yrs Clinical) and as usual one year of compulsory rotating internship. The main reason to reduce the duration of the course is that too many years are spent by medical students in the college and hospital itself for learning. By the time the students leave the portals of these institutions, they are around 25 yrs of age, provided there are no failures on the way. If the students choose to acquire post-graduate degrees and later super or subspeciality degrees like D.M or M.Ch, they reach 30yrs of age. This indirectly means that the students spend half their life span in learning process only. It will be suicidal if the duration of undergraduate education is further meddled not to have fixed no foundation of fundamentals in all branches of medicine from 1st yr to the end of 4th yr. Further the period of one year compulsory rotating internship is not properly utilized as desired by Medical Council, but is hard for preparation for Post graduate entrance examinations, a well known fact. To nullify this unhealthy Practice, every medical graduate must spend at least 3 yrs in rural service either at a Primary Health Centre, subcentre, taluk or district head quarter's hospitals, before seeking admission into Postgraduate degree courses. This avoids mad craze for obtaining degree after degree and thus provides full manpower to serve the rural and tribal areas. This plan should be implemented in all States and Union territories. Unifirmly to strike balance and to avoid back door entries. This plan and condition was thought off, again and again but never implemented seriously. Yet another important step is, that there should be regular and constant change in the quality of medical education to meet needs of the society and local areas. There must be periodic change in the course content,

curriculum both quantitatively and qualitatively. Periodic reorientation of medical education is the dire need and some diseases like parasitic; communicable diseases are on decline and some other new diseases like AIDS/HIV different types of cancers, gaeriatric health problems etc. take their place. Sustained mass immunization supported by supply of protected drinking water, improving environmental sanitation, advising nutrition balanced diet and so on reduced mortality including that of maternal and newborne. Some of the yesteryears knowledge should be replaced by fresh ones, particularly the diagnostic, use of high tech equipment, therapeutic modalities and so on. Preventive and social medicine should be given more stress, thereby reducing the incidence of preventable diseases. Privatization of medical education is perhaps necessary to develop adequate manpower, train the students in the use of high-tech equipment and for better results.

Medicare : If medical education is privatized, medicare should be all the more. The sudden spurt of private hospitals, nursing homes, diagnostic centers, outbeats the existing government hospitals. In every aspect everything is readily available in the private set up, though it is commercial in nature. There are now 3star, 5 star private hospitals with latest equipments, highly qualified medical, nursing and paramedical staff and are comparable to any best hospitals in developed countries. Corporate hospitals are showpieces of privately available medicare. Unfortunately they are not within the reach of a common man. For Govt. hospitals the bottleneck is lack of funds or misuse of funds whereas in private hospitals the money can be easily raised by self-financing, obtaining loans from banks at low interest rate and utilizing indigenous equipment. The Govt. hospitals are still over-crowded, the doctors tend to make quick bucks and concentrate more on private practice than on public service. The unfortunate present day trend is that human relationship between doctors and patients is fast on decline, and so also compassion for the deserving. Patients are treated as machines, organ replacement stood the test of time and in the near future computers replace human brains and robots replace human hands and in further what is in store is everybody guess.

In conclusion, it is advisable to look back, take stock of the situation and insist on the young to follow scientific medicare and stick to medical ethics, come what may. The public should be treated as carefully as we treat our kith and kin. Then only this is a Noble Profession, otherwise not.

MEDICAL ETHICS

- Dr. A. Aswini Kumar

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Ethics relate to what is right and what is wrong. Essentially these are ideas and beliefs about what type of behaviour is normally right or wrong.

Medical ethics are a system of principles governing medical conduct. It deals with relationship of a physician to the patient, patient's family, fellow physicians and the society at large. As such it is but natural that these ethics change with time and they cannot be static.

An example of this is the Hippocratic oath which says "I will not give a pessary to a woman to induce abortion". But it cannot be today when the Government has permitted termination of an unwanted pregnancy. So with times moral values and ethics change.

What is the role of medical ethics in the present day practice? Why things are changing and why to day the medical profession is looked down-why? Why and why?

Aushadham Jahnavi Thoyam Vaidyo Narayano Harihi-that is what the scriptures have said equating the doctor to Lord Narayana.

Today the medical profession is no longer considered noble and the doctors are not believed, but distrusted, beaten and dragged into court of law in litigation. The supreme courts decision to include doctors profession under the CPA amply reflects the mood of the people.

The following wise statements of elders depict the malady.

1. Today's problem is not about the clinical competence of the doctors but the lack of inter human relationship.
2. Doctor is one among the society and any change in the society has an effect on him.

And we all know for certain that today it is money, money and more money that is ruling the society and everybody is greedy and running after money. Doctors are no exception. Yester years Doctor's followed Hippocrates dictum of practice of medicine.

Ethical Imperatives :

1. To seek the patient's benefits
2. To avoid harm
3. To be respectful and compassionate
4. To preserve confidence and maintain competence

Hippocrates also said that financial and social influences are the counter forces for ethical traditions.

Hippocratic Dictums :

1. If there are two ways of investigating a case-choose the least troublesome.
2. If there are two ways of treating a patient-choose the least costly.

Today with the advancement of knowledge, the investigation facilities, the high expectations of the patients and their relatives, the competition all around, the present day doctor is at a disadvantage and probably is cornered.

He needs to investigate a case for fear of being held guilty in a consumer forum if some thing unwarranted happens.

A classical example being the viral fever, which normally does no harm, subsides in 3 to 4 days with symptomatic treatment. But it can devastate the brain causing encephalitis and leave the patient crippled for life or even cause death.

The other reason for investigation is the painful truth which every body knows yet denies the kick backs.

Today's modern medical practice is investigation oriented. The reasons could be as mentioned earlier. These are costly and sometimes the patients and their relatives pressurise the doctor for investigations in their ignorance that it is the panacea of medical treatment.

A leading physician of Mumbai in his article in the Hindu wrote that today it is not health care but health industry. In hi-tech hospitals the cost of investigations and treatment is high because of the infrastructure, the cost of equipment, establishment and other facilities they offer. The rich get over investigated and the middle class imitate the rich and get pauperised.

Patient - doctor relationship is essentially based on mutual trust and that is eroded today. There is a need to put an end to these and the best way is transparency, discussion with patients and relatives in decision-making which is an important ethical issue. And that is what BMA in its new Hippocratic oath of 1998 A.D. advocates.

"I promise that my medical knowledge will be used to benefit people's health. Patients are my first concern. I will listen to them and provide the best care I can. I will be honest, respectful and compassionate towards the patient. I will not provide treatment that are pointless and harmful. I will answer to the patients as truthfully as I can"

What are the ideals to practice.

The essence of medicine is in combining the actions and thoughts in the service of the patients.

1. The care of the patient starts with the caring of the patients.
2. Patient is a human being first with fear, hope and seeking help and reassurance.
3. "*Primum non nocere*"- never harm the patient.
4. Treat the whole patient, not the disease alone.
5. Give the patient time to ask questions and give yourself time to reflect
6. To remember the essential duty of a doctor is to care, comfort and console every day.

Is it possible to practice all ideals at every time? Possibly the answer is No. But then why these ideals?

"Ideals are like stars difficult to reach but help in navigating

in darkness”.

Who is an Ideal Doctor?

An Ideal doctor is the one whom a doctor wants to see when he falls sick and the qualities are those which he expects in his treating doctor.

Bhagawan Sri Satya Sai Baba in his discourse to Doctors at Prasanthi Nilayam, Puttaparthi said

“Serve with a smile on the face and sympathy at heart”

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If only we practise medicine as advised by our elders and preached by Sri Bhagawan Satya Sai Baba, then medical ethics can still be practised in the modern commercial world and the old glory of the profession can be regained.

ALTERNATIVE MEDICINE : THE MYTHS AND MYSTERY

- Dr. T.V. Sairam
Chief Commissioner of Customs & Central Excise

“The most beautiful thing we can experience is the mysterious. It is the source of all true art and science”--Albert Einstein

Dr. Larry Dossey, in a recent editorial in the journal **Alternative Therapies** has raised certain points on the dire need of the healers when he observed that we were training to become surgeons, internists, and pathologists, but not healers. Around the globe, all cultures had produced them in abundance-a tribe of passionate, idealistic men and women, whose desire to be involved with healing was rather mysterious, powerful, and inexplicable. They simply “know” they must become healers, and they will do almost anything to fulfill their calling.

Inadequacy of the existing, modern and socially-sanctioned medical institutions and syllabi for such men and women, wedded to the cause of healing, which can be a painful, suffocating experience for them has also been portrayed by Larry Dossey in this editorial. It is mainly because these institutions have a completely different view of nature of healing and healers, than that of the natural-born healers themselves, which have never been attuned to nourishing and developing the natural healing instincts and talents in them.

In 1993, the **New English Journal of Medicine** reported that one in three Americans, usually college-educated and relatively well-to-do uses unconventional medical treatments such as relaxation, chiropractic, therapeutic

massage, special diets, music, and mega vitamins. A survey indicated that many had felt let down by physicians in the past, and that had made them to switch over to an approach, which was more humane, less judgmental and which induced them becoming responsible for their health and healthy habits. Such an approach made them feel more participative in every step of procedure they had to undertake and further, they never felt either like over-grown babies, before an interrogating panel of strange specialists or like guinea pigs before a multitude of instrument-wielding laboratory technicians, being bundled up into thick and heavy folders of test reports, containing verbosity and jargons, tables and bar charts and signatures and rubber stamps...

With the arrival of the New Age, there seems to be a growing recognition that alternative mind/body disciplines and creative arts therapies offer patients significant control of stress, hypertension, digestive disorders, and other conditions with much less medication. Despite the skepticism at certain quarters - particularly among the scientists, behaviorists, and clinicians - one finds the general upsurge across the continents to try and experiment with alternative treatments at least with caution and care. Dawning of this wisdom was possible due to a number of intellectuals, who transcending the limitations of science and reasons, came to acknowledge a similar view as Henri Poincare held: ‘Science is facts, just as houses are made of stones, so is science made of facts; but a pile of stones is not a house and a collection of facts is not necessarily science’.

The ancient pillars of alternative medicine such as vibrational medicine, yoga and other Eastern methods have come into prominence in Europe and U.S.A in recent times in a big way. It has been long felt that no reliable dictionary incorporating all these exotic names and subjects, which are mostly of Chinese or Sanskrit origin are available at a single place, so that those who desire to know what is what has an easy access. This author, who has been documenting traditional use of medicinal herbs in the past-for over three decades and who had a long experience of travelling across the Indian subcontinent, meeting and interacting with many unacknowledged, unlettered barefoot vaidyas, some of them quacks in the real sense and some of them, on the other hand, are highly respected, has decided to fill this void.

Just as we need no further proof that fire can burn or pollution can cause health hazards, we cannot procrastinate on clinical trials of each every method or system discussed here. It is obvious that for the most mainstream treatments, the mechanism of action is hardly understood and yet people go for it- even risking the very life, which they want to save, before a surgeon with a cost tag looming large- to avoid suffering. Nevertheless, as a student of science, this author would however like to caution those prospective users of the alternative treatment methods, mentioned here, to use their

full discretion before adopting the one which suits their real needs (including their pockets!) and if it gives satisfaction, then go along continuing society cost-benefit analysis counts even in healing! The author is of the view that instead of closing the doors to such remedies, one can be (if he or she wants) a little adventurous, if the system is otherwise non-violent and compassionate as most of these methods are. We have a saying that it is better to be loved and rejected rather than never loved at all!

Recent times have witnessed certain openness and accommodation about the traditions everywhere, with the growing realization that all traditions before us, after all, were not just bull-shit and that all our ancestors have not been just a bunch of clowns!

Thanks to the innovative and visionary work of Andrew Weil, Deepak Chopra, Jeanne Achterberg, Joan Borysenko, Larry Dossey, Linda Rodgers, and many other mind/body pioneers, the National Institutes of Health (NIH) in the United States in 1992 set up the office of Alternative Medicine (now the Office of Complementary and Alternative Medicine) to “facilitate the fair, scientific evaluation of alternative therapies that could improve many people’s health and well-being.” In addition to funding such promising holistic therapies as meditation, biofeedback, therapeutic touch, macrobiotics, and Native American Medicine, the OCAM awarded one of its initial thirty grants to “investigate any beneficial effects of a specific music therapy intervention on empirical measures of self-perception, empathy, social perception, depression, and emotional expression in persons with brain injuries.”

While tuppence compared to the funds spent on drugs, vaccines, artificial body parts, and other invasive treatments, controlled by the powerful pharma lobbies backed by the mighty multinationals, alternative therapies, nevertheless, are struggling hard to gain confidence, credence and popularity. In a report to the National Horizons, a distinguished group of mind/body researchers headed by Larry Dossey included music therapy, as well as other arts therapies, in the medicine of the future.

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PROTECTION, PRESERVATION AND RENOVATION OF PAINTINGS

- Prof. N.Krishna Murthy
Retd. Professor, Andhra University
Artist and Sculptor

The work relating to the chemical aspect of paintings done by me as a man of science especially as a chemist is worth mentioning. The protection and preservation of paintings are important as they are not inferior to those that are produced in the modern times. So a scientific study of such an aspect is important for the upkeep of various museums,

art galleries, fresco paintings in churches and in temples. The study of the deleterious influence of the various materials used in paints and pigments on the human system is necessary and useful for the safety of painters and the labour in the paint industries. The rosemadder that was used by Leonardo da Vinci about 500 hundred years back in the painting of Mona Lisa has faded now. Similarly, several colours fade because of the photochemical effect of light to a great extent and by artificial light dust and gases of air. The effect of ultraviolet light is relevant in this regard. The vehicle in the paint causes formation of fungus on the oil paintings, accentuated by the moisture in the air. Such problems are the main causes for the deterioration of a painting in addition to the natural decay of the cellulose of the cloth used as a base for the preparation of canvas.

During 1970s at the request of the Andhra University I attempted the renovation of about a dozen life size oil size paintings and another six to eight pieces of small paintings. Almost all the paintings became hazy with dust and were thrown into cellar wherein some of the wings of the frames which were very valuable were also lost. It took me nine months to repair all the paintings. The professionals mostly from Baroda repair these pieces and charge heavily taking the measure at the rate of an inch. Beyond a particular damage the professionals refuse to undertake the repairs of a painting. As a researcher I have great interest in attending to these matters because of my curiosity and scientific temper. The old paintings are first to be attended to cover the torn pieces and strengthening the deteriorated cellulose part of the canvas namely the cloth is the first task. So the reverse side of the canvas is coated with enamel paint with which it not only strengthens the cloth but also gives adhesive to the front part of the resin coating - very often the canvas is given small crashes in old paintings. If the resin coating is badly effected to the cloth peels off when touched. Then back side of the canvas should be treated with an adhesive like fevicol which gives a good protection. Then the canvas is to be pasted preferably to a water-proof cardboard of suitable thickness, depending upon the size of the painting. Instead waterproof plywood can also be used. Depending upon the strength of the surface of the painting the surface is cleaned where the dust is to be taken out by a vacuum cleaner and if the surface is good without crashes it can be wiped with moistened cotton to clean the surface and further dried. The dry surface of the painting is then coated with a thin layer of a mixture of linseed oil in large proportions with a little varnish added to it. This brings the painting to the life and to the original hue. Then the portions that are faded or lost are to be repainted without affecting the originality of the painting and the painter. Sometimes when the resin part of the canvas is peeled off and the surface of the cloth is exposed a difference of height will be seen and this can be covered by means of primers painted to the same thickness or through a resin coating.

“Time is what we want most, but alas ! we use worst.” - WILLIAM PENN

So the second stage of repair withstands the coverage of these patches after which it is to be painted in its fine form following the originality of the painter who did the painting. During the process of cleaning hydrogen peroxide is used on the white surface to give its original white and in certain cases titanous solutions is used instead of hydrogen peroxide. Rectified spirit is also found to have certain advantages in cleaning the oil paintings to remove the absorbed dust. It is usually found that the oxidation of a vehicle in a paint is slowed down by substances like carbon in black colour and activated by manganese, cadmium and iron compounds.

The framing part of the painting is followed by taking the base material as wood and the designing material for its cheapness taken as plaster of paris instead of resinous materials. The designs are attached with adhesives, then smoothed with plaster of paris, emiered and then coated twice with enamel and finally painted with gold colour, with varnish or preferably with aluminium thinner. Thus the renovation and repair work comes down to the cheapest levels. Perhaps hundredth part of professionals and the paintings are found to be good even after a period of 30 years. Adopting the same procedure about ten paintings were repaired for Visakha Museum and another ten for Vizianagaram Manasas Trust which are at present with Maharaja's College, Vizianagaram.

ARISTOTLE (384-322 BC) - II

Sri Challa Sivasankaram

After the death of Alexander the Great of Macedonia circumstances had so shaped that he had to flee Athens. The government of the day censured him with impiety. The same type of charge that was leveled against Socrates. Socrates who believed in the soul of the other world braved the decree of the mortal governments in favour of acquiring the seat in the heart of the immortal realm of the soul. Providence intervened to save Plato from becoming a slave having been sold to a slave-lord. The bidder happened to be his well-wisher and let him go. Aristotle fled Athens before being entrapped by the bloodsucking hounds of the government, like Aurobindo in 1910 who left India for Chandernagore a French pocket before the day-break with a view to escape the chains that would tie and take him to the Jail of British India on the charge of terrorist activity.

Dr. Vidyabhushan author of Indian logic says, "It is not inconceivable that the knowledge of Aristotle's Logic found its way through Alexandria, Syria and other countries into Takshasila. The Hindu logician owed the idea of syllogism to the influence of Aristotle. The potter is the efficient cause of the jar. While his stick and wheel are regarded as accessory. The kind of causes correspond to Aristotle's material, formal and efficient causes. The effect itself may be regarded as the final cause of Aristotle. Aristotelian view of universalia is not

untrue, say, men are born and die, but man remains. Universals have a more enduring reality than individuals. Aristotle's theory of God as the first Mover who starts all heavenly and earthly motions seems to have gained universal recognition. God is one". The Samkhya view of freedom (Moksha) is not unlike Aristotle's view of blessedness as eternal thinking free from all activity. It is true that Aristotle regards God as activity or energy, but this activity knows no change and the energy does nothing.

Aristotle recommends for the ordinary men "moral virtues" which are emphatically, "human affairs" and for those who aim at immortality the exercise of reason, which apprehends things noble and divine. (Nichomachean Ethics) Aristotle argues that knowledge is true wisdom, life at its highest stretch. Aristotle is one with the sanatan interpretation of Moksha (Freedom) dissolution or absorption in the Supreme self of the soul limited to body.

Like God, Mind is universal. God has no form, no name and no home. Likewise is Mind. If we give a keen and earnest thought to the question we perceive the subtlety and immensity of movement of the mind always engaged in action and at no moment static. It acts eternally, unhindered by geographical frontiers and limits. Its unfoldment we find at one and well-nigh the same time in China in Persia, in Greece and in India and several other places. In India it unfolded as Gautama Buddha and Mahaveera, in China it blossomed as Confucius and Lao Tse, in Greece as Pythagoras and in Persia as Zoroaster. The attempt at splitting the mind on the ground of geographical demarcations and calling, we become meaningless and foolish. In Kerala in India there were born three great men, within the span of a century-Guadapada, Govinda Bhagavadpada and Sankara Bhagavadpada- Almost at the same time of the history there existed three great men, Socrates, Plato and Aristotle who were born between 470 BC and 384 BC. There is a divine principle administering the world order in the name of universal Mind. Though God and Mind manage separate portfolios apparently the two supracosmic and cosmic beings, causeless and eternal as they are they work in unison for the good of the universe incarnating whenever they are necessary in the form of edifying personalities equipped with brilliant intellect and suprasensory awareness to diffuse, to disseminate and to distribute the highest knowledge similar in essence as and when such divine deed was expected and looked forward for containing and educating the mankind for a saner life maintaining harmony of the celestial sort and to evolve a way that shall humanize and spiritualise the body politic of the nations that are in want of that which makes human life meaningful and infinitely delightful. Through the three worlds simultaneously stimulating and inspiring the inhabitants of the three worlds lest they should get lost in the mire of ignorance. So, need is not there for us to be surprised when a scholar converses on the similarities

strikingly transparent in the doctrines and philosophies. They are separate only because they are clothed in different languages and script. In essence they are one and integral.

Aristotle is a vast subject and vaster is his knowledge. One may be tempted to compare it to an ocean in expanse and profundity. But that too does fail to equal his kind. He is the divine epitome of world's known and unknown wisdom. He is a live, vital element resplendent, radiating and regenerating. The following observation of Aristotle reveals his perfect perfection as philosopher, scientist and logician and upholder of Dharma (Virtue). "Man when perfected is the best of animals, but when separated from law and justice, he is the worst of all since armed injustice is the more dangerous and he is equipped at birth with arms meant to be used by intelligence and virtue which he may use for the worst ends. Wherefore if he has not virtue, he is the most savage of animals". (Concluded).

BOOK REVIEW

* **WEAPONS OF MASS DESTRUCTION, M.N. Sastri.** A.P.H. Publishing Corporation, New Delhi - 110 002. Pp.152, Rs.395/-

'Weapons of Mass Destruction' by Professor M.N.Sastri provides a comprehensive overview that one might have been unaware of regarding WMDs. The book is an interesting narrative with a scientific temper. The author's experience as a professor in chemistry and his passion and concern for the society make him uniquely qualified to write a book on WMD. But as Professor Sastri's book is bound to have lots of technical facts, this book is no exception. Yet, the book is friendly to the general reader too, which he presents in a simple and lucid style.

He traces, how in the Stone Age, about two million years ago 'tools' such as wooden spears, stone axes, throwing sticks and boomerangs were used in warfare to the usage of more lethal weapons, be they chemical, nuclear or biological of today. The author describes how WMD came into being and provides the reader with information on high explosives including dynamite, R.D.X., TNT, low explosives the assembling of detonator etc. He also tells us about the manufacturers of explosives through the past centuries and the historical facts that explosives. We see the steady rise of weapons becoming more deadly in operation and in number with the progress of civilization. His aim seem to be to chart the human race's insane efforts to destroy itself.

The author appears to use two approaches. First is the technical. This is full of description of the development of the bigger and more fatal WMDs. The second approach looks at the impact of the changing tactical conditions of wars because of the development of lethal weapons and their impact. In chapters devoted to each of the categories of the different kinds of weapons, Sastri describes the technology, types and uses of such chemical explosives. He makes reference to the

development of nuclear and hydrogen bombs, the spread of nuclear weaponry to countries such as Israel and North Korea, the intercontinental ballistic missile, the development of chemical and biological weapons and the risk we face today. Each chapter concludes with ominous warnings about the dangers posed by WMD. The author draws our attention to, not only the killing and destructive potential of these weapons, but also the damaging effect it has for generation to come because of the toxic wastes that is absorbed in the atmosphere. This is illustrated through his clear-cut recounting of the extent of damage these weapons have already caused on mankind which the future generations will bear the brunt.

Sastri also writes about the nature and the economics of wars. He states that after the World War II, "all subsequent wars were fought or are being fought mostly in the developing countries in Africa, Asia and the Middle East. Significantly, the supplies of arms for these wars come from the developed nations. In between 1999-2000 the US made \$37.8 billion (in constant) dollar in arms Aransfer agreements with developing natures, 41.9% of all such Russia made \$23 billion in arms transfer agreements, or 25.5%. France the third leading supplier, made \$4.8 billion or 5.3% of all such agreements. China ranked first among developing nations in the value of arms transfer agreements, costing concluding \$ 11.3 billion, followed by the UAE with \$9 billion, and India at \$8 billion"

The pacifist side of Professor Sastri comes out in his forewarning of the fatal nature of man's so called advancement in scientific research. He cautions us about the effects of a global thermonuclear war. He says, "With some nations backing out of international agreements on nuclear disarmament and some nations covertly acquiring nuclear weapons, it is becoming increasingly clear that we are a long way from a nuclear weapon-free society". The Lawrence Livermore National Laboratory, California, concluded that a nuclear or radiological attack is inevitable over the next 50 years, if not the next decade. Professor Sastri goes on to explain, the consequences for humanity, in the event of a global thremonuclear war. He quotes from various studies conducted by scientists, biologists, eco-scientists and cosmologists like R.P Turco, O.B. Toon, T.P. Ackerman, J.B. Pollack and Paul R.Ehrlich. He also quotes from several groups including the Swedish Academy of Sciences, the International Research Council of Scientific Union (SCOPE) and the US National research Council. He summarizes some of the broad conclusions of their study.

One of the intriguing finds is the "Nuclear Winter". The study describes that "as the particles of soot generated by the forest and fuel fires reach the (?), they block the (?) rodiation reaches the ground. Thirty million tons of soot that has moved up in the Northern Hemisphere would cause a 90 per cent drop in the solar radiation reaching the ground. Consequently,

there will be darkness and a steep fall in temperature with the minimum reaching -23 degree centigrade. This condition, termed as Nuclear Winter, might last several months or even a year". Such findings not only are gripping but also thought-provoking.

He writes about the chemical weapons or the "poor man's atom bomb". He traces the use of chemicals as lethal weapons to 429 BC when the Spartans used sulphur fumes in the Peloponnesian War. Most of these chemicals when entering into the body, act with great speed, causing loss of voluntary muscular action through paralysis and usually, death through arrest of muscular respiration. Iraq used chemical weapons in 1988 to suppress the Kurds in the town of Halabja in Northern Iraq. During the Vietnam War (1959-75) large quantities of a defoliant, known as Agent Orange were used by the US to destroy the large forest areas, which provided protection to the Vietnamese forces. The Soviets used chemical weapons in Afghanistan during the 1979-89 war.

Discussing the biological weapons, Sastri prudently mentions about the "Ethnic Weapons". He writes, "the most frightening forms of biowarfare are what are called ethnic weapons. The ethnic weapons represent altered germs, which attack specific ethnic groups or races". He expounds the white South African Government order of 1988 as a case in point. The white South African Government ordered a programme to develop a genetically engineered bio-weapon that would specifically kill the black people. Another such amazing example he cites is the report in the British press which stated that "Israel was working on a weapon that would specifically harm Arabs carrying certain genes". These, Sastri explains "could be in the form of a genetically engineered virus or toxin that binds to a specific receptor that determines an "ethnic" characteristic such as skin pigmentations".

The e-bomb, (an electromagnetic weapon) Sastri writes, "is a microwave device with high destructive power depending upon its power and the target of vulnerability. A 10 gigawatt

5 GHz HPM device could leave its lethal footprints 400 to 500 metres across. Developing field strengths of several kilovolts per metre such an e-bomb could wreak major havoc over a heavily populated area. With a frequency range between 1 to 10 GHz, the HPMs (High Power Microwave) can penetrate even electronics shielded against a nuclear detonation". So, for all of us who thought we were safely tucked away from the impact of the horrors of war, here is some not very comforting news. According to the author, "even the deepest bunkers with the thickest concrete walls are not safe from such a beam if they have even a single unprotected wire reaching the surface." He informs that the "HPM technology is also capable of generation of thunderstorms-like clouds that hurl lightning bolts to the ground, causing wild forest fires.

Powerful electromagnetic radiation beams could also induce ionosphere modifications to a point where they could interfere with the earth's magnetic field, triggering earthquakes".

WMD is a handbook for those who want concise information about not only the WMDs but also the different conventions and agreements and the UN efforts in trying to reduce the proliferation of such weapons. Be it about wars or world nuclear weapon inventory or damages caused by weapon explosions - all such information is presented in the form of clear-cut tables and charts. The book accomplishes the author's objective "to create awareness among the general public about these weapons and the consequences of their uses."

A fascinating read that will appeal to both the specialist in the field and the layman. For some this book might make grim reading but however grim, it describes the world in which we live-a reality we have to fight.

- Prof. Mrs. B.Meena Rao

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