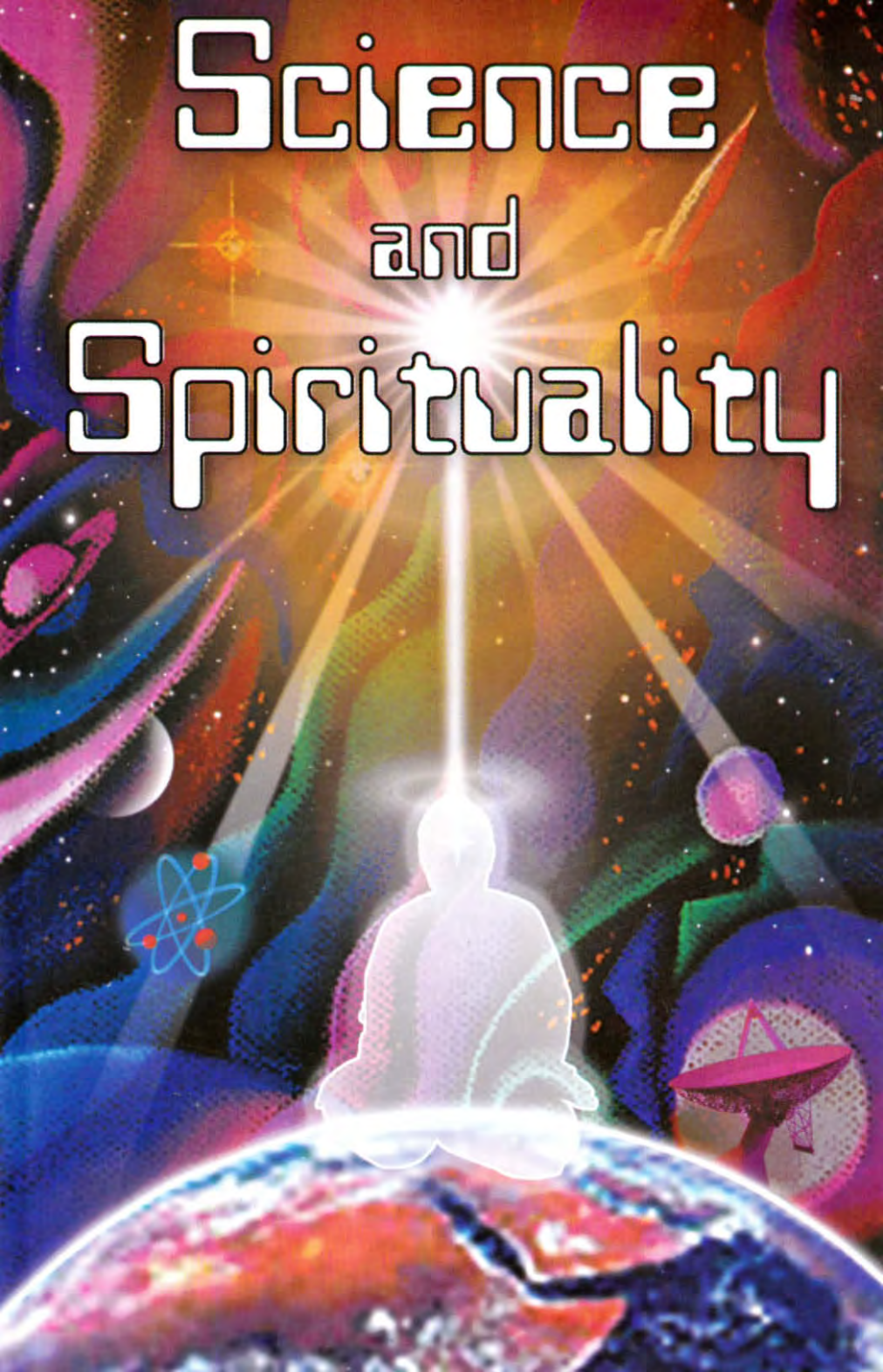


Science and Spirituality



Science and Spirituality

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Seeing the Truth in its Spirituo- scientific context and experiencing peace and solace

This volume contains some of the articles written by the author from time to time on various sub-titles relating to Science and Spirituality. These articles are not like chapters of a book or monograph, having no composite scheme, but are, to a large extent, independent of each other and are self-sufficient. But yet the sequence or order in which they have been placed in this volume is such that the reader would feel that there is some subtle or visible connection of one with the other. Even though the serial order of these could be changed without seriously affecting the continuity or the building up of the theme yet the author preferred the present serial order. Moreover, he felt that the first two articles should occupy the place they do now because of their nature and content.

The idea behind this book is not to give a very comprehensive spiritual or scientific world view but to arouse the interest of the readers to know further on the subject. However, the book is intended to play the role not of a mere appetiser but also to provide some spiritual food and nutrition to persons with scientific bent of mind.

It is also hoped that while some articles will remove some doubts about, and create some faith in, Spirituality and some others would stimulate new thinking because the concepts given therein are different from the concepts widely accepted today in some fields of science.

The author hopes that the new material provided in some of the articles would receive the impartial and unbiased consideration of the scientists and spiritualists rather than be pushed aside because of its new approach or new spiritual or scientific ideas.

The author does not claim any extraordinary knowledge either of Science and Spirituality. However, he has genuine interest in knowing and understanding the Truth in a spirituo-scientific perspective and he has made a humble attempt to give an expression to his understanding of Truth so that it may be of some service to others if it can be.

Initially, he intended this book to have articles having a bearing in Natural and Biological Sciences only but, later, he thought of including a few articles that relate to Social Sciences also. So, the reader will find that some articles relate to Psychology, Economics etc., also.

The author hopes that the book will create or promote interest in readers in regard to leading a life of higher consciousness and in practising Meditation— the art of relaxation that enables a person to be free from tension—and to experience peace and to ‘see’ the Truth when they are in that level of consciousness or state of being.

15th November, 1988

— The Author



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Science, Religion and Spirituality

The object of Science is to know the nature of reality in the physical realm. All scientific exploration aims at discovering certain secrets behind the forces and phenomena of Nature and understanding the laws underlying them.

Scientific knowledge is such knowledge as can be practically demonstrated or experimentally tested, or can be verified by methodical observation or mathematical calculations, or can be proved on the basis of the discovered laws of Nature.

But, because of the limitations of its scope and methods of exploration, an inherent shortcoming of Science has been that it did not explore the nature of Thought and Consciousness which are the primary reality. So, though Science has provided man with a great fund of knowledge of the material world and has also provided him with great power to have control over Matter and forces of Nature so that he may be able to have comforts and ease, yet, until a few decades ago, it did not make any worthwhile effort to provide even indirect means of knowing the nature of the conscient being for whom it wants to provide comforts. Thus an important area of reality was left unexplained by Science and, therefore, man could not have a complete or total picture of Reality.

Moreover, though Science explains how certain actions, reactions and processes take place, it does not explain why things exist and for whom they exist. It explains the anatomy, physiology and chemistry of the body and the brain and the physical forces acting and inter-acting therein and it throws light on the processes of replication and reproduction and the genetic inheritance but it does not explain for whom all this works and what is the meaning and purpose of life.

We also find that though the object of Science has been to solve the riddle of life and the cosmos, it has, in fact, not yet been able to solve anyone of the two. Some thinkers have expressed the opinion that Science has raised more questions than it has solved and that it has created many new and gigantic problems even though it has provided temporary or adhoc solutions to some. Not only has it not been able to provide man with a satisfying world view, it has left almost totally untouched the area of man's own nature — the nature of man's Mind and how it works.

We also find that, though scientific discoveries are made with the purpose of making man's life happy and raising his standard of living, yet application of scientific knowledge and the resulting process of industrialisation have led to over-urbanisation, pollution of air, water and atmosphere. It has upset the ecological system, and has led to rapid consumption of non-renewable resources of energy and mineral wealth. What is, however, worst is that it has pushed the world from the age of the arrows and the sword to the age of atomic bombs and star wars.

These results of Science are, however, attributed to the short-sightedness and narrow-mindedness of the political bosses who take policy decisions regarding the use of science and technology to achieve certain national objectives and provide the necessary funds and facilities for research and manufacture. But though it is generally said that scientists cannot make ethical choice of their own yet, in fact, it shows how man, whether he is a politician or a scientist, has been neglecting the ethical and spiritual aspect of his scientific discoveries.

So, though Science has provided man with invaluable information on genetics, micro-biology and medicine, electronics, optics, aeronautics, communications and computer technology, and has provided man with an analytical and objective modes of thinking, yet, in the absence of comparable moral stature and spiritual wisdom, there has been rapid degeneration and debasement of character. Moreover, Science has not provided any worthwhile, real and lasting solution to man's social, cultural, political, economic and emotional problems as these are outside its area of exploration.

The role of Religion

All religions have the common object of explaining to man his real identity as different from the physical reality. Religion aims at giving to man a code of conduct and behaviour so that man does not commit such acts as cause sufferings to him and to others and also make him suffer divine retribution. Religion explains man's relationship with other beings and with God (if it believes in him). It gives meaning to life and existence and inspires for a noble goal and throws light on how that goal can be achieved. For this purpose, it gives its own world-view to man and prescribes certain practices in order that he may be able to realise the self, and to have link with God and peace of mind.

Some religions have been at odds with many discoveries of Science. Preachers of some religions have, in the past, condemned certain scientists as heretics and some scientists have condemned certain religious belief as

mere blind faith and the religious belief in God as a figment of man's imagination or an atavistic throwback to past which was characterised with fear and superstition. But the situation seems to have changed lately. Now the followers of various religions accept many new concepts given by Science as true. They also accept Science as a useful discipline and openly admire the achievements of Science and Technology and the benefits it has given to mankind. Some religious leaders and writers even use Scientific concepts to support their religious beliefs and they make an endeavour to project their ideology as scientific or in line with the findings of Science. Some scientists also have, lately, made attempts to show that scientific discoveries have their parallels in religion. There is thus a new marriage taking place between Science and Religion. However, the area of exploration and the methodology of the two even now remains widely apart and, on many points, almost irreconcilable.

Also, many people—scientists and others—allege that religions have been the cause of many wars. Much violence and bloodshed has occurred throughout the ages, because of religious fanaticism and intolerance. They, therefore, allege that religion has not only not brought man nearer his goal but has also divided mankind into antagonistic communities that are always ready to clash at the slightest provocation. To an extent, this charge is true. Religious people often say that true religion does not breed hatred and intolerance but one asks: where is such a true religion?

True religion is different from Theology and Philosophy as its doctrines and precepts have not been derived from logical and philosophical ruminations but are generally based on religious and mystical experiences or realisation or revelations.

The professed aim of Religion is to bring peace and solace to the tormented souls. It gives to mankind a message for his life here and hereafter. Every Religion gives a certain world-vision and also promises liberation from sufferings and better existence hereafter if its commandments are faithfully followed.

But we find that, in actual practice, there has been much persecution by followers of one Faith or one Religion of people following another Faith or Religion. Also we observe that though the professed aims of religions have been high, all religions, put together, have not been able to improve the morals of mankind and make the world a better place to live in. Religion, which was to have been a uniting force has, in practice, divided mankind into different communities. Also religions have failed to inspire a majority of the mankind on a path of love, peace, unity, divinity and kindness. Instead,

Religion has itself suffered rapid degeneration and has lost its pith. It has not been able to raise the consciousness of man to a soul-conscious level, and, instead, religious intolerance has caused much tension and turmoil in the society.

But it cannot be denied that each religion has provided some relief to individuals following it faithfully. Each religion has emphatically asked its followers to observe an ethical code of conduct and this has attracted the attention of individual souls and changed them into better beings. It has also given peace to its faithful followers during the time of great stresses and strains. At least, it has constantly been reminding man to become a better and elevated soul.

But selfish people have used Religion for exploiting others and for attacking other segments of society with the aim of territorial conquests. Some thinkers also allege that Religion has been spreading blind faith, ritualism and superstition. They also say that Religion has been an obstacle in the path of research and exploration.

Thus Science and Religion (and also philosophy) have neither been able to provide satisfactory answers to many questions nor have they been able to eliminate poverty and sufferings from mankind. Instead, we find that poverty and problems have increased in the world. This is not necessarily the result of Science, Religion and Philosophy yet it shows that there is a missing dimension of our understanding of Reality and there is something lacking in our life-styles.

Spirituality

Mankind needs knowledge which is strengthened and supported by Science and Religion, Philosophy and common sense. It needs such knowledge as satisfactorily answers to questions about the physical world and the spiritual reality. It needs something which has Science, Religion and Philosophy integrated into one undifferentiated whole. This something should give meaning and purpose to life, should inspire people to higher and nobler goals, should bring about unity in place of fragmentation and should give peace and solace to the suffering humanity. Its concepts or facts of knowledge should give an integrated and satisfying world-vision and should be supported by logical and rational thinking and its set of values should be of universal nature so that they are not meant for a particular territory or community. It should be pragmatic but should also have an idealism. It should give to man a scientific temper but should also have an element of Faith and should also have transcendental source of its origin. It should draw its life from Revelations but should be so logical as to gain support from scientific and philosophical

methods of exploration. It should synthesise various branches of knowledge, such as History, Geography, Philosophy, Health sciences, Psychology, Ethics, Social Sciences, etc. into one whole and should give a way of practical living to it. It should give a comprehensive and clear world-view which should inspire and unite mankind to a higher level of consciousness and a way of life that is characterised by love, kindness, compassion, co-operation, humanism, ethical values and has a happy blend of knowledge of the mundane and transcendental reality.

It should build such an interpretation based on history as can identify the causes of fall of civilisations and can now provide guidance for building a better world. It should have rationalism of science, faith of religion and integrated vision of philosophy and common sense. It should give an overview of all branches of knowledge of the mundane and should flower into such spiritual wisdom as can bring fulfilment and bring about happiness. This something which has all these characteristics is called—“Spiritual-Wisdom”. It is this which promotes spirituality.

Spiritual knowledge, as distinguished from Religion, is free from any prejudices. It provides an insight into the nature of Consciousness. It interprets the findings of History, Sociology, Economics, Politics, Biology, Psychology and the sciences and integrates all knowledge into one whole so as to give to man an integrated vision of truth and an integrated personality based on this. It serves as the uniting force which brings about synthesis in the truths of various other branches of knowledge. It does not accept rituals and traditions which have no meaning or cannot be proved as valid and useful. It explains the relationship between man and his Creator. It attempts to give an orientation to all Science and Arts & Culture so that man's life becomes happy and he can understand and play his role better and with greater satisfaction.

Spirituality discusses Darwin's Theory of Evolution, Karl Marx's Dialectical Materialism, Sigmund Freud's thesis of Id, Ego and Alter ego, forms of Beliefs about God, and such other tenets given by various religions, independent view of things. It explains the concepts and laws of metaphysics and gives such code of conduct and such practices as give man high character and give an ethical base to life and to all other branches of knowledge. Spirituality inspires man not only for his individual liberation from evils and the resultant sufferings but it also equips him with such knowledge and spiritual power whereby he can satisfactorily fulfil his social obligations and his family duties and can also attain excellence and can march towards mundane and transcendental perfection. Spirituality change man's

escapist attitude or his aggressive and carnal behaviour and gives him a strong will and purity of mind and intellect and control over his desires and physical organs. It brings about a paradigm shift and a quantum jump in the quality and level of consciousness. It enables him to be face to face with the new reality and gives him an experience of bliss and divine peace. The practice of spiritual meditation makes man's life free from tension and more efficient. It gives to man equipoise and tranquility and, at the same time, gives to him the strength to solve the problems of life by cultivation of moral and human values in his life.

Thus spirituality is different from religion in many ways. It has a universal appeal and has a strong and fully developed ethical core. It has all that is best in religion, philosophy and science. It has appeal even for the atheists and the non-believers and its message is of love, kindness and purity.

Spirituality And the Scientific evidence regarding the existence of soul

Spirituality is built around seven main points. The first and foremost among these is that consciousness is the inherent, in-separable and eternal quality or attribute of a *non-physical* entity, called the soul, *Atma* or The Spirit. Spirituality does not consider consciousness as an epiphenomenon of the brain or of the electro-magnetic force that are at work in the brain and the body nor does it consider it as a product of chemical actions or reactions that are taking place in the body and brain. Spirituality is built on detailed knowledge about this conscient entity, the soul, about its various states and levels and also of various forms of its manifestations such as Thought, Judgement, Memory, Belief, Learning, Outlook, Attitudes, *Sanskars*, etc. Spirituality has evidence that supports its affirmation about the existence of soul, a non-physical entity, and about its belief that soul is eternal and immortal.

Spiritual and moral dimension of action

Based on this first premise, the second affirmation of Spirituality is that actions of human beings and all other conscient beings have a spiritual and moral dimension. It is this moral or spiritual factor that brings peace and happiness or sufferings and pain to man. Spirituality, therefore puts up a strong case for leading a life of soul-consciousness and good action or Karma. It enunciates the laws of karma and gives to man a code of conduct to follow or set of laws to observe in order to lead a healthy and happy life. Spirituality lays down that man must cultivate such divine qualities as humility, contentment, tolerance, patience, sweetness, equipoise, universal love, etc. and that he must inculcate in himself such values as honesty, sincerity, etc. in order that the soul may be free from defilement or that it may rise higher and may help in building up a better social order.

Concept of world-brotherhood

Thirdly, Spirituality gives to man the concept of world-brotherhood under the Fatherhood of one God. It gives knowledge of God and explains

how man should stabilise in awareness of him and strengthen his love-link with him. It lays great emphasis on living this relationship in day-to-day life for it is a source of spiritual strength and it brings about sublimation of man's will and behaviour.

Like the second affirmation, this third affirmation also, of Spirituality, is related to the first affirmation because spirituality affirms that God also is a Soul who is the Supreme among all souls and has certain special attitudes which other souls do not have. It considers God as the Father—Mother not because God 'created' other souls in the same sense as a potter creates pots or a spider weaves a web but because He is a Father figure in respect of Knowledge, Purity, Peace, etc. and He provides these to souls at such an hour in history when knowledge of truth and purity of action have almost been lost.

Inner transformation

Fourthly, spirituality is not merely a philosophy or theoretical knowledge but it is knowledge applied to situations in life and put into action. So, it attempts to change man's outlook and attitudes by giving him knowledge of his real identity, of the world around him, of the actions he performs and of the life hereafter and also of his relationship with God and with other beings. By giving an ennobling and enlightening world view and self-view, and adding to it the spiritual dimension of Space and Time, it brings about inner transformation of man. It promotes in him the attitudes of goodwill, co-operation, sympathy and love and mentally prepares him to serve others with humility and to work for his own excellence and perfection. This attitudinal transformation and spiritual upliftment also is based on the first premise namely that the self is a non-physical entity and that virtues will bring their own reward now or after a period. It is based also on the belief that there is potentiality of goodness in man and it can be awakened to give its glow by removing the negativity that has crept in it.

Art and Science of Meditation of self-realisation

Fifthly, Spirituality gives to man the practice of an art, science, discipline or culture, called Yoga or Meditation. This practice enables man to realise or experience his real identity, his innate goodness and his peaceful and divine nature and to have deep experience of God's eternal attributes such as Bliss, Love, Peace, etc. Meditation also is based on the first affirmation, namely that the real identity of the self is as of a non-physical self-luminous and eternal entity, called 'Soul'.

The world originally had a better order

Sixthly, Spirituality is based on the understanding that, in the beginning this world had morally, socially, politically, culturally and economically a better order which was characterised by purity, peace and prosperity or health, wealth and happiness and that the earliest period was the Golden Age or Satyuga of the history of mankind. The world then was paradise. People then did not need any State-law or any law-enforcing agencies or any religious preaching because they were, by nature, holy and virtuous. They were gods and goddesses or Devatas and Devis. The world then was Swarga or paradise. Later, as man became body-conscious and he identified himself with his body, Evil entered the world in the forms of sex-lust, anger, greed, attachment, pride, sloth, violence, jealousy, etc. and that led to more and more degeneration from age to age. Thus Spirituality is based on the firm foundation that the world was, originally, a paradise and can now again be transformed into paradise if we, human beings, imbibe human values and co-operate with each other to build up a better world order. Spirituality considers the co-operation of all, including that of scientists, essential, for that order would have scientific devices also to make life easy and comfortable though science would not be put to any negative uses in that world order.

Seventhly, Spirituality affirms that there is an extraterrestrial region where there is life in its incorporeal form. There is a world beyond the sun, the stars and the galaxies, it is known as the 'World of incorporeal souls' (Parloka), Brahmloka or Param Dham—the farthest or the Supreme Abode where souls originally dwell in peaceful and discarnate state. All souls came from there on the world drama stage and became incarnate here to play their respective roles and they pass through various stages and, ultimately, the Supreme Soul, who is above birth and death of the mundane kind, takes divine kind of incarnation to guide and to help souls to purify themselves and to return to their abode.

Since the subsequent six affirmations and all other formulations of Spirituality are based on the first affirmation about the existence of the soul, it would, therefore, be appropriate to see, first, as to what scientific or rational evidence spirituality offers to substantiate this affirmation. Over the millennia, many philosophical arguments have been given to support the belief in the existence of the soul but, here, we would like to place only such information before the reader as has come to light through scientific exploration or scientific reasoning during this century.

Many kinds of scientific evidence about the existence of soul

One form of evidence about the existence of soul comes from the researches done in this regard by the psychologists and psychiatrists. They have done research work for a number of years and their research is firmly grounded in the methods of modern science. Some of them have done research by interviewing hundreds of cases of such persons who were declared 'clinically dead' by the doctors attending on them but who returned to life after resuscitation etc. Others have done research on hundreds of persons by the use of the method, called 'hypnotic regression'. Still others have done research by interviewing hundreds of small children who told stories of their past lives. The work of all these scientists is of complementary nature. All these researches corroborate the belief in the existence of a metaphysical self, i.e. the soul or the consciousness which is immortal and which takes another body after relinquishing one body.

Other scientists have discussed the question of the existence of soul in the light of neurological researches on brain and consciousness. Some of these have been awarded Nobel Prize for their research work in regard to brain.

Still others have discussed the question in the light of Quantum Mechanics, Theory of Relativity, Data-processing Theory, Thermodynamics Entropy, etc. Here we will give briefly some evidence from each one of the above areas.

Evidence from research on 'the clinically dead'

Dr. Raymond A. Moody, Jr. has done pioneering work in his field. After obtaining his Doctorate in Philosophy, he did research on three kinds of persons - (i) those who were resuscitated after having been thought, adjudged or pronounced clinically dead by their doctors, (ii) those who, in the case of accidents or severe injury or illness, came very close to physical death and (iii) those who, as they died, told their experience to other people who were present and these, later, reported the content of death experiences to Dr. Moody. Dr. Moody studied about 150 such cases. After studying these cases, Dr. Moody constructed a model of experience of death, for he found that there were remarkable similarities in all these cases. He has described this in his book 'Life-After-Life', sale of which has exceeded three million copies. The model is mentioned as follows:

"A man is dying and, as he reaches the point of greatest physical distress he hears himself pronounced dead by his doctor. He begins to hear an

uncomfortable noise, a loud ringing or buzzing, and at the same time feels himself moving very rapidly through a long dark tunnel. After this, he suddenly finds himself outside of his own physical body, but still in the immediate physical environment, and he sees his own body from a distance, as though he is a spectator. He watches the resuscitation attempt from this unusual vantage point and is in a state of emotional upheaval.

After a while, he collects himself and becomes more accustomed to his odd condition. He notices that he still has “body”, but one of a very different nature and with very different powers from the physical body he has left behind. Soon other things begin to happen. Others come to meet and to help him. He glimpses the spirits of relatives and friends who have already died, and a loving, warm spirit of a kind he has never encountered before a being of light—appears before him. This being asks him a question, nonverbally, to make him evaluate his life and helps him along by showing him a panoramic, instantaneous playback of the major events of his life. At some point he finds himself approaching some sort of barrier of border, apparently representing the limit between earthly life and the next life. Yet he finds that he must go back to the earth, that the time for his death has not yet come. At this point he resists, for by now he is so taken up with his experience in the afterlife and does not want to return. He is overwhelmed by intense feelings of joy, love and peace. Despite his attitude, though, he somehow reunites with his physical body and lives.

Later, he tries to tell others but he has trouble doing so. In the first place, he can find no human words adequate to describe these unearthly episodes. He also finds that others scoff so he stops telling other people. Still, the experience affects his life profoundly, especially his views about death and its relationship to life.”¹

It should be noted that, in all cases, studied by Dr. Moody, Death was seen as a transition from one state to another. Some of his subjects even likened death as escape from jail.

A typical case of death experience was that of Dr. George Ritchie. This was published in Washington Post. Dr. Ritchie was declared ‘clinically dead’ in 1943 and, if anyone doubts this fact, Dr. Ritchie has got the hospital staff’s sworn testimony on this point and has, in addition to this, the doctor’s written opinion that Ritchie’s “virtual call from death and return to vigorous health has to be explained in terms other than natural

1. *Life After Life* by Dr. Raymond A. Moody, Jr. Bantann Edition, reprinted in 1977, page 16.

means.”² Dr. Moody got interested in the subject of death experience after he listened to Dr. Ritchie’s story from Ritchie himself, and, therefore he dedicated his book to Dr. Ritchie.

Ritchie has explained his experience of leaving the body as under:

Ritchie felt he was floating above the trees and observing things below

Ritchie says: “Now I know his sounds ridiculous. I get outside and, swoosh, man, I’m travelling at something approaching the speed of sound, about a hundred to 500 feet above the trees. And, suddenly, I’m crossing this large river and I see this little town. There’s this one, lone guy coming down the street; there’s this all-night cafe on the corner.”

Ritchie also had experience of a Being-of-light. He has narrated it as under:

Ritchie sees a Being-of-light

“There’s this little 15 watt bulb there and I thought that bulb was getting brighter. And, suddenly, the intensity of that light was so strong that the only thing I could compare it to is if you turned on a million welders’ lights you’d have some idea of the intensity of light. “Out of this light, stepped this form of sheer light. Nothing like I’d ever seen in any stained glass windows.”

Ritchie sees panoramic view of life-events

Dr. Ritchie continues, “the hospital walls had disappeared and every single thing that had ever happened to me from the time I was born was there in panoramic view. Every detail, everything I had ever done in public and in private, in light, in darkness. Now how would you like to have your best friend see that? Because I was a pretty normal boy.”

“But guess that I have never been in the presence of such total and absolute love, a Being that totally knew everything about me and totally accepted me and totally loved me.”

“A moment before, desparately alone and frightened, awful gloom; now to be in the presence of this Being. I didn’t want to leave him under any circumstances. This Christ is like something you have never seen. I don’t have the words to get this across.”

2. *Ibid*, pages 21 and 22

The Being-of-Light asks Ritchie some questions

Now the first question he throws at me is: "What have you done with your life?"³ I definitely can hear, but I'm not hearing from ears but it's like you and I sitting here and there's no need for us to talk because every time you think of something. I'm instantaneously aware of it."

"I have to laugh today. I want you to get the ludicrousness of this situation. I'm trying to look over some of the better parts of my life and hoping he won't notice some of the embarrassing parts. I think, well. I was an Eagle Scout. He's got a good sense of humour, thank goodness. And he immediately comes back with the same question. I mean, that didn't impress him too much."

"So I'm hedging. I'm thinking I was president of my college fraternity I'm thinking. I'm too young to die. He (the Being of Light) immediately comes back. 'No one's too young to die.'"⁴

This experience also, like the experience of many others bears out the fact that the soul is different from the body and that God is a Being-of-Light who is knowledgeable.

Many others also have done research of this kind. They have published their findings. These all give similar findings. Dr. Elizabeth Kubler-Ross, a swiss-born doctor, who has written foreward of Dr. Moody's book in one of them⁵. Some others who have published their research are: Frank Smyth and Roy Stemmen and Arnold Toynbee and Roy Stemmen⁶ and Arnold Toynbee and Arthur Koestler.⁷ D. Scott Rogo who did Psychic Research at the University of California, Los Angeles, also wrote a book, titled 'At the Hour of Death'.

Hypnotic Regression

Another area of research that gives evidence about the existence of soul is Hypnotic Regression. Dr. Hellen Wambach, Ph.D.,⁸ among many others, has done extensive research work on the experience of rebirth and past lives through this method. She regressed 750 subjects back to the moment of death in their previous life and then to the moment of

3. *The Evidence for life After Death* by Martin Ebon.

4. *'At the Hour of Death'* by Karlis osis and Erlendur Haraldsson

5. *By Dr. Elizabeth Kubler Ross*

6. *Mystins of the After life* by Frank Smyth and Roy Stemmen.

7. *Life After Death* by Arnold Toynbee, Arthur Koestler and others.

8. *Life Before Life* by Hellen Wambach, Ph.D., Bantan Book, 1979.

entering the present body. About 89% of her subjects said that they, as souls, did not enter the body that grew out of the foetus until after 6 months of gestation. Among these, 32% even said that they entered the body shortly before birth.

Dr. Wambach took many hundreds of people back through numerous past lives. About 1100 people had volunteered for these experiments. She hypnotised many people in groups also and took them as far back in time as to lives prior to the birth and period of Christ. The hypnotised subjects gave experiences of their past lives relating to the ancient civilisations, such as the Indus Valley, Greece, Mesopotamia, etc. She has published these in her books, 'Reliving Past Lives' and 'Life after Life'. She verified the experiences of past civilisations, given by her subjects, with historical record of those periods and found that out of 1088 data sheets, built from these experiences, only 11 had discrepancies.

Dr. Wambach had devised a set of questions to ask her subjects whether, in their past life, they were related to persons with whom they were related now in this life. About 87% of all her subjects reported that they had known their present parents, relatives and friends in their past lives.⁹ *After going through the ten chapters of the book, one comes to the conclusion that there definitely is a metaphysical entity, called the soul that lives on after the body is dead. From De Rocha, the psychotherapist who did hypnotic regression in the year 1904, on a girl of eighteen years, and discovered that a subject could be taken to his or her previous life,¹⁰ till now, many many subjects have been hypnotically regressed and their narratives about their past lives have been verified and found true.*

One such case, was reported in September, 1984 - issue of the Monthly 'Mirror' published from Bombay, India. The report was built on what Mr. J.V.Rao, a hypnotist in Dadar, Mumbai, had mentioned to the reporter about a Christian girl of 18 who, when hypnotically regressed, had revealed that, in one of her previous lives she was born in Italy and had lived there during the period of Mussolini. She had narrated how her that life ended by a road accident. After the hypnotic state was over, she could neither utter Italian language nor could she state even a single incident which she had mentioned in hypnotic state. It was verified from all her relatives in this life that she had never gone out of India in her this life nor did she have even the slightest knowledge of Italian language.

9. *Ibid*, page 91.

10. It is mentioned by C.J. Ducasse in his "The Empirical case of Personal Survival", in *Body, Mind and Death*, the Cromwell Publishing Co., 1964.

Professor Mc Dougall has mentioned a case in his book: "An outline of Abnormal psychology". In this, he had referred to a curious case of hypnotic regression done by Professor Theodore Flourney of Geneva University on a Swiss girl who, in her state of hypnotic regression, had stated that, in one of her past lives, she was born to an Arab Chief and was married to a Hindu King, called Sivruka who built an excellent fortress, called Chandragiri. The investigation of the case, on the basis of old documents, confirmed the veracity of her statements. Similarly, Jeffrey Iresm has mentioned in his book, "More lives than one" (Pan Books, 1977), the cases reported by a British hypnotherapist, Mr. Arnall Bloxham, among these 400 cases being the case of a person who said that he, in one of his previous lives, watched the execution of Charles I at Whitehall in 1649. How can we explain all these cases unless we believe in the existence of soul that survives after the death of the body?

3. Cases of re-birth as narrated by small children

Over the centuries, hundreds or thousands of cases of re-incarnation came to light. But the research done in this field by Doctor Ian Stevenson, who, earlier, was the Head of the Department of Psychiatry at the University of Virginia, USA, is unique. He investigated about 2000 cases, from all over the world, of those who had claimed that they had lived before their present life.

Prof. Ian Stevenson had undertaken the work of this kind of investigation because his knowledge of psychology and psychiatry did not satisfy his curiosity about human nature. In his own words, he has said:

"I had become increasingly dissatisfied with theories of the human personality and felt that the present knowledge of environmental influences and genetics were inadequate, and that there was a great deal of metal to be eventually taken out of the ore, of what we call, paranormal phenomena. So, I felt there would be particularly large yield of metal to come out of the investigation of children who say they remember the past lives."

The investigation of the cases of re-incarnation enabled Prof. Stevenson to understand why children, from their early age, had certain skills and why individuals had different kinds of phobias and why the temperament of even the identical twins was different. Professor Stevenson has now written on all these and other aspects of personality that only reincarnation can explain.

(i) Un-acquired and uninherited skills

Writing of skills and talents in small children that were neither learnt nor inherited from the parents, the professor has said: "I remember one child in Sri Lanka who was gifted at preparing thatch for roofs being able to put the palm leaves together very skillfully. She had never been trained in that; her family was several levels above the person whose life she was remembering and they didn't bother with thatching; they had galvanised tin roofs" He thus says that this skill of the child born to a family of higher economic status, could not be explained without reincarnation about which the child spoke from past-life.

(ii) Phobias

Writing on Phobias, he says: "Phobias and inhibitions are much commoner phenomena and in about 50% of cases the child has a phobia, sometimes expressed very young, nearly always related to the mode of death of the person whose life is being remembered. For example, if the previous life ended in drowning, there would be a phobia of water and if the previous life ended in a stabbing there would be a phobia of bladed weapons. If it ended in shooting, there would be a phobia of fire-arms and so on."

(iii) Difference in the temperament of identical twins

On the subject of identical twins who, even though were physically born by the splitting of a single egg but had striking contrasts in temperament and whose this difference in temperament could not be explained on the basis of genetics because their bodies had resulted from the same genetic material. The professor says about Sri Lankan twins: "One remembers the previous life of a simple quiet school boy—and that happened to be verified. Everything he said turned out to be correct about the life of another quiet simple school boy who died of some illness when he was about 12 or 13. The two families were quite known to each other and the distance was about 50 kilometers. These twins are identical, as I showed myself by studying their blood groups. His twins had a totally different memory... He thus points out that the bodies of two identical twins is born of the same genetic material, the difference in their temperaments is because of two different souls who had re-incarnated.

Dr. Ian Stevenson has published his views in an article, titled 'The Explanatory Value of the idea of Re-incarnation' in Vol.164, No.5 of *The Journal of Nervous and Mental Diseases*, printed in the USA. The article is comprehensive and explains the above phenomena among many other things.

What is of greater relevance to the present context of re-incarnation is now reproduced here, with courtesy to the author and others. In this Dr. Stevenson has explained his approach and his observations and methodology of investigation:

Cases of the Reincarnation Type

A typical case of this type begins when a small child, usually between the age of 2 and 4, starts to tell his parents, and anyone else who will listen, that he remembers living another life before his birth. His statements about the previous life which he claims to remember are nearly always accompanied by behaviour which is unusual in the child's family, but which harmonizes with the statements he is making about the deceased person he claims to have been. For example, if the child claims to remember a previous life as a wealthy man with many servants, he is likely to refuse to do any household chores or other manual work, no matter how poor his family is.

A child claiming to remember a previous life usually asks to be taken to the place where he says he lived during that life, and, for this reason, in order to satisfy their own curiosity, his parents nearly always try to find the family to which he seems to be referring. If the child has furnished enough details, especially identifying proper names, and if the distances involved are not too great, the search for the family of the person he has been talking about is nearly always successful. (Sometimes this deceased person¹¹ is already known to the child's family, but such cases are necessarily weak with regard to evidence of anything out of the ordinary. The child is then usually found to have been accurate in about 90 percent of the statements he has been making about the deceased person whose life he claims to remember. Reports about that person's behaviour made by surviving members of his family usually indicate also close correspondence between that behaviour and the unusual conduct that the child has been showing in his family.

In the usual case of this type, the child's utterances concerning the previous life reach a peak of volume and detail between the ages of 3 and 5. After this, the imaged memories of the previous life appear to fade

11. It has been found convenient to refer to the deceased person about whom the child is talking as the "previous personality". The term can be used whether or not an actual deceased person has been found whose life corresponded to the child's statements; nor does its use imply any commitment to a particular explanation of how the child obtained by correct knowledge he showed about the person identified.

most cases; sometimes the memories persist until later, but the child may talk less or not at all about them. At about the same age, but often somewhat later, his unusual behaviour also recedes. The majority of children, subjects of these cases, develop along entirely normal lines in later childhood and adolescence. In some, however, the influence of the memories of the previous life may last into adulthood.

Reports of cases of this type were published sporadically from the late 1890s through the 1930s. In 1960, I published summaries of some of these previously recorded cases and also an analysis of 44 cases of which the published reports seemed sufficiently reliable for at least provisional acceptance of these cases as authentic (35). I concluded that the evidence offered in connection with the best of these cases justified an intensive investigation of whatever new ones could be discovered. In the following year (1961), I began field-investigations of cases in Asia and have continued them ever since as time and funds permitted. With the help of colleagues and assistants, I have now assembled data on more than 1600 cases of the reincarnation type.

Distribution of Reported Cases

Cases of the reincarnation type have been reported (and investigated) more frequently in some parts of the world than in others. The principal sites of abundant reported cases are: Northern India; Sri Lanka; Burma; Thailand; Vietnam; Western Asia, especially south central Turkey, Lebanon, and Syria; and northwest North America, among the natives of that region. *The people of these areas (of the groups among whom the cases occur) believe in reincarnation. This fact has led some uninformed persons to suppose that the cases offer nothing of interest, but a myth shaped by the expectations of the cultures in which they occur. It happens, however, that cases of this type also occur in areas of the world whose people find the idea of reincarnation uncongenial or even heretical. Cases similar in their main features to those of the areas mentioned above have been found in Europe and North America (apart from the areas of the native tribes in the northwest) and will be reported in due course.* It remains true, however, that the cases reported from these later regions are less numerous and in general poorer as to details apparently remembered by the subjects than those of the areas mentioned where the cases occur frequently.

Methods of Investigating Cases

The methods used for the investigation of these cases have been those traditional in parapsychology since the end of the last century. These, in

turn, derived from the methods used by lawyers, historians, and to some extent by psychiatrists, in their attempts to reconstruct past events. Parapsychologists adopted these methods to the needs of their material, and cases of the reincarnation type have required some further modifications of method to suit the exigencies of this particular type of case.

The data of the cases derive mainly from interviews with first-hand informants. These are, on the side of the child subject of the case, his parents and other members of his family or neighbours who are qualified as first-hand informants and available to give evidence. Statements of the child himself are always noted (sometimes tape-recorded) if he is still talking about the previous life he claims to remember. After testimony on the child's side of the case has been recorded, the whole procedure of interviewing several or more informants is repeated with the family of the previous personality whose life the child claims to remember. This person has usually been identified by the time investigators reach the case; but if he has not, and if the child has given sufficient detail to justify the attempt, the investigators will try to find a family corresponding to the child's statements. *Great importance is attached to independent verification of the child's statements with the family of the related previous personality. The oral testimony of informants is supplemented by any written records or documents, such as birth and death certificates, hospital records, and diaries, that can be traced and examined or copied.*

Informants are frequently interviewed more than once. Later, interviews furnish information about the consistency of the informants' accounts, permit the filling in of gaps in the information already obtained, and allow for further observations of the child as he grows older. The gradual recession of the child's imaged memories and of the related unusual behaviour can thus be observed over a period of some years.

Since errors of memory—whether motivated or due to inaccuracies of observation and recollection—are the main sources of weakness in these cases, every effort is made to reach them early, to check the testimony of one informant against that of others, and to analyze discrepancies among the statements of different informants and between those of the same informant on different occasions.

The cases are of very uneven quality; in some, the evidence furnished by the informants is extremely weak, but in others a thorough investigation, including the interrogation of many informants, has led to judgments that the informants have given accounts of events that adequately correspond

to what did in fact occur when the case developed. In a small number of instances, an investigator has actually reached the scene of the case as it started to develop and before the two families concerned had met. He could thus make a written record of what the child said about the previous life before his (the child's) statements were verified. In these rare cases, we can confidently eliminate lapses of memory as a source of error.

Analysis of the case

Each case is analysed individually with regard to alternative interpretations for it; in addition, the data of all the cases are being analyzed with a computer for the detection of recurrent characteristics.

In the analysis of individual cases, I consider the following principal interpretations; fraud; errors of memory, especially paramnesia and cryptomnesia, extrasensory perception on the part of the child concerned, together with the construction by him of an imaginary previous personality whose life he claims to remember; inherited memory; "possession" of the child by a discarnate personality, and reincarnation. Interested readers will find full discussions of these interpretations of the cases elsewhere. Here I shall only say that, for at least from the foregoing, it should be clear that the cases of reincarnation have been investigated in an objective and scientific manner and enough care and caution has been taken against fraud, errors of memory, etc. Naturally, thousands of such cases put together cannot lead to wrong conclusion. A historian also investigates the truth of events in this manner. An advocate also builds up his case in a court based on this kind of evidence. Many persons questioned in this regard give information and when that information is matched, it fits in to give a credible story. Moreover, children who tell about their past lives are or a very small age and cannot stand proofing questioning for long if they had been tutored or if they were trying to play fraud. All this put together naturally leads one to believe that there definitely is an entity which survives physical death and takes another incarnation.

We now give here below the case-history of one small boy, Ismail which was published in a national newspaper in Delhi, India, in the year 1976:

"It was a strange thing indeed that a little boy, Ismail, came from the place of his birth to a site about three quarters of a mile away where his eyes fell upon an ice-cream seller. He suddenly accosted him: 'Hullo, do you recognise me?' The ice-cream seller, named Mehmat, failed to recognise him, for he had never seen him before. He, therefore, shook his head to indicate 'no'. Thereupon, Ismail reminded Mehmat in a very

familiar tone that he was Abit Sujulmus and asked him since when he had started selling ice-cream, for he had been selling vegetables previously.

Looking at the little boy with his eyes distended with extreme surprise, Mehmat confessed that he did recognise him, though he was wondering all the time how that little boy could call himself Abit Sujulmus. He knew very well that Abit Sujulmus did wholesale business of fruits and vegetables, and that he grew those in his own orchards and gardens, looked after by his own servants, but he had been murdered a long time back by three persons acting in collusion. He was, therefore, at a loss to understand how the little boy, Ismail, could identify himself with fully grown man, Abit Sujulmus. Mehmat's eyes were thus an open question mark?

And, then, Mehmat was told that this little boy, Ismail had not even learnt to articulate when he started telling his father about his previous birth. At the age of a year-and-a half he said, "I am bored with my life here. I want to go home to see my children." His father was astounded and struck dumb to hear this. He was a butcher by occupation and carried on a flourishing business at Aden. Not only was he puzzled by what his child said, but all his kith and kin as well as other relatives were also confused and perplexed by it.

Ismail was born in the year 1956 and was his father's ninth child in the family, with physical characteristics distinct from those of other children. He had something like a mark of a wound on his head which went on fading away as he grew older.

No sooner did he learn to speak than he began to talk about things relating to his previous birth. He said that he was a resident of a town, three quarters of a mile distance from this place. All people were struck with wonder at his memory. Abit Sujulmus, a wealthy businessman that he was, was well-known all over that town. His first wife was Hatis, from whom he had no issue. He, therefore, divorced her and bequeathed some of his property to her. Thereafter, he married a beautiful girl from whom he was blessed with several issues.

Then there occurred a traumatic incident. On the 31st January, 1956, Sujulmus was nearly 50 years old. He had then engaged three men from a near-by village to work in his gardens.

That day, one of the three men came and asked Abit Sujulmus to see one of his horses in the stable which was lame. Sujulmus accompanied him forthwith to his stable where the two other were already present. Unsuspecting, he bent down to examine the horse's legs. Just then, one

of the three men suddenly dealt a heavy blow on his head with an iron rod. As a result, Sujulmus simply heaved only a deep sigh and collapsed in a heap.

His cry of anguish, however, reached the ears of his wife, Shabida and her children who at once came running to the stable but they, too, were done away with as soon as they reached there.

The assassins thereafter, took to heels, but they were arrested within a week. Two of them were sentenced to gallows while the third was imprisoned and died in jail soon after. Some months after this occurrence at Aden, about three quarters of a mile away from that place, was born Ismail who carried the mark of a wound on his head. God knows if this was the mark of some wound which Abit Sujulmus had suffered in consequence of the fatal assault on his head.

When he was three years old, members of both the families—the present one as well as the one of his previous birth—gave Ismail full permission to visit them. Now, he said in clear words that he was a married person, that he had married twice, because his first wife was issueless, that his second wife, Shabida, was very beautiful, that he was murdered by his servant at the age



of 50; further, that one of the servants, named Ramzan, had dealt a fatal blow to his head with an iron rod as a result of which he had died, that his wife who had heard his painful cry had come running to the stable with her two children, Ismail and Zinu, and that all those three were also murdered. All these things were true, word for word, and the town's people knew all about the tragic death of Sujulmus.

Ismail now went to the town of his previous birth where his business had been wound up and his first wife was living in a two roomed mud hut. Seeing her in this lowly condition, his eyes were filled with tears. In the fervour of his love, little Ismail stepped forward and embraced her with his little arms just like a loving husband does on seeing his wife in an unhappy condition. Even now Ismail keeps visiting the wife of his previous life, with all the accompaniment of prosperity, to remove his wife's misery. And therefore, little Ismail remains ever miserable.

Hearing this, the ice-cream seller, looked with wonder toward Ismail. In the meantime, Ismail had also treated himself to some ice-cream, taken from the seller. When Ismail's father began to pay for the ice-cream, Ismail said at once: "Let it be, father, don't pay him. He is still indebted to

me. In my previous birth, he used to fetch vegetables for sale here and he ran an account with me which is still in debit.” When Ismail’s father, thereupon, raised his eyes enquiringly, the ice-cream seller, Mehmat, with strange look in his eyes, said: “Please don’t pay, Ismail is correct.” Speaking thus, Mehmat’s eyes had suddenly, for some unknown reason, filled with tears. And, he simply exclaimed: “God is great and glorious”.

4. Evidence about the existence of soul in the light of neurological researches

People generally think that Consciousness and Thought are an epiphenomenon of brain. They believe that all stimuli go to the brain as electrical impulses and it is the brain, which working as a computer, gives response in the form of ‘thoughts, feelings, emotions etc. Some say that thought and consciousness are the result of brain and body-chemistry. *Little do they realize that consciousness is altogether a different kind of existence to which laws of chemistry and physics do not apply. Thoughts can neither be produced by any physical or chemical action, known to man, nor they can be produced by any form of physical energy. Thought cannot be measured also as physical and chemical actions or entities can be quantified.*

Take, for example, the sight of a falling apple which Newton saw, or of the shaking of the lid of boiling kettle which James Watt, the inventor of the Steam Engine, saw. Biologically and neurologically speaking, the sight of the apple or the moving lid would have reached the retina, via the optic nerves and then to the visual cortex and there it would have got integrated to give the experience of a picture. It would not have gone beyond that. If the brain had been fed, like a computer, with some instructions one would have, like a robot picked the apple or removed the lid. That is all. The reaction of the sensory and motor mechanism and the brain would not, in any case, have been to take upon itself the search for solution of the riddle as Newton or James Watt took upon themselves. For, the laws of chemistry and physics or bio-chemistry and physiology state that the re-action will be equal to the action. But in the examples of the apple and the lid, it is clear that there is a metaphysical entity who has a will so that it decided to sustain the thought process and go beyond what the original physical stimulus warranted.

Thoughts are of different nature

It can be seen that thoughts and consciousness are not like chairs and tables. They do not occupy space. Chairs and tables deteriorate with the

passage of time but ideas and concepts may not get destroyed by time. The more we use a chair or car, the more it gets worn out but the more we think of a concept, the more it gets set. Further, if I spend money, I am left with that much less but if I spend my knowledge, it increases by expenditure. So, thoughts, ideas, concepts, experience and consciousness are the manifestations of a metaphysical form of energy.

Moreover, latest researches in the fields of neurology and brain sciences have established that, without bringing in the concept of a non-physical soul in the brain, the explanation of various brain functions is incomplete.

Penfield's experiments show that cerebral cortex is not the seat of mind

It should be noted in this context that Penfield's experiments have shown that even massive removals of cerebral cortex do not seem to completely abolish awareness, whereas, small lesions in the brainstem produce irreversible coma. Penfield and another neuro-scientist, Heranadoez-peon, have also pointed to the evidence from those unfortunate human beings who are born without any cerebral cortex and are called 'anecephalic monsters' in scientific jargon because they are not capable of much learning and of understanding their environment. They do have sleep and wakefulness alternating each other and, when they are awake they can smile or cry also. Similarly, newborn normal babies, whose cerebral cortex is not yet functional, show brief periods of wakefulness during the day. The case of these anecephalic monsters implies that while the two cerebral hemispheres are responsible for higher thought processes and for understanding the language code and expressing thought in language, etc., these are not the seat of Consciousness of Mind for the Consciousness in these anecephalic monsters is still there though they do not have any cerebral cortex. In other words, it means that a man can live and have consciousness even if he does not have the two cerebral hemispheres.

Further Penfield performed thousands of such experiments. He has documented them. He stimulated thousands of sites or points on the brain. Stimulation of motor cortex produced only bodily movements, as for example the movement of a hand, but it did not produce any conscious effects. *It just stimulated a mechanical or motor action and the patient's consciousness felt that it was being done without his will which means that Conscious Mind is not located in motor cortex also though the motor nerves which trigger the motor action are located there. This also shows that the cerebral cortex and the motor cortex are only the instruments and*

the conscient being who uses them is different from these.

Location of the Soul

Penfield is known for his finding that memories can be activated by an electrode placed on the temporal lobe or some other part of surface of the cortex. But, actually, the locus of the memories was in the upper brainstem and the Hypothalamus which again, indicates the presence of an entity there.

Again, the stimulation of sensory areas of the cortex resulted in hearing, seeing or feeling something depending on which cortical area had been stimulated, but the sensations which resulted from this were not well-knit perceptions like we normally have of visions of tables, chairs, etc., but rather these sensations were only bits of perceptions, not well-integrated and, as we have said before, the locus of these seems to be near the brainstem.

Further, stimulation of the rest of the cortex, which is known as the 'uncommitted cortex' did not produce any conscious effects. All this leads one to the conclusion that the neo-cortex or the cerebral hemispheres are not the seat of Consciousness or Mind which, according to the available evidence, seems to be in or near the Hypothalamus which has connection with the Thalamus and the Brainstem.

Similarly, the Mexican neuro-physiologist, Raul Heranandez-Peon, through his experiments, came to the conclusion that Reticular Activating System (RAS) of the Brainstem is the gate through which go the sensory impulses to the cortex and that it is the regulator of 'attention'. And we all know that 'Attention' and 'Consciousness' are closely related. Students of psychology know that attention is essential to all learning and experience which is a work of Consciousness or Mind. This too shows that Mind, Consciousness or Soul should be located in the Hypothalamus, near the upper part of the Brainstem which has the Reticular Activating System. The above facts are further proved by experiments of the famous physiologist and neurologist, Dr. Sperry.

The right and the left hemispheres are not the Seat of Mind

Until only recently, it was believed that the right hemisphere had no specialised functions of its own but it was capable of taking over the functions of language and other thought-processes if the left hemisphere was damaged. In other words, the right hemisphere was considered to be like a spare tyre. The reason for this is that it was found in many patients

that, if any damage occurred to the right hemisphere, the damage did not produce such disorders of Thought-processes as are characteristic of aphasia, i.e., block-age of the function. So, it was thought that all higher mental activities took place in the left hemisphere. Because of this belief, the right side of brain was designated as the 'non-dominant' or 'minor' and the left hemisphere, as the 'dominant' or 'major' hemisphere. But during the last half century, this view has changed considerably through observation of the result that followed the surgical separation of the right from the left hemisphere. Perhaps the first operation to separate the two hemispheres was performed, in the year 1960, on a small number of patients, suffering from severe epilepsy, the operation involved the severing of all direct connections between the two hemispheres by cutting all the cables of nerve fibers which connect the corresponding parts of the two hemispheres. The connection between the two hemispheres is there because of the corpus callosum which is composed of about 200 million nerve-fibers and nerve-cells which normally function to transmit information between the two and co-ordinate their motor activities also. Since 1960, till date, many such operations have been performed. One of the pioneers in this field is Roger Sperry of the California Institute of Technology who has been awarded the Nobel Award for this work in Physiology. Some of his findings, relevant to our present topic are:

1. Even after removal of one hemisphere, a person is alert, responsive and intelligent and a casual interaction with such a one would not reveal that he or she differs from the rest of the humanity because of commissurotomy, i.e., the surgical operation separating the two hemispheres though there are certain deficiencies noticeable because the sensory information that goes to one hemisphere is not passed on to the other hemisphere. Since one hemisphere can do without the other, this clearly shows that neither of the two hemispheres is the seat of Consciousness or Mind though both of these are used by Mind.
2. It was observed that when the left hemisphere of a patient was totally removed for treatment of a large brain-tumour, despite the loss of language capability which is a known speciality of the left hemisphere, the patient had all signs of intelligent and active behaviour. It is clear enough that the right hemisphere is capable of sensory and motor action even in the absence of the left hemisphere which, until only a few decade ago, was wrongly considered to be the seat of the soul or Mind.

3. Further, it has been found that the right hemisphere excels in both the perception and expression of music and in visuo-spatial or pictorial thinking and in synthesis whereas the left hemisphere excels in human speech, abstract conceptualisation, logic, mathematics and in analytical thinking.

The Mind is a psychic reality, located outside the two hemispheres

Now an important question related to the above findings is: "Who is it that manipulates the information from these two hemispheres which are characterised as analytic/synthetic or logical/dreaming, etc.? In other words, since the operations separating the two hemispheres have made it clear that there are two different kinds of brains, or, let us say, there are two different kinds of brain-codes operating to give each hemisphere should take precedence over the other at any given moment and under a given situation? Who decides that this problem requires analytical thinking, logic, etc., and, therefore, the left hemisphere should work on this, or that the other problem is spatio-visual in its nature—as an artist's job is— and that the right hemisphere should take over this job?"

Evidently, the Consciousness, Awareness, or Mind which decides and uses either of the two hemispheres, is separate and apart from these two and is located at another site. In fact, in patients who have split brains, the Consciousness seems to be manifesting separately through the two hemispheres which clearly shows that the point-source of consciousness is somewhere outside of these two hemispheres.

Sir John Eccles has done research in the field of neurology. He was awarded Nobel Prize for his commendable and valuable researches. Eccles has given many arguments and much evidence to say that besides the body and the brain there is the self-conscious mind or the Soul. He has written many books on the basis of neurological researches he and others have done. His two books, *The Self and Its Brain*¹² and *Facing the Reality, Philosophical Adventure by a Brain Scientist*, are wonderful books on the subject. He has also participated in many seminars relating to this subject and written a number of articles in many prestigious periodicals. The following excerpts may be quoted from one of his writings, bearing the title: *The Brain-Mind Problem as a Frontier of Science*.

12. K.R.Popper and J.C.Eccles : *The Self and Its Brain*, Springer Verlag
J.C.Eccles, Springer-Verlag, 1970.

1. We can assume that the experiences of the self-conscious mind have a relationship with neural events in the liaison brain, this being a relationship of interaction giving a degree of correspondence, but not an identity.
2. There is a unitary character about the experiences of the self-conscious mind despite the unimaginable complexity and diversity of the brain events. There is concentration first on this, then on that aspect of the cerebral performance at any one instant. This focusing is the phenomenon known as attention.
3. There is the continual experience that the self-conscious mind can effectively act on the brain events. This is most overtly seen in voluntary action, but throughout our waking life we are deliberately evoking brain events when we try to recall a memory or to recapture a word or phrase or to express a thought or to establish a new memory.

We also have to build up a philosophy that recognizes the openness of World 1 to influences from the world of conscious experience, World 2. Popper (9) expresses very well the necessity for some loophole in the apparent closedness of the world of matter and energy—that is, of World 1. It is not enough to have an indeterminacy provided by the probabilistic operation at the quantal level. He says that a closed indeterministic World 1. A brief initial outline of the hypothesis may be stated as follows. It is extracted from Popper and Eccles (3).

The self-conscious mind is actively engaged in reading out from the multitude of active centres at the highest level of brain activity, namely, the liaison areas of the dominant cerebral hemisphere. Displayed or portrayed before it from instant to instant is the whole of the complex neural processes, and according to attention and choice and interest or drive, it can select from this ensemble of performances in the liaison brain, searching now this, now that and blending together the results of read outs of many different areas in the liaison brain. In this way the self-conscious mind achieves a unity of experience. This hypothesis gives a prime role to the action of the self-conscious mind, an action of choice and searching and discovering and integrating. The neural machinery of the liaison brain is the World 1 component of the interface with World 2. Furthermore, the self-conscious mind acts on these neural centres modifying the dynamic spatiotemporal patterns of the neural events.

A key component of the hypothesis is that the unity of conscious experience is provided by the self-conscious mind and not by the neural machinery of the liaison areas of the cerebral hemisphere. Hitherto it has

been impossible to develop any neurophysiological theory that explains how a diversity of brain events comes to be synthesized so that there is a unified conscious experience of a global or gestalt character. The brain events remain disparate, being essentially the individual actions of countless neurons that are built into complex circuits and so participate in the spatiotemporal patterns of activity. This is the case even for the most specialised neurons thus far detected, the visual feature detection neurons of the inferotemporal lobe of primates. Our present hypothesis regards the neuronal machinery as multiplex of radiating and receiving structures, but it does not itself provide the ultimate synthesis. The experienced unity comes not from a neurophysiological synthesis, but from the proposed integrating character of the self-conscious mind. We conjecture that in the first place the self-conscious mind is developed in order to give this unity of the self in all of its conscious experiences and actions.

It is proposed that the self-conscious mind plays through the whole liaison brain in the selective and unifying manner.

Eccles has thus expressed how brain is the mechanism which the self-conscious Mind makes use of. In other words, soul is a metaphysical entity, different from the brain. Further independent study by others has shown that the self-conscious Mind or Soul is a point of light which is located at the hypothalamus in the brain and, from there is linked to all the body and brain-mechanism.¹³

4. Existence of soul in the light of the Theory of Relativity, Data-processing Theory, Quantum Mechanics, Thermodynamics, etc.

We now consider the question of the existence of soul in the light of modern Physics. Let us, first, consider it from the point of view of Einstein's Theory of Relativity and his *gedanken* (thought experiments). Those who have studied this theory know that any space-time events can be viewed from an innumerable number of events, each giving rise to a different experience. So, if it is said, as scientific community generally says to-day, that the events in our brain that lead to experience correspond to space-time electro-magnetic events, then how could all the electro-magnetic activity generated by our five senses be generated into something

13. *Eternal Drama of Souls, Matter and God, Part-1* by B.K.Jagdish Chander, Brahma Kumaris World Spiritual University, 3rd Edition, 1985, pages 122 to 144.

we feel as a unified experience? Einstein's gedanken (thought experiments) tells us that our frame of reference will affect our measurements of the location, speed, direction, mass, length, momentum, energy, frequency, etc. of a particular object or event. We further know that our observations are also coloured by our choice of measuring apparatus and by such factors such as our attitudes, beliefs, past experiences, desires, prejudices, etc. **So, if it were only the electro-magnetic events involved and so many were the frames of references then our experience could not have been 'one' as it really is. Since our experience is always one and unique, there must be a single point of reference, working as a co-ordinate origin, to which our experience owes its one-ness or uniqueness. This universal fact that we have only one or a unique space-time experience is a clear evidence of the truth that there is only co-ordinate origin which works as our one reference frame and one set of attitudes and beliefs which lead to the 'one-ness' of our perception or experience. This one co-ordinate origin is the soul.**

So, even though we have never observed a particle which instantly works as one single frame of observation and reference, it becomes necessary to recognise the existence of such an entity, called the soul—a point of conscient light in the brain.

Evidence from Quantum Mechanics

As students of Physics know, Quantum Mechanics is that branch of Physics which deals with different energy states that a system can occupy. This branch of physics has helped us to explain the behaviour of particles, atoms and molecules. Quantum Mechanics tells us that we can't know the exact details of time, energy, momentum, position, frequency, etc. at the micro level because our very act of measuring disturbs the system or event we want to observe. In other words, we cannot predict tiny changes in small areas as we can predict the behaviour of large objects such as an aeroplane or car. At the micro level we cannot say when or which thing will occur; we can only describe the probability of a particular activity because these events are as abrupt as the catching of a fire, occurrence of an explosion or the phenomena of explosion. Since the phenomena at the micro level are abrupt as the catastrophies we have just mentioned, the phenomena are described by a special branch of mathematics, called Catastrophe Theory.

Let us now consider the experience of an individual in the light of what has been said above. There are a number of ways we can approach a problem, and, therefore, there can be a number of decisions we can make in a particular situation and there can be number of mental states

that can occur. The question, therefore, is: what determines what and how we look at our surroundings, what we perceive or experience and how we react? The decision we finally make is, generally, an abrupt one. Therefore, all our mental activity correspond to the changes in quantum energy states which the Quantum mechanical equations would describe in terms of probability only using its Catastrophic Theory.

So according to Quantum mechanics and the Catastrophic Theory, our mental states being abrupt and events being at the micro level would always be unpredictable. We couldn't say with any degree of certainty that the Mind, Thought or Consciousness of a particular individual would take a particular course of action. An individual's action to us would always be uncertain and unascertainable. But we know that, in actual practice, we are able to know it. Everyone of us knows that our experiences and actions are the results of our considered or chosen choices.

It is thus clear that the quantum level or micro-level forces which trigger our decisions or result in leaps and quantum-jumps of consciousness are not simply random and unpredictable but are directly related to our Will and Samskaras which reflect the presence of another type of force-non-physical energy-that triggers our thoughts and decisions in a definite direction.

Evidence from Thermodynamics and Entropy Law

Entropy is the measure of disorder within a system. High entropy means that there is greater disorder and that less energy is available for use while 'low entropy' means that there is a large amount of energy available for use.

According to the Second Law of Thermodynamics, each action or interaction within the system would increase entropy and so, in any non-living system, more and more energy would become un-recoverable and, so, greater and greater will be the disorder. According to this Law, the universe will ultimately meet 'heat death' because of higher and higher entropy and loss of heat.

The operation of the Law of Entropy can be explained by the example of petrol or gas used in a car. When the petrol is in the tank of the car, the molecules of the petrol are much more ordered. When however, the car moves, they turn into vapour and then vapourize and the chain of the petrol molecules gets broken apart and combines with oxygen from the atmosphere to form carbon dioxide gas, the energy that was stored in the form of chemical bonds of the gasoline now is released and scattered in

all directions and cannot be restored to the same state. Also, there is the wear and tear of the car because of its use and, so, the system is moving towards greater disorder and higher entropy.

But when we look at conscious activity, we find that the picture is not the same. Our conscious behaviour tends to move to a state of greater order rather than towards disorder and confusion which the Second Law of Thermodynamics would envisage. Also, if we have the knowledge of consciousness and its functioning, we can intervene and stop degradation which we see in non-living system and thus we can bring back our conscious system to its original ordered state. For example, though less and less energy would be available when the car is driven and the gasoline is used and gets transformed into other states and there would be linear progression towards entropy, the driver would learn more and more by experience and his mental state would have greater order. His ability to drive would improve. So, at the level of consciousness, greater and greater order would result, leading to zero entropy.

We see the evidence of what we have stated above in the universe. While we see increasing degradation in the material universe, we experience greater order in research and exploration. What was once not understood and was almost impossible has now been understood and made possible. People have now mastered Science and Technology and this has led to a high system of accuracy.

Thus we notice that when a person has knowledge of a certain system, he can bring change and restore the original order. This shows that there is a conscient entity on which the law of Entropy does not work in the linear fashion and this conscious entity, called the soul, can return to its original state of highest order by means of the knowledge of how its consciousness works. What we have to do is to know our aim clearly and to remove our ignorance which is the cause of disorder. All this takes us to the conclusion that consciousness is a separate entity and is non-physical.

In fact, we find that the greatest objection to the belief in the existence of soul has been on the basis of the Law of Entropy and the second Law of Thermodynamics. It was said that these laws would be operative on any system and, so, if the soul is a store of conscient energy, it would gradually lose its available energy and would reach a stage of death, i.e. unavailable energy. *It was alleged that the belief that the soul is eternal violates the Law of Conservation of physics. It was also said that consciousness in any form, as for example, in the form of intention, would not be able to act upon the reasons or the synopsis because it is believed*

to be non-physical, having no mass. But the above explanation, on the other hand, establishes the fact of the existence of soul especially a new finding in this field provides the probability of its existence.

Not only that, it has been found that, even on physical level, there are probabilistic fields of quantum mechanics which carry neither mass nor energy but which can, nevertheless exert effective action at the micro level. In the light of this, it now seems possible that the mental events which are of non-material nature, can act on probabilistic synoptic events in the manner analogous to the probability fields of quantum mechanics.

The nature of a human soul

Let us now state briefly what a soul is. The soul or psyche is a non-physical entity which cannot be perceived directly at any of the wavelengths in the electro magnetic spectrum. As a form of energy it is infinitesimal in size. It is smaller than even the smallest sub-atomic particle. Physical parameters such as mass, volume, time, velocity and weight cannot be applied to the soul directly. The soul is immortal and, after the body dies, it takes another body as an actor changes its costumes. The circumstances in which it takes a new body are determined or influenced by the actions it performs in the present body or it performed in the previous bodies.

The soul has consciousness as its inherent or natural quality. It manifests in various forms such as belief, imagination, understanding, will, remembering, learning, intentions, motives, emotions, judgement, etc. Briefly, it may be said that it manifests in the form of Mind, Intellect, Samskaras, memory and emotions.

Analogous to a multi-tract micro-computer, the soul in the brain functions continuously. Sanskaras or Latent thoughts from its subconscious mind are continuously influencing its conscious thoughts, decisions and emotions. More latent thoughts emerge on the video-screen of our mind in dreams because when we are asleep, our five senses are, to a large extent, turned inwards.

The soul is located at a specific anatomic site in the brain where it is able to effect all functions throughout the whole body, the site of its location is the pituitary-hypothalamus combine at the SELLA TURICA. From a frontal view, the soul is located in line with the point that lies midway between the eyebrows. Laterally, the pituitary lies below the optic Chiasm. Metaphysical energy, manifesting as Thoughts, forms a quantum field which has no mass. At the micro-level it influences the related nuclei in the hypothalamus which trigger the pituitary or which set up neuro-

electrical impulses or photon-fields at the various organs and tissues. Much action is through the neuro-endocrine systems because only nervous tissue is specialised for the different transmission of electrical or electromagnetic impulses or photon-fields at the micro-level. These then influence biochemical and biophysical functions in the rest of the body. However, all cells of the body seem to have consciousness because they are connected with the brain where the soul dwells.

The soul generally enters the body when the foetus is five or six months old because, at this time all systems and organs have developed to such an extent that psychophysiologic behaviour can be observed. In the absence of the soul at this period, the foetus's development is retarded. Abortion can result. The period of five-six months is thus a period of preparation for the entrance of the soul or psyche.

Life, in its real sense, goes beyond the biochemical and biophysical processes. Death is of four types. One type is called Necrobiosis. This means the usual type of death of cells which are replaced by new cells. The other type is known as Necrosis. This refers to the death of cells as a result of noxious agents. The third one is named as Somatic death which means the death of the whole body. In the last case, even though many organs cease functioning, many cells continue to live upto a certain period of time. Plastic surgery also is based on this fact. The skin from cadavers is grafted on burnt parts of patients on this basis. It is now said that the final death takes place when the brain becomes dead and a command centre in the brain triggers death. This is the final act the soul, located at the hypothalamus performs.

It should be realised that the soul is important in sustaining the organs and tissues and in the presence of the soul are the real life-processes going on. Even the cancer cells will 'live' in a tube of nutrient media and oxygen for weeks. Similarly, heart-tissue and the whole heart would live. But if the whole cardiovascular system is isolated, it would not survive that long, because the integrating factor, the soul, is missing.

When a person dies, he feels that inner light or power moves from the extremities of the limits and because the soul abides there in the brain. When the soul leaves the body it carries with it latent impressions or sanskaras of this and the past life.

Knowing the truth of the existence of the soul, we must keep awareness of this fact even when we are at work. We should remember that the world is an eternal drama of souls, matter and God and that we must play our part well in this drama using our discretion.

What Scientists say on the question of soul and on Rebirth

Some people think that scientists do not believe in the existence of soul and consider it as an irrational belief or mere blind faith. Following are some excerpts from the writing of some famous scientists and psychologists which show that many world-famous scientists believed and believe in the existence of soul and its rebirth.

Sir Francis Walshed, Neurologist

Says in his article titled: "Thoughts upon the Equation of mind with Brain" in *Brain—A Journal of Neurology*, March 1983.

From sheer psychological and philosophical necessity, traditional commonsense philosophy from the earliest Greeks to Aquinas accepted the existence in man of an essential immaterial element ... setting him above the merely animal. This element they called psyche, entelechy, anima or soul.

It has also to be recognized that for the soul's functioning as an essential element in the hylomorphic human person, it needs sense data, of which the brain is the collecting, integrating and distributing mechanism. Yet it would be quite childish to identify the instrument with its user, even though the user be dependent upon the instrument for operating... We shall have to accept the ancient concept of the soul again; as an immaterial, noncorporeal part of the human person, and yet an integral part of his nature, not just some concomitant aspect of man, but something without which he is not a human person...

There is a sense in which the present is an age of which a characteristic is its failure to understand the status of its own obstructions, and this, perhaps, is the inevitable fruit of the divorce of natural science from metaphysics, to have achieved which was the empty triumph of the nineteenth century.... For me, the chill physico-mathematical concept of the human mind is a muddy vesture of decay in which I am not willing to be enfolded. It is unworthy of the dignity of Man. And if any one says that this is not a scientific attitude I am unmoved by the irrelevance, for, outside its proper field of discourse, the word "science" does not intimidate me. Man was not made for science, but science by man, who remains more and greater than his creations.

Max Planck, World Famous Physicist

Says in his article 'Where is science going?

There is a point, one single point in the immeasurable world of mind and matter, where science and therefore, every casual method of research is inapplicable, not only on practical grounds but also on logical grounds, and will always remain inapplicable. This point is the individual ego. It is a small point in the universal realm of being; but in itself it is a whole world, embracing our emotional life, our will and our thought. This realm of the ego is at once the source of our deepest suffering and at the same time of our highest happiness. Over this realm no outer power of fate can ever have sway...

There can never be any real opposition between religion and science; for the one is the complement of the other. Every serious and reflective person realizes, *I think that the religious element in his nature must be recognized and cultivated if all the powers of the human soul are to act together in perfect balance and harmony. And indeed it was not by any accident that the greatest thinkers of all ages were also deeply religious souls, even though they make no public show of their religious feeling... Every advance in knowledge brings us face to face with the mystery of our own being.*

(Emphasis by giving italics type is by us)

Erwin Schredinger (1887-1961)

World-famous Physicist who won Noble Prize (1933)

Writes in 'What is life', published by Cambridge University Press:

(1) My body functions as a pure mechanism according to the Laws of Nature. (2) Yet I know, by incontrovertible direct experience, that I am directing its motions, of which I foresee the effects, that may be fateful and all-important, in which case I feel and take full responsibility for them.

The only possible inference from these two facts is, I think, that *I*—I in the widest meaning of the word, that is to say, every conscious mind that has ever said or felt "*I*"—am the person, if any, who controls the "motion of the atoms" according to the Laws of Nature.

If you analyze (this "*I*") closely you will, I think, find that it is just a little bit more than a collection of single data (experiences and memories), namely the canvas (or ground-stuff) upon which they are collected.

You may come to a distant country, lose sight of all your friends... acquire new (ones)... Less and less important will become the fact that,

while living your new life, you still recollect the old one... Yet there has been no intermediate break, no death. And even if a skilled hypnotist succeeded in blotting out entirely all your earlier reminiscences, you would not find that he had killed you. In no case is there a loss of personal existence to deplore. Nor will there ever be.

Albert Einstein (1879-1955)

The greatest scientist says in 'The world as I see it'.

It is enough for me to contemplate the mystery of conscious life, perpetuating itself through all eternity—to reflect upon the marvellous structure of the universe, which we can dimly perceive—and to try humbly to comprehend even an infinitesimal part of the intelligence manifested in nature....

The most beautiful and most profound emotion we can experience is the sensation of the mystical. It is the sower of all true science. He to whom this emotion is a stranger, who can no longer wonder and stand rapt in awe, is as good as dead. To know that what is impenetrable to us really exists, manifesting itself as the highest wisdom and the most radiant beauty which our dull faculties can comprehend only in their primitive forms—this knowledge, this feeling is at the centre of true religiousness.

I maintain that cosmic religious feeling is the strongest and noblest incitement to scientific research. A contemporary has said not unjustly, that in this age of ours, the serious scientific workers are the only profoundly religious people.

Alexis Carrel (1873-1944)

Says in 'Man the Unknown'

The soul is the aspect of ourselves that is specific of our nature and distinguishes man from all other animals. We are not capable of defining this familiar and profoundly mysterious entity. What is thought, that strange being, which lives in the depths of ourselves without consuming a measurable quantity of chemical energy? Is it related to the known forms of energy? Could it be a constituent of our universe, ignored by the physicists, but infinitely more important than light?

The mind is hidden within the living matter completely neglected by physiologists and economists, almost unnoticed by physicians. And yet it is the most colossal power of this world.. Should it be considered as an immaterial being, located outside space and time, outside the dimensions of the cosmic universe, and inserting itself by an unknown procedure into

our brain, which would be the indispensable condition of its manifestations and the determining agent of its characteristics?

Our mind has a natural tendency to reject the things that do not fit into the frame of scientific or philosophical beliefs of our time. After all, scientists are only men. They are saturated with the prejudices of their environment and their epoch. They willingly believe that facts that cannot be explained by current theories do not exist.... At the present time, scientists... still look upon telepathy and other metaphysical phenomena as illusions. Evident facts having an unorthodox appearance are suppressed.. The inventory of the things which could lead us to a better understanding of human being has been left incomplete. We must, then, go back to a native observation of ourselves in all our aspects, reject nothing and describe simply what we see.

Thomas H. Huxley (1825-1895)
British Biologist And Darwinist

Quoted from 'Evolution and Ethics'

In the doctrine of transmigration, whatever its origin, Brahminical and Buddhist speculation found, ready to hand, the means of constructing a plausible vindication of the ways of the Cosmos to man... This plea of justification is not less plausible than others; and none but very hasty thinkers will reject it on the ground of inherent absurdity. Like the doctrine of evolution itself, that of transmigration has its roots in the world of reality; and it may claim such support as the great argument from analogy is capable of supplying.

He is the person, who advocated Darwin's Evolution theory like a crusader. He says in "Essays upon some Controversial Questions."

Looking at the matter from the most rigidly scientific point of view, the assumption that, amidst the myriads of worlds scattered through endless space, there can be no intelligence, as much greater than man's as his is greater than a blackbeetle's, no being endowed with powers of influencing the course of nature as much greater than his, as his is greater than a snail's seems to me not merely baseless, but impertinent. Without stepping beyond the analogy of that which is known, it is easy to people the cosmos with entities, is ascending scale...

I understand the main tenet of Materialism to be that there is nothing in the universe but matter and force Kraft and Stoff—force and matter—are paraded as the Alpha and Omega of existence... Whosoever does not hold it is condemned by the more zealous of the persuasion to the Inferno

appointed for fools or hypocrites. But all this I heartily disbelieve... There is a third thing in the universe, to wit, consciousness, which... I cannot see to be matter or force, or any conceivable modification of either.

The student of nature, who starts from the axiom of the universality of the law of causation, cannot refuse to admit an eternal existence, if he admits the conservation of energy, he cannot deny the possibility of an eternal energy; if he admits the existence of immaterial phenomena in the form of consciousness, he must admit the possibility, at any rate, of an eternal series of such phenomena.

Heber D. Curtis (1872-1942), Astrophysicist

As reported in Los Angeles times, dated the 31st December, 1926, says:

I personally find it impossible to regard Handel's "Largo," Keats's "Ode to a Grecian Urn," and the higher ethics as mere by-products of the chemical interaction of a collection of hydrocarbon molecules. With energy, matter, space and time continuous, with nothing lost or wasted, are we ourselves the only manifestation that comes to an end, ceases, is annihilated at three score year and ten?

What we crudely call the spirit of man makes new compounds, plays with the law of chemical action, guides the forces of the atom, changes the face of the earth, gives life to new forms and takes it away from millions of animals and plants. Here is a flame that controls its own flaming, a creative spirit which cannot reasonably be less than the continuity it controls. This thing, soul, mind or spirit, cannot well be an exception. In some way, as yet impossible to define it too, must possess continuity.

Louis Figuier(1819-1894) French Naturalist And Science-Writer

Says in 'The Tomorrow of Delhi'

Descartes and Leibnitz have demonstrated that the human understanding possesses ideas called innate, that is to say, ideas which we bring with us to our birth. This fact is certain. In our times, the Scotch philosopher Dugald Stewart, has put Descartes theory into a more precise form by proving that the only really innate idea, that which has universal existence in the human mind after birth, is the idea or the principle of causality, a principle that makes us say and think that there is not effect without cause, which is the beginning of reason...

Innate, ideas and the principle of causality are explained very simply

by the doctrine of the plurality of existences; they are, indeed, merely deductions from that doctrine. A man's soul, having already existed... has preserved the trace of the impressions received during that existence.. has lost, it is true the recollection of actions performed during its former incarnation, but the abstract facts must remain in the soul in its second incarnation. Natural aptitudes, faculties, vocations, are the traces of impressions formerly received, of knowledge already acquired, and, being revealed from the cradle, cannot be explained otherwise than by a life gone by... The soul of the man remains always the same, in spite of its numerous perignations.

Gustaf Stromberg, an Astronomer

The following is from a review of his book, titled 'The Soul of the Universe'. The review appeared in the 'Times' of April 29, 1940.

Memory is independent of matter. If it can survive replacement of (cerebral) matter during life, why should it not survive the dissolution of the brain cells after death? The memory of an individual... is written in indelible script in space and time—it has become an eternal part of a Cosmos in development.

Dr. Stromberg defines the soul as "the ego of a human being... something which gives unity to the mental complex of a man." Though immaterial, he considers it a real structure, like a life of force. Therefore it cannot be annihilated without violating a law analogous to the purely physical law of conservation of mass and energy. Exactly what experiences the human soul may have after death, the author does not presume to say. He thinks the transmigration of souls entirely possible.

Identity Crisis

It is good to suggest to the people that they make sincere efforts to effect transformation in the self, to improve their relationships with others and to do service to others. If they make commitment for this and implement an action-plan of their choice in this direction, it would definitely be a step forward towards a Better World. After people have taken a step for the betterment of the world through self-change, or through service to others, they will feel further impetus for taking longer and quicker steps in that direction.

But while this strategy for bringing about a Better World has its validity and effectiveness, let us not forget that the major break-through in man's efforts for self-change comes when he knows his real identity. The present world crisis, which is generally known as the crisis of values is, in fact, a deep crisis of self-identity. The crisis of values also has real identity of the self. The whole tragic situation around us is due to loss of identity. While man has discovered many "lost" continents on the globe, this `continent of the self has yet to be discovered or re-discovered by everyone of us.

Thus man has first to be made aware of the truth that he has, in him, a certain potential of divine qualities or a core of human values and that these qualities or values, within him, have gone deep down in the sea of the Sub-conscious and the Unconscious Mind and have now to be brought again to the surface, into the light, and have to be used as the keyboard for actions. Man has also to be given a realisation of the truth that, with the cremation or burial of the dead body, man's all deeds—good or bad—done by him during his life-time, or the abilities and qualities acquired by him over a period of time, are not all lost. Neither do man's good actions go unrewarded for ever nor do his bad actions go unpunished. Though man's body dies, the soul lives on forever and forever and takes another and another incarnation until it attains its final liberation and retires for a period of time to plunge into happy activities again, promoted by its own will. Unless and until man realises that, in truth, he is an eternal being, a soul, a being-of-light and that so are other beings, his outlook and his attitude towards all others does not undergo a total change. When, however, he realises his real identity, he takes a new 'mental birth' so to say. His life-style and his mode of thinking and action undergoes a left-about-turn. For, man now thinks that he is not made of dust nor is he an animal but, in his

own true nature, he is a being-of-light, pure, peaceful and upright originally. This realisation brings an attitudinal change in him and he now feels that he is not to give up his social life but only to be his real self so as to lead a life to peace.

When man thus knows his real identity, then an improvement in his self and in his relationships with others takes place automatically and naturally even as day follows night. In that new state of awakening or altered state of consciousness, he naturally thinks of being good and doing good. He has then a natural and constant inclination to do service to others also.

So, we may adopt whatever strategy we think is suitable for a particular country or a group of people but let us keep in mind that, sooner or later, we have to give to all those who come in touch with us the knowledge of the real identity of self, for without this knowledge, there is no going nearer to our goal.

When we have given the knowledge of real identity of the self. Only then can we facilitate a love-link between the self and the Supreme Soul. Without this mental and emotional link with the Creator, it is very difficult, if not impossible for a person to sustain the self in divine qualities or ethical values for long. Let us note this secret and sacred truth that our relationship with God is the most important thing. If, to us, the relationship does not matter then nothing really matters. That, in truth, ought to be the first relationship from which all other relationships should receive. 'The substance' (or call it whatever you may) of love is divinity and unity. If one cannot maintain a faithful and loving relationship with God, take it for granted that he cannot really maintain a worthwhile or worthy relationship with anyone.

One has so many relationships in the corporeal world, what then is one's difficulty in, or objection to, having a relationship with God? If one says that he does not believe in God and does not know Him and that he knows only Morality, Goodness and Kindness, let him understand that God is the very embodiment of these and that, if he believes in Goodness, Kindness and Morality, he already believed in God even though indirectly. Let him realize that qualities always exist or rest in some person or entity; they do not have any existence independent of, or separate from, these. So, Goodness, Kindness and Morality also rest in someone at their peak point and that someone is called God. These qualities are the characteristics of a conscient person. So, God is a conscient Person though He is Incorporeal Being-or-light. As such, we do have some relationship with Him as we have relationship with others, for we are not in a vacuum.

In fact, all morality has its sanction from God. If one removes God from

His consciousness, his moral sense does not rest on any sound and firm foundation. God is the Fountainhead of virtues and high values. We, therefore, in our own interest, ought to know Him and have very loving relationship with Him. The knowledge of the identity of the self and of God will enable man to rid himself of the present crisis.

The root of all evils

Some people ask: "What difference does it make if we do not practise soul-consciousness or yoga? To understand the answer to this, let us see how body-consciousness gives rise to the five main evils and how the latter cause man sorrow and sufferings.

Suppose a small boy genuinely feels that he has some good suggestion to offer. He says to his uncle: "Please, will you kindly listen to me for a minute?" The uncle, instead of giving a patient hearing, says, "Look here, chap, I take it as an affront to me. How dare you give an advice to me who am many years your senior whereas you have not yet had even your wisdom tooth appear!" Now this kind of harshness, has evidently, sprung from the man's pride of his physical age which in other words, means that he is body-conscious. This small example is enough to illustrate how more severe form of pride can cause severe cracks in the relations between families and nations lead to wars.

Again, a mother feels so shocked at the death of her son that she feels the need to consult a psychiatrist to bring her back to normal state. She is so much disturbed that she constantly cries, "Oh my son, my son!" though she knows well that her dead son is not going to come back to life. Similarly does one feel when one is treated harshly by someone with whom one had attachment. In other spheres of life, it is attachment that is responsible for nepotism, favouritism, narrow nationalism, etc.

Sex-lust, it need not be explained at length, is an attraction towards the colour and contours of the flesh. When one is conscious of himself in terms of being male or female or young, then only is one invaded by the carnal desire.

Anger and hate also have their roots in body-consciousness. 'One' becomes angry when one looks upon others as not 'his own. Racial discrimination, casteism, etc, are also based on body-consciousness.

Similarly, greed also is hinged on body-consciousness. Take the case of a man who is amassing great wealth so as to leave behind him a great fortune for his son. He exploits others for the sake of his son; he does not care even if other people's sons die of starvation, but he wants to hoard and hoard for his "own sons". Obviously, he is cruel to others or, at least, he does not have any tender feelings to those who are starving because of his attachment to one who is related to him physically as his son.

So, soul-consciousness or yoga, based on it, is necessary for purity and peace.

Science and Spirituality— Partners for Peace

Since the time of Nicolaus Copernicus and Galileo, there has been a general feeling among people that Science and Religion have some kind of an inherent antagonism. The cause for this impression has been the hostile attitude of certain religions towards the findings of some scientists in the medieval times and also later. That part of history is now well-known and there seems to be no need to recount it here. The present trend, however, is that spiritualists now recognise the great contribution made by Science & Technology towards the means of comfort and general welfare of mankind. Achievements of science, particularly in the area of agriculture, medicine and surgery and means of transport and communication, and the research done in Physics, Chemistry and Biology so as to have better understanding of various forms of Matter and Energy are now lauded by spiritualists generally. A noteworthy development is that during the last half-a-century or more, many scientists also have been pointing to recognise the reality of a metaphysical self. Among these are and have been eminent physicists, neurophysiologists, brain surgeons and others, some of them Nobel Laureates. John Eccles, Eugene Wigner, Penfield, Sperry, Schrodinger, Late Lord Sherrington are some among these. So the question before us, in the present changed situation—four hundred years after the Inquisition in the time of Galileo, is whether the two can now work in cordial partnership to help man to understand better the reality of the consciousness and the cosmos and help man attain peace, both individually and collectively.

What is Peace?

Before plunging into the subject proper, I would like to say a few words about Peace, in spiritual parlance. It is a state of being in which one has benign experience of spiritual calm and mental composure. It is a state untouched by any negative thoughts and is characterised by equanimity and mental balance. In the state of peace, one has the combined feeling of supersensuous joy, contentment, well-being, mental ease and freedom of spirit. One can have this state only when one has inner harmony between one's mind and intellect and one is free from any twitches and pains of conscience and has neither fear nor worry nor is

one disturbed by lack of fulfilment of desires or waves of the well-known six vices. This state is not to be identified with dullness or passivity but its main characteristic is that one does not have any emotional disturbance.

How can Science and Spirituality be Partners?

Let us first take up the last-stated constituent of Peace, namely the fulfilment of desires. Spiritual wisdom enjoins on man to lead a life of simplicity, moderation and minimum desires. It asks one not to hanker after more and more worldly luxuries or pleasures. A well-known Indian adage says that "though man himself grows physically old, his desires grow young and become more compelling". It, therefore, advises man not to be over-ambitious, for it is almost impossible for a man to fulfil all his desires, and those desires which are left unfulfilled, give man sleepless or dreamy nights and days of depression and frustration. If one suppresses desires, one gets mental and physical ailments because of repression and if one tries to fulfil them, they multiply manifold!

Another problem raised by desires is that if someone stands in one's way of fulfilling one's desires, one feels hatred and anger towards that man and, in this fit of anger, one loses one's sense of judgement and balance. Identifying one's desires as one cause of peacelessness, the Gita (Ch.2, Verse 62-63) has expressed the analysis beautifully. It says:

ध्यायतो विषयान् पुंसः सङ्क्लेश्चजायते।

सङ्कल्यंजायते कामः कामात्क्रोधोऽभिजातयते ॥ गीता आ:2, श्लोः 62

क्रोधाद्भवति संमोहः संमोहात्स्मृतिविभ्रमः।

स्मृतिभ्रंशाद् बुद्धिनाशो बुद्धि नाशात्प्रणश्यति ॥ गीता आ:2, श्लोः 63

"From lust arises tension and anger. Anger leads to mental confusion, imbalance and loss of the sense of proper judgement. Man's intellect having thus been clouded, he loses all and is led to his ruin. Therefore, know you Arjuna, that "Lust or Sex-lust, Anger and Greed are the three doorways to hell i.e., to peacelessness and sorrow." Spiritual wisdom, therefore, guides man to sublimate his desires; it gives man a world-view which enables him to find an inexhaustible mine of happiness and peace in the self. It thus enables man to abstain from anger and greed and from lust for sex.

A saint-poet, named Bhartri Hari, who was a king of a State in India but who later renounced, has expressed this truth from another angle. He

says:

भोगा न भुक्ता वयमेव भुक्ताः
 तपो न तप्तं वयमेव तप्ताः
 कालो न याती वयमेव याताः
 तृष्णा न जीर्णा वयमेव जीर्णाः

“The thrust of strength of our desires does not weaken; it is we who weaken.” I invite your attention to the beautiful scientific truth in the first and second lines of this quartlet. It says that it is not we who consume things but the things consume us too. It is not the time that is moving or marching fast; it is we who are moving (towards our death). What he has said is an Indian version of the Second Law of Thermodynamics, given by the saint-poet on an intuitive basis. Isn't this spiritual implication of the Law of Entropy which says that our every act results in the loss of energy. It is one point where Science and Spirituality meet. The Second Law of Thermodynamics is the most irrefutable and fundamental law of physics; and simplicity or minimisation of desires and consumption is a fundamental principle of spirituality—both recognise the same truth in different forms. Shiv Baba and Brahma Baba, the founding Fathers of the World Spiritual University of Brahma Kumaris, have also said the same thing. Baba has said:

कम खर्च बाला नशीन
 सादगी, त्याग और पवित्रता श्रेष्ठ गुण है।

“The less you spend, the better, the wiser and greater you are.” And “Simplicity, minimisation of desires and consumption, and the adoption of the principle of purity are the highest principles.” We have seen the adoption of these principles in the life of Brahma Baba and those who are his mind-born children. We have found peace and equipoise in their life. Anyone who sits in their presence and gets their vibrations, he too then feels peaceful. For peace, one need not become a hermit or a recluse but one must lead a natural and simple life. So Science could be partner for peace by laying down, for man the principle of least possible consumption, basing it on the Second Law of Thermodynamics.

But, it is an irony of fate that scientists themselves have not given the seriousness to the implication of the Second Law of Thermodynamics. The overall materialistic world-view given and promoted by science and the techno-scientific culture has promoted consumerism and high-entropy civilisation. Science & Technology have thus created a new trend in human

thought. Man thinks that he is making rapid progress and that civilisation has spread fast but, in term of the Second Law of Thermodynamics, man is enormously, nay, unimaginably using the non-renewable sources of energy and natural wealth and is polluting the world. By supplying more and more comforts and luxury-goods, besides consumer items, it has whipped up desires in man. Man to-day needs or desires thousand-and-one more things than he needed say two hundred years ago. The whole human effort now seems to be geared up to production, acquisition and consumption of goods. In a sense, man has now become more dependent on material things which, by their very nature, are transitory and ephemeral and make man pleasure-hungry and discontented. The desires have thus increased manifold due to man's giving long rope to them. This has resulted in loss of peace because, despite best efforts, many desires of man remain unfulfilled. One thoughtful person has given a mathematical equation to find out how much peace a person has in proportion to his desires. He has said that

$$\text{Peace} = \frac{\text{Number of desires fulfilled}}{\text{Number of desires unfulfilled}}$$

Since the number of unfulfilled desires, lying hidden in man's mind or finding expression in various forms, is far greater than the number of desires fulfilled, man has, in his mind, only small fraction of peace. The more the man reduces his desires, the more peaceful he will be. So science can be an active partner for peace, if, besides giving various laws of physics, it makes known to man the sad result of ever-increasing trend towards cosummerism. It should also tell people that nothing in this world is permanent. Even proton, electron and neutron also disintegrate. It should explain to man that, according to the Entropy Law, the more we consume, the less remains the available energy and the more we advance towards death. It should thus teach man to be frugal and to adopt simplicity, for this spiritual truth is also the scientific truth. It should also explain that one effect of high consumption culture is more and more pollution of the atmosphere.

Partners for bringing Health, Happiness and Peace

Another important area in which Science and Spiritualism can be partners for peace is the region of health. The World Health Organisation has defined health as "a state of complete mental and social well-being besides physical well-being". Defining the social well-being, it has said that "the ability to maintain a reasonable and long-standing relationship

with friends and family and a certain amount of benevolence, or at least absence of malice and vicious intentions towards fellow beings are signs of social health." Defining the mental aspect of health, it has laid down that one is mentally healthy if one is "happy, calm and of cheerful demeanour and has feeling of satisfaction and is at peace with himself and is somewhat considerate and has understanding personality and has some amount of self-control".

Now while Medical and Biological Sciences have done tremendously good work for the physical well-being of man, these have not been able to do much about psychosomatic diseases. It is now well-known to theoreticians and practitioners of the medical profession that many diseases are caused by mental stress and tension; and Medical Sciences have not been able to give man equanimity of mind and happy relationship with others. In other words, these have not been able to give man social and mental health. Man has jealousy, fear, anger and vices and is unable to adjust himself to his social environment. However, it is now well-recognised even by people in the medical profession that Spiritual Meditation or Raj Yoga helps subdue, or cure many psychosomatic diseases. It enables man to have mental relaxation. E.E.G. and other tests on practitioners of meditation have proved this conclusively. Man's blood lactate, breathing rate, blood pressure, and state of mind are definitely affected by Meditation. All these indicate that, in Spiritual Meditation, one is in a peaceful state physically as well as mentally. One has alpha or delta waves in that state and these indicate a state of mental calm. It is also found that a man who regularly practises meditation is able to have more endurance and tolerance and is able to improve his relations also with others. Practice of Meditation reduces rate of divorces, suicides, family break-ups, crime and violence. Spiritualists are thus partners for peace as they enable man to have physical, mental and social health. Scientists also are doing a very useful and valuable work in the area of physical health and also mental health. *If Health Scientists enlighten their patients about the advantages of the practice of Spiritual Meditation, they would be playing an additionally useful role for enabling people to keep healthy and to have mind-body harmony and peace.*

Again, in the case of terminally ill people, where medication is of no further help, meditation can bring solace to the bed-ridden patient. He or she can live in peace before the death finally overtakes him or her. Meditation and Spiritual Wisdom help one during the period of convalescence or recovery also. In fact it helps in many ways; it gives the body more resistance and immunity against diseases; it gives a person

more stamina and it is the best tool to fight against old age. Since a feeling of ease is a characteristic of the state of peace, the elimination of disease is an area of peace in which Science and Spirituality can both be partners.

Peacefulness is a state of consciousness:

Scientists must realise the reality of metaphysical mind

Now all the aforesaid advantages of meditation and spirituality, as ascertained by EEG and EEC and other means are a positive evidence to show that one's thoughts and emotions, or Mind and Intellect affect one's whole body through one's nervous system. The existence of a metaphysical Mind or Self must, therefore, be considered real. I call the 'Mind' metaphysical because as Eugene Wigner, an eminent physicist has also said, laws of physics and chemistry do not apply to Thought or Understanding. One cannot measure the speed of Thought which, in an instant, can travel to the Moon and can visit the past or imagine the future, nor can one have weight, volume or velocity of understanding and Comprehension. But the reality of their existence is established because they affect the body and, through it, the external world. This is very simple reasoning. As the scientists believe in the existence of Electricity because it manifests as light in a fluorescent tube, as power in a moving fan or as heat in a hot plate, so also one should believe in the existence of an entity which has conscious energy that finds manifestation in the form of Thought, Feeling, Memory, Understanding, etc. Arguing from effect to cause, one cannot deny the existence of the soul. In our day-to-day life also, we usually consider that force or entity as real which, even though invisible, exerts some influence on entities which are visible and the existence of which is self-evident. So, self-aware Mind which exerts its influence on the brain, the nervous system and the body has to be considered real. In fact, soul or consciousness is the primary reality and all other kinds of realities are of second order. It would be advantageous to quote Eugene Wigner, the eminent theoretical Physicist, in this context.

Says Wigner: "There are two kinds of reality or existence—the existence of my consciousness and the reality of existence of everything else. This latter reality is not absolute but only reality Excepting immediate sensations, the content of my consciousness, everything else is a construct..." "As I said, our inability to describe consciousness adequately and to give a satisfactory picture of it is the greatest obstacle to our acquiring a rounded picture of the world". He further says that if Physics cannot comprehend the soul, "laws of physics will have to be changed, not merely to be re-interpreted."

Wigner has put it very correctly. We cannot understand the cosmos without understanding the consciousness. We cannot understand peace without believing in the existence of a meta-physical self. Peace is not a physico-chemical substance. Peace is a state of being; it is an experience of the spiritual self. This entity, has, therefore, to be considered as a primary reality, to which laws of physics, chemistry, or biology do not apply. Science should accept this spiritual reality. Schrodinger, the physicist who was awarded Nobel Prize for his research in wave mechanics, wrote in his book "Science and Humanism". "Who are We? The answer to this question is not only one of the tasks of science but the task of science". So instead of not recognising the reality of the metaphysical soul, physics should either change its own laws or admit that, presently it has no means to ascertain its reality though prima facie, its existence seems to be a reality.

Unity of Consciousness establishes the Reality of the Spiritual Self on a Scientific basis

In fact, not to recognise the existence of the soul or self-aware mind seems to be very strange. The continuity of our consciousness, very well establishes the reality of existence of the self. Let me explain this point a little more clearly. During my day-long activity, I feel continuity of the self. I feel that I am the same person who did an act, say, an hour ago and also another act three hours ago. There is thus a feeling of unity of personality. When I go to sleep during the night, I appear to have lost my consciousness but when I wake up after each period of such 'unconsciousness', I recognise, because of my memory, the continuity with the self of the preceding day and I continue with the line of experience the next day. Never do I feel strange, on waking up in the morning, that I am in the same room in which I laid myself in sleep last night. It is because of the continuity of consciousness that we call a person as a (one) person and the self as the (same) self. In fact, during sleep, the consciousness has not totally ceased to be but is manifesting itself in the form of dreams, etc. Thus one's common sense and experience and also one's rational self testify to the existence of the metaphysical self which, it is strange enough, many scientists refuse to accept as a separate entity.

Not only that, most scientists are so completely hypnotised by the bewildering facts of the material world that they make attempts to explain even Mind and Intellect either as forms of subtle matter or as epiphenomenon of the brain. It would, therefore, be appropriate, in this context, to quote Wilder Penfield, the great neuro-scientist and neurosurgeon about the difference between Mind and Brain. Penfield says:

“The physical basis of the Mind is the brain-action but the spirit is free; it is capable of some degree of initiative.” “The spirit is the man who knows. He must have continuity through periods of sleep and coma. I assume, then, that this spirit must live somehow after death”.

If science has no means to know the soul, it should not deny its existence

Options of other brain-scientists also can be quoted to substantiate the truth that in every body abides a spirit, a metaphysical conscient entity but despite that there are scientists who refuse to accept this truth because they are prepared to believe in the existence of only those entities as real as can be quantified or can be perceived by means of the senses. They easily forget that the senses also would not be able to perceive if the perceiver, i.e. the self, was not there. They also overlook the fact that physics, astronomy, micro-biology, etc., hitherto did not believe in the existence of many entities in which they now believe. It is not because those entities then did not exist but because scientists had no means to know their existence. With the invention of telescope and microscope and, later, with the help of satellites and remote control systems, these scientists have been able to observe the existence of entities which were hitherto unknown.

Also, in the light of the new findings, Science has been amending its own old theories. For example, there was a time when physics started from the theory that matter was something that extended in space. It was, then, considered as ultimate and substantial but when J. J. Thompson discovered the electron as a tiny splinter of the atom, then the concept underwent a great change. Later, when it was found that not only could atom be split up but electrons, which were hitherto considered stable, could also be pairwise annihilated to produce photons (light quanta) and that they could be re-created out of photons or gamma rays, Physics underwent another big change. Today, we know that even most stable particle of Matter can be destroyed; by collision with its antiparticle when their energy is changed into another form of energy. Thus, even Matter has now transcended itself; it is no longer ‘material’. It also suggests that there is no entity which has continuation of its own identity, i.e. which can persist during all change and is the possessor of the properties or qualities of a thing. It is only the soul which persists in the continuity of consciousness and essence.

With this historical background of constant revision of their theories, it is wrong for scientists to assume that what modern physics or other sciences

cannot observe, does not exist. In fact, if we keep in mind Heisenberg's Principle of Uncertainty we would be able to understand the limitations of physics itself. This principle, propounded by the German Physicist Heisenberg explains that science cannot know the ultimate truth. Heisenberg discovered that the 'objective' observation of atomic particles was an improbability because the very nature of particles was such that the very act of observation was interfering and altering instead of fixing and preserving the object. Heisenberg and those who followed him into the micro world of quantum physics learned that each new observation they made rendered the precise measurement of Matter impossible. The scientists were surprised to realise that every time they observed the tiniest of particles, the electrons, their act of observation was influencing what they were seeing. It jumps so that to see where it was, you have to make it go elsewhere. So you can measure either its velocity or its location but never both at the same time. Now, if that be the case with the observation of electrons, which can further be split up, how can physicists observe the metaphysical self, which is tinier than even photons, etc? Its existence, as we said earlier, can be known through its manifestations in the form of Thought, Experience, etc. Science should, therefore, accept the reality of its existence. Belief in soul is the very foundation of Spirituality. And, this belief if based on logical understanding plays a key role in bringing peace to man and improving the state of consciousness of man and the moral condition of society. The least that Science can do in this regard to state that the reality of soul is *prima facie* a fact but, because of its very nature, Science, in its present state, has no means to confirm or deny its existence in the traditional or classical sense.

Spiritual Outlook and third Eye as partners of Scientific Outlook

A reference has already been made to Heisenberg's Principle of Uncertainty. Science has its own limitations in knowing the ultimate Reality. Here Spirituality can play a very useful and vital role.

It is a common experience that man can observe material things of the world when his consciousness is more or less manifesting itself through his body, i.e. when he is aware of his physical being. This sort of consciousness, in addition to man's lack of pin-pointed concentration, disqualifies him from knowing the final truth because man's own mental disturbances affect his observations. Rajyoga or Spiritual Meditation, however, is the way, whereby man can make his mind quite stable and then observe the subtle existence or phenomena of Matter or Nature

without disturbing them. Through this method, man can also have higher perceptions and revelations from the Highest Being.

By means of the practice of Meditation and Thought-purification, one is able to develop one's powers of perception and knowing. One can detach oneself from the body and focus one's mind on what one wants to know in depth. This method is free from disturbances of one's body-processes and the forces of Nature. One's Third Eye of Intuition, Insight, Divine Sight or Trance Vision gets opened and one is able to get knowledge of the cosmos and consciousness which physics, astronomy and other sciences cannot get. The physical or Natural sciences are able to have inner secrets relating to Matter and Energy only through scientific aids to eyes, such as microscope, telescope, electronmicroscope etc. but for all experiments of science, physical senses are used. Spiritualism, on the other hand, is able to peep into the depth of Mind and research the farthest part of cosmos and know the Ultimate Reality by means of the Third Eye and by means of supersensuous or extra-sensory faculties. This knowledge enables a person to have ecstasy and profound peace. This is the divine wisdom. It is not peace as a layman understands it but divine peace. It is a very special experience.

Spiritualists are prepared to share this knowledge with scientists and to offer their services to scientists in order to enable them to have this experience of deep and divine peace. It is peace which soul, an originally extraterrestrial being, experiences when it is perfectly stabilised in the self. This experience of profound peace and of the self as a being of Light, distinct from the body, can be given to all who are willing and receptive.

Extraterrestrial Existence

Scientists landed man on the Moon in 1969 and have been sending probe missions into outer space to explore the existence of extraterrestrial beings. But though all their efforts so far have given almost no positive indication of the existence of extraterrestrial beings, scientists are still busy with their these extremely costly explorations. They think that, at some distant date, it may be possible to explore beyond planets, such as Epsilon Eridani and Tau Ceti which are about 11 to 12 light years away. The absurdity of such a belief was expressed by eminent physicists, Edward Purcell and Sebastain Von Hoerner in 1963 in their book "Interstellar Communication". Let us understand this a bit more clearly:

The star, nearest to the earth, is Bernhard. It is about six light years away. Light takes 1.25 seconds to cover the distance to the moon and

back. So, if we have a spacecraft which travels at one-eighth of the speed of light, even then it would take us about one hundred years to reach the star, Bernhard, and to come back to the earth. This means that we cannot explore life in Tau Ceti or Eridani. However, Dr. Narlikar, an eminent astro-physicist says that, perhaps, we could have a sufficiently motivated group of people who could marry, produce children and train them while on journey.

Now, even if such people were located, the spaceship would have to weigh 50,000 tonnes. According to scientists, 47,000 tonnes, out of this, would have to be fuel and this, Dr. Narlikar says 'would mean all the nuclear fuel in the world.' Obviously, it would not be possible for man to look for life in a spacecraft by taking the approach we have mentioned. The idea of listening to other civilisations in the galaxy has also not borne fruit nor is it likely to. Then how can we know the truth about the cosmos and the consciousness through Science alone?

Let everyone realise that all knowledge which comes through research of human beings, however scientific be the method and however sophisticated be the instruments, is mixed with dreams, hopes, prejudices, presumptions, errors, mistakes, fallacies or inadequacies. It has gaps and is incomplete. A well-known philosopher, Karl Popper, therefore, says that falsification in whole or in part is the anticipated fate of all hypothesis. No scientific hypothesis or theory, he says, can be claimed to be completely true in itself. A scientist may only say that this is the best he has been able to find. Any claim higher than this would be unjustified. This contention of Karl Popper is supported by the History of Science. *All should, therefore, realise that there are themes and topics which, by their very nature, are subtle, esoteric and metaphysical and pertain to a realm which is other than that of Matter which forms the subject of study of Physics, Chemistry and other Sciences. Light on such topics comes through divine revelations.* It is God who knows for certain what is what and who is who. He, therefore, gives the knowledge of souls and of extra-terrestrial regions. I would like to mention here two of these revelations which would surely be of interest both to the scientists and spiritualists and which are also related to the attainment of Peace.

One of these is that, beyond the stars and the galaxies is a region of ever-luminous photon-like principle. That is the region of Angels. Yoga is the means of communication with these extra-terrestrial beings. There is no sound in this plane of existence. They talk to each other in silent words. Beyond this region is yet another region of immeasurable expanse.

Here also there is very subtle light. Its colour is as we see in the horizon at the time of sunset or sunrise. In this photon-like ever-shining light dwell souls in the incorporeal state. It is there that the Supreme Soul, the Being of Light, who is Knowledgeful, Peaceful and Blissful, abides. A lot of research has been done on this. Some of these are given in the titles, such as 'Life After Life', by Raymond A. Moody Jr., 'Life After Death' by Arnold Toyanbee and Arthur Koestler besides the works of Dr. Elisabeth Kubler Ross and Robert A. Monroe. All this is witness to the existence of that eternal Being of Light who, though without a male or female body, gives the souls the experience of being their most benign and beloved Father. We, however, have known and realised the existence of this Being-of-Light on the basis of His own revelations to us through a medium and also through trance-visions. Rajyoga Meditation or Spirituality gives detailed knowledge of Him and of how a wireless link by means of Thought Power can be established with Him to have the experience of most exquisite, most sublime and deep peace. Scientists can become great partners for peace if they join spiritualists in an endeavour to experience this ultimate reality and to have this most elevating, refreshing, energising and rapturous experience.

Another important truth revealed by God is that the theory of Biological Evolution is only a high conjecture. Many eminent scientists have explained how this theory is not only non-demonstrable but it is not true. It is not our intention to dwell on the merits or demerits of this theory at length here. Our aim is to point out that man has not descended from the Ape. Man is originally divine in his nature. He is the supreme among all earthly living beings and, as explained earlier, there are no other gross corporeal beings elsewhere in space. This very world was originally the paradise. There was perfect peace here on earth. But due to the six well-known vices, this world has now become a veritable hell. Because of insatiable carnal desires, unquenchable thirst for worldly goods and because of a high-entropy technoscientific culture, there is pollution, degeneration and peacelessness. Because of loss of spiritual values, man has lost control over his sense-organs and mind and scientists are busy preparing weapons of world destruction. If scientists do not become full, active partners with spiritualists for peace, a sad end awaits the world. Of course, after the great catastrophe, the world order will start with an era of purity and peace but most part of humankind will have been destroyed through a nuclear catastrophe. It would, therefore, be only proper for scientists and spiritualists to consider the present as a most crucial phase of world-history. We call this Confluence Age when the techno-scientific culture, totally

alienated from the spiritualism, and with dangerous tendencies of violence, sexual permissiveness and all that goes with it, has brought mankind to the brink of a great destruction when this Being of Light, has been giving guidance for deep peace and for re-establishment of a new era through a human medium whom we call, Prajapita Brahma. Anyone who is interested to have insights into this revealed knowledge and method of peace which has been experienced in a high level of consciousness is welcome to be partner in peace.

Can Religion Solve Modern Problems ?

Signs of a sad end and a hopeful future

Modern age is the age of science. Science has progressed so much that it has almost reached the point of perfection. What a miracle it is of the intellect of man! Humanity has been enriched a lot by the material comforts through science and technology. Life has become more easy and comfortable. Distance between distant countries has been curtailed and the life of man elongated. Science has also provided cinema, radio and T.V. for recreation and education.

But it is a matter of great surprise and regret too that, on the one hand, the man of today possesses such a paraphernalia of material comforts and, on the other, he is faced with thousands of new problems which are hard nuts for him to crack. They create greater headache for him than the comforts he gets. Everyday, he is beset with some challenge or the other from some or the other comfort-producing gadget. He eagerly waits for that moment when he would heave a sigh of relief from the burden of some problems. He has to face personal problems as well as social, political, economic, national and international problems. And the modern man has become so familiar with those problems that it has become his routine problem to solve these problems.

The Era of Problems

Can there be an end to these problems? It is a big problem before the entire mankind today. Perhaps, one may not see such a moment even in a dream in this age when one could be free from all problems. Problems have become an essential commodity for life, like food, air and water. If there is milk problem for a child, the adult has the problem of food shortage to solve. If the daughter is in sorrow because her parents are unable to find husband for her, the daughter-in-law finds it a problem to stay with her mother-in-law. If the teacher is unhappy with his meagre emoluments, the student suffers from the problem of improper education. If the employer is gheraoed, the employees find themselves locked out. The more the scientific inventions create facilities for man, the more deadly and troublesome become the problem arising out of their use. This is self-evident from the puzzled face of the modern man.

How could all these problems get solved? How could a man achieve a

peaceful, happy and comfortable life, free from all problems. What is the best way to face any new problems?

You are quite conversant with the unique methods in vogue for solving the present-day problems. The solution of one problem becomes the cause for creating many more troublesome problems. Political solutions lead to social problems. If any solution is sought through social reforms, the age-old customs, orthodoxy and walls of traditions and religious bigotry block the way. If some religious reforms are introduced to solve a problem, the modern trends oppose them tooth and nail. To find a solution to all the problems is a very gigantic problem.

Does Religion provide the answer?

Can Religion give the proper solution or answer to this urgent problem? Modern man runs two kilometres away on hearing the very name of Religion. Why? Because history is witness to the fact that some of the traditional religions have played havoc in the past in the name of religion. Such wrong and bigotted actions were actually irreligious actions under the garb of Religion. Violent wars, personal persecution and torture, exploitation of innocent people, misuse of money, waste of time, etc., were all done in the good name of religion. That is why the modern intelligent man hates the very name of Religion. Social service, service of the poor, kindness to all living beings, etc. is all that is religion to him. He has lost faith in scriptures in which he finds obscenity, violent wars even among the deities who are simultaneously worshipped in temples, etc. It, no doubt, creates a void in his life due to absence of religion, but such religion does not offer any solace to his mind. He is rather bewildered and is at crossroads with a big question mark asking which way lies salvation for him.

Let Religion be understood in its real form

It may, however, be clarified here for the guidance of the modern man that if he tried to understand the proper significance and actual meaning of religion and how it stood for righteous action and not for rituals and ceremonies (which had made inroads into the religion later), he would not be afraid of taking proper benefit out of true religion. If he knew that it was actually religion alone which could grant him power and enable him to solve his personal as well as other modern problems, that it was through the power of righteous faith and true religion that he could get permanent relief from troubles, sorrows and sufferings, he would definitely start tackling all problems through such intrinsically valid religion. He would

get real peace and tranquility by getting problems solved permanently. The religion which can liberate humanity from the burden of problems will certainly command respect even from the modern man and he will sooner than later adhere to such a religion instead of groping in irreligiousness.

What is Swadharma and what is Pardharma?

What actually is Religion? What is irreligion? Religion is an outlook on life which guides man to perform righteous action and as a result thereof, gets internal peace and happiness for his own self as well as for others. Irreligion is that perverted outlook on life which leads to wrong, malicious and vicious actions under the influence of vices like sexlust, anger, avarice, attachment and arrogance which bring sufferings and sorrow in their trail for everyone concerned. Irreligious persons create troubles for others and become a great problem themselves. It has been said: "One's own religion (Swadharma) brings happiness and peace whereas an alien religion (Pardharma) creates unhappiness and sorrow." The proper connotation of these antonyms (Swadharma and Pardharma) must be borne in mind as meaning the true, internal, soul's religion or nature of peace and purity as against the external, bodily, ritualistic religion which abides by the laws of self-aggrandisement, impurity, hatred, etc.

Swadharma or Soul-Consciousness is the only answer

Purity and peace are the actual nature of each and every soul. A soul-conscious person performs all actions by first getting established in his actual self-religion (Swadharma) of purity and peace. He remains conscious of the fact that he is the progeny of God, the Almighty Father, who is the Ocean of peace, purity and bliss. His outlook and attitude towards other human beings is that of universal spiritual brotherhood, all being the spiritual children of one and the same Parent Soul or God. He always thinks of bestowing happiness on all brother souls. He endeavours to serve humanity with all his might, mind and money as he is conscious of the fact that they are all creation of his own Supreme Father whom they only mistakenly call by different names—God, Parmatma, Ishwar, Allah, or Wahguru are some of the different names given to one same Supreme Soul in different languages. Religious people in India call Him God-Father Shiva because He is the Benefactor of all.

Hence, to know one's own soul-form and to get established in the proper stage of soul-consciousness, to know God and to follow His commandments of becoming holy and to behave like a Raj Yogi in practical

life is the real self-religion (Swa-Dharma) of a human soul. If a person acts as per his self-religion or real-nature, he is not only able to face any eventuality but could eradicate the very causes of all problems from their very roots. Only religion, or rather self-religion, can bestow so much power that can remove all problems from their very foundations.

Life without Religion is like a body without a soul

It is a matter of experience. We know that all the problems of the world are basically the result of man's forgetfulness of self-religion. Due to this small mistake or by discarding one's very self-nature, one becomes body-conscious. Body-consciousness is the root cause of sex-lust that leads to population-explosion. Anger, greed and attachment follow sex-lust as its very shadow. Anger is the mother of domestic quarrels, social and political troubles as well as international wars. Attachment and greed become the foundation of adulteration, black-market, etc. Wars are also caused due to these vices, although crusades are the result of religious bigotry founded on body-consciousness. Lethargy, too, is not a vice in a small way. Now, just imagine who could bestow victory over sex-lust and other vices!

These vices arise in mind first and then a person puts them into action. Mind and intellect are faculties of the soul. If a soul does not possess the power of righteousness, Yoga, purity and spirituality, how could it save itself from the attack of vices? And, if a soul is unable to overcome vices which are the root cause of all problems and troubles, how could one find a solution to all problems?

To live a life on the basis of spiritual knowledge is the real meaning of religion. Spirituality alone has the power which can bestow a life like a flower (a lotus flower particularly) to the modern man after liberating him from all vices and shortcomings. The power and determination to face all challenges of problems in life is the true religion. Life without religion is like a body without a soul, i.e., a dead body. Such a life is like that of birds, insects and animals in which religion is not lived, much less is it known. A person who does not know himself or his Supreme Soul-Father or God, who has no aim and object in life, who does not maintain Yoga with God, who is ignorant about righteous actions, who is also ignorant about the knowledge of the entire world-cycle, is also ignorant about the right religion. And his life cannot be ever free from problems, and he cannot, therefore, remain ever-happy in life.

Hence, if the modern man wishes to solve all his problems, he can find the solution by his knowing, accepting and establishing himself in

self-religion or self-nature of purity and peace. He need not renounce his hearth and home for this attainment. But, he will have to renounce his ego, lust, anger, etc., the very root cause of all problems. To make one's life like the lotus flower is the need of the hour. For attaining such a life, one needs power of yoga because there is vicious atmosphere prevailing all around in the world today. Vices (Rāvan) rule supreme every where. Every human being has been enslaved by Ravan.

Life can become easy, peaceful and happy if we remain conscious of the following things:

1. That I am a sentient soul, dwelling in the body on this earth.
2. That I am son of Supreme Soul—God Almighty.
3. That my original nature of self-religion is purity and peace.
4. That I am to sow the seed of righteous actions in this world.
5. That I am to attain salvation and fruition in this very life.
6. That we, souls, are to return to Paramdham after finishing our respective assigned roles in this world drama.
7. That we should return in the same pure stage in which we had first come down on this earth.
8. That the remaining few moments of our life must be spent in Godly remembrances. etc., etc.

Then only will the life definitely become worthy and worthwhile and every problem will get easily solved. This is the resultant power of our self religion-consciousness which cannot be attained from anywhere else.

Therefore, it is our firm belief that the knowledge of actual religion as imparted by God Himself can solve all problems of the world.

Inter-Religious Harmony and Emotional Integration

All religions profess faith in righteous and virtuous living. Their scriptures ask man to live in peace with his neighbour, and to be good and to do justice. All faiths proclaim the brotherhood of man and exhort man to be kind and considerate. But it is a pity that, in practice, religions are unable to maintain harmonious relations among themselves. A study of the history of religions shows that all religions, at one stage or the other, broke up into sects, one hating and condemning the other. Followers of one sect or one religion committed barbarous crimes against the followers of the other Sects or other Faiths. Religious priests made all attempts to keep their followers apart. They have been stoking the fires of religious differences so that there has been so much of hatred, persecution, communal violence and bloodshed!

Religion as a divisive force and as a cause of strife

One would naturally expect that the world, in which we live, would be made a better and happier place by so many religions together. Yet one finds that the world is seething with religious strife. Today, almost all countries in the Middle East are smouldering or burning with religious hatred. The belligerence between the Palestinians and the Israelis, the civil war that once rocked the Lebanon, the existing enmity between Syria and Israel or Israel and Jordan is due basically to religious differences. What heinous crimes were committed and horrible cruelties perpetrated on the Palestinians, in refugee camps in Sabra and Shatila in West Beirut, is an indelible blot on the religion of those who committed the barbarous acts. The continuing state of hostilities between Shias and Sunnis in Iran or Pakistan, the persecution of Bahais in some countries and the continuing feud between Catholics and Protestants in Ireland are only some examples of religion joining hands with politics to disturb peace and to indulge in violence. India too has no less suffered because of communal disharmony and riots even after it was partitioned.

Feeling tired, almost exhausted, of the repetition of these inhuman acts of homicide, intolerance and religious bigotry, one would like to ask whether there is any solution to this man-created problem. Is there a way to communal harmony and inter-religious amity? Can we build up an

atmosphere of goodwill and understanding? Before we discuss the possible remedy for this fastering sore, let us first see what are the major causes that turn religion into a divisive force or into outbursts of violence and acts of genocide.

As everyone would expect, religion should bring on inward transformation and a spiritual change. It should enable man to overcome the discords within his own nature. It should bring about man's transition from ignorance to a state of enlightenment, end his disquiet and anguish. But, on the contrary, one finds that, on large section of mankind, it had the tragic effect of an intolerable attitude and exclusive faith. Why? What are the obstacles to interreligious harmony? What are the hindrances that stand in the way of achieving peace and good-will on earth? Can't we fashion a new type of human being who is relevant to our times or to the future?

Attitude of intolerance, based on vain belief in superiority of the dogma

A deep study of the history of Religions would reveal that one major cause of intolerance has been the strong conviction of votaries of some religions that the concepts of God, Soul and the Universe, that are given in their scriptures, have come to them from knowledgeable God Himself, and that those who do not accept them as such, are pagans, sinful disbelievers, ignorant fools or the followers of Satan who will be put into the purgatory on the doom's day or will suffer untold sufferings in the hell. There are religious zealots who think that their own religion is based on God's unique, final and unsurpassable revelations and that religions, others than their own, are an invitation of Satan to draw men away from the truth and yet they do not have tolerance and character. This has given rise to intolerance in the mind of half-baked religious followers.

While strong faith in one's religion may be a virtue, intolerance has been denounced in all sacred texts. However, religious zealots are filled with fury when they hear that some other communities don't consider the former's scripture as God's own revelations or the last word of God Himself, or that some people interpret their scriptures differently. History is witness to the truth that this view of Christianity and Islam led to inquisition and to the wars of Religion. Christianity and Islam have inherited the belief based on the exhortation of Yahweh (Jehovah) to Moses to tolerate no other gods. This inherited view point led their disbelief in false gods—to take the form of contempt for those who believed in them, and they considered aloofness from the 'pagans' as supreme piety. This frame of mind led to

terrible consequences and to long history of cruelty and persecution. Other religions, whose votaries had this same attitude, also led to violent dissensions.

Ugly Acts of conversion and Proselytisation

It is obvious that the priest class and some of their hard-headed followers failed to understand that there cannot be any regimentation of the whole mankind in matter of religion. Some differences are bound to occur and, for the sake of co-existence, one has to make some adjustment with others. What is a very clear and convincing tenet to one may seem to be an incredible jigma to another. What appears to a Christian or a Hindu a true historical fact, given in his scriptures, may be a doubtful event to followers of other religions. There may be people who are not prepared to believe in, miracle stories, cult-symbols, or irrational concepts of creation of the universe as given in the Bible, the Quran or the Puranas. One cannot steamroll all mankind into one belief, or coerce them to swear allegiance to only one scripture or one faith. One should realise that there may have been some accretions in the scripture with the passage of time or that there may be some inaccuracies there due to the fact that historical events, in the olden times, were passed on by one generation to the other, by word of mouth. But, the fact has been that, instead of bringing about an inner change in the self and realising the presence of inaccuracies or accretions in the texts, the vocal votaries of many religions have always condemned other faiths in rough and crude language and have led a campaign of villification and hatred against followers of other religions.

Not only that but preachers and votaries of some religions tried to spread their 'gospel' or 'message' by the use of fire and brimstone. They made all attempts to proselytise others by giving them temptations, offering them reward and creating fears in their minds of the fires of hell. By doing this, they adopted means which were against their own religious ethics. They believed that, just by reading or uttering one sacred sentence of their scripture or by undergoing a certain ritual, a person would be converted into their religion, or, anyone into whose ears the readings from their scriptures would pour, would belong to their creed and would be entitled to redemption!

Degeneration of moral standards of Religions

These sorts of attempts led religions along a course of degeneration, for, moral values were now relegated to the backyard and religious dogma and preaching and conversion got a position of precedence. A spirit of

competition ensued and cooperation was out of question. Instead of instructing their followers to have respect for other religions and to see and pick up what is good in other faiths, attempts were made to obliterate other religions and to undermine the allegiance of people to other faiths without giving them higher, nobler and deeper spiritual experience.

Loss of Spirituality, divinity and other worldliness

Moreover, religion, now, no longer remained a path of unfoldment of inner divinity but became a socio-political force against others. The followers, instead of putting emphasis on inner transformation of the self, were now contented only with reading their sacred texts or repeating sacred formulas, or performing rituals and co-operating in the work of adding new converts to their fold. The penetration of worldliness into Religion became so intense that religion, instead of teaching transcendence and other worldliness, got itself adjusted to the world. It lost its divinity and spirituality and became a mere set of dogmas, rituals, ceremonies and eschatological rites.

Change of emphasis and goals

Religion, instead of becoming universal, became more and more parochial, sectarian and narrow in outlook though number of its votaries swelled. As a Nation State thinks that a bad citizen belongs to it but a good alien does not, even so Religion considered all good strangers, who did not bear its label, as aliens. If any of its votaries committed acts of violence in its name, it felt proud of having such faithfuls in its fold, or at least it considered them their own people and put a curtain on their acts or gave them shelter in places of worship, taking them as holy crusaders. If, on the other hand, certain other people remained peaceful, that same religion considered these folks either cowards or dangerous. Instead of condemning evil in whatever form and in whichever people it appeared, it condemned people of other religions, overlooking crimes or sins of its own followers and merits of the other people. Evidently, it was now less concerned with spreading awareness of the Transcendent and with giving people an experience of peace and guiding them on the path of purity and, instead, it now laid emphasis on doctrinal conformity, ceremonial piety or ritualistic practices. Instead of believing that people would benefit by their religion when they see the fruits of their belief in their life, they now thought that it was their sacred duty to bring others to their fold, little realising that any religion, that was embraced by a small group at a remote moment in history and was, later, restructured by fallible men in narratives or tenets, may not appeal to all intelligent men but that their practical

good acts could still impress them and their conduct could still attract them.

Scriptures and founders took the place of idols

Another tragic event in history has been that, as a religion became established and took some roots, its followers began to consider their founder, prophet or guru as an object of worship. Though the founder or the prophet had given only the message, people began to look on him as God or as a manifestation of God, and those who did not believe in this were considered as people of opposing faiths. It was thought that anyone who did not pay allegiance to that prophet would go to hell or to inferno. Thus they owed their obedience and allegiance not as much to God or to moral principles as to the letters and words of the scripture and to their founder. They became worshippers of the words and had now words and persons as their new idols.

Change in attitude

After identifying some of the causes of communal disharmony, let us now try to find out a solution to the problem. Let us find out some remedy that can put the genie of communal hatred back into the bottle or can create happy relationship between various religions. Mankind has seen great communal and social upheavals which religious fanaticism has produced and has had much suffering, caused by unspiritualised zealots. It now widely feels the precariousness of the human predicament. It is now sick of split and quarrels between religions. The scientists have split the atom and made the atom bomb but society now wants religion to provide man a sense of security and a feeling of togetherness and unity. It is now anxious to find a solution to all internecine strife.

Well, the truth cannot be overemphasised that the real and lasting solution lies in changing the attitudes. In the first instance, let us ponder whether a loveful and compassionate God would have been unjust and unfair to the rest of the mankind by giving the monopoly of His truth to a handful of people at some point of history, lying in-between the beginning and the end of World History Cycle? If God is Love, Kindness and Mercy, it cannot be that mankind lived for thousands of years, before the advent of a particular prophet or messenger, without God's grace on them.

So, we must know that God reveals the Truth to mankind through Adam or Brahma at the point of conjunction of the end of one and the beginning of the other World Cycle and that He blesses all the mankind and that the treasure of His revelations was lost after some period and, that, since Dwapur Yuga (Copper Age), every community or nation had its

saints or prophets, to give them some religious sustenance.

Thus, it is stated in the Quran that every nation has been having some messengers. "Thou, (O Muhammed) art but one who warneth, and, for every nation, there is a Messenger." (Quran, Sura 13-5-37). It says again: "Unto every people did we send a messenger to teach them to worship God." (Sura 16-5-37). It is said that when, once, St. Francis of Assisi picked up a paper and was told that what was written on it came from a pagan, he said: "Whether by pagan or anyone else, it comes from the wisdom of God and has reference to God, from whom comes every good thing." St. Amrbose also said: "Every truth, by whomsoever it is spoken, is of the holy spirit." St. Xavier also repeated these words. So, let it be understood by all religious minded men that the revelation of God of Love and Mercy, embraced all nations and all religious people just at the conjunction of the end of the old world cycle and the beginning of the present world cycle, and that, ever, since the time of Abraham, all nations or communities have been having saints or Messengers who taught them how to worship (note the word `worship') God. Let, therefore, respect for all religions, dwell in man's mind.

Let's put an end to doctrinal controversies and have respect for all

Religions of Indian origin have generally been having this attitude. There is the famous Rock Edict of Ashoka which asks people to respect other religions. It says that, by talking ill of other religions, we harm and hurt our own religion. So, let us have sympathetic understanding and appreciation of other faiths and have tolerance and forbearance towards those beliefs which, from our point of view, are irrational and unacceptable. Let there be an end to hot doctrinal controversies or open disputes and debates or *Shastrarths*, or mere theoretical and undemonstrable premises.

All religions are like branches of one same tree

Let us understand that there cannot be homogeneity but, at least, there can be organic unity as between the parts of a body or as there is diversity of colour and composition of flowers in a garden. Let us look on all religions as branches or sub-branches of one same World Tree of which the Religion, established by God through Brahma or Adam, is the root. Having this attitude, we may even critically evaluate every religion and have a review of its past history with sympathy, giving up all feelings of hatred.

A place of importance for Moral Values

Secondly, let all religions restore the place of spiritual values in life. Religion is not compatible with moral lapses. If we think we are religious people, then, we must love all mankind. We must not forget that morality is the essence, the core or the substance of Religion. A person who indulges in arson, loot, violence, cruelty, hatred, vengeance, rioting or acts of public nuisance is not at all a religious person however much ritualistic or prayerful he might be. Religion should lead man away from egoism and hate in the direction of humility, sympathy and understanding of the needs and difficulties of others.

Moreover, preachers of religion should take the responsibility of moral advancement of their followers and should hold them from acts of violence. Let it be noted that the important point about our moral life is not whether we are Hindus or Muslims but whether we are good or bad. If God of our concept is Kind, Compassionate and Merciful, we also must make, ourselves in His true image. We must be born again in the spirit of Truth, Love and Purity.

Further, let people of one religion consider others not as rivals but as friendly partners in watering and nourishing the moral roots of mankind. We may continue to have our special loyalties but we must appreciate what is true, lovely and beneficial in other religions. Let all those who have faith in God and/or soul, whatever may be their religious denomination, get together in the spirit of true brotherhood and share, among themselves, elevating spiritual experience and moral values.

Principles to be observed for Religious Harmony and Emotional Integration

In order to have unity among people of various religions and faiths, the following code of conduct has been charted out. It is hoped that if this code is observed, it will build up good-will and will lead to emotional integration. Since communal disharmony or friction is a major cause of peacelessness and, if inflamed, can create great upheavels, a code for preachers and followers of religions seems necessary.

Principles to be observed by preachers and followers of various religions for inter-religious and social harmony

- (1) We will consider all men and women, to whichever religion they might belong, as souls, and, as such, our brothers, and will, thus, consider mankind as a family and will, therefore, maintain our relations on the basis of spiritual love, sympathy and co-operation.
- (2) We will give supreme importance to non-violence, tolerance and forgiveness in our inter-religious relationship and will respect other religions as we wish our own religion to be respected.
- (3) We will not discuss sore spots of any religion publicly, especially in gatherings in which persons belonging to that religion are present and never will we discuss it in a manner or in language or with the intention to inflame the feelings of others against that point to which the believers of a religion are susceptible and sensitive.
- (4) We believe that everyone has the right to have a comparative study of religions, including our own, and has also the right to criticise it in sympathy, politeness, and fairness in order to evaluate and assess its merits and demerits but no one has the right to condemn, or calumniate, or belittle, or use abusive language for beliefs, tenets, practices, symbols, holy places, revered prophets and saints of any religion, including his own, or to spread hatred against these.

This, however, does not preclude one's right to denounce the acts or historic role of persons who in the name of religion, whatever be its

name, perpetrated cruelties, invaded countries, persecuted others or committed inhuman crimes, and we will consider these as enemies of mankind and religion, even if they professed to belong to our religion, but even this act of condemnation will not be directed against any religion or founders of religion.

- (5) We will not support or participate in, or have sympathy for any act of forcible conversion, or of proselytisation of illiterate and uneducated people by alluring them with any worldly reward, or for building a place of worship supplanting the one which belonged to another religion, nor will we compete with building activity or religious acts of others in a manner as is likely to create suspicion, bitterness, hatred or hostility, but, instead, we will always offer voluntary co-operation for a humanitarian cause.

In this sense, we will co-operate with the government and the people to take out our processions, and hold our gatherings and celebrate our special occasions, taking precautions that these do not create ill-will, or tension, or public nuisance, or disturbance nor do they foreseeably hurt the feelings of followers of other faiths, and, if these processions, celebrations, etc. are by a group belonging to a religion other than our own, we will not create hindrances but will maintain an atmosphere of harmony and good-will.

- (6) If some people, professing our religion commit violence, arson, loot or acts of spreading hatred against other religions, we will not hide them or give them shelter in our sacred places nor will we try to justify their acts, for killing a man, to whichever religion he might belong or committing other acts, fore-mentioned, is committing sin and is downgrading religion and is revolting against kind, just, loving and compassionate God, who is God of people of all religions.
- (7) We will consider religion as a moral force and will use our religious bent of mind to keep politics free from corruptive influences, but we will not mix dirty politics into our religion and will not allow certain scheming politicians to exploit religion as a vote-catching device, or for satisfying their lust for power, or use religion for anti-national activity of any sort, nor will we use religion to influence people to give us certain benefits illegally, nor will we use violence against other people, for we believe that war, under any name, is an evil.
- (8) We will consider religion as a means of inner transformation, elevating spiritual experience, self-illumination and purification and will, therefore, consider it as one's right to choose or build a religion which

suits one's conscience, and we will practise religion to raise ourselves morally and will inspire others towards this aim to religion rather than to performing meaningless rituals, etc.

- (9) We will not encourage divisive tendencies on the basis of castes, cults or creeds nor will we consider persons engaged in certain unclean professions as '*Shudrās*' nor will we debar them or followers of any other religion from gaining access to religious places, scriptures, etc. if they maintain reasonable personal cleanliness and are genuine seekers of truth.
- (10) We will treat women as of equal social status and will look upon them as an important and useful part of society and will consider disparaging and derogatory comments on the role and status of women in certain old scriptures as defunct, unfair and will not mind sincere and polite philosophical evaluation of any religion, including our own.

Science and Silence

People are very highly impressed by the powers and achievements of Science. The reasons for this are obvious. Science has made numberless valuable contributions to man's understanding of the cosmos and the forces of nature. It has made available to man many useful inventions which technology has successfully put to use for making man's life more comfortable and convenient. It has also given to man more thorough knowledge of his body, brain and nutrition and has thus enabled him to combat many diseases. Moreover, with the advancement in science, man can now grow more food, do things more quickly by use of automation and computers and can have better control over some forces of Nature.

Can ultimate, perfect and whole truth be known through science?

But no one can deny that probes made by Science into the nature of cosmos and the secrets of life have not yet enabled him to know the ultimate truth. Cosmos and Consciousness remain to man a mystery as ever before. In fact, some eminent scientists themselves have suggested that Science has raised more questions than it has solved and that, in certain areas, particularly in some fields of physics and cosmology, its conflicting theories have created confusion and are either like metaphysics or like fairy tales.

Further, it would be admitted by all that every successive major finding of science has brought to light some flaws, lacuna or anomalies in the prevalent or preceding 'scientific' view, thus pointing out that discoveries of science, however wonderful and perfect they may appear today, are imperfect and full of gaps after all. One can better understand this unpalatable fact if one keeps in mind the fact that, with the invention of new and more sophisticated instruments such as telescope, microscope, electronic microscope, bubble chamber, EEG etc., new phenomena and more facts have been coming to light which made changes or corrections in the existing theories obligatory. This, therefore, means, in other words, that those theories were not correct and perfect and man will never be able to know the perfect truth through Science because one cannot practically have a perfect instrument. Moreover, as 'Heisenberg's Principle of Indeterminacy' suggests the subtle experiments, by their very nature,

are such that the very presence of the observer, man, disturbs those experiments and the subtle phenomena are (due to other reasons also) indeterminable through gross instruments and by an observer who is in gross, i.e., physical state. All this shows that what is called 'scientific knowledge' is in truth not scientific; it is not free from defects and is, at best only, approximate and limited truth, relating only to the physical world which forms only a small part of the cosmos.

Is Science only a boon?

Another bitter truth about science is that, while making attempts to make man's life more comfortable, it has given rise to certain new irritants and new troubles and, while trying to solve some existing problems, it has resulted in raising new problems. As for example, the technological uses of science have caused grave problems of environmental pollution, nuclear radiation and rapid consumption of world's non-renewable mineral resources and energy. In fact, the unprecedented danger of a nuclear catastrophe, confronting mankind today, is also a spin of Science and Technology.

Furthermore, though Scientific Knowledge has made attempts to explain the relationship between one thing and another, it has failed to make the relationship between one man and another man more cordial and ethical. The fact remains that it has made human relationships more mechanical and worse by making him more materialistic and comfort-conscious.

Science has invented powerful rockets that have the ability to put man on the moon but it has not enabled man to have the power of controlling his mind and have peace. What use have rockets and all technical know-how if man has lost his peace and sleep? What are all boons worth if man has lost his inner contentment and happiness?

Again, whereas Science has greatly helped prolong average life-span of man and has equipped man with the knowledge of heart-transplant, kidney-transplant, eyes-transplant, etc., and has done considerable service by inventing sophisticated surgical techniques and life-saving drugs, yet there has been a spurt in incidence of heart-failures, psycho-somatic diseases, cases of cancer and other killer-diseases in areas and countries which are known for great scientific and industrial development.

It might have enabled man to conquer, in part, forces of Nature yet it has not enabled man to score a victory over his own nature so that he has to go to psycho-therapists for his mental ills. Moreover, the fury of

Nature continues to devastate and ravage the earth despite man's great scientific knowledge and skill.

Yet another serious charge against Science and Technology is that both these together are uprooting balance of Nature, causing disharmony, making life artificial and, above all, these are leading the world to destruction because, according to the Second Law of Thermodynamics, the high-entropy rate, caused by Technology, has highly speeded up mankind's march towards a state of utter degeneration.

Moreover, though science has provided man with more comforts and has greatly increased man's speed, it has made man slave of these comforts and has made his life mechanical and has deprived him of leisure.

But, the greatest failure of Science lies in this that though it has made many discoveries in the physical world, man has not been able to discover his own identity with all the fund of knowledge and technique, science has provided man with. Is it then any wonder that people in scientifically advanced countries evince thirst for such religious and occult practices as can enable man to rediscover his real identity and to have peace of mind.

Powers and Fruits of Silence

By Silence is meant the quiescence of spirit, the calmness of mind or the state of mental equipoise. *Though silence of the tongue helps to attain this state yet it is not to be identified with stillness of speech; for, it is mainly a state of mind in which all turbulence has ceased. It is attained and experienced when the soul rests in the self and in God, the Ocean of Peace. In this state the bubbling or muttering of Mind has stopped, the consciousness has withdrawn from the outgoing senses and all noises of vices have died away. It is not to be identified with dullness, sleep or total passivity, rather, it is a state of heightened consciousness, actualisation of the Spirit and activity at a different level of existence. It is a very powerful state which can do greater wonders than Science. It energises the spirit so much that the latter begins to radiate very powerful waves of peace and currents of new type of energy which revitalise the elements of Matter and fill all things with essence, energy, freshness and harmony. It is the only means of reversing the entropy law and bringing all Matter back into its original state of high energy and vitality. Different from the physical and chemical actions, it is the only form of activity (activated state) or the state of being which recharges the spirit with new energy and which, automatically, conserves the material energy and, above all, sets in a process of bringing all things back to their pristine state of purity, power and peace and heals the wound inflicted by Science on the earth and the*

atmosphere.

Silence is effective medication

The State of Silence, which comes by intense Spiritual Meditation, gives man's mind the greatest relaxation, restfulness and refreshment. There is sufficient medical evidence on this point. Silence straightens man's thoughts, soothes his emotions and gives him wonderful composure and entrancing calm. It restores inner harmony and weeds out all disturbances and pains of the conscience. Thus, it is far-far superior to all drugs and medication that is aimed at bringing rest and relaxation to man's troubled mind, disturbed psyche and turbulent emotions which cause even such grave diseases as cancer, hypertension, arthritis, rheumatic pain, heart attacks, asthma, allergy, lack of resistance to onslaughts of disease, fatigue, stress, etc. Silence has helped even terminally ill patients, it has been observed by medical researchers that Silence of Mind helps speedy recovery and greatly assists the inner physical forces at work for a patient's convalescence. The reason for this is that it prevents negative thoughts, emotional turmoil, trauma, mental fatigue and dissipation of useful energy by wasteful thoughts. Silence gives to man patience and peace so that there is no increase in stimulation of Adrenal, Thyroid, Pituitary and Pineal glands and, consequently, there is no hormonal disturbance or imbalance and all the systems of the body work in union and inner harmony. Thus, man's mind feels at ease so that the chances of disease are greatly reduced.

Silence makes Mind a fit instrument for clear knowledge

Since man's mind is now unruffled like the surface of a calm lake, the reality is now clearly reflected in the mirror of mind. As the thoughts of mind are no longer murky, the truth reveals itself in its full radiance. As there are now no motives of selfishness and hankerings for name and fame and there are no vices lurking in sub-conscious layers of mind, the instrument of mind in Silence is efficient to grasp the truth in its pristine purity.

It should not be hard to realise that the sole instrument of all knowledge—mundane or transcendental—is the mind. And, since Mind in silence is undisturbed, calm and in a state of purity it is able to comprehend truth in its original grandeur. The mind, being detached and withdrawn from the body and its sense-organs, is now rid of the shortcomings which hitherto affected it and thus it can now understand the cosmos in its real nature.

One rediscovers the self through silence

Above all, man can rediscover his own real identity only through silence, attained by means of Spiritual Meditation. And what worth is life if man has known the rocks, the rivers, the earth and ether and the flora and fauna but is ignorant of the self? Of what use is all science if it does not bring in real and lasting happiness? And, surely, man cannot have unalloyed joy, constant happiness and spiritual bliss if he has not realised himself through Meditation and restful silence.

While Science aggravates Desires, Silence brings Satisfaction

Again, science is devoted to material pursuits. It makes available to man material goods in abundance so as to satisfy man's desires. But does it really enable man to satisfy his desires or it gives a fillip to his cravings for more modern and more sophisticated means for satisfying his earlier desires and for fulfilling his new longings? Telling the truth, it is silence which brings contentment to man's mind. In silence, one gets experiences which are unequalled by the satisfaction of worldly desires. The state of calm and silence puts to end all cravings for worldly things because there is no attainment like it. It gives to man the treasure of divine wisdom and invaluable gift of heavenly peace and rare contentment and a sense of fulfilment.

Silence enables the soul to communicate with God and to get at truth

However, the greatest boon which silence showers on the soul is its contact with God, for man is able to communicate with God through silence and not through any vocal prayer or incantation. It is in Silence that the greatest mysteries of Consciousness and Cosmos are revealed to man.

Since silence removes distraction and mental discord and produces composure and softens emotions, it gives to mind the power to have vision of the subtlest varieties. It is in silence that man's intuitive faculties work in full strength and his transcendental abilities and latent faculties get activated so that what were hitherto mysteries to Science are now mastered by Silence. Thus silence is the sheet anchor of peace and poise; it is the enemy of ignorance and leads to illumination and right living. It gives to one's personality the quality of spiritual radiance.

Silence gives wealth of virtues

Silence gives a great wealth of virtues. One gets great confidence,

courage, serenity, patience, humility and inner strength so that one can cross over great obstacles in life, face big problems and confront grave situations with calm and confidence and maintain his tranquility. All difficulties melt away if one taps the source of power provided by Silence and Meditation. Thus, silence is the key which unlocks the door to sublime virtues and success and gives easy access to God and bliss. It subdues mind's waywardness and tendencies to go outward. It gives to mind the ability to keep away from the lure of sense-objects.

Above all, waves of silence move with tremendous speed and force toppling negative forces in the world and, establishing, in their place, love and amity, compassion and composure and peace and purity.

How can State of Silence be achieved?

In order to attain the state of silence, one has to enter the realm of the spirit. When a person rests in the deep thought that he is a soul—peaceful in its original nature—he begins to taste the nectar of silence. One has to give up one's identification with the body and to collect his thoughts, be serene and enter the domain of the deathless, shining self which is of the nature of peace and is an eternal point of light. In other words, one has to start with spiritual meditation, recapitulating in his mind: "I am a deathless soul, radiant and shining and conscient and peaceful in my real nature." One has to die to the worldly consciousness and become alive to and be aware of the soul. When a person thinks of himself as a soul and rests his thoughts on God, the two monkeys of Desire and Aversion (sitting on the tree of body-consciousness) who were hitherto shaking and agitating his mind, take leave of him and the mind gets peace.

Let Desires and Vasanas cease

Again, just as a bee buzzes when it flits from flower to flower but becomes silent when it comes back to the honey-comb and drinks the honey, even so does man's mind attain 'Sweet Silence' or Honey-like Silence by withdrawing from its jaunts to various sense-objects and coming back to the self. *It should be realised that uncontrolled and ignoble desires or trishna is the enemy of restfulness and peace. There cannot be even an iota of Silence and Peace if it is always hankering after objects. When thirsting dies, silence automatically dawns and man enjoys peace: It is the worldly cravings, desires and vasanas that cause rush of thoughts. With the desires and vasanas ceasing to push and pull the mind, the mind becomes calm.*

Think of evanescence of sense-objects

One should, therefore, first acquire a proper attitude towards life and things so as to be able to attain the superb state of Silence. He should have this truth firmly rooted in his mind that objects are perishable and that sensual pleasures are momentary. He should think of the evanescence of life. This will give him proper frame of mind. This will put an end to his extrovert tendencies and his veiled desires and will enable him to withdraw.

Let man realise the truth that peace is his very nature, silence is his inalienable attribute. It is because of lack of realisation of this truth that he runs after material objects in pursuit of peace and happiness. Just as a musk deer does not know that fragrance of musk is an emanation from its own navel and, therefore, it wanders about here and there to find out the source of the smell, even so does the ignorant or deluded man do in search of the fountain of bliss, little realising that the material objects are conditioned in space and time and causation and cannot, therefore, be a source of constant mental peace. Therefore, rest in the thought that you are a soul and that peace is your original nature. Thought moulds man. As a man thinketh so he becometh.

Besides, one should pay attention to the following:

1. Speak little, speak gently, kindly and in a happy vein.
2. The sub-conscious mind is a sort of vast store room, underneath the conscious mind. It plays an important part in the psychological life of man. Man's many distractions, depression, pulls, craving, etc., emanate from the sub-conscious. Many habits or evil samskaras are rooted in the sub-conscious. These are the thieves that steal Silence. By not repeating those habits, the habits and samskaras will gradually die out.
3. Don't spin your imagination or indulge in the will-of-the-wisp. It is imagination that strengthens vrittis and turn them into desires that disturb silence.
4. Keep yourself absolutely alone from undesirable and vulgar literature and motion pictures.
5. Take light, simple, vegetarian food and avoid over-eating and pungent and spicy dishes.
6. Have only nodding acquaintance with hedonists, bohemians and epicurians. Do not indulge in Jhar-mui, Jhang-mui, i.e., talks of censure and villainy.

7. Develop cosmic love, kindness, forgiveness, non-attachment and sweetness of temper. Do not allow the waves of irritability, jealousy, hatred and revenge to overtake you. For this, look to the lighter side of the events and persons.
8. Emotion is motive power. But you must not become a prey to your emotions. You must calm down the surging emotions and must purify them. For this, set your mind on God and His greatness. Remember that setting the mind on the flesh and material things brings in carnality and surge of desires and vices whereas setting the mind on God brings peace to the tormented soul, Silence to the mind, relaxation to the body and nervous system, tranquility to the spirit and calmness to the emotions and freedom to man from anxiety and worry.
9. Consider yourself as an instrument in the hands of God and maintain your mental link with Him. You will always swing in Silence and Bliss and disturbance will never touch you.

May you have the divine Silence of the soul!

Social and Moral Responsibility of Science and Scientists

—Are scientific discoveries value-free?—

Even today there are some scientists who say that scientific discoveries and inventions are value-free. They think that the findings of science are apolitical and amoral. But didn't Plato say that man is a political animal? Don't scientific findings influence politics and vice versa? The present article is of the nature of a rejoinder to those who think that value-judgements do not apply to science.

The publication of the book, entitled *Star Warrior: A Penetrating Look into the lives of the young scientists Behind our Space Age Weaponry* has revived the age-old question of the social responsibility of science and scientists. William Broad, the author of the book, has given, in this publication, an insight into the life of the scientists, Rod Hyde, Peter Hagelstein and others who are now doing research work to complete spaceships and to design laser beam weapons for what has now come to be known as 'star wars'. He has exposed how primitive are the political perceptions and the life-styles and food-habits of these scientists. They have few interests beyond their unidimensional research work. They do not know and they have no time to think how far their research work is going to affect and influence the society. Perhaps they think that it is for the social scientists to look into this aspect of their research.

In fact, this belief that scientists have no social and moral responsibility beyond making discoveries in a devoted manner has been widely prevalent among the scientists for more than about a hundred years now. Many scientists have been of the view that the findings of science are value-free. They have generally taken the stand that the aim of science is to discover the secrets behind the forces and processes of Nature and thus to uncover an area of truth and that what a scientist or science discovers has objective validity and therefore, it cannot be said of them that the findings are 'good' or 'bad' for the society. It was said that value-judgements cannot be applied to the hypotheses, theories or concepts formulated by scientists. In other words, the scientists held that ethical values cannot be applied to scientific discoveries *per se*.

Who bears the social responsibility?

Those who held the above stated view, said that it was the technological use of these scientific discoveries which might be judged as 'good' or 'bad' for the society and, for this reason, it is the political leaders in power, the administrators, the industrialists and the technocrats and their tribes and not the theoretical scientists who could be held morally responsible because it was the former and not the latter who decide as to what use be made of the available scientific knowledge; it is these who formulate policies and execute the decisions.

The above view may have appeared to have some validity at some point of time in the past but when we review the history of science and its progress over a period of about a century, and we make an attempt to assess the impact of science on the society and its morals during this period, the above view seems to be erroneous.

Impact of science on life styles and morals

It would not be an exaggeration to say that the findings of science have given birth to a new civilisation, new culture, new life-style, new beliefs, new outlook and new morals. No one can deny that the concepts given by science or scientists have so deeply influenced man's thoughts, religious beliefs and morals and have, in fact, not left a single aspect or area of life untouched.

For instance, it would be incorrect to say that Darwin's theory of biological evolution has not influenced the value-system which each religious community or metaphysical school once held. Its direct or indirect denial of God without any scientific proof and its emphasis on the principle of the survival of the fittest had sent strong shock-waves into the theological edifice of Christianity and had, overtly or covertly, shook its moral foundations.

Likewise, the Newtonian mechanistic world-view and the views of Laplace, which were rigidly deterministic, left little scope for 'free will' which forms the very basis of all ethics and moral values. Contrariwise, the views of some scientists or 'Randomness' and 'Heisenberg's Principle of Indeterminacy' or 'Principle of Uncertainty' had their own deep impact on metaphysics and various value-systems based on it.

It would, perhaps, be needless to add more such instances of scientific theories, influencing perceptibly and heavily the moral values generally accepted by a great part of the society, but it would be necessary to point out that not the finding of physicists or physics but of all scientific disciplines have left their deep impression on man's morals. The new knowledge

about the nature and functions of chromosomes and genes in Biology and the knowledge of the chemistry of the double helix or DNA and RNA, and the deeper understanding of the processes of replication or reproduction also have left their impact on religious beliefs, metaphysical concepts of man's overall world-view and man's morals.

Of course the political leaders in power, the bureaucrats and the industrialists who formulate and decide the policies as to the purpose to which the scientific knowledge is to be put, or who found the technological projects and their implementation, are deeply involved in making decisions which may prove beneficial, harmful or suicidal for the society but the theoreticians, the academicians and the researchers also who make scientific probes or investigations, cannot be absolved of their social and moral responsibility for their discoveries, for after all, they know that their findings are going to be used for the society and, more often than not, they also know to what use their discoveries can be put and what effect these will have on the society or the individuals.

At this point it would be better to give example of an event to show how scientific discoveries and decisions of scientists have a moral dimension too.

How Socio-economic and political environment affects scientists?

It would be proper first to give an instance to show how the prevalent socio-political environment in a society affects an individual's morals, including those of top-class scientists. It would then be shown how the view-points of a scientist influence him to use his knowledge of a particular discovery towards an end which, as he knows, may prove destructive to a great segment of society. It will also be shown how the scientists-the theoreticians and academicians-influence even the politicians and, through them, the bureaucrats and technocrats and that scientists also, like other human beings, are not apolitical nor amoral; they too have feelings of fear, hate and vengeance and may use their knowledge of science under the influence of such negative thoughts and may thus influence, in turn, the whole society.

Let us turn our attention for a while, to Germany in the second, third and fourth decade of the twentieth century. In 1920, an Anti-Einstein League was formed in Germany, and it offered large amounts of money to anyone who would write refutations of Einstein's work. On 24th August of that year, this League sponsored a meeting in Berlin Philharmonic

Hall, where Einstein's work was attacked and antisemitic slogans were shouted. Einstein himself had attended this meeting and there were speeches against his Theory of Relativity in his very presence. Einstein felt bitter and angry and he wrote a letter to Berliner Tageblatt a periodical which published that letter. (Einstein's friends had wished that Einstein should have tried to ignore the matter but Einstein had taken this step). The matter, however, did not end there. There was mounting campaign against the whole Jewish Community, as is now well-known and against Einstein so much so that Einstein, hurt by this atmosphere, left Germany in 1932.

Even after that, the campaign of hatred and villification against him and his theory went on. In 1933, Phillip Lenard wrote in *Volkische Beobachter*:

"The most important example of the dangerous influence of Jewish circles on the study of nature has been provided by Herr Einstein. Even scientists who have otherwise done solid work cannot escape the reproach that they allowed the Relativity theory to get a foothold in Germany, because they did not see or did not want to see, how wrong it is, outside the field of science also, to regard this Jew as a good German.'

In 1935, Phillip Lenard, in his inaugural address at the opening of a new institute of Physics, said;

"... We must recognise that it is unworthy of a German to be the intellectual follower of a Jew...."¹

Now all these happenings, influenced Einstein's attitude towards the political and moral questions of the day.

In 1933, he wrote to a French pacifist:

"What I shall tell you will greatly surprise you. Until quite recently, we in Europe could assume that personal war resistance constituted an effective attack on militarism. Today we face an altogether different situation. In the heart of Europe lies a power, Germany, that is obviously, pushing towards war with all available means. Imagine Belgium occupied by present-day Germany! Things would be far worse than in 1914, and they were bad enough even then. Hence I must tell you candidly; Were I a Belgian, I should not in the present circumstances refuse military service; rather I should enter such service cheerfully in the belief that I would

1. Quoted by Philipp Frank in *Einstein: His Life and Times*, New York, ADfred A knoff, 1947, page 232.

thereby be helping to save European Civilisation.”²

It is clear that Einstein, affected by the political climate of that time had then become Anti-Nazi and had remained so ever afterwards as will be clear from his reply to Arnold Sommerfeld, who wrote to Einstein in 1946, suggesting that Einstein might be interested in renewing his membership in the Bavarian Academy from which Einstein had been expelled in 1933. Einstein wrote;

“The Germans slaughtered my Jewish bretheren; I will have nothing further to do with them, not even with a relatively harmless academy...”³

Examples of scientists influencing political and economic policies

We will now see how, Einstein, who had now become Anti-Nazi, was influenced by two other scientists, Eugene Wigner and Szilard.

These two scientists had realised that if Germany was going to try to build a bomb, she would require large quantities of Uranium. They knew that Hitler, after seizing Czechoslovakia in 1939, had taken immediate steps to block the export of Uranium which was an indication that they were aware of its military applications. Szilard knew also that Einstein had a close friendship with the Belgian royal family and was in periodic correspondance with Queen Elizabeth. So, Wigner and Szilard thought of informing Einstein about the situation and ask him to write the Queen to keep the Uranium deposits in Belgium Congo from falling into the hands of Germans and to open up an important source of supply for the United States of America.

So, Wigner and Leo Szilard paid Einstein a visit in mid-July, 1939 at Nasau Point and conversed with Einstein on the above points. It was then decided that a letter would be drafted to the Queen and would be sent to her after getting it cleared through the States Department.

Szilard and Fermi were working at the physics department at Columbia University where they did not have sufficient financial support for their research on fission. Szilard and Edward Teller, who was then a visiting professor at Columbia, went to Long Island where Einstein was then staying and suggested to Einstein to write to Roosevelt. Einstein dictated a first draft in German, of which a modified English translation was prepared by Szilard and signed by Einstein and sent to Roosevelt through Alexander

2. David Irving: *The German Atomic Bomb*, New York, 1977, page 177.

3. Quoted in Nathoi. and Norden, eds “Einstein on Peace” pages 367-368

Sacks, an economist, who was an adviser to Roosevelt. The letter read:

“Sir,

Some recent work by E. Fermi and Szilard, which has been communicated to me in manuscript, lead me to expect that the element Uranium may be turned into a new and important source of energy in the immediate future. Certain aspects of the situation seem to call for watchfulness and, if necessary, quick action on the part of the administration. I believe, therefore, that it is my duty to bring to your attention the following facts and recommendations.

In the course of the last four months, it has been made probable—through the work of Joliot in France as well as Fermi and Szilard in America—that it may become possible to set up nuclear chain reactions in a large mass of uranium, by which vast amounts of power and large quantities of new radium-like elements would be generated. Now it appears almost certain that this could be achieved in the immediate future.

This new phenomenon would also lead to the construction of bombs, and it is conceivable though much less certain—that extremely powerful bombs of a new type may thus be constructed. A single bomb of this type, carried by a boat or exploded in a port, might very well destroy the whole port together with some of the surrounding territory. However, such bombs might very well prove to be too heavy for transportation by air.

The United States has only poor ores of Uranium in moderate quantities. There is some good ore in Canada and the former Czechoslovakia while the most important source of Uranium is the Belgian Congo.

In view of this situation, you may think it desirable to have some permanent contact maintained between the administration and the group of physicists working on chain reactions in America. One possible way of achieving this might be for you to entrust with this task a person who has your confidence and who would perhaps serve in unofficial capacity. His task might comprise the following.

- (1) To approach Government Departments, keep them informed of further developments and put forward recommendation for Government action, giving particular attention to the problem of securing supply of Uranium ore for the United States.
- (2) To speed up experimental work which is at present being carried on within the limits of the budgets of University laboratories, by providing

funds, if such funds be required through his contacts with private persons who are willing to make contributions for his cause, and perhaps, also by obtaining the co-operation of industrial laboratories which have the necessary equipment.

I understand the Germany has actually stopped the sale of uranium from the Czechoslovakia mines which she has taken over. That she should have taken such early action might perhaps be understood on the ground that the son of the German Under Secretary of State, Von Weizsacker, is attached to the Kaiser Wilhelm Institute in Berlin, where some of the American work on uranium is now being repeated.

Your very truly,
A. Einstein. "4

It should be known in this connection that Mr. Sacks finally delivered Einstein's letter to Roosevelt on 11th Oct. 1939 and on 19th Oct. Roosevelt sent to Einstein a brief note, stating:

"I have found this data of such import that I have convened a board consisting of the head of the Bureau of Standards and a chosen representative of the Army and Navy to thoroughly investigate the possibilities of your suggestion regarding the elements of Uranium."⁵

Soon afterwards, the Advisory Committee was formed, Einstein also had informal contact with this committee though he was not a member of it.

Now it should be clear from the above that the work on fission done by Szilard, Fermi and others had deep social and ethical implications also, for the invention of atom bomb has greatly altered social, political, economic and the moral scene at the international level and that in turn, has not only affected man enormously at the individual level but has threatened the very survival of human race.

Further, it should be evident that even Einstein, who was a top class academician and a pacifist was influenced by the socio-economic and political environment of his day and also by fellow scientist, such as Eugene Wigner, Szilard and Edward Tellers.

It is also obvious in this case that scientists like Einstein, Wigner and others had taken a decision about the practical application of scientific

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4. *The letter is given in "Einstein on Peace" (ed. by Nathon and Norden) pp.294 with an earlier draft and an account of the events leading up to its being written and delivered..*
 5. *Ibid, page297.*

discoveries and were involved though indirectly in the formulation of policy for its use for war purposes. It was Einstein and other scientists who had led the political leaders, the bureaucrats and the industrialists to decide in favour of using Uranium for making an atom bomb, knowing pretty well that it would have a great destructive power.

It is true that Einstein personally was not involved in any research, which required the use of Uranium and which led finally to the invention of atom bomb nor was he in any way associated with the work of studying uranium and, further, this also is true that he was shocked to hear the news of an atom bomb having been dropped on Hiroshima, but this also is equally true-as historical records prove that it was he who had first suggested the matter to Roosevelt.

In view of all this, he who says that discoveries of science are value-free only closes his eyes to the events of history and to variable facts. One must remember that scientists also have a political dimension and a moral dimension of their being and, as part of the society they are influenced by the society and their findings and their work influence the society, including its moral structure and this is only natural and true. Scientists therefore, cannot absolve themselves of their moral responsibility nor can they reasonably overlook or ignore the moral aspect of their work.

Economics Without Ethics and Spirituality

The ancient Indian spiritual wisdom says that man should make efforts to achieve four objects. While naming these four, it gives first place to Dharma i.e. moral greatness, virtue, purity or strength of character. It gives only a second place to Artha, i.e. wealth, economic prosperity or richness. It gives Kama, i.e. fulfilment of worldly needs, material wants of physical comforts the third place and then, finally, mentions the attainment of liberation as the ultimate goal. **By laying down this order of priorities, it intends to make it very clear that, if one loses one's character, one does not really attain anything worthy or great. By giving up moral values, one loses one's peace of mind and he who has lost his peace, his economic achievements are not a source of real comfort or inner happiness and, therefore, they amount almost to nothing.** Its emphasis on Dharma, therefore, is very appropriate, for one who forsakes *Dharma*, he invites troubles for himself, his family and his society. Even '*Artha*', i.e. wealth or economic prosperity becomes '*Anartha*' i.e. a source of trouble if one loses one's morality. For, money earned and accumulated through dishonest and unrighteous means generates greed and temptation, leads to disputes among one's nears-and-dears, brings mental dissatisfaction, fear, insecurity, anxiety and so many other negative things with it. So, even though, it asks one to create wealth and have prosperity, it advises one to adopt the right, just and honest means for this purpose. If one accumulates wealth by dishonest and unethical means or by indulging in acts of social and economic injustice and exploitation or by taking to unfair means, then, one is ultimately doomed. He is inviting mental conflict and government action against him and also public disgrace and sadness sooner or later.

The spiritual wisdom advises man to give only third place to one's worldly aspirations (*Kama*) because one requires money to fulfil most worldly wants and if money has not been earned by honest and fair means, one will never feel satisfied even if one's wants are fulfilled. One who indulges in bribery, corruption or dishonest means, releases such evil forces in the society that make the society miserable. One may even work one's way to glory but a morally corrupt person becomes ill-famed rather than famous.

And, so far as the Liberation (*Mukti*) or Beatitude is concerned, there is no question of it being attained without spiritual purity, great virtues and high character. One's evil actions put one into the quagmire or they involve him into so many bondages. It is only the pious ways that uplift one to the lofty goal of Liberation or Fruition.

Money has become the main consideration

But one finds that, in the present-day world, money is the major consideration with the people. Man's status is measured in terms of money. A man is considered a great man if he has amassed great wealth. One's standard of living is determined in terms of one's show of wealth rather than by his moral greatness. People who profess to be engaged in social service or those who are asked to help in public welfare work, generally do so for considerations of some monetary gains only. Almost everyone has become so money-minded that people have started saying it openly that God cannot be worshipped if one has an empty stomach and that, in order to acquire something for one's livelihood one need not bother about the question whether one is doing it by fair or unfair means. Thus, money has become the main if not the sole consideration. It has become the yard-stick for everything. Everything is valued in terms of money. Even moral values have lost their value, "Everyone is dishonest", one heard a layman say, "If I make a little money out of the way, how does it make things worse?" , he asks.

The answer is very clear. It is, "If everyone has lost his Dharma, then everyone has lost his peace also". Everyone is peaceless today, it is because of the lack of one or the other moral value. Moreover, one has not to emulate a characterless person in life but persons who can raise their head high and can look straight because they stand on the bedrock of character.

Economics without ethics

We find that the present-day economic systems are divorced from ethics. Not only do they not take into consideration the ethical values but also they generate unethical trends. The current world fiscal scene clearly shows that our economic thinking and our models of planning and development are out-of-touch with reality and are estranged from ethics. Take, for example, the recent event of recession and also the event of fall in the exchange rate of the dollar. A little deep thinking as to the factors that led to these two events would lead us to the conclusion that these events occurred because some developed and affluent countries, such as the USA, had been spending much beyond their means. They had been

importing more than they could export or more than their foreign exchange reserves could afford. The result has been that such countries became major debtors to some exporting countries, such as Japan. These massive debts greatly eroded the strength of their economy and their currency. Further, the creditor countries, such as Japan, went on investing heavily in US under the illusion that the US is economically healthy and strong, with the consequence that, while the economy of the US became overburdened, the economy of Japan came under grave risk. This then is the fate of the debtor and the creditor countries.

In simple terms, these facts show that most nations of the world have forgotten or conveniently overlooked the age-old moral lesson that one should live according to one's means and should avoid taking debts because, by being a debtor, one loses one's peace and honour, and one's liabilities and debts give one only worry or artificial happiness. One should have remembered this great moral lesson of history that, however strong a nation might be industrially, the divorce of economics from any principle of ethics results not only in devaluation of the currency but of the honour of country, and leads its people to dehumanisation.

If we now turn our attention to the developing countries, we find that their economic condition also is sad though for other reasons. As is well-known, these countries are caught up in the vicious circle of poverty-low income-low saving rate-low investment rate. So, they set poverty-alleviation and generation of employment as their goals. Thus in order to extricate their country from this vicious circle, they have adopted a development model that is based on the assumption that the economic growth is a function only of high rates of investments, and in order to generate better rate of investment resources, they resorted to three factors—higher taxation, deficit financing and internal and external borrowings. This is what India also has been doing.

The higher and higher tax-rates have become counter-productive because they have led to more and more tax-evasion and have generated black or un-accounted money, and the returns to the government treasury also have always fallen short of expectation. This factor has had a very bad effect on the moral standards of the people and on the currency-value of the country. The result of borrowings and deficit financing has been that almost all nations, to-day, are debtor nations with weak economies and almost all industrialists and richmen are, directly or indirectly, dependent on the borrowings, from banks or through bonds or fixed deposits, the savings of the middle class and the poor people. Also

the planned economy almost everywhere is near exhaustion point and near the peak of the resource-crunch. This shows that even that best of brains cannot sustain an economy in a healthy state as it is divorced from the ordinary rules of ethics or principles of spiritual wisdom.

Resource crunch

Take, for example, the problem of “resource crunch”, In countries where there is planned economy and where there is the public sector, one finds that the country cannot generate more and more resources because, in the public sector, there is less production either because of loss of working days due to strikes or there is lack of efficiency. The result is that many public sector industries are in the red. Not only do they not generate resources but also they consume a great chunk of the resources generated through other. If the workers and the management in the public enterprise realised their responsibility and worked dutifully and did not waste in strikes, the time for which they were paid from the public purse, the public sector industries would show growing profits and generate resources as they were expected to. But we find that, even in communist countries where there are, perhaps, no strikes, the production rate is not satisfactory because of inefficiency and dereliction of duty. So in those countries also, the planning bodies experience the resource crunch because of the lack of the ethical values of responsibility, honest duty and efficiency.

Black Money

We have mentioned earlier how the governments, especially in capitalist countries, resort to deficit financing, and increasing tax-rates in order to mop up large resources so that the plan outlays can be hiked. As the plan outlays have been increasing, the deficit on revenue account has also been increasing. For example, these were Rs.1379 crore in 1979-80 in the annual budget in India but in 1986-87, they rose to 7,233 crores (revised estimates).

We have also said that the government, in the capitalist developing countries, indulges into public borrowings. These borrowings also go on increasing year after year. For example, they were Rs.2001 crore in 1979-80 which rose to 6,300 crore in 1987-88. Thus large-scale borrowings, deficit financing and increase in tax-rates have always resulted in the rich becoming richer and the poor becoming poorer. So, not only has poverty not been eliminated or alleviated but the rich, by borrowing money from the savings or fixed accounts of the middle class and the poor people, become more and more rich. The result has been that the rich have become

more and more greedy and money-minded and, due to inflation, the poor have been becoming more and more poor.

Again, the black money generated due to tax evasion, etc. has also become responsible for increase in prices, and many other wrong habits which are opposed to the attainment of the goal of Liberation. Those who amass large amounts of black money, indulge in various kinds of unsocial, illegal or unholy acts which speed up the moral degeneration of the society.

Thus, this vicious circle continues. The government increases tax-rates. This results in the increase of prices of consumer's goods. The government servants demand higher pay scales or more dearness allowance and the workers demand more wages. The government and the factory-managements or the wage-boards give a pay-hike and, in order to meet this extra burden, the government again raises its tax-rates! The poor man who, already has little earnings, is crushed. The value of the rupee having decreased, and the price of goods and commodities having increased, the common man feels that he is under great pressure. The tension of the housewife and the low-paid clerk or the middle-class man increases and, due to high tension, he has to pay higher bill to the chemist and the doctor and, in order to meet the increasing demands, he indulges into bribery. All this, then, results in dehumanisation and in moral turpitude. The society stinks with characterlessness. Thus economics, estranged from ethics leads to man's moral downfall and to untold sufferings. Even those who have modern gadgets and goods for comfort, lack in mental concentration and peace. This is the present state of our society. This state shows that there is utter degeneration of the moral fibre of mankind. This decay in morals goes on increasing and a stage is reached when its vicious circle cannot be cut by man himself. It is at such a point of time that God descends to give to mankind the moral moorings again and to teach to him the right order of priorities and goals and to re-establish the Religion and the moral values.

One evil supports the other

The nature of evil forces is such that one evil strengthens and supports the other. Not only does black money run a parallel economy and result in many economic crimes but it also affects the total morality of man. Man conceals his income, evades taxes, spends money on harmful habits, such as on wine and woman. He also aligns with some politicians or the latter with him, each for his own selfish aims. Man wants to accumulate more and more money so as to become richer than many others in the

race. Those who are very rich, have the means to become gay. Those who are poor, they try to seek pleasure in producing more progeny. This promiscuity and permissiveness is on the increase. The population also increases. As the population-growth is more than the economic growth, all development plans are nullified. It is now well-known that a growth-rate of 5% is checkmated by a population growth-rate of 2 per cent and is so slow in effect as not to make for any real improvement in the living conditions of the poor. So, while the right economic effort would require control on population, the government repeats the exercise of increasing tax-rates or levying taxes on new consumer items in order to raise new revenue resources. Little would the government and the people realise that if man does not control his mind, there would either be high-rate of population growth, or illegitimate children, broken homes, cases of divorce, promiscuity and sex-diseases. The best thing, therefore, is to observe moral norms and to base our economy on ethics, for without that there cannot be peace and happiness in the world.

The Moral and spiritual Imperatives

Our World, to-day, is caught up in a vicious circle. Most of the problems it faces are interlinked and each one of them feeds up the fires of others. They are tangled and inter-twined so much so that it has become very difficult to extricate the world out of it. One of the reasons why we cannot solve or lessen the rigour of these problems is that we do not apply or do not have a solution which attacks all the problems. In other words, our approach to our problems is not holistic; it is piece meal. We try to make use of solutions for each individual problem separately and the result is that, in the mean time, other problems increase and bring from the back door the problems that we are trying to tackle.

Secondly, we have an infatuation for the old theories. Little do we realise that our present problems—socio-economic, psychological and political—have been caused directly or indirectly by theories and concepts that gained currency during the past about three hundred years or a little more. We should have thought that these theories have proved not only ineffective in the long run but have given rise to new problems or have aggravated our old problems. We should, therefore, have discarded them as outdated. We should have felt that the theories of Adam Smith and Karl Marx cannot work in the present context, for the world-scene has changed tremendously since then. If even now we do not free ourselves from the constraints of these crumbling ideologies and unconfirmed assumptions, the time will have run out and we will be too late to apply any corrective.

In fact, we should have known by now that something is wrong with our very approach to the problem of elimination or alleviation of sufferings in the world, and our paradigm of a better world is erroneous. Our main emphasis, in our present approach and model, has been on economic development. We have been measuring, and we still measure, the advancement of a nation by its GNP (Gross National Production) and its per capita income. Our major concern, in this paradigm of development, has been to raise the economic standard of living of the people. This has been based on the assumption that greater enjoyment of material goods leads to greater happiness. It has thus given us a wrong model of development. Our assumption has been wrong because man does not live by bread alone. He needs mental and cultural development and peace

of mind also. Our goal should, therefore, be the well-being of man rather than material wealth. Obviously, there is now the need for a paradigm-shift and a shift in our emphasis. We have to work for fuller, all-round or holistic development of everyone rather than mere economic development of a few. We have to have cultural and spiritual democracy instead of political democracy. Presently, the disparity between techno-scientific and psycho-spiritual development has grown tremendously. This has resulted in great imbalances and social, cultural and moral distortions. It has greatly eroded correct perceptions of ourselves and the society we live in. The result is the present identity crisis. The critical situation we face today has been brought about by the deterioration in morals and over-emphasis on the physical and material. This has led to fixing up of wrong priorities, wrong imperatives, wrong attitude, and wrong goals.

We find that our knowledge of Nature and its forces has tremendously increased during the past few centuries but our moral and spiritual development has not kept pace with it. As a result, our relations at interpersonal, inter-communal and international level have greatly degenerated. If we cannot solve the problems of nuclear race or poverty today, it is because our relationships today, at all levels, are not based on goodwill, friendship, love and co-operation. And our relationships have worsened or are not on proper keel because there has been a great deterioration in our moral standards and our level of behaviour. The present crisis is, therefore, mainly a moral crisis. All our current problems arise from lack of moral and spiritual strength and absence or lack of co-operation.

If, therefore, we wish to reduce sufferings in the world or eliminate them totally or in other words, if we wish to build a better world, then we have to create the necessary moral climate and to build up goodwill and co-operation on a global scale, then we have to take notice of the moral imperative. It is the moral imperative to co-operate for a better world and to build up goodwill and good relations or else there would be a great destruction.

The belief that there can be a world without sufferings and without the problems as we have to-day is not a Utopian belief. It seems utopian when we use the current assumptions and paradigms. The paradigm shift would make it look quite feasible. Let us, therefore, follow the moral imperative if we wish to have a better world to live in. Let us have world welfare and not mere economic welfare as our aim. It is only then that we will have the co-operation of all.

Attitudinal Change through Spirituality

The present state of the world, in which we live, is what it is because of certain systems—social, political, economic, religious and others—all these woven together into a complex structure, called society. These systems, in turn, are built on certain attitudes and values which various nations, communities or groups of people have to come acquire over a period of time. These attitudes, in their turn, are based on the ideas, ideologies or beliefs which people have acquired, over a period of time, from others or have learnt by first-hand experience.

So, if we want to build up a better world order, there is no way to it except through attitudinal change or shift, as has been pointed out earlier, cannot take place unless certain age-old beliefs which people have acquired and which are now working as the matrix for their attitudes, relationships and behaviour, are changed. People have to be given a better ideal which inspires them to have higher values and nobler behaviour. It must be remembered that the present stage of turmoil is because our society has no such ideal which should give it impetus for better relationships and better behaviour. Let us, therefore, not forget that the 'improvement in the self', the 'betterment of our relationships' and the spirit of 'service of others' which are sought to be brought about are only parts of the attitudinal Change which is our main object. And, in order to bring about the Attitudinal Change, we have to give to the society a new convincing and inspiring ideal and also the ideology necessary to achieve that ideal.

Also, we have to remember that family is the unit of society. Family is the micro world. It is the first school where everyone gets educated. In fact, most of our attitudes are built up in our family. First, the deterioration starts in the family and then it penetrates into the society. So, in order to bring about a Better World, let us inspire people to make a better family. To-day, the family is disintegrating and so we find that there is tendency of separatism and fragmentation all over the world. There is no real love among family members and, so, there is no real love in man's relationships with others. A man who is dissatisfied at home and finds tension there would spread dissatisfaction and tension outside his home into the wide world. Promiscuity is increasing and the number of cases of divorce is

increasing. Parents do not give love to their children and the children do not give respect to their parents. So, let man first improve his family relationships. "Charity", they say, "begins at home". Better families would make a better world. This improvement in relationships and change in attitudes, let us understand, is brought about by spirituality. It is spirituality, not science that give the concept of the world as a family.

Sublimation of Science and Politics through spirituality

Whenever a human being engages into an action, he does so with some motive or some intention. Even when a person explains, at the end of an action, that he had 'no motive' in doing it, he did, in fact, have a motive at the back of his mind when he did that action though he did not have any clear awareness of it then. His explanation should not lead us to believe that he, really, had no motive at all, for every motor action must, as a rule, have some motive behind it. In fact, the very explanation offered by someone to convince others that he had no motive, has now the intention of getting absolved of the accusation of having had a bad motive. At best what could be true is that his action was goaded by a motive that had worked at a sub-conscious level.

Considered in this light, the intentions of groups, as compared to an individual's motive, have much greater significance. We find that the impact of these actions is generally if not inexceptionably, proportionate to the social, economic, political or religious power or the scientific and technological know-how operative behind them. Thus, if Religion and Politics or Science and Politics align together with a noble or sublime intention or motive, the result may either be a great social and moral improvement and the establishment of law and order in the first case or a great scientific development in the latter case. Conversely, if they align together with an inferior motive, the result can be disastrous also. The alignment of the political and economic power with the power of science and technology with an unholy motive becomes obvious when we consider the use of nuclear technology for the invention and manufacture of nuclear weapons which now threaten the very existence of a large part of mankind. The result of the negative intention behind the alignment of Religion and Politics can be witnessed in what has been happening between Iran and Iraq for some years now.

If we thus realise the importance of motives or intentions, we should be able to realise the importance of Spirituality also, for the very object of spirituality is to sublimate and harmonize the intentions of human beings so as to achieve higher social goals. That which brings about the happy unity of wills and motivated human beings for building a better society,

characterised by love, unity, peace, co-operation, etc, is the real spirituality which is specially needed in to-day's context when Science and Technology, in alignment with Political forces, have gained tremendous power-destructive as well as constructive. Let us understand it very clearly that, behind the political force and the power of science is the motive force and, of all the forces at work, it is this, which need be sublimated through spirituality.

How Spirituality gives us Purity And Harmonious Personality?

We find that Shiv Baba and Brahma Baba, in their angelic forms, have explained in some of their Subtle Teachings (Avyakt Vanis), that 'Purity is Personality'¹ and also that 'Purity is Royalty'². They have also said that Purity is greatness. Purity, Sublimity³ and Divinity are synonymous. Since we all aim at attaining divinity, it would be of advantage to us to know clearly how Purity gives to man a harmonious and royal personality.

In fact, it is now generally recognised that a major aim of Education is personality enhancement. Many educationists have said it in emphatic terms that right type of education 's that which prepares a person to face situations in life fairly well and guides him how to adjust his personality in certain changing situations. They have explicitly stated that, **if education does not make the educand's personality dynamic and does not equip a person as to adopt himself to the realities of the world or to adjust himself to certain environment or to have harmony of mind and be free from tension then such an education lacks in a very important element.**

But, it is a pity that Western educational philosophy and educational psychology has not given any worthwhile attention to purity as one of the means (if not the only means) of enhancing or elevating of one's personality or for giving to man good mental health and harmonious personality. The sad result of all this lacuna is that, in those countries people have to visit mental health clinicians or consultants to solve the problems concerning their mental illnesses, conflicts, maladjustments, abnormalities, stress or tension. Slowly, however, the westerners are coming to know that Purity gives to man the wholesome or 'complete' personality, resolves man's conflicts, rehabilitates him in society and enables him to feel relaxed and happy and play a creative, socially useful and psychologically normal role. Recently, scientific tests, performed on Dadi Janki in San Francisco, USA, mark almost a beginning in that direction and it is hoped that, in the near future, the truth will dawn on educationists, psychologists, psychiatrists and mental health clinicians that Purity gives man a harmonious, healthy,

1.&2. *Avyakt Vani*, 5th Feb., 1975

3. *Avyakt Vani*, 14th Jan., 1979 and also 23rd Jan. 1980

well-adjusted, integrated and happy mind. In order to understand this truth a little more clearly, let us first know what is meant, in simple psychological terms, by 'Personality', 'Adjustment', 'Integration', 'Harmony' and 'Mental health'. Later, we will see how Purity, as defined by Baba, is Personality and Royalty.

What is 'personality'?

'Personality is generally defined as 'a person's reactions and reaction-possibilities to situations faced by him.' It is the sum total of behaviour and trends manifested in a person's attempts for social adjustments.⁴ It is the name given to one's psycho-physical adjustive processes and reactions to internal and external stimuli.⁵ Man's character development and personality integration are almost similar processes but 'personality' is a wider term which includes urges, impulses, motives, tendencies, traits, interests, attitudes, moods, etc. whereas the word 'character' is used to denote ethical values and attitudes or a person's self-control. 'Character' is embedded in the total structure of personality.⁶

Now, since 'Purity' is the core of character, and a very distinguishing feature of behaviour, it would, therefore, be useful to explain, briefly, five levels of character-development as classified by certain psychologists'.⁷

- (1) *The Amoral Level:* This is the level of behaviour or character of an infant or a child in early period of childhood. At this level, one is innocent and is unaware of ethical value and of the effect his behaviour will have on others. A young infant wants to snatch any attractive object or throw any toy without caring to whom it belongs or what will be the result of his action. If that behaviour persists in a person's adulthood, then it will be considered as abnormal behaviour and lack of character.
- (2) *The Expedient Level:* At this level, a person chooses to perform such acts as can fulfil his own wish or impulse. Even though an expedient person knows that his action will not have good effect on others yet he does not hesitate to perform actions to gratify his senses or satisfy his selfish ambitions.

4. Dashiell. J.F.: *Fundamentals of Objective Psychology*, Houghton, P-551.

5. Allport G. W. : *A Personality : A Psychological Interpretation*, N.Y. Henry Hold, P.46.

6. Cronbach L.J.: *Educational Psychology*, Lond., Rupert Hurt-Davis, P.616.

7. Pech R.F. and R.J. Havighurst: *The Psychology of Character-Development*, N.Y., Wiley.

- (3) *The Conventional Level:* If a person acts in the same manner as his community, family or group usually acts, without reflecting whether it is good or bad, he acts at conventional level. Most men generally behave at the conventional level because this kind of behaviour has the social sanction. In fact, an adult should apply his own judgement as to whether a group-behaviour is worthy of being performed or not and should modify or overthrow it, yet, most people behave as 'dumb driven cattle', for that is the path of least resistance.
- (4) *The Irrational-conscientious level:* This type of behaviour is performed by a person when he observes certain principles and values not because his reasoning tells him that this is worthy of pursuit but because he has emotional attachment to it. He says that he does a particular action because his conscience feels satisfied with that type of behaviour or conduct. For example, if a person observes honesty because, earlier, dishonesty has led him to trouble or because he has seen that others who were dishonest came into the grip of law, he is acting at this level. This man has, evidently, acted honestly because he is anxiety-ridden and not because of judgement based on thorough understanding and reflection.
- (5) *The Rational-Altruistic Level:* This is the highest level of behaviour. A man who behaves at this level takes into consideration the welfare of everyone who is affected and he uses his own judgement as to which action will be the most beneficial to all involved. It is different from the type of behaviour described as Irrational-Conscientious, as the individual who acts at this level does the action on the basis of reasoning and not his emotionality. *A rational- altruistic person, when placed in conflicting situations, uses his sense of right and wrong and establishes its harmony with his goals. His wish and consciousness do not pull in opposite directions or, in other words, his mind and intellect do not have a conflict because he has established harmony between the two by using knowledge, reasoning and judgement.*

As we all know from our daily experience, we are often confronted with conflicting values. If an individual uses reasoning to decide his course of action and chooses to act in keeping with higher values, his behaviour is said to be at Rational Level. Further, if he has also taken into consideration the welfare of others and the ultimate good of mankind, we will call his behaviour as altruistic. Evidently, such a behaviour as has good wishes (Shubh Kamna) and good intentions (Shubh Bhavna) at its root and has the welfare or higher good (Kalyan) of others in mind and also is inherently good from ethical point of view, is of the noblest and

the highest type. It is this type of purity which Baba calls 'Personality' and equates with Greatness, Magnanimity or Royalty.

But the belief prevalent in to-day's society is that it is almost impossible to become perfectly rational-altruistic. People say that, in this society, and in this environment in which there is great degeneration of moral values, one would like to choose expedient behaviour, for if one tries to choose the moral path, one would not be able to fulfil one's desires. Therefore, people say that "rational-altruistic level of character is an ideal to be approached but, perhaps never to be attained save in myth." They say that such a level of character can be found in deities or angels and not in human beings. Hardly do they know that God has now imparted that education by means of which one is able to become an angel or a deity. Brahma Baba is, therefore, called *Adi dev* because he became the first man-god and angel and he will be the first deity. Dadi Janki, on whom scientific tests were conducted, has also been following in the footsteps of Brahma Baba, Dadi Prakashmani and Dadi Manmohini, the Institution's Chiefs, also have the same rational-altruistic level of character or behaviour wherefore people get vision (*Sākshātkar* or *Pratakshyatā*) from their form or mode of behaviour.

Now, the question is whether a rational-altruistic person, who, as expected, is morally and spiritually high, has mental harmony also and whether he is mentally healthy also? In the case of Dadi Janki, the tests, performed on her in Australia and USA, showed that she had a highly Harmonious Mind. What is meant by 'Harmonious Mind'?

Harmonious Mind

In order to understand clearly the role of harmonisation which is a sure sign of mental health, let us take the analogy of physical health. If, in the body of an individual, all the organs are working in complete isolation from each other and without any mutual co-ordination—the lungs breathing hard irrespective of the heart pumping rapidly and the muscles getting tense in disregard to the man feeling fatigued and wanting to sleep—the person will become physically sick. If the body is to be healthy, each one of its parts and organs has to discharge its individual function in harmony with the other, considering the body to be one functional unit.

The same principle is applicable to human personality also. Various units of personality, such as impulses, motives, attitudes, inborn and acquired traits, inner urges, potentialities, etc. should work in harmony. If different potentialities of man work towards different goals and in

disregard of the rest of the personality-traits, then there will be disharmony, resulting in mental disorders and disturbance, causing ultimately, break down of personality and mental illness. For example, if one mental trait urges the person to earn and amass lot of wealth and the other gives him fear, checking him from investing money and a third trait forces him to lie down lazily in rest and comfort and the fourth gives him rage so that he cannot behave calmly and sweetly with his colleagues, customers or clients, the result will be frustration, caused by non-attainment of goal, mental disturbance due to rage and dissatisfaction with the self and with others and there will be mental conflict and illness. If, on the other hand, his urge for money works in co-ordination with his potentiality for work and also with his rational sense that asks to observe moderation, then his personality for work and also with his rational sense that asks to observe moderation, then his personality will be known as a harmonious and healthy personality. **One, who has harmonious personality, has Peace of Mind. He has no tension and almost no symptoms of mental ill-health.**

Harmony and Adjustment

But, in this connection, it should be understood that mental harmony and co-ordination has not to be merely among one's own urges, impulses, potentialities, rational sense, etc. But with the realities of the situations also. We often observe that when a man seeks to satisfy his needs or fulfil his desires, he is confronted with certain obstacles, thwarting situations, awaiting failures, or resulting disappointments. These are likely to create disturbance in man's mind. *One has, therefore, to adjust his goals or harmonise his urges or to face the situation squarely. This kind of adjustment and harmonisation with the reality and with life's situations also is essential to have mental health and to avoid conflicts, else the person will become maladjusted.*

Harmony of one's personality with the situations and environments, either by having control and mastery over them or by re-adjustment of his goals, his desires and his endeavours, or by developing the trait of satisfaction and contentment in all circumstances, brings peace to man's mind. This kind of harmony results from the integration and co-ordination of one's (1) thinking, (2) feeling and (3) striving with one's potentialities and character-traits. If one thinks of achieving a particular high goal, strives only little does not use his potentialities and has other tendencies pulling in other directions and feels frustrated, he does not have a harmonious Mind or harmonized, properly adjusted personality. Deep thinking would

reveal that Spirituality—Purity—brings both kinds of harmony, for it does not make us over-ambitious so that we think, with a sense of balance, of only such morally approved high goals which we can attain; it removes our laziness and lethargy, so that we strive hard for success; it gives us good tendencies so that we can have sympathy, co-operation, help and good-will of others and can, in the final result, feel satisfaction and, if at all our goals are to be fully achieved or there are failures. Purity keeps us from feeling tense or frustrated and from worrying because we have knowledge of Destiny or Drama. Also Purity gives us the power to persevere, to tolerate and remain calm and balanced. So, Dadi Janki's 'Harmonious Mind' or 'Peaceful Personality', as certified by experimentators in their scientific laboratories, is due to her Spirituality, Purity and proper adjustment, the knowledge of World Drama Philosophy as revealed by Shiv Baba through Brahma Baba.

Wholesome and healthy Personality

But it should be known, in this context, that Harmony is only one aspect of Personality though it is a very important aspect. Another important aspect of Personality Development or Mental Health is: '**Full Expression of one's potentialities**' and native urges. If one's inner urges are repressed and not fully expressed, one does not have a developed, great, magnanimous or royal personality. On the other hand, one has an undeveloped, crippled or deformed personality. The individual who represses his 'drives' and 'urges' becomes weak-willed and has feeble character. He develops psychoneurotic conditions, abnormalities of behaviour and many mental and physical ailments. However, a person who has Spirituality and Purity need not repress his inner urges because he would not have fear. One who is honest, truthful and righteous (*Sach*), he would dance, (*Nach*) with joy as his potentialities need not be much inhibited. He will have wider field of service and people will provide him with great opportunities because he is great, honest, sincere and trustworthy and this will provide him with more and more chances of expression and manifestation of full potentialities and development of total personality. This he will be able to build a wholesome and healthy psycho-physical personality.

For having Healthy Personality or Mental Health, another important thing is to have a **Common End or Unified Goal**. For, the harmonisation of various potentialities into a unified whole is not possible if one does not direct his potentialities towards a Common End or single goal. If there are different aims or purposes which are in conflict with each other,

then harmonisation will not be possible to be achieved. For example, if a person has, on the one hand, the urge to help others to have spiritual elevation and, on the other, wants his own elevation to be higher than the farmer's at any cost, then jealousy will come in place of spirituality and there will be conflict in his mind, resulting in tension, peacelessness and maladjustment with the situation. But if, on the contrary, his unified goal is the greatest well-being of all, submerging his own with that of the society as a whole, he will have good will, good intentions (*Shubha Bhāvanā*) and good wishes (*Shubh Kāmnā*) and he will have no conflict within his own mind or with the persons and the result will be full and fair expression of his own potentialities.

However, there is, before the common man, the problem of choosing the right end or goal. There are some goals or aims which are more capable of drawing out and directing man's potentialities than others. There are some aims which are good, there are others which are not. For example, the end which relates to excessive acquisition of wealth even by foul means or to combat evils in others by criticising them, showing anger or offence at others' faults is undesirable as it engages man's energies not for higher goals and nobler aims. It cannot result in harmonisation of personality. If, on the other hand, one chooses the goal of Godly Service, human welfare and of guiding people to build up character and to have peace, the pursuit of this wider, benign and higher goal will give to man the sense of greatest fulfilment, completeness, harmony and happiness to the personality as a whole.⁸ Since 'The aim of motivating every organism is the urge for completeness, the ideals, aims and purposes in life are essential to mental health so that if the ideal we have set before us has completeness, we will strive for achieving completeness.'⁹ So, it is a point worthy of high **appreciation** that Baba has given to us the goal of attaining deity status, which has completeness and perfection, and has given us the path of Godly Service which helps us to express our potentialities to the maximum. In fact, the whole system of education, consisting of four main subjects, is directed towards achieving completeness or perfection in the form of Jeevn Mukti by attaining perfect mental health in this life, i.e. by fully developing all the potentialities and by harmonising all traits with one another and by directing these to one unified noble goal.

8. Hadfield : *Mental and Psycho-neurosis*, P.4.

9. *Ibid*, P.1

Mental Health and Harmony

It should be easy, with the above background knowledge, to understand why the scientists who tested Dadi Janki in San Francisco, said that their findings had shown that she was healthy. Since Dadi does not have perfect physical health, some Brahma Kumari sisters and Brahma Kumar brothers were surprised at the above pronouncement of the results of tests on her. But if we keep in mind the fact that what the doctors had said was expressed after monitoring her Personality parameters and her brain waves, there will be no cause for surprise because she had no tension of mind or muscle and no neurotic or abnormal symptoms. She had peace and happiness and was relaxed. She had no mental conflict and maladjustment but, had, rather, a harmonious mind. She gave signs of development of most or many of her potentialities, had the unified goal of world welfare, had social and moral efficiency and had a satisfied and contented mind. She was therefore adjudged as a mentally healthy person who had harmonious mind. Further, since she had a healthy and peaceful Mind, her those physical systems which have come to be associated, in the Western Medical Sciences, with the psyche-such as respiration heart beat, blood Lactate, etc. might have, possibly, given to the testor the symptoms of a physically healthy person.

In conclusion, one can say that Spirituality gives to man what is called Purity or sublimity and the latter gives to him harmony and integrated personality. In this sense, Spirituality also is a Science which brings about specific results through specific effort and changes in personality can be tested and measured.

Deviant Behaviour

**—Signs of the end of the old and the birth of the new society—
(A sociological view of history and the present time)**

Every society has a set of norms and certain standards of individual and collective behaviour. Society generally expects individuals and groups, such as the family, and institutions, associations and organisations, to behave according to those norms, values and mores. These values, in course of time, take the form of well-established traditions, customs and conventions. The society, in which individuals and groups naturally, voluntarily and comfortably act according to the highest standards of conduct or highest norms of behaviour, is considered as the best. Such a society is without any social strains, divisions, rifts, clashes and disharmony. On the other hand it is characterised by love, unity and harmony. In this society, which is free from tensions every individual is healthy and happy. Each one has a sense of security and a feeling of belongingness. It is an emotionally integrated society in which life is worth living. Such a society does not know any hatred, jealousy, wars or exploitation. Everyone lives with a sense of fulfilment, for everyone has a chance of full growth, development and self-expression.

A society without deviance and divisiveness

It is this kind of a society which has an ideal, well-knit and cohesive socio-economic and political set-up which all highly cherish. Some call it 'The Golden Age', 'The Utopia'. The aim of various branches of knowledge and all noble human efforts is to re-establish such a society which existed in the earliest times.

Origin of deviant behaviour

As time passed, the society had some such individuals who did not have as much moral and spiritual strength as the preceding generations or as most of their contemporaries had. They had some biological drives and urges which impelled them to adopt a behaviour different or deviant from the previous and the existing high standards. So, their acts were at odds with the conventions and also the current high standards. Their behaviour was contrary to anticipation of others. For example, their attitude

towards the other sex had changed. Such people had a conflict in their human personality. If they curbed their deviant behaviour, they felt frustrated and depressed and, if instead, they acted deviantly, they were considered a different kind of people by the rest of the society. This marked the start of The Copper Age of the world order, when individuals with lesser standard of values and normality began to appear in the society for the first time.

Appearance of various cults, castes, sub-cultures etc.

In the initial stages, the number of such people was small but they drifted and tended to form groups so as to reinforce and to give emotional protection to each other against their critics or against the rest of the society. As the number of such people, who had the common problem of adjustment to conventional society, grew, a sub-cultural group took shape. This group developed a set of rigid behavioural norms of its own, forming a sub-culture. This led to stratification in the society, and the social and cultural divisions thus became permanent, each group trying to give rational explanation to justify its own stand-points. Thus they became a bit alienated from the main society, gave to themselves a new nomenclature and, in course of time, each one developed into a large group. Various cults and castes now began to be formed.

When cultural division became an established fact, certain people took upon themselves to preach to the deviant people a high code of conduct or a high set of norms and values in order that they may still try to rise to higher standards. Or, they preached so that there may not be any further deviation. Thus, a third group, constituted of preachers, moral reformers or writers of codes-of-conduct took shape.

It also happened, as time passed, that some such people as were dissatisfied with the group of the deviant behaviour, began to preach a new set of values and, thus, gradually, the sub-cultures began to multiply. The society now began to grow into a heterogeneous society, constituted of multiple deviant sub-cultures. New religions, new cultural or social groups, new ideologies and beliefs came into existence.

Some people, who were themselves not satisfied with their own moral standards and who experienced inner conflict, developed various forms of worship, prayer, religious rituals, beliefs, confessions, repentance and religious efforts. This gave rise to newer and newer sub-cultural or religious groups. New sects or cults grew even within one same major deviant cultural or religious group.

Stratification also occurred on economic basis. Some were more affluent, others were at the bottom economically and yet others were in between the two. Among these latter also some were a bit below the midline and others a bit above the middle. Each of these four classes now had its own set of norms. The society had now a kind of social or economic hierarchy, each following a little different value-system and a set of social and family norms. Besides different sub-cultural groups, the society had different economic classes and some of the sub-cultural groups were identified with the economic classes. The formation of sub-cultural religious groups and economic classes gave to the deviant behaviour some kind of recognition, social approval or sanction, and thus the evasion of, or the deviation from the established set of norms became institutionalised. It became respectable within that group even though there was criticism of it by other groups. It became even sacred to the group which now adopted this deviant culture.

As population increased and migrations of individuals or groups to other land for rehabilitation, exploration, adventure, resettlement or, for other reasons, took place, there developed new cultural trends, new customs, new ways of living, new food habits and new social norms. Because of geophysical and other factors also new social groups emerged which differed from others in form of dress, features, lingual accents and dialects and even mainstream, developed their own customs and had their own interests. They, sometimes, developed opposing trends in regard to their neighbouring communities.

Increase of clashes in a heterogeneous society

Thus, as time passed, the society became more and more heterogeneous. The norms of one religion, one community or one cultural or sub-cultural group came into conflict with the norms of other and each group having grown up into a big one, sometimes took the form of confrontation with the other and, so, these conflicts took the form of violence. Also, there were invasions of one cultural, religious, social, economic or political group on another, each led by their respective leaders.

The deviation in behaviour, leading to formation of different sub-cultures, or the formation of different sub-cultural, cultural or religious groups, led to more and more social strains. The society now saw more and more tensions, conflicts and violent outbursts or confrontations when one group tried to assert or emphasise its superiority, or made an attempt to dominate, humiliate, displace or eliminate another, or when it tried to expand at the cost of the other, or spread hatred and propagated bitter

criticism of the other. These conflicts took the form of communal riots, political assaults based on diverse religion, culture or ideology, ethnic strife, class-war, linguistic or racial clashes and so on. All these disturbed the social equilibrium greatly.

Development of science and technology created new trends in culture, new life-style and new ways of thinking. The media also added their own powerful influence. The newspapers, magazines, radio, T.V. Vedio, cinema, etc. left their own deep imprint on the masses and the classes. New fashions, new eating styles, new kind of norms came into vogue. These greatly influenced the mores of a people. They gave new turns, twists and trends and created new waves of deviation from, and violations of, the traditional behaviour. This led to more and more disharmony and suffering.

The present stage of society

A stage has now been reached when there are many sets of norms in vogue and yet none of them is clearly binding. There are no coherent traditions. One cannot anticipate one's reactions to a particular situation. There is no fixed or commonly approved set of values. There are flagrant violations of what were previously shared values, mutual understanding and way of doing things. One is now not afraid of social censure or disapproval. Everyone feels free to have his own set of values. The normative structure of the society has utterly degenerated.

At this juncture man does not clearly know what is wrong and what is right. Or, he does not have the will or the power to do the right thing and to observe the right value even in face of pressure. There is acute disjunction between the current norms and the aspired goals or cherished ideals. The capacities of man to act according to the ideals or goals have gone very low. There is break-down in the cultural, social, moral and spiritual norms and values. Each group puts blame on other and each individual censures one group or the other. The economic structure also has got disrupted. There is parallel economy. Law and Order are constantly threatened. Individuals and groups feel insecure and confused. The cultural groups have got disorganised and internally faction-ridden and the social, religious, cultural, economic and political systems are close to collapse. Violence, Corruption, Selfish motives, Dishonesty, Disloyalty, Dissidence, Disruption, Indiscipline, Hooliganism, Barbarism and Disregard of Law and values have an upper hand. The society has high degree of disaffection, divisive tendencies and destructive activity: such as military build-up, arms race and trade, commerce, industry and finance based on weapon-culture. There are clear signs of the society preparing for its own suicide,

extermination. Every man has so much deviated from the religious ideals he professes, from the norms which he wants other to follow, and from the values which he believes are necessary for a society to live as an integrated and peaceful society, that he seems to be pulled by an unseen force towards its final confrontation with others and to kill and be killed by others in this mad attempt. Not only does the nature and number of weapons lead the society to a mutually assured destruction (MAD) but the forces of Nature which also have been aggravated through disruption and pollution, aid and abet the forces of destruction.

Signs of a sad end and a hopeful future

When such a critical point in the World Drama arrives, as has arrived now, it has all the signs of a sad end or great catastrophe ahead but a great misfortune for the mankind is that most people do not clearly foresee this because their minds are clouded by the shadow of their bad acts and their intellects are deluded and blinded by their utter disregard and violation of even ordinary human values.

It is at such a juncture that God, in whom all divine values are personified and who alone is left to re-establish the highest norms which once existed in the earliest times, appears on the world scene. He now motivates and educates individuals and masses to adopt, once again, the highest standards of private and public morality and norms of conduct so that a society, based on highest values, as once existed, comes into being. Those who follow His lead and allow themselves to be guided, reformed and transformed by Him, now have a new kind of deviant behaviour.

New kind of deviation in behaviour

This deviation is now for the individual and social good. Yet, since it appears clearly to be a deviation from the current values, which in fact are rotten to their very core, it is criticised or censured by many initially. Gradually, however, it grows and acquires strength and gains more and more recognition, acceptability and even sanctity. After about two generations, it becomes a great moral force, carrying with it many others. There is greater and greater appreciation for it and the demand for sowing its seeds at other places increases.

This new set of values is universal in nature and has no labels of one single group—religious, social, economic, political or otherwise. Anyone can easily identify himself or herself with these. These values don't require anyone to make very hard sacrifices. They ask a person only to be his own real and natural self and to be close to God and to build up harmony

with other souls and with Nature. This value-system appeals to man's commonsense, is simple and without any ostentations and is not cumbersome. People of all denominations can adopt it. It calls upon all to build up this divine culture.

While this new culture, new set of norms, new life-style and new socio-economic structure takes roots, grows, multiplies and begins to replace the old one, the existing society, which is nothing but a conglomeration of divergent and deviant behavioural patterns, labelled as different religious or different socio-economic or socio-political systems, reaches its final stage of self-destruction through forces sown by itself in the form of nuclear weapons, environmental pollution, overpopulation, etc. This is how 'the old order giveth place to new.

The present state of society

The present state of society is the one in which 'the old is giving place to the new' or, in fact, to that which existed in the earliest times. The signs of the end of the old, i.e. the existing structure which is crumbling under its own weight, due to the cracks developed by its own divisive strains, can clearly be seen in the horizon. The signs of the establishment of the new culture, new society, new set of moral and spiritual values can also be seen if one cares to see. This latter act of re-establishment of the highest standards of behaviour is taking place under the lead of God Himself.

The changes in society are always marked by deviant behaviour. Deviance is now necessary for giving up the rotten culture. Improvements in thoughts have also been observed in history through deviance. Socrates, Galileo had deviance in their beliefs as compared to the old ones. Christ also preached deviance in behaviour. There can be no social transformation without deviance in behaviour. We have now to deviate from the old, Iron-Aged values. We will have to face some criticism from the vested interests but, never mind, we should face these boldly, to re-establish the Golden Age or the Age of the highest norms and standards of behaviour, under the banner raised by God.

Supplementary roles of Science and Spirituality

Science has made more progress during the last 500 years, especially during the last century-and-a-half than in all previous history. In the earlier phase, the work of Copernicus, Galileo, Newton and the philosopher-scientist Descartes, had given to mankind what is now known as “The Mechanistic or The Cartesian World” view. But in the later phase, the concept of Relativity, The Quantum Theory, The Electronic Theory of Matter, the greater understanding of the Genetic code and the neurological, glandular and immunity-systems and many other new findings in the field of Biology, Bio-chemistry, Geology, Astronomy, Cosmology, Marine Sciences, Computer Science, etc. have further influenced man’s outlook and ways of living profoundly and have brought about a great social change.

Change in World View

The theories formulated during the last one-and-a-half century have greatly altered man’s early view of the world and Nature and have replaced the older mechanistic world view with altogether a new one. They have also cleared the society of many cobwebs of superstitions and wrong beliefs and have struck a severe blow to man’s earlier tendency towards blind faith and have given to the society what are called ‘the scientific method’ and ‘the scientific temper’.

We also find that the practical application of scientific knowledge to technology has given mankind almost innumerable benefits in the form of scientific goods and gadgets for use and for growth and development. In fact, there is almost no field which has not benefited from the inventions of science and technology.

Wide gap between two kinds of progress

However, it is now being increasingly realised that, whereas science has so widely expanded man’s horizon of understanding of the forces and processes of Nature, man’s own progress towards better understanding of his own nature, his thought-processes and his emotions has, if any, been only minimal. Thus there is now a much wider gap between his material progress on the one hand and his moral and spiritual progress on the

other hand. We find that though man's capacity to produce foods has increased immensely, his capacity and will to do good to others has not increased even fractionally. Whereas the gadgets to make life convenient and comfortable have increased innumerable, man's solace has not shown any appreciable increase. It is, therefore, pointed out by many that there is now a dire need for a parallel increase in such spiritual knowledge that enlightens man about the identity and the nature of the conscient self and gives a proper view of the place and role of man in the drama of life that is being continuously enacted on the world stage and sublimates and enriches his emotions.

In fact, we find that due to lack of spiritual development, i.e. due to lack of sublimation and enrichment of the emotions of love, kindness, compassion etc., very little benefits of science have reached the multitude of mankind. More than fifty percent of the world population, which is poor by any standards, remains almost deprived of the fruits of science and technology even in so far as the basic necessities of life are concerned. This further strengthens the need for spiritual progress in pace with the scientific progress.

Some plus and minus points of Science

We also find that tremendous progress in almost all fields of science has led man to believe that there is no area of life about which methods used by science cannot produce any information. We can also see that, today, there are millions of people, for whom it has become almost customary to consider anything set forth in the name of science as correct. They also believe that science can provide information about everything and also do nearly everything. At the same time, it is now being much more realised by scientists themselves that science has its own limitations and that there are vast areas yet to be explored. In higher academic circles, one generally hears scientists, philosophers and the intelligentsia refer to Heisenberg's Principle of Uncertainty or Indeterminacy to give expression to their realisation that there is a limit to explore things through Scientific methods, for the very presence of the observer, the act of observation and the introduction of the measuring instruments seems to create ambiguity. Not only that, it is now believed that the nature of certain subatomic particles themselves is such that not all factors about them can be determined simultaneously and that there is some genuine uncertainty inherent in the process of understanding the nature of things through scientific method.

It is also realised now that life at a higher level also cannot be understood with scientific method because for experiment, life at higher level cannot be isolated and controlled without altering that which is to be studied. For example, man cannot be isolated from his social and physical environment for the sake of study.

Seeing the above-mentioned three trends created by Science itself—one represented by the Principle of Uncertainty and the other in the form of people's instant faith in all findings under the name of science and the third in the form of people's lust for material goods and comforts, it is being said that while science has delivered a hard blow to blind faith and superstition of the earlier times, it has given, on the one hand, an attitude of over-confidence and a new kind of blind faith to millions of lay people in its own finding. And on the other hand, it has given to many people the unrealistic attitude of overscepticism and a suspicious and doubting nature. Also, it has given to man a tendency to use more and even more material goods and scientific gadgets so that he has become over-dependent on them and has become too comfort-loving and a bit more materialistic and extrovert. It is, therefore, being felt that there is a need to clean it of superstition, blind faith, and unrealised dogma and can create a healthy balance between Rationality and Faith in human nature. There is need for such Spiritual wisdom that can provide man with means of direct perception of the ultimate truth, and can supplement scientific method for, as has become clear by now, the forces of Matter at the sub-atomic level and also life at the higher level, i.e. things that are beyond the reach of the aided sense-organs cannot be studied by the scientific method.

Supplementary roles of Science and Spirituality

There are certain other serious things being said in this regard, i.e. about, (i) the tools of scientific exploration, (ii) the scope of scientific experiments. In regard to the first, it is said that science is dependent on man's sense-organs and his general intellectual equipments. Though we may increase the range of man's senses with instruments, such as telescope and microscope and we may also aid his intellect with advanced type of computers, we cannot change the nature of his organs or provide him with supernatural ones. So, it is thought that the only alternative left to know the truth at its subtle level is to enhance the qualities of the mind and the intellect so that these can have direct perception or realisation of the abstract or that which lies beyond-far beyond than where even our satellites can go. In other words, one has to have conceptual and experimental understanding of the truth that lies beyond the phenomenal

through the supersensory, supermental, extrasensory or spiritual techniques or through intuition, insight and vision which is of a different kind, class and quality. In fact, we already find many scientists, like Fritjof Capra, talking about the eastern techniques of discovering the ultimate truth and of a kind of parallelism that is there between discoveries made by Science in the West and Spirituality in the East.

It is also being said by those who are wedded to the study of human brain and to abilities of the Mind that science develops the left side of the brain and that there are many brain centres which are, perhaps, atrophied because of disease and that man, at present, is using only a small fraction of the abilities of his mind. Others are pointing out how intuition and insight and imagination have played a significant role even in scientific exploration and research.

About the second, i.e. about the method used by science, it is being said that science used mainly the analytical method and is based on what is called Reductionism and these deprive us of the knowledge of the qualities of the whole which may very often, be different from the qualities of its parts. For example, if we analyse a living organism and study its parts separately, we may be able to understand the functions of each part, yet we cannot understand life which is in the total organism. Thus, it is now realised that the whole has certain qualities which are not found in its parts. It is, therefore, being advocated that the eastern attitude of synthesis or of having a gestalt view, as is found in their spiritual discipline, should supplement the scientific method of analysis or reductionism to understand the whole truth and to have holistic knowledge.

In connection with the scope of science, it is being said that its very approach, methodology and tools of exploration and discovery put limitations on its scope. So, it is thought that even when science has told us with certainty all that it is capable of telling it would still leave some of our most pressing questions unanswered. For example, the method and the instruments used by science do not enable us to understand Mind or Consciousness and yet understanding Consciousness, which is the basic or 'primary reality' on which all other understanding is built up, is very essential, for it is at the back of all observations, experiments, inventions and mechanisations. Moreover, Consciousness has qualities, such as love, compassion, will, etc., which can be studied by a separate approach and through a separate method only which is peculiar to Spirituality. And, already many scientists, such as Sir John Eccles, Schrodinger, Wigner, Lord Sherrington, etc.—Nobel Laureates among them—have said that

study of Consciousness is of primary importance. Some have even said that Science must address itself to its study while others, many medical scientists in particular, have already been working to find evidence for the existence of soul, using objective, rational and statistical methods.

The methods used by science are objective. Scientific findings and statements are open to criticism; they can be tested and verified, and, if found incorrect, can be amended or be replaced by better concepts, more plausible explanations or more accurate formulations. They are not based on individualised or personalised experiences but are universal in their acceptability and application. Under the same conditions, the laws of science have no element of subjectivity or touch of emotionality. Emotions are not involved or reflected in scientific findings.

Spiritual method, on the other hand, is intended to probe that which is beyond the phenomenal, the physical and the manifest. So because of the very nature of the entities it wants to know and to understand, its method is different; it is more subtle and non-physical. In order to understand a spiritual truth, one has to stabilize the self at certain level of consciousness. One has to detach oneself from one's environment and withdraw from the physical consciousness. Anyone who observes the moral laws, or what are called yamas and niyamas and maintains the required conditions, can discover the truth at the experimental level. The personal factor, however best one tries to eliminate it, gets involved in spiritual practices or experiments. This gives a subjective touch to one's findings or experiences and makes qualitative or quantitative difference but, the core of the findings is essentially the same.

True Spirituality also is based on rational beliefs and universal laws. While Religion is based mainly on beliefs to which a religious person has personal attachment and of which a person does not like or relish any criticism, spirituality permits questions about the theoretical foundations of its practice or its applications. It has great scope for rationality and objectivity.

Study of Consciousness or the self

It will be admitted by many, if not by all, that it is no less important to understand the self or consciousness and its qualities because the whole social structure is built on the acceptance by all of the existence of a self-aware or conscient person who, all through life, has unity of being and continuity of experience and seems to have a past and a future. It is also universally accepted that, on the enrichment of the positive qualities and emotions of this conscient person, depend our peaceful co-existence and

the improvement of our interpersonal and international relations.

The understanding of the self is also necessary in order to discover the meaning of life and the purpose of our existence. Science can give us an understanding of the physical laws of Matter but science and its telescopes and microscopes do not enable us to know 'the purpose' of the vast universe. It is the task of spirituality to enlighten us about the latter. Science and Spirituality must, therefore, supplement each other, for the object of both is to discover the truth and there are two separate fields and two separate methods used by them and these should be considered as supplementary rather than antagonistic.

In fact, it has been scientifically tested that spiritual Meditation releases man's mind from Tension and gives him deep experience of peace and also the abilities to concentrate better and think more clearly and to have control over one's thought processes & emotions. It gives a person inner satisfaction, i.e., contentment, and enkindles his intuitive faculty and brings about enhancement of one's personality and the qualities of the head and the heart.

The Question of Human Values and Good Intentions

Further, it is now being increasingly realised that the recent developments in scientific theory and its practical application and the increasing sophistication in its tools has given Science and Technology tremendous power over nature and things and have immensely increased man's power to realise his intentions and his will. But whether he employs these powers for good or for bad purposes, for construction or for destruction and for increasing happiness and stability or misery and struggle depends upon the character of his intentions. For example, the release of atomic energy for nuclear fission by chain reaction and the genetic engineering have tremendous applications depending upon whether these are used for good or for bad purpose. Thus new problems of human values have arisen with the increase in scientific knowledge and technological skill and there is the need for sublimation of intentions and the harmonization of wills and motives in order to achieve the basic conditions for any scientific social order. There is thus the need for giving spiritual orientation to the will, the intentions and the life-style of man.

Very essential to widen the spiritual base

It must be understood that Science is now playing a pivotal role in almost all fields. Gone are the days, when scientists now work in small, private laboratories or at the university for discovery of truth in which

they themselves were interested. The conditions have now greatly changed. The scientists now work for public projects in sophisticated and well-equipped laboratories which have enormous financial outlays and in which the politicians and industrialists are interested for their own respective reasons. Now Science and Technology have, therefore, become a key factor in the power struggle between special interest-groups on the national scenes and between power blocks at the international scene. Scientists are now deeply involved in economic competition, social planning, all fields of engineering, including genetic engineering and in military affairs. The power of Science and Technology to change the world has now increased immensely. So, greater necessity has arisen for their commitment to uphold certain values and to keep in mind certain social objectives, humanitarian perspectives and higher purpose. There is need for Science and Technology to be used in such projects which can benefit the poor and the deprived sections of society and can make the work of the working class more convenient and time-saving and can provide such tools and contrivances as make the work of the under-privileged class more easy, more dignified and less exacting.

Need for Interaction

Scientists have to keep in mind that spirituality is needed for sublimation of emotions and for peace of mind. Spiritualists have to keep in mind that Science is needed for progress. Moreover both the attitudes and approaches are needed for understanding the ultimate truth and for one's personality enhancement.

The Moral, Social and Spiritual dimensions of health

Since ancient times, medical profession has been considered as a noble profession, for its members render a valuable service to mankind by preventing, alleviating, controlling or eliminating disease, pain and suffering. Through the knowledge of the physical body and the laws of health and hygiene, doctors provide patients with measures of great relief and recovery when the former are passing through great physical or mental crises, are facing the worst of physical troubles or mental tensions are fighting for life. So, my compliments to the members of the profession.

However I feel that many members of the medical profession in this era of increasing urbanisation and spread of industrial civilisation and technological culture also face the great pressures of materialism and are hard-pressed for time. Being always in a hurry, and with the object of providing medicine to the largest possible number of patients within the set time-limits, they are now more and more pre-occupied with only the physical well-being of their patients, almost overlooking the changes required in the outlook or personality-trait of the patients. Even though they know that most diseases are psychosomatic in their nature and that the life-style, the personality-traits and the behavioural pattern also of a person play a major role in causing stress or trauma or in aggravating the disease, they, for various reasons, do not or cannot pay adequate attention to the social and moral dimensions of health and disease. Their main attention is on the symptoms and on prescribing suitable medicines. But, if we think deeper, we find that, without controlling, reducing or eliminating the psychic or the behavioural causes, there cannot be any lasting cure of many diseases.

Another serious thing which occurs as a result of moral or social ill-health of a person but which is not given serious attention is that not only does the person himself suffer from its evil on his body but, as a result of his these psychic factors, he causes ill-health to many others also who live with him, work with him or deal with him. For example, a person of irritable nature or one who easily loses his temper or is prone to anxiety, does not only himself suffer from avoidable worry and tension but often causes mental tension to others also. More worse still is the social strife,

family turmoil or upheaval the moral and social ill-health of a person create. Hitler, for example, was socially and morally ill and mentally sick. Most of our present-day problems are due to moral and social ill-health of our citizens, most of them generating a chain-reaction and contributing peacelessness to the total atmosphere.

So, while doctors talk of holistic health, hypertension, psychosomatic diseases, drug addiction or AIDs, we wish the due attention is paid to the turmoil caused by one's moral sickness or social illness in the socio-political or socio-economic atmosphere of the society.

The consequences of moral and social illnesses

The consequences of moral or social ill-health of a person would be tremendously more dangerous if that person rises to a high position in politics, military, trade union, journalism, etc. The Prime Minister or The President of a country who suffers from hypertension, high blood pressure or 'personality-A defects' can cause great social catastrophies. Especially the top political authorities of USA or America can cause an armageddon if they suffer from depression, melancholia and hypertension or are rash in their decisions. Similarly, the chief of an army can lead a nation to a situation of great national catastrophe if he is a person of irritable nature and short temper and takes decisions very casually and without proper reckoning. The editor of a newspapers would indulge in writing such editorials or giving undue prominence of such events as may cause great public agitations or give peacelessness to thousands of readers.

Even an ordinary man would create an atmosphere of peacelessness wherever he goes if he has strong personality-A traits or is mentally, morally or socially sick.

One would not be wrong to say that much of the suffering in the world is due to moral and social sickness. All wars, communal riots, economic exploitation, extremists' activities, political strife and even agitations and strikes are due to moral and social illnesses of various kinds. How many die and how much loss the world suffers because of this kind of illness. One would only be stating the truth, however bitter, that the armies, the police, and the jails show that our society is sick spiritually. And, yet this aspect of health is being ignored or is being less attended to.

Suggestions

I have one or two suggestions in this regard of whatever little worth they may be: —

One of these is that, when the doctors give prescription, let them also

give, along with it, a printed leaflet of suggestions for the improvement of moral and social health or for changes in the behavioural pattern, eating habits and personality-traits. The patient will no doubt take their own time for effecting these improvements or changes yet his attention will be drawn to those changes. As the medicines have an accompanying printed leaflet giving instructions for their use and giving information about the ingredients even so should this printed leaflet, giving instructions about how to have the vitamins of happiness, tranquilisers of peaceful relations, anesthesia of comforting words, antibiotics of ... and sedatives of... and to avoid alcohol, non-vegetarian diet, strong spices, etc. There should be no doubt that these printed words of advice from a doctor will have their effect sooner or later because most patients do heed their advice. The doctors may include the cost of this leaflet in the total cost of the medicines he dispenses or he may give these leaflets out of sympathy and with a feeling of love and service. The instructions should also suggest that Meditation helps a person greatly in healing and in preventing diseases.

The second suggestion that can be offered is that there be a liaison between a physician and an institution such as Brahma Kumaris World Spiritual University whose main concern is to bring about behavioural transformation and to restore moral, social, and spiritual health. Let the members of the medical profession suggest their patients to attend some such training classes which can help them in bringing about the desired changes in their attitudes and life-style.

Meditation as a means of Eliciting Relaxation Response

The meditation practice through which we can elicit the Relaxation Response has eight basic components. These are :

- (1) An easy and comfortable posture.
- (2) Thoughts or consciousness of God as a being-of-light and as the Most Beloved Mother-Father and as the Ocean of Peace, Bliss and Love, and consciousness of the Soul World or Brahmlok as the world of perfect calm.
- (3) Consciousness of self as, originally, a pure and peaceful being-of-light and as an immortal child of Almighty God, the Ocean of love and compassion
- (4) Stabilisation in this awareness of self and God and also in awareness of the Soul World—the world of absolute purity and peace.
- (5) Mental stabilisation in this awareness so as to spread vibrations of purity and peace.
- (6) Use the music, light and incense, etc. as aids for creating the congenial environment.
- (7) Outer and inner Tratak of gaze or vizualisation.
- (8) Repetition of certain affirmations with deep love for, faith in, and understanding and remembrance of God in His various relationships to the self and the world.

Following seems to be the reasons why the meditation, having above components, elicits a Relaxation response:

1. The easy posture

It makes one feel relaxed. It gives one the feeling of being at ease. It prepares the mind for doing something spiritually great. It gives one a feeling of being a seeker or a traveller in this world and of having a spiritual goal. Subconsciously, it makes one have humility.

2. Thought or Consciousness of God

The thoughts or consciousness of God as the Most Beloved Mother-

Father make one feel a sense of belonging to someone really great. One has a sense of security and a faith in divine help. It eliminates fear and anxiety and also ego because one feels that, as compared to God, the Ocean, one's knowledge, power and qualities are a mere trickle.

Consciousness of God as a Being-of-light uplifts one from the feeling of one's gross body and makes him feel light too. It brings about withdrawal from one's physical body, environment and also worldly situations for the time being. This gives a very peaceful and pleasureable or blissful experience. It gives feeling of increased strength and creativity. This has a positive effect on one's muscle-tone which is comparable in some degree to sleep and is, in certain respects better than Shav Asana (the Death Posture) which has been confirmed as a good means to Relaxation.

Furthermore, consciousness of God as an Ocean of Peace, Bliss and Love brings into specific attention these positive qualities and a little stabilisation in this awareness leads one to this divine experience which is much more than a stage of relaxation and is given various names such as 'Spiritual Ecstasy', etc.

Awareness of God as a point-of-light also gives one concentration and eliminates all other thoughts, including all negative thoughts. It is million times better than tranquilisers which have negative effect whereas this has a definite positive effect in changing one's Type-A behaviour and transforming one's negative habits such as the habit of smoking and using alcohol. One feels that one's mental ailments have vanished.

3. Consciousness of self

Consciousness of self as originally pure and peaceful being-of-light and an immortal child of God, who is Almighty, builds up one's self-confidence and gives rise to pure thoughts or strengthens the wish to be a better person. It changes a sinner into a saint and assures one of a bright and happy future not as a mere follower of gurus but as a spiritualised person in link with God.

The awareness of being a soul gives one the consciousness of a new (spiritual) relationships with others. This affirmation, done mentally, reminds one of putting this into practice and of behaving like a child of God who is Kind and Loving.

The consciousness of being a soul gives a feeling of immortality and higher values. It gives one new understanding of the law of karma and results in changing of attitudes and *Sanskāras*.

Overall, this gives man a new vision, a better world-view and a proper foundation for the practice of yoga.

4. Stabilisation in awareness of self

Stabilisation in this awareness of self as an immortal conscient point-of-light, and in sustained awareness of God as a Being who is a point-of-light gives the practice of control of mind, mental concentration abstract thinking and subtle visualisation, spiritual insight and withdrawal from the worldly environment even when one is sitting in a place where there are lot of people and quietude and tranquility even in the face of disturbing factors.

5. The thought of spreading vibrations of Purity and Peace

Mental stabilisation in this awareness so as to spread vibrations of purity and peace gives one the tendency to do silent service to the mankind at large and to the whole natural environment. It rises oneself from the level of doing yoga only for the sake of the self to the stage of doing service to all. It gives one the feeling of a mission. It builds up goodwill towards all and also raises the standard of one's meditational practice, for this attitude opens one's mental channels to God to receive more light, might and peace from Him so as to pass it on to the whole world as a medium.

This attitude of sympathy for and service to the society removes hatred, enmity, fear and jealousy and thus brings for the Relaxation Response.

6. Use of Music and Spiritual songs.

Use of music and spiritual songs awakens one's emotions of deep love for God and gives one's thoughts a channel to reach out to God and have a 'hot line' with Him. Music and songs have scientifically been tested to have influence on one's emotions and in rousing feelings and memories of a specific type. So, songs are external and internal aid to build up the proper mental set. The music and the songs activate the right hemisphere of the brain and the whole limbic system to join the left hemisphere in the effort to have a singleminded devotion to, and loveful concentration on, or deep and heightened awareness of God. This unity of the two hemispheres gives man very deep experience over a long period of time and have extended effect which lasts even when meditation practice is over. The red light serves in two major ways. It serves as a Traffic Control signal for thoughts. As one stops one's vehicle at a crossing

when one sees red light so does one stop the traffic of thoughts and stabilise mind in the self.

Moreover, red light reminds a person to take his mind to Brahmlok where there is golden red light and which is the abode of souls in their incorporeal state of Release. Red light thus reminds a practitioner of his spiritual stage of Release from all negativity, all bondages and all worries, etc. and of his return to *Brahmaloka*—the world where there is perfect calm. Thus it brings about the Relaxation Response.

7. Tratak or Gaze

Various system of meditation use various forms of Tratak or gaze. Some fix their gaze on the flame of a candle. Others focus their eyes for a period on the middle of the eyebrows or on the tip of their nose. The former is called *Bhru-madhyā trātak*. The other is known as *Nāsyagra trātak*; Here, in Brahma Kumaris Institution we do not practise these. On the other hand, we fix our gaze on the open eyes of a Rajyogi, sitting opposite to us, because we believe that eyes are the best means of expression and communication and, so, the eyes of a Rajyoga teacher, who is stabilised in meditation, communicate, in silence, the essence of spirituality.

Moreover, fixing of the gaze has in it the element of calming down the mind or resting the mind. Eye-balls do not move in deep sleep also but they move rapidly in the state of dream. They also move, under control, when one is awake. But in this practice, one voluntarily controls their movement by a gaze thus producing a state of rest.

8. Repetition of Certain affirmations feeling fully

Repetition of certain affirmations with deep understanding and emotion of love leads to stabilisation, realisation and experience. Repetition of thought gives it roots in the mind. It takes the form of lasting impressions. It is easy to recall a thought that has been repeated a number of times because it is now retained in our memory. So, meditation becomes easy after the affirmations have earlier been repeated. When one repeats them after having understood the underlying meanings and with a sense of firm conviction or deep and enlightened faith and also with a deep feeling or emotion, one finds that it works as a lift takes the soul to spiritual heights. It makes the flow of spiritual thoughts natural and easy. One has not to strain oneself to recall a spiritual thought but it comes automatically. Of course, one has not to repeat spiritual thought mechanically and like a parrot but one lets these thoughts come by

themselves; not necessarily in a fixed order nor necessarily in a fixed sequence of sentences or words—as the words that spontaneously come up in the mind out of love for and understanding of God. This makes yoga easy. It becomes like a real *Ajapājap*.

One of the best advantages of this step is that evil thoughts do not enter one's mind and one does not feel easily provoked or agitated. It makes one feel constant peace, contentment and spiritual rest and intoxication. It gives a stage opposite to that of depression, frustration and feeling of being useless, worthless or lonely. Obviously, such a practice of yoga gives one the Relaxation Response.

Above, we have mentioned eight components of Rajyoga Meditation, practised at Brahma Kumaris Institution. Herbert Benson, who first discovered the Relaxation Response and performed tests on meditations, had said that four elements are integral parts of various forms of meditation or Relaxation techniques. These four are :-

1. Quiet Environment

In all systems of meditation practice, a quiet environment, with decreased environmental stimuli, is chosen. One generally uses a place of worship or a place of seclusion and relative calm.

B.K. Rajyoga system also recommends such an environment but it does not consider it to be absolutely necessary, i.e. so necessary as if one would not be able to meditate without it. For a beginner, it would seem to be more or less necessary but an experienced yogi can meditate even at a place where there are distracting factors. He is able to maintain his mental calm by withdrawing from the body and by picturing to mind the atmosphere of the Soul World or Brahmloka. Knowledge of and love for God, and dispassion for the worldly objects, enables one to overcome distractions and to direct one's thought and attention unto God.

In many techniques, the practitioner is instructed to close his eyes from the very beginning, or later in his practice. But, in B.K. technique of Rajyoga, one is asked not only to have open eyes but, preferably, to have an external and internal gaze, for this gives better mental stability and relaxation. Moreover, the meditator is asked to keep his 'third eye' (The eye of spiritual wisdom) open so that he mentally sees a soul in each and every living body and has an eye on the Soul World - the abode where the soul stays in a stage of liberation.

2. Decreased Muscle Tonus

In all the other systems of meditation, the practitioner is asked to sit in a comfortable posture so that minimal muscular work is required. *Shav-Āsan* brings about Relaxation Response mainly due to this factor.

B.K. Rajyoga system also recommends easy and comfortable posture. If one cannot sit because of an ailment or high age, one may even lie down comfortably, keeping the eyes open. It evokes the Relaxation Response not merely by the factor of minimal muscular activity but also by withdrawing from the body. This is done by being aware of the identity of the self as a soul and by practice of consciousness of Incorporeal God.

In B.K. System of Rajyoga, one mentally sits as a soul in Brahmloka. One forgets everything about the body and relatives of the body. This results in the Relaxation Response.

4. Mental Device

Herbert Benson has said that almost all systems of meditation have some mental stimulus. They use a sound, a syllable or a phrase in the form of *Mantra*, silently or audibly, or while having a fixed gaze (*tratak*) on an object (a flame or the centre of some concentric circles or at a place between the eye-brows.) Benson says that the purpose behind this practice seems to be to shift from logical, externally-oriented thought. Benson would not mind whether this sound or syllable has a religious context, such as *Om* has, or whether it is secular, such as the repetition of the word: 'One'. He only emphasises that the word, syllable or sentence, in order to be effective in bringing out this response, should be free from logically oriented thought.

In B.K. system of Rajyoga meditation, the emphasis is on affirmations having spiritual significance. One does not pay attention to the logical validity of that affirmation while one is meditating but, sufficiently before meditation, one has understood the logical or rational validity of that affirmation so that one repeats these affirmation, while in meditation, with strong conviction and deep feelings. These affirmations are now so clearly understood that these naturally come up in one's mind.

4. Passive Attitude

In most systems of meditation, the meditator is told that, if during repetition of a *Mantra* any other thought comes up, it should be disregarded and the meditator should redirect his attention to the repetition of the

Mantra. Moreover, he should not worry about how well he is performing the technique.

The B.K. System of Rajyog also advises a practitioner to disregard the intruding thoughts and not to bother, during the practice, about how much success he gets in having stability. Additionally, the B.K. System suggests that spiritual songs will give a person better stability and would help in warding off the unwanted thoughts. Moreover, love for God can boost one's efforts in the direction of stability and concentration.

However, so far as the behavioural pattern of the practitioner to face situation with determination and strength though with patience, peace and moral sense. It does not encourage passivity in life but rather asks one to maintain a balance.

Moreover, it should be clear from the eight components mentioned earlier that the B.K. system of Rajyoga has many more valuable elements which also evoke the Relaxation Response.

How Man's Desires and Sanskars cause him physical, mental and spiritual sufferings

—A question of Psychology and Spirituality—

A popular proverb says. "As long as there is life, there is hope and there is also some desire." Only a dead body, uninhabited by a soul, is without any desire. So, hope and desire are considered as characteristic signs of life in this world. Man has some aspirations, which he wants to be fulfilled; he has certain goals to be achieved, certain destinations to be reached, certain objectives to be attained and certain ideals to be realised, and it is for this reason that he performs all sorts of actions and thinks of various plans, and those actions and thoughts are, no doubt, a sign of vibrant life.

Unmanageable desires, irresistible attractions and their result

But the trouble starts when the quality of man's desires deteriorates, or when the number of his desires becomes unmanageable, or when man becomes a slave and servitor to his desires.

It has been observed that a man who does not fully realise that the objects of the world are transitory and short-lived and that things are not what they seem, keenly aspires for them. He loves them profoundly and has strong desire to possess them and to have some kind of satisfaction out of them. His desire for certain objects is so strong that he is mad after them, he runs after them and is prepared even to die for them. He is attracted by the colourful outer form or captivating taste of things. Bewitched by their charm, as it were, he pines for them. His love for them takes the form of deep infatuation, an irresistible attraction or a strong and impelling desire to have them, play with them and be, permanently, with them. So, it has rightly been said:

*And so we are mad after wordly things
Bound to earth as without the wings
For us Bliss is a fountain sealed*

*And the realms above are unrevealed
And we drift on lusty thoughts for ever
Contented in our hearts never.*

—J.C.

In order to gratify these multiplying desires, man makes strenuous and tiresome efforts and even loses his sleep. He sees them in his dreams and worries about them during the day unless those objects are attained.

High Waves of Love and Hate

His, this strong force of love or desire may take the form of obsession with sex-lust, fondness for certain articles of food, deep craving for certain articles of dress or foot-wear, craze for articles of exterior or interior decorations, fetish for money and an insatiable thirst for pomp and power or name and fame. If man's these desires are not satisfied, then, he may have jealousy, hatred, anger or wish for taking revenge. So, in short, man's tendencies may broadly be classified under two heads— (1) Love and (2) Hate. The feelings of love and hate are the driving force behind man's all emotions. These cause, in man's mind, increasing waves of thought, which drive him to action. In general terms, these form his proclivities, his grooves for actions, or his Sanskaras, and these determine whether he will lead a happy or miserable life.

Physical and mental ailments because of suppression or over-indulgence

If man, suppresses these desires, they try to find expression covertly, without man being conscious or fully aware of it. If they do not find expression even in a concealed or secretive manner, they affect man's physical and mental health badly. He may have headache, stomachache, backache, pain in the chest, fainting spells, breathlessness, pain in joints, nausea, loss of appetite, pounding of the heart, excessive belching, weakness, heavy feeling after eating, stomach ulcer, etc.,etc. Also he may feel dejected, frustrated, neurotic, etc. If he lets loose the reins of his desires for sex, for delicious dishes, for fashion and for name and fame then, there is no end to it and his thirst for these will never be quenched. He will then have other kinds of diseases, such as insomnia, arthritis, etc.

Most diseases are caused by emotional disturbance or tension

Yet the pity is that most people do not know that these diseases,

and many others, are caused by man's emotions stirred by man's feelings of love or hate. They go from one doctor to another, get electrocardiograms, X-ray, urinalyses, gastric analyses, tests for blood-sugars, etc. and take hormones, tonics, vitamins, drugs and concoctions and elixirs, etc. and the doctors, after all the check-ups and tests, find nothing wrong physically. Then some people go to naturopaths, acupuncture practitioners, even witchcraft and chiropractors and Tantrics, telling them that they have pain in the back or in legs, etc. They do not know that the real trouble lies in their minds because they have either suppressed desires, stirred-up emotions, strong waves of love and hate, and insatiable thirst for things. So while medication can give them immediate and temporary relief and can extricate them from out of situations of grave danger, yet the lasting and real remedy lies in having a mental state, characterised by a feeling of relaxation, ease and freedom from anxiety, worry or tension caused by strong and unfulfilled desires or by emotions of love and hate.

If man does not take to this saner course, he will ever remain a victim of one or the other kind of physical or mental suffering. He will be puppet in the hands of his circumstances and other people. In this context, an example may be given of an English physician, John Hunter, who had a severe heart attack. The attack had nearly killed him. When he recovered, he realised more clearly how emotions affect one's health, while talking to a friend, he said: "My life is in the hands of any rascal who chooses to annoy and tease me." He said this, because he was unable to control his temper. He was swayed by feelings of love and hate. It is recorded about this doctor, that, one day, he could not keep his cool and became angry and dropped dead. His loss of temper had brought on a blood-clot in the wall of his heart. We will explain how the heart can beat fast or cause pounding, or slow down without anything being wrong with the heart physically.

How emotions affect the Heart?

Those who have studied elementary anatomy and physiology would know that there are two nerves of different kinds which go from the heart to the lower part of the brain. These can be seen with the naked eye and can even be picked up with a twitch of fingers. They are like white strings. We may call one of these nerves 'F' ('F' for fast_beating) and the other 'S' ('S' for slow beating').* Now if one touches the 'F'

*In medical parlance, two nerves ('F' and 'S') are well-known.

nerve with battery, a current will go down this nerve and the heart will begin to beat fast and to sprint. If, on the other hand, the 'S' nerve is touched with battery, the heart will slow down and will begin to plod. Thus, one can make a normal heart beat fast or slow without touching it. The same happens because of different kind of emotions. We will explain how it happens---

In the lower part of the brain, where the two nerves 'F' and 'S' end, there is a tissue that can send the current down the 'F' and the 'S' nerve. This fact can be tested by putting two wires on the 'F' and 'S' nerves and connecting these wires to a galvanometer which has a needle which shows an electric current when it passes between the two wires which run from it. It can be shown, by means of this galvanometer, that when a man gets angry, his heart beats fastly; when he is afraid, it slows down for a few moments. **The rate of the heart-beat, in both these cases, has nothing to do with the physical condition of the heart; it solely depends on the man's emotions.** The two nerves, we have referred to above, end in the lower part of the brain or in the sub-cortical regions so that Hypothalamus, the Brainstem, Forebrain or the Prefrontal lobes, which is the brain mechanism for exteriorisation or inhibition of thought and Emotion, can send the current down the 'F' or the 'S' nerve so that the heart begins to beat fast and if the man is afraid, the current goes down the nerve 'S' so that the heart beats slowly.

But the question is what determines whether the current should go down by way of the 'Anger nerve' (F) or the 'Fear nerve' (S)? In order to understand the answer to this question, let us see what happens in the case of an electric current. *We read in books on Physics, in chapter on Electricity that electric current follows the path of least resistance. The same happens with man's emotions. If a person is irritable and aggressive, his 'anger channel' has a 'lower resistance'. Thus, in spiritual parlance, it depends upon man's Sanskaras, formed in the early part of his present life and also in his previous lives. Whether he is of fighting, aggressive and active or of timid and passive nature will determine which nerve the current will pass down to the heart. If his nature is such that he can maintain equanimity, he will be able to store his energy in the brain while things are happening. He will take care of the situation by maintaining equipoise while realising, at the same time, the gravity or the nature of the situation.*

How Emotions affect Blood Pressure?

What has been said about quickening and slowing or fainting of the

heart, applies also to the rise and fall of blood pressure which can cause bounding situation or fainting fit, for there are similar nerves which affect the blood pressure. One can demonstrate that, by sending electric current along one of these nerves, the blood pressure goes up and, by sending the current along another, the blood-pressure goes down. The fall in blood-pressure causes fainting spell.

How emotional tension causes stomach ulcer and other stomach troubles?

A similar story relates to stomach troubles such as an 'ulcer' or 'heavy stomach'. There are two kinds of nerves, going from the lower part of the brain to the stomach also. Let us call one of these nerves as 'E' (E for Expansion) and the other 'S' (S for shrinking). When a person gets angry, the current goes down the nerve 'E' to the stomach so that the blood vessels in the wall of the stomach expand and soak up blood like a sponge and the stomach looks red and, if on the other hand, the person is afraid the current goes down the nerve 'S', the blood vessels in the wall of the stomach Shrink and squeeze most of the blood out so that the stomach now looks pale. Though a man cannot see and a layman does not know that his stomach is red, he feels his stomach heavy because, as a sponge becomes heavy when it is soaked in water, even so the stomach becomes heavy when blood vessels in its wall expand and are full with blood.

When a man has constant fear, anxiety or worry and the current goes down the nerve 'S' and the blood vessels contract, then one consequence of this is that nerve-current slows the function of the stomach so that it now squeezes less efficiently than usual and takes longer to digest food, which lies raw in the stomach and begins to ferment. This causes loss of appetite and belching because not only has it begun to ferment or 'putrify' but also because no room has been made for the next meal which the man takes at the routine time.

If the current goes down the 'S' nerve, the digestive juices may become too powerful and burning. If, at the same time, stomach wall are congested and soggy, then it may so happen that the stomach will digest a part of its own self. This may cause him stomach ulcer.

So, it can be realised how gravely our emotions affect our physical organs! If a man has had unrealised desires, and pent-up tension over a long period, whether he be conscious of it or not, a little part of the stomach will be affected by excessive digestive juices. But if he maintains

an attitude of contentment, satisfaction and fulfillment, he will not normally have such stomach-troubles. He will neither have red, soggy and overtly acidic stomach nor will he have a pale one, but he will have a nice, healthy, pink one.

Headaches

Emotions do not only cause heart and stomach ailments but also troubles like headache. How do emotions cause headaches? We can study this by means of a spinal cord tap. In a spinal tap, a lumbar is punctured; a needle is put into the spinal in the back and some of the fluid, which surrounds the brain and the spinal cord and is like mineral water, is drawn out for study. This fluid, acts as a cushion and as a nourishment for the nervous system. As the pressure of air in the atmosphere is measured by means of a barometer which shows the normal atmospheric pressure about 30 inches or 760 millimeters, the pressure of the fluid in the spinal column is measured by means of manometer which generally shows the fluid rise at about 5 inches or 120 mm. in the glass measuring tube when the needle inserted into a person's spinal column. This will be observed in any person who has suppressed desires and pent up feelings and emotions, but is, at the moment, lying relaxed in his bed. This fluid-pressure in the spinal column is also the pressure of the fluid as it surrounds the brain inside the bony skull.

If we now ask this person some simple questions of Mathematics or History, etc., which do not stir up his emotions, and, at the same time, we observe the water-level in the glass tube of the needle, we will find that there is almost no rise or fall. Thus, thinking processes, as such, hardly change the pressure in the brain. But, if we ask this same person a question which bestirs some emotions and makes him feel angry or highly embarrassed or deeply ashamed or pricked, there will first be a brief pause which signifies thinking what answer he should give, and, then, as we watch, we find the pressure rises up to 140,160,180 or 200 mm. After the prickly or provocative question has been answered and the topic has been changed to a lighter one, the pressure would begin to register a fall again or, if the person is still having that stirred emotion, the pressure may even stay for sometime.

We, thus, see that emotional disturbances can increase pressure of the fluid around the brain. If this increase stays for sometime, the contents of the skull will be squeezed by the fluid and a headache may result. So, we can observe without naked eyes how emotions might cause headache. But this does not mean that headache is always due to the emotional

factor, it may be due to other factors as well.

We can similarly explain how back-pains and arthritis also are caused by our suppressed and unfulfilled desires, cravings, longings, and wishes and by our hidden or manifest waves of love and hate emotions. A very long list of diseases caused by emotional turmoil can be compiled.

What we wanted to point out by giving this physiological or clinical explanation of the effect of emotions was that we should take care that our attitude to the world and to the events is right and proper, for if it is not, then, we will have to suffer mentally from emotional turmoil and physically from psychosomatic diseases. In fact, there is no disease which does not have a mental factor, affecting its aggravation or cure, directly or indirectly. There is, therefore, need for keeping our Mind healthy and happy.

Maintaining Equilibrium of Mind

But the question is how can we keep our Mind free from suppressed desires, pent-up feelings and stirred-up emotions when desires are natural to man and when waves of love and hate seem to be a routine occurring with all men and women? Let us see how our outlook, our philosophy of life and our attitude to events can give us mental health and freedom from the disease-causing factors, which the psychoanalysts call *Libido*, *Id* or *Mortido*, and which in spiritual parlance, are known as *Kāma* (Sex-lust, including suppressed feelings), *Krodha* (Anger), *Moha* (Attachment), *Bhay* (Fear), etc., or various kinds of Attractions (*Rāga*) and Repulsions (*Dweshā*), etc.

If we ponder deeply over the nature of the world, we will come to the conclusion that it is ephemeral. The objects of this world are short-lived and pleasures one gets from them are evanescent. Things are in a state of flux; everything in this universe is in a state of transition. There is nothing which is static, changeless or lasting. The scientists also say that every object is constantly changing and moving. The stars are moving, galaxies are moving and the planets also are moving. Even the sub-atomic particles, the electrons, etc. are moving. The object we observed yesterday is not the same today; it has moved, changed, grown old and has deteriorated or is on the road to degeneration. Why do we then run after these objects of Matter which themselves are running at a tremendous speed? Why do we hanker after them when they are hollow within and are degenerating, splitting up and fragmenting? Even proton, which was previously assumed to be everlasting, has now been found to be gradually disintegrating. Even solids are not solids because they have empty spaces

within their particles. Even moon which seems to be beautiful and bright is made of silicon etc. and is a reflector, having no light of its own! Even the most beautiful of faces, seen under a microscope would look highly porous and very ugly but its real nature is hidden to human eyes. So things are not what they seem. Even the tastiest of dishes are an anathema to another person which shows that the taste does not lie in the eatable but in the mind of the person. It is, therefore, mere madness if one runs after material things. "What does a man gain by gaining the whole world if he loses his own soul?" - Thus sayeth the Bible.

Philosophy of Life

The proper philosophy of life would, therefore, be to use things so as to fulfil one's needs but not to be mad after them, for the desires will multiply. If we fulfil our daily need and do not have greed, we will certainly have neither to suppress our desires nor give them a loose rope.

Secondly, let us understand that all rewards and punishments or pleasures and pains that come to us are the result of our own actions. Let us, therefore, neither be angry nor have fear. Let us only improve the quality of our actions. Let us give up negative thinking and have positive qualities, for this is the real path to happiness and health.

Thirdly, let us have that education, training and practice which can enable us to change our old habits, our proclivities, tendencies and hardened traits. This kind of education in Spiritual Knowledge and Meditation is the real cure for our mental and physical ailments for a lasting period because, as has been explained, our habits and emotions affect our health enormously.

Besides this let us understand that thoughts, emotions, desires, etc. are not physical entities. They are metaphysical entities. They emanate from the soul which is their seat. The soul abides in the hypothalamus to where the various nerves, mentioned earlier, go from heart or stomach, etc. The soul does not dwell in the heart as some religions say, for we have seen that the racing up or slowing down and fainting spell of heart depends upon thought and emotional current from the lower part of the brain of the hypothalamus. If we culture our soul so that it has positive *sanskāras*, free from negativity (impurities), and full of divinity, we will really be healthy and happy.

Spirituality helps man through positive thinking

In recent times, much has been said in written or spoken words about the efficiency of Positive Thinking and Meditation in prevention and management or control of cancer, peptic ulcer, coronary heart diseases, blood pressure, etc. Meditation and Positive Thinking also helps persons who have 'Type A personality' to have relaxation and to be the stress-free. Let us explain briefly what we mean by type A personality and by stress, Hypertension, High blood pressure and how cause coronary heart diseases, etc.

It has been found that persons who, by nature are restless and impatient, are more prone to coronary heart diseases and to arteriosclerosis, atherosclerosis and Hypertension leading to Aneurysms. Their restlessness gives their behaviour the features of aggressiveness, abruptness of speech and gesture and a tendency of hostility. Their restlessness may be due to anxiety or a spirit of competitiveness. Because of competitiveness, they are in a great hurry to out do others and to meet deadlines. They have a great sense of time-urgency and think with great sensitivity. Thus, they are constantly under stress. Such people are classified as people with Type A behaviour pattern.

Emotional and social factors also have indicated association with coronary Heart Diseases. Sustained over-stimulation of the Central nervous system, depression, sleep disturbance, prolonged anxiety, life-dissatisfaction, status, incorgruity, social deprivation, etc. have been identified as determinants of vulnerability. A high sodium content in diet can produce hypertension. Fat-saturated diet, and common beverages also contribute to hypertension and can damage myocardium and make it more irritable and thus increase the risk of coronary attacks.

Stress, Hypertension and Blood Pressure

In this connection it should be known that, normally, it is parasympathetic system which controls the functioning of our internal organs. But when we are under Stress, it is the sympathetic nerves that take over. Let us see how it happens.

As soon as a person faces a situation of mental or physical stress—

hatred, fear or rage which necessitate fight or flight responses. Cerebral cortex senses that Stress and sends impulses to the hypothalamus which, in turn, passes them to the pituitary. The pituitary secretes more or less quantities of all the hormones. These influence the medulla (inner core) of the Adrenal glands which releases two hormones, namely adranaline (epinephrine) and nonadrenaline (nonepinephrine) in the blood stream. These hormones prepare the body for the fight or flight response by releasing glucose—the source of energy. They constrict capillaries in the skin so that it looks pale and the blood contained in them is diverted to the muscles and the internal organs. The stomach stops the work of digestion of food as that is not immediately necessary. Heart rate increases. The arteries constrict and as a result blood-pressure rises. Clotting time of the blood is lessened.

The body, naturally, cannot remain geared in such a situation for long, otherwise it would exhaust itself. So, after a while, the impulses from the hypothalamus now stimulate the pituitary to release another hormone called ACTH (Adrena-corticotropic hormone). This hormone acts upon the cortex (outer ring) of the Adrenals which produce its hormones and release these to the blood, the job of these latter hormones is to lower the raised blood-pressure by dilating the blood vessels and to produce more sugar from the fat and the proteins already in the body.

Now it can be understood that the adrenals have a limit to their capacity to prepare the body again and again for a stressful situation and to restore it back to its normal state. If stimulated too often and for longer periods, the changes brought about in the stomach-become more or less a regular feature of the body. This leads to different diseases like high blood-pressure, strain on the heart or stomach ulcers. If we want our adrenals to work efficiently, we need to provide them enough time for constructive rest or relaxation. It means that we should not let stimulate too often the cerebral cortex, the hypothalamus, the pituitary and the adrenals. There is the necessity of the Relaxed Response and, in order to elicit response, the need for positive thinking is there, so that there may be no Stress and high blood-pressure.

High blood pressure

What is high blood-pressure? We should know that blood-pressure is the pressure exerted by the blood against the walls of the arteries through which it flows. Each time when the heart contract and pumps out blood into the arteries, the blood-pressure is high. The reading at this time is called systolic, for Systole means heart-contraction. Each time when the

heart is relaxing after having contracted, its pressure reading is lower and is called diastolic, for diastole means heart-relaxation. Majority of the people have 120 systolic and 80 diastolic blood-pressure readings.

Blood-pressure varies from time to time. It falls temporarily during sleep and rises during activity or excitement. Various factors have their effect on the blood-pressure. Stimuli from the cerebral cortex to hypothalamus and from there to pituitary and other hormonal glands of the body have great effect on blood-pressure. The kidneys also influence it by releasing or accumulating a variety of secretions, as for example, renin. These facts control the relaxation or contraction of the smaller blood vessels, the arterioles. If the blood vessels relax readily, the blood pumped out by the heart can be accommodated in the vessels easily without raising the blood -pressures . But if the blood-vessels do not relax easily, when the blood is pumped into them by the heart, the pressure in the blood vessels rises and remains so even in diastole. The lack of relaxation of blood vessels increases the blood-pressure over a long period of time.

If the blood vessels do not relax to receive the blood from the heart, the heart has to work harder against the resistance. This strains the heart, so that it ultimately fails to perform its function. High blood-pressure is also known to accelerate the process of atherosclerosis of the blood vessels resulting in narrowing of the blood capillaries. This makes the coronary arteries of the heart, blood vessels in the brain, capillary network in the kidneys specially vulnerable. Hence there is the need of eliciting the relaxation Response.

What is Relaxation Response?

We have mentioned above 'the fight-or-flight response.' It was W.B. Cannon, Professor of Physiology at Harvard, who, in 1940, gave this name to this particular physiological behaviour under stress. Earlier, Dr. Hans Selye, who won a Nobel Prize for research on stress, had given these successive series of responses as: (i) Alarm Reaction, (ii) Stage of Resistance, and (iii) Stage of Exhaustion. Some like to call it: 'The Emergency Response.'

Medical researches reveal that there is another response which is the opposite of the 'Emergency Response' or 'Fight-or-Flight Response.' Dr. R.K. Hess, Nobel Laureate of Physiology, who first discovered this, called it Trophotropic Response. When Dr. Hess electrically stimulated specific nuclei in the hypothalamus via implanted electrodes, there were EEG changes and there were discrete behavioural responses. In the

early 1970's Dr. Herbert Benson, Associate Professor of clinical medicine and Director of the Thorndike Institute for Cardiovascular Research at Harvard Medical Centre, discovered protothropic-type response in men and women who meditated. He termed it as **The Relaxation Response**. The EEG reading of meditation who evince this response show high percentage of Alpha brain waves. This response also brings about reduced blood-pressure, low metabolic rate, increased skin resistance, decreased breathing rate and pupil-constriction. Later researches in this field have shown that this **Relaxation Response** is the psycho-physiologic opposite of the **Emergency Response or Fight-or-Flight Response**. Now meditation and yogic way of life elicits the Relaxation response which is opposite to this will be explained in the 2nd part of this article.

It appears to be integrated hypothalamic response which results in generalised decreased sympathetic nervous system activity and, perhaps, also increased parasympathetic activity.

It would be of advantage to know, in this connection, that this is a response from the trophotropic zone. This zone is located in the area of the anterior hypothalamus. It extends upto the pre-optic areas, septum and inferior lateral thalamus. Hess had described it as the protective mechanism against stress. Herbert Benson and others have emphasised that this response is the opposite of the ergotropic reactions which are oriented towards increased oxidative metabolism and utilisation of energy. The ergotropic zone extends from the anterior mid-brain towards the hypothalamus. When that zone is electrically stimulated, it produces dilation of the pupils, increased blood-pressure, increased respiratory rate and increased motor excitability. The whole zone makes a group response mediated by the sympathetic nervous system.

It should be known in this connection, that according to spiritual knowledge, the soul is located in this region. The non-physical, positive thoughts and Meditation bring out the positive response. Thus spirituality helps man in having peace and relaxation through Meditation.

Positive Thinking and Relaxation Response

In the preceding pages it was explained that the psycho-physiological response which is opposite to the Emergency Response or Fight-or-Flight Response is known as Relaxation Response. It was also explained that when a person makes Relaxation Response, his breathing rate; blood-pressure and metabolic rate decrease and his skin-resistance increases, and his EEG reading show high percentage of Alpha brain-waves. In this state, one has decreased activity of sympathetic nervous system and, perhaps, increased para-sympathetic activity. In this response, which is the integrated or group response of hypothalamus, pituitary, para-sympathetic nervous system and Adrenal glands, there is no increase in oxidative metabolism or utilisation of energy. Also there is no such production of norephine-phrine at the Adrenal Medulla as one finds in the case of the Emergency or Stress Response. Now, we will show how Positive thinking elicits this response, i.e. the Relaxation Response.

Eight main components of Positive Thinking

It should be known that Positive Thinking has eight main components. People often talk of Positive Thinking without clearly knowing these components and how these eight result in Relaxation Response. They also do not know that if a person misses even one of these eight components, his response to a particular situation will have comparatively less relaxation because of that missing factor. These eight components are: (1) Positive Beliefs (2) Positive Attitudes (3) Positive Values (4) Positive Psychodynamics (5) Positive Culture, Positive Daily routine or Positive Norms (6) Positive Memories (7) Positive Judgement and (8) Positive Method of Relaxation. We will now explain what each one of these is:

(1 & 2) Positive Beliefs and Positive Attitudes

Each one of us has acquired some beliefs either by reading some books or by listening to some talks or by any other method, such as by our own analytical thinking or intuition. There is no man who has absolutely no belief—right or wrong, positive or negative. Each one of our beliefs, whatever it be, gives us a certain attitude and a particular

outlook, singly or in combination with other beliefs. It is our these attitudes and outlook which make a situation appear to us as it does.

Why one person feels tense whereas another feels relaxed in the face of the same situation is because of the difference in the attitudes of the two persons and these attitudes, in turn, are determined by our beliefs. Thus our beliefs—religious, social, political, etc. are very important because our attitudes, our behavioural response and our state of being or the nature of our consciousness, depends initially and basically on our beliefs and it is this which gives us a good or a bad feeling. So, if we wish that the day-to-day situation in our life should not evoke stress-response, we have to have such beliefs as do not give us an attitude of aggression, hostility, anxiety, hatred, and anger, i.e. they make us feel relaxed. Such beliefs are called 'Positive Beliefs'. Someone has said that you may not be able to change certain events but you can certainly change your attitudes. But, our attitudes, as we have already pointed out, are determined by our beliefs. So we should have positive beliefs in order to have the Relaxation Response in order to have good physical, social, moral and spiritual health and healthy feeling.

We now give here some examples of how our beliefs give us corresponding attitudes and also corresponding state-of-being:

Negative Belief	Attitudes & Outlook	State-of-being
1. All men are always selfish. There is no man without any desires or ambitions. So there is nothing wrong in being ambitious or in trying one's self-interest for desires. One who does not work for his own self-interest, lags behind or is pushed aside; he is of weak intellect or is immature. Even all spiritual discourses cannot remove selfishness from man.	1. A person with such a belief always looks at others as beings who are selfish to their very core. His attitude shows that he is always trying to find a way how his own desires or motives can be realised. Considering desires and selfishness as only natural, he has the attitude of pushing his way through the multitude, caring less for others or for the fate of the society.	1. He is ambitious, competitive and aggressive. If his desires are not fulfilled, he feels depressed, frustrated and agitated. If he sees that another person's desires are better fulfilled, he becomes jealous of the latter and sees him as his rival. He begins to hate him or becomes worried as to how to push ahead of him. He is thus in a state of stress.

2. Man has descended from the Ape and because of this ancestral background, it is natural for him to have some animalistic tendencies. With evolutionary history forming his background, it is only natural for him to feel alarmed at even a small sign of risk even as he became alarmed and ready for aggression during his earlier stages of evolution at the slightest signs of predators. Man is no doubt an improvement on Ape but Ape is still there in man. Language, Education and Social environment have changed this two-handed Ape but his animalistic genetic inheritance cannot be removed.
2. This belief makes man look at the world as a constant struggle for survival where use of might and aggressiveness, and even cunningness, are necessary parts of the game of life. This also gives him an outlook that justifies sex-lust, anger and violence and also that man may kill other animals for his food. A person with this belief will look at many things from the security point-of-view and will be inclined to have and to use weapons. His outlook on man as 'a being' who has something of animal in him' makes it difficult for him to believe that man can become divine in one life. He, therefore, looks on other man as 'Social or Political animals'.
2. A man with this belief has a spirit of combativeness. He is in a state of suspicion and agnosticism. He feels it hard to repose faith or trust in others. He is not only body-conscious but is also animal-conscious. He is on the borderline between peace and peacelessness. He takes little or no interest in spiritual themes and finds it difficult to think of the Divine or the Supermundane. He feels no hesitation or shame in saying that his early ancestors were Apes and he considers some impulsive or instinctive part of his behaviour as natural.
3. No one is perfect. If we have erred, it is nothing very unusual; everyone errs. There is nothing wrong in telling a man the errors he commits. We must be aware and make others aware of
3. One who has this belief, will have the attitude of constantly looking at the faults of others and thus feeling false satisfaction. He will indulge in conscious or unconscious justification for his
3. It will be a state-of-being in which man is conscious of others' faults and shortcomings. He will not be at peace with himself and with others. He will be easily irritable and will always be

the dark side of man. In so doing, there is no question of regard or proprietary involved; the only question involved is of calling an axe.

On the other hand, no one can point his finger at us because, in that case, three fingers would already be pointing at him.

own faults and shortcomings by pointing out the shortcomings of others. He will have the outlook of criticising others to show that they are lesser beings than what they are generally thought to be. This attitude will make him talk ill of others and to pick holes in others and to keep fretting, fuming and sulking. He will feel pseudo-pleasure in caricaturing and castigating. His attitude will thus be of irreverent or harsh criticism of others and of self-righteousness.

uneasy. Dissatisfaction with and criticism of others will be his constant traits. While he will allow no check on his own habit of lampooning others. He will thus be ready for a wordy duel and battle of arguments and will find it hard to relax.

The above makes it clear that the Negative Beliefs give man the attitude of Selfishness, Competitiveness and Aggressiveness and, often, of depression and anxiety.

Positive Beliefs

1. Almost every man has a human element in him. Almost everyone has at least a small bit of humanity or human sense which can be developed. All men are not always selfish. Some men renounce for the welfare of others; some have enlightened self-inter-

Positive Attitudes & Outlook

1. A person who has this belief will not look upon all human beings as always selfish or utterly selfish. He will have either the attitude of guarded caution or of guarded faith in human goodness. He will himself have the attitude of being kind, consider-

Positive state-of-being

1. The state-of-being of such a person will be characterized by sympathy, honesty, help and fellow-feeling. He will not be on the verge of being aggressive. His mind will not be uneasy due to so many unfulfilled ambitions but will be at rest, for he will not be

est and, of course, many in the Kaliyuga, are selfish or have narrow interest but they can be transformed, for man's original nature was of love, faith, and co-operation.

ate, loving and polite. He will have the attitude of making small or big sacrifices for the greater good of mankind when and where necessary. His outlook will be broad, friendly and co-operative.

jealous but happy to see others also progressing. His will, therefore, be a relaxed state-of-being.

2. Man has descended from his original divine or viceless state. By making right effort, he can become divine again, for he has the divine potentialities in him. Presently, we find many inhuman or low qualities in man because, gradually, man has been losing his touch with the spiritual reality and has been guided only by the materialistic considerations. The divine element, therefore, now lies dormant and has to be awakened. Even if we keep aside the above beliefs, we must know that our own welfare lies in progressing towards the divine or the sublime.
2. This belief will give him the attitude of looking at others as those who, once upon a time, were divine. This will give him a positive outlook. His attitude towards others will be of happy co-existence and his outlook on the world will be as a place where one has to develop divine qualities. His outlook will be of an optimist who thinks that man can become divine and that the coming Age will be the Age of the Divine Man. His own attitude will, therefore, be of a person at least a bit higher than of a common man, e.g. of a man who is making efforts to become divine. His attitude will be of hope rather than despair.
2. A man with this belief will not be cunning, combative or restless but co-operative calm and peace-loving. He will not look to the animal in man but to the divinity in man. Even if the vulgarity in a man is clearly manifest, his own state-of-being will be characterized by a sense of pardon or mercy rather than by hate, for he would wish that all attain their original divine stage. His stage of being will thus be of relative calm rather than of turbulence. It will have orientation towards being divine, non-violent and peaceful.

3. Once upon a time all were in their respective stage of perfection but now no one is perfect. If one now errs, we should have sympathy for him and should, as a friend, help him towards perfection. Also we should look at others' good points too; we should inspire and encourage others by mentioning their good points.
- If someone mentions our shortcomings, we should take him as our friend because he has drawn our attention to our weaknesses which we should remove. We should not hate him or consider him as our enemy.
3. A person with this belief will look at the good points in others and will see how he too can improve himself. If a shortcoming of another person comes to his notice, he will peep into his own mind and see if he too has that shortcoming so that it be removed. His attitude will thus be of a person who is out to acquire virtue.
- His attitude will not be of finding faults and of slandering others but of helping them to regain their higher stage. He will not hate that person who mentions his shortcomings but will rather direct his energy and efforts at correcting himself.
3. Such a person will be happy with himself and with others and will enjoy all situations considering each one of these as a chance for self-improvement. His state of being will not be characterized by any prejudices because he does not notice faults or bad points in others on the other hand, his innocence, his good wishes and his habit to see good points in others will make him feel light and relaxed. He will thus be friendly and easy.

From the above, it should be clear that the Positive Beliefs give man a friendly attitude. They do not make his mind sick nor do they make him feel disturbed as the Negative Beliefs make him feel. They make him feel light.

Positive Beliefs

1. Each one of us is a soul-an eternal, immortal and conscient being. God is our Loving, Kind,

Positive Attitudes

1. A person with this belief and value-base, will always think over the moral validity of a response and will try

Negative Belief

1. The soul, as a spiritual or metaphysical beings has no existence nor has God any existence. With

Compassionate and Almighty Mother-Father. As His Children, we are all brothers. God helps those who help themselves. God is infallible and is the sincerest Friend. All moral laws, in order to be valid must have their sanction from God.

As good and obedient children of God, we should also be loving and kind. We should act according to the commandments of the infallible God.

to do only morally sound actions. His attitude, therefore, will be of a person who does not intend to cause sufferings to anyone or who does not intend to hurt others' feelings. His outlook will be of a peace-loving person. He will treat others as members of one great family of mankind and thus maintain social harmony.

the death of the body, everything is over. To think of God's guidance and help is to deceive ourselves.

2. We should give up vice and acquire virtues. We must remember that Virtue is its own reward. We must not imitate a vicious person thinking that he is making progress and, therefore, it will be good to follow him. One day, vice will certainly lead to grievous fall. Also, vices can never bring peace. We must have higher principles and nobler goals. We must value virtues as wealth. We must not yield to
2. Such a person will have virtues uppermost in his mind and, therefore, his attitude will be of harmony, reconciliation, amity, amiability, amicability, broad-mindedness and compassion. His outlook will be of a person who tries to adjust and to make life peaceful. He will have attitude of non-violence, non-injury and of service and concord. This will ease even tense situations.
2. There is nothing good or bad; only thinking makes it so. Might is right and only wealth is virtue. The virtuous people suffer. The vicious emerge successful. Therefore, one should adopt all means to have victory and success. One need not take virtue seriously and one may make use of negative qualities if they help solve a problem. After all man is man and it is futile to attempt to be divine, for the twain

- temptations and pressures and must be prepared to pass tests with faith in God and goodness.
3. The law of *Karma* is inviolable. Everyone has to reap the result of one's karma in this or the next life. *Karma* leaves some *Samskaras* behind. We must, therefore, do righteous *Karma*. There is a clear-cut difference between a good and a bad *Karma* or a virtuous and a vicious action. When we are conscious of our identity as a soul and have a loveful mental link with God, and consider all human beings as our brothers, then our mental and moral state is such that our actions are righteous because they are not vitiated by the six main and wellknown evils which are caused by body-consciousness.
 4. Real happiness lies in life of simplicity and self-control. We should, therefore, have control over our senses and mind. We must not be slaves to
 3. A person who really and strongly believes in the Law of *Karma* and has also knowledge of the method of self-transformation, will try to change rather than to avenge; he will make efforts to become complete rather than to complain. He will endeavour to have control over his own self rather than try to control others. His attitude, therefore, will be of 'being good and doing good' and this will give him sweetness of tongue and behaviour which will endear him to others and make all feel easy with him.
 4. The attitude of such a person will be of restraint. He will not be impulsive. His outlook will be of a balance of love and law. His mind
 3. There is no such thing as the Law of *Karma*. No one can prove that the law of *Karma* is universally operative. Various religions and systems of ethics differ as to what is right and what is wrong. Let's, therefore, not bother too much about *Karma*. One cannot say for certain that the sufferings of a person are because of his past *Karma*.
 4. The whole world is for our enjoyment. So, we must have sense-pleasures. Life is short; we must not, therefore, lag behind in enjoying
- shall not meet. Let us stick to the wisdom and the folly of being a man.

senses and sense-objects. Life is short; we must keep ourselves fit by observance of laws and also regularity.

will not be scattered but will be calm and collected because his attitude is of easy and voluntary control rather than of indiscipline.

material things. We must not think such of the laws but be easy go-merry.

We will now explain how Negative Beliefs give Negative Values and how the latter, in turn, give Negative Attitude, Outlook and Behaviour.

Corresponding Values

1. Physical existence is all that matters. One should do anything to survive. Survival value is the foremost value. There are no spiritual values. Nothing but your own money and physical strength can help you.
2. There is nothing which has intrinsic virtue. Virtue lies only in gaining and in possessing. One who gains money, political power, high social position, etc. is considered as virtuous. Therefore, material values are the only values. Even what are called spiritual values require the help and sustenance from the material and the physical. It would, therefore, be proper to consider wealth, status and power as the values or virtues.
3. There are no fixed values. Values are only created. So, one need not be bound by any moral or ethical principles. One must judge every situation and apply his own common sense. Only the weak asks others to observe values; what the brave peo-

Corresponding Attitude

1. A person with this belief and these values will have ultra materialistic attitude and body-conscious outlook. He will consider attainment of material comforts as the goal of his life. He will look on Money as God.
2. One who has this belief and only material values, considers a wealthy and a powerful man as his hero. He looks on others without much wealth, even though they be men of high character, as of lower grade. He has the attitude of assertiveness and ambitiousness. If he does not have high economic, social or political position as others have, he will feel jealous or/ and depressed; if he has them, he will feel proud. In either case, his materialistic values will give him a negative attitude.
3. The attitude of such a person is amoral. He has either no moral scruples or if he has any, it is due to the influence of others as his sub-conscious or unconscious mind and he himself has no rational explanation of it nor can he explain its bear-

ple do, become acceptable norms or right values for the weak. Let pleasure or joy be the guiding criterion for value-Judgement.

4. "Eat, drink and be merry" should be the guiding principle of man's ethics. Life being short and one only, man must not miss the material enjoyment. Spiritual peace, spiritual bliss and religious merit are only myths. Those who enjoy only now and here without any inhibitions are the wise.
4. The attitude of such persons will be to feel free to smoke, to take alcohol, to see obscene films and to indulge in all such ways as can bring sensual pleasures or material comforts. One's outlook on life would be as towards an occasion for sense-gratification without any regard to ethics.

Analysis of the comparison between two kinds of Beliefs, Values and Attitudes.

It should be clear from the foregoing explanation that the Positive Belief. No. 1 and the Ethics based on it will give one the attitude of fellow-feeling, goodwill, sympathy and self-confidence whereas the Negative Belief No.1 and the ethical construction based on it, will make one ultra-materialistic and ambitious of worldly achievement and goals.

Positive Belief and Value No.2 will make a person loving and loveable; these will also give him faith in goodness and relieve him of worry. On the other hand, Negative Belief and Value No.2 will make a person aggressive, selfish, ambitious, competitive and without a moral code.

Positive Belief and Positive Value No.3 will give one the tendency to be good and do good and thus be fearless because the person has no suspect or bad motive. On the other hand, Negative Belief and Value No.3 will make a person drifting and without a moral mooring. Since such a person has no moral norms he will always suspect the motives of others. People will doubt his honesty and sincerity and he will feel insecurity in dealing with others. Positive. Belief No.4 and the corresponding values will give him moderation and contentment whereas Negative Belief No.4 and the corresponding values will give him lack of control over his sense-organs and behaviour and will naturally bring him into conflict with others, and create ambitions and jealousy in his mind and, perhaps, give him the habits of overeating, taking tobacco, alcohol, etc.

All these Negative Values together give one's mind the Type-A Behavioural pattern whereas these Positive Values give a person the

Type-B Behavioural Pattern. The former pattern gives him restlessness whereas the latter makes him restful and relaxed.

4. Positive Psychodynamics

Gita, the world-famous scripture, says that this world is an amphitheatre of action where each one of us has to do action but we should have proper guidelines for our mind so that action may not be a cause of sufferings or of future bondages or a present burden. In other words, we must know the psychodynamics of action.

One of the principles of Positive Psychodynamics of Action is that *we should do action without attachment to persons or to the fruit of action. We should do action as a pleasant duty or a voluntary division of labour or with the motive of service or as an attempt to make the world a better place for all.* If one does action with emotional attachment to its fruits or to certain human beings, then he is creating bondages for himself and raising high expectations both of which will make his mind like a rough sea-surface rather than like a calm, lake. For, not only will such a person have anxiety for the results but will also feel depressed and frustrate if he does not attain the expected results. And, if he achieves the desired results, his desire may multiply. *If, on the other hand, one acts as a Karma yogi, one is neither ambitious nor does one have anxiety for the results, or fears of the unknown or aggressiveness if there are any hurdles on the way. This saves him from fatigue, gives him more efficiency and a better sense of joy, fulfilment and relaxation.* What he is to do is to do karma sincerely and devotedly and, what is very important, with a sense of detachment and with awareness of God.

This combination of a spirit of detachment and sincerity towards one's undertakings comes from the knowledge that this world is a big stage where life unfolds Drama every moment and each one plays one's part according to one's *sanskāras* and one's innate and acquired qualities, and whatever happens is a part of the Drama in which many factors are at play, one enjoys the different situations in the Drama without feeling either worried over the results or feeling frustrated after the outcome. This psychodynamics of action which gives one the attitude of detachment and duty, dedication to a higher moral goal and social good, renunciation of what is negative and enhancement of what is positive, makes one feel relaxed under all situations of stress and strain, whenever any situation of stress presents itself, a person who works according to this psychodynamics, considers it as a result of innumerable factors, including the result of his own past actions. He maintains his mental link with God and, believing

in His help and guidance, he engages himself in morally sound actions without worrying for the results.

Moreover, the sense of being a trustee of God also makes a person free of anxiety, relieves him of feeling work as a burden or boredom and gives him a sense of honesty, dedication, sense of purpose and the joy of fulfilment. The Gita, therefore, asks man again and again to do his duties as a yogi, as a trustee and in a spirit of detachment and renunciation.

5. Positive Culture, Positive Daily routine and Positive Norms

One's eating habits, ways of conversation, dressing manners, ideas about Art and Culture, lifestyle and daily routine also matters. Take, for example the case of a person who starts his day with a morning newspaper or with the news on radio. The newspapers generally have headlines about great calamities, the prevalent dictum is: "Bad news is good news and good news is bad news." So also one hears generally such news on the radio which give anxiety, sad feeling, fear excitement, etc. to the mind. *It would therefore, be better to read the newspaper or hear the news afterwards and, first, to start the day on a happy note.* Let the first thought in man's mind, when he wakes up, be: "I am a soul, pure and peaceful in my original nature; I am a child of God, the Ocean of Peace and Bliss." Let him silently say to God: "Good Morning Most Beloved Father" or, let him heartily say to God: "Good Morning" and also to the members of his family. This will set the right mood for the day. Let his face have a smile and his eyes have a twinkle of love and his mind start his day with the firm determination to be good and to do good this day.

Also, let cleanliness be his cult and culture. Let his house, his body, his clothes and, most of all, his mind be clean. Cleanliness always gives a feeling of happiness. Where there is filth, foreign matter or impurity, there is disease, discomfort or peacelessness.

Further, let our food be vegetarian or fruitarian and without stimulants. Let it be fresh, natural, nourishing, digestible and sattwic. Let us eat our food, considering our body as a sacred trust and our food as *Prasadam*—sanctified articles.

Let our culture be the yoga culture. Let it be based on yoga-ethics, i.e. the *Yamās* and *Niyamās*. We should know that, if we don't observe *Ahimsa* (Non-violence) in thought, word and deed, we can never experience real peace in our life. If we don't observe the principle of *Asteya* (Non-stealing), we cannot be totally without fear or anxiety. If we want to be without traits of aggression, hatred, hostility, covetousness,

etc. we have to have the yoga-culture.

Likewise, our ideas on Arts (Music, Drama, Dance Painting, etc.) Literature, Humour, Enjoyment, etc. should also be positive. Vulgarity, obscenity, lack of decorum or civility affect one's attitudes and state-of-being and may make a person's mind scattered, excited, agitated or vitiated. On the other hand, positive art, culture, literature, means of enjoyment and humour make a person feel happy, relaxed and energised.

6. Positive Memories

Memories greatly influence a person's attitude and state of mind. On meeting a person if one is reminded of the bitter past (when this first man had been harsh and cruel), the latter's mind either feels afraid or tense. It gets ready for fight or flight. It has hatred for the person. If, on the other hand, this man stirs unhappy memories, one's mind feels relaxed. It has love for the man. Same may happen when a person is faced with an emotion-laden situation., If the situation reminds one of a trauma or a painful problem, a serious complication or a trouble, experienced before, then one's mind gets either anxiety or depression or other tense feeling. If, on the contrary, the situation reminds a person of another happy occasion one had experienced before, it becomes an enjoyable and peaceful experience. Memories of events even in dreams may give a happy or a sad feeling.

Even when a person is not faced with a situation or does not meet a person, his mind may still be occupied with memories of some past events or of persons and these may be raking up certain kinds of feelings or emotions in his mind. It is, therefore, necessary that one should recall positive memories only and must forget the rest. That is why the saying goes: "Let past be past" or that we must "forget and forgive." We may have only memories of happy events or words of wisdom. If we remember the prickly, the nasty, the bitter, the sad events, then we are unwisely living the thorny past the second, the third or the fourth time and are unnecessarily prolonging the period of our suffering though the real event or situation does not exist any more. We are ourselves making our own life miserable without there being any enemy or any bad situation.

It is indeed a folly and a bad habit to dig out the bitter past and to be sad about. At least this one is no one else's fault but a flaw in our own personality. It is not only waste of time, money, energy and breath but it is also like a slow act of suicide, for this badly affects one's physical, mental and spiritual health.

Even when some past traumatic experiences suddenly flash on one's mind, one should free one's mind of these, considering these as thorns and thistles, or as rubbish and pebbles, or as thieves that steal one's happiness. Let there be memories of Satyuga, of God, of the original, peaceful self, or of points of knowledge, etc.

7. Positive Judgement

One may have acquired Positive Belief and Positive Values only recently or only a small period ago, and the Beliefs and Values may not yet have taken deep roots and may not, therefore, have given him firm Positive Attitudes and Outlook. In such a case when this person faces a provocative or awful situation, his previous personality-traits or Samskaras may try to capture his mind and push it again towards a fight-or-Flight response. This person who wishes to remain calm and peaceful because of his newly-learned beliefs and values may feel compelled, so to say, by his samskaras, to feel sad, worried, angry, jealous or ambitious. At this moment, it is one's Positive Judgement which can help a person to maintain positivity. Otherwise, negative Samskaras, old habits or tendencies will drag him into Stress.

What is Positive Judgement?

When two kinds of thoughts cross a person's mind, he feels it necessary to resolve the conflict and to set the situation at rest. If one thought is: "Be angry and shout at this man" and the other is "Keep calm and be quiet", one has to decide which thought he has to inhibit and which one he has to put into action. If one's beliefs and values are positive and strong, it would be possible to resolve the conflict within a second. If the positive Beliefs, convictions and ethical principles are very strong and well-set in the mind then there would, perhaps, be no conflict at all. If, however, the beliefs and ethical ideas are yet weak as compared to the pressures exerted by the situation, then one is liable to err and be conquered by the negative forces. At such a point of time, one has to use one's better moral judgment. If one wavers or is swayed between the good and the evil, one is tossed between the two. If, on the other hand, one used one's will power and says to himself: "No siding with the evil", one emerges victorious. Positive determination gives strength to one's shaky judgement on such occasions. Even when all wisdom leaves a person and there is darkness all around, let a person have at least one small torch with him to guide him on his path. Let him always keep this grain of truth with him: "God is with the good, the virtuous. I

cannot be dissuaded from the path of virtue. Go away demon; come God. I cannot give up goodness under any circumstances." This thought will always give strength to one's judgement. Let one think calmly and clearly and use his moral sense and all will be fine in course of time. A moment of Positive Judgement will save him from million bad and tormenting thoughts and he will feel relaxed.

What is Nature and how can we have harmony with Nature?

The word 'nature' is used differently by different people. But one thing which is, perhaps, common to almost all usages is that 'Nature' implies the 'innate quality' or the 'basic characteristic' of a thing or a person. For example, when we tell a person that he had said this or that, he protests: "No, not at all. I could not have said this because that is not my nature." Thus, 'nature' is that 'hard core' or basic quality which always remains or forms the fundamental characteristic of a thing or a person.

Considered in this sense, Oxygen, Hydrogen or Water has each its own specific, intrinsic quality. That is its 'nature'. It is due to its nature that it behaves in a particular way, in a particular situation and acts or reacts in a way that is special to itself. When we say that its nature is like that, it means that *it is like that, it is made like that; its ingredients, its constitution or its individuality is like that: If it loses that specific and particular quality, then, it loses its that individuality or its very existence.*

Let us go a little further on this subject. We notice that each element or each thing, having its particular, peculiar or special nature, acts on or reacts towards other things or other situations in a particular or special way and this creates a particular environment. The sum-total, of the environment so created or the forces so generated are also wholly known as 'Nature'. For example, when we add fertiliser to sow the seed and water the sapling, all these things, and the aid, the sun-light, the humidity, etc., etc., act on and react to the plant in a particular way and vice versa, and we say that the plant is a creation of Nature or that Nature acted like that. So, in this case also, it is the intrinsic or basic quality. i.e., the nature of each one acting on, and reacting towards, each other, and we call the sum-total of all the environment or forces so generated also as 'Nature'. We call this also as 'Nature' because this is the result of the interplay of the intrinsic nature of each one of the participants in this drama.

Nature is not God

Here, let us clarify that Nature is not 'God' nor is it a handwork of God. Some people use the word 'Nature' and 'God' synonymously. That is a wrong use of the word. Like other things or persons, God also has

His own Nature, i.e. He also has His own specific qualities, different from others. Because of His special qualities, God also acts in a particular way which is specific to Him only. But, the total environment or the forces of Matter generated by the action and reaction of very many elements, things and persons are not God. They constitute 'Nature' because they are the resultant or cumulative effect of the respective nature of all together at a particular point of time.

Sometimes, we say: "Look, how beautiful are the flowers, what a beautiful form or design they have, what a wonderful smell and harmony of colours...., how wonderful is Nature!" When we make statements like this, what is actually meant is that there is a force at work or that there are number of factors working together who have 'created' that beautiful variety of flowers. We do not exactly know what that force or combination of forces is. We only realise that we ourselves have not created that design or given that colour or shape. Since it was beyond our own capacity to create such a wonderful thing as a beautiful, sweet-smelling flower or a butterfly, and since we think that no other human being has done it, we say that it is a creation of Nature or God. Some say that God is the most wonderful artist; others say that Nature is the most wonderful artist. We are thus confused about the use of the two words, 'Nature' and 'God' and we, sometimes, wrongly identify the two.

In fact, in the example of the flower, which we have cited above, it is 'Nature', and not God, which has resulted in the appearance and the growth of that flower. In this case, the word 'Nature' used in a very comprehensive way, for the word includes "all the factors and material forces at work". It means that the inherent and intrinsic qualities of the seed (which has its own genetic system), the specific nature of the soil, the nature of the fertilisers, the nature of the organic and inorganic environment and so on, all together acted in that way. Instead of naming each actor in this drama of growth of the flower, we name all of them collectively, saying that it is a work of Nature. It would be wrong to say that God has created the flower. God is a supreme soul; he is not a material force but a spiritual power.

Because of wrong identification of the words 'God' with 'Nature' many scientists and rationalists, reject the suggestion that there is no God because their knowledge of sciences—Botany, Agriculture, Horticulture, Zoology, etc.-tells that the growth of the flower or the birth of a butterfly is the work of certain biological and Natural forces at work and no other person, called 'God', is involved in this act. And, what they

say is, to a great extent, a fact. It is a fact because, in the case of the plants, it is the genetic factor and the environment that are responsible for their growth in a particular form and manner, and, in the case of the fauna or the animals and birds, an additional factor is the nature of each individual soul which takes that physical form, depending on its *sanskāras*. So, there is no doubt that we have had this body not by our choice nor did our parents make any effort to give it this particular shape but it would be wrong to say that God made our eyes, ears, nose, etc. of a particular shape and size. As is clear from our present knowledge of the genetic inheritance of plants, the form and feature of plants are determined by their respective genetic nature of the environment, including the nature of the soil. And, likewise, in the case of human beings and animals, it is determined by their *Sanskāras* and it is those subtle forces that select the suitable or the required material from the surroundings and, so, we say that it is by 'Natural selection' that it happens like that. In fact, 'Natural Selection' is not 'selection' because no 'conscious' selection is made but only things happen in a particular way because the forces at work are so constituted and are of such nature, not by our choosing, but as it happened. So, let us be clear that nature and God are two different existences.

Individual Nature

We referred earlier to the nature of every thing, every person and every species. Every human being also has his own individual nature. Thus as a species also, humankind is different from all the other species and besides that difference, every single human being has certain intrinsic qualities which are special to him and which distinguish him from all the rest.

Human Nature

Different philosophers, psychologists and social scientists have given us a different view of human nature. The founders of all religions have said that man is potentially divine. Christianity, for example, holds that 'man was created in the image of God'. All the *Upanishads*, the ancient Indian spiritual texts, including *Shrimad Bhagwad Gita*, also emphasise that 'the original nature of man is divine'. They say that the bad tendencies or proclivities of man are because he has acquired certain habits by his association with others from whom he has copied or learnt those wrong or negative habits. So, that means that man has an original nature which is intrinsic, inherent or 'hard core' and he has also an 'acquired nature' which he has learnt later by wrong kind of efforts.

This latter may, then, be called his 'second nature'. Our bad habits are our 'second nature'. These habits can therefore be unlearned or reformed. One's 'second nature' i.e. one's habits may be good or bad according to the lessons one has learnt through one's formal or informal education or through one's own efforts or by the influence of the environment, but one's fundamental or original nature is good or divine. All religions try to give an awareness of our intrinsic goodness and exhort and inspire us to give up our bad habits which we have wrongly picked up.

There have been some philosophers, psychologists or social thinkers who differ from the above view. For example, Freud, a well-known German psychologist, does not think that man is essentially and intrinsically divine. He has said in his writings that the basic force that goads man's behaviour is the *Libido* or the sexual urge which is the *Id*. He thus emphasises that man acquires the knowledge of good or bad from the society and this forms his 'super ego' which keeps a watch over his *ego* and *Id*—the latter being goaded by the sexual urge. He advises man not to repress his sexual urges under the voice of his super ego. In other words, he believes that the intrinsic nature of man is libidinous, or, let us say, it has libido; it is not saintly.

But we find that Sigmund Freud, in the later days of his life, felt a small change in his these views. Also, it is now well-known that his colleagues, Adler and Jung, who had earlier worked with him, separated from him because they did not agree with these views of Freud. In the Victorian era, when there were some strict moral norms, there might have been cases of neurosis due to repression, by some people, of their sexual urge, and Freud, because of these cases having come to him for help, might have concluded that the basic nature of man is libidinous but this was not a universal truth. This could not be said, in general, of the human nature.

We get another view of human nature from Karl Marx who gave to the world his theory of communism, Marx had built his whole thesis on the thought that man by nature, is selfish. From his deep analytical thought, he concluded that it was the selfishness of man that led him to economic exploitation of others and that the poverty in the world was mainly because of this selfish motive of man which formed the 'hard core' of his nature.

The above also is a mistaken view of human nature. For, we find people, in this world, like Buddha, Christ and Mahatma Gandhi who sacrificed their everything, including their very life for the welfare of mankind. Can we rightly say that these were selfish people? No, they worked for public good and even suffered for the sake of others.

We can say that every man has 'self-interest' but we cannot say that every man is 'selfish'. To have 'self-interest' is different from being 'selfish'. If man were selfish by nature, then, 'service', 'sacrifice' 'sympathy' 'compassion', etc. would have no meaning. We call Buddha, Christ or Mahatma Gandhi 'great' because they made sacrifices. Life would not have anything inspiring or worthy for us if everyone, including ourselves, were selfish.

Perhaps, a common experience of us all would help us to decide finally as to what the truth is about the original human nature? Is man potentially divine or demoniacal? Is 'goodness' or 'evil' at the very base of his nature?

Each one of us knows from our daily experience that whenever we hurt the feelings of others or whenever we do something which will harm others, there is an inner voice which cries a halt. There is a voice of the conscience which tries to prevent us from doing that action. There is something in us which checks us. This is our innate goodness. This is our original nature. This essentially comprises purity and peace.

The voice of our conscience is not the voice of God.

Here also we would like to clarify that this 'voice of the conscience' is not the 'voice of God'; it is the voice of our own innate goodness. We, as souls, are originally pure and divine. Our that divine nature speaks out at times when we think of doing a bad or immoral action. It tries to apply a brake on our unrighteous thoughts. Our 'second nature', 'acquired nature'. our habits or our '*Sankāras*' may have become so strong that our innate goodness, may not be able to hold it in check but, nevertheless, we do have our original goodness or virtue there. This cannot be destroyed, for it is our very nature, i.e. we are it, or it is us; we and this nature are non-different. The bad tendencies, the evil propensities, the negative forces are not our nature; they are not ourselves. They are our 'acquired nature' or 'second nature' and we are unhappy with it. We wish to get rid of it. We feel enslaved to it and wish to break away from its fetters or its yoke. We repent after every action done under its influence. Our goodness is not God, nor is it due to the presence of God in us but it is our own nature. There is one God who is the Father of us all—the Supreme Father of all souls—but He is on the high. He is over there in the Soul World also called *Brahmaloka*. He helps us, guides us, influences us whenever we open unto Him but he is not dwelling in or within us. Our inner voice is our voice; His voice is His voice.

How to be in harmony with Nature?

If the voice of the inner conscience and man's will are different, then, there is a conflict. One's intellect and mind clash with each other if their voices are different. When that happens, there is the tension and the peacelessness. So, if we want peace, we have to have harmony between them. Unless and until we have inner harmony, we cannot have peace of mind.

Moreover, if a man has this inner conflict, he as a disturbed person, will not have creative intelligence. He will create disharmony wherever he goes. It is such a person who creates tension, wars and peacelessness. So, for the welfare of the society also it is necessary that every man has inner harmony.

In order to have inner harmony and to be peaceful, one must have knowledge of his real identity. Only when a person knows that he is a soul and that the body is only an assemblage of instruments given to the soul for action, only then is he able to stabilise himself in the real identity of the soul which, as explained earlier, has the spiritual outlook of world brotherhood, and it is this outlook which brings about peace. Unless one realises that one is a soul and unless one stabilises in the consciousness of the soul, one is influenced by negative thoughts. It is only when one stabilises in soul-consciousness that a person leads a life of purity and peace. Out of body-consciousness are born sex-lust, anger, greed, attachment, arrogance and selfishness. A man who leads a life based on soul-consciousness, gets freedom from these six evils. The inner conflict, caused by these evils, ceases and peace of mind and harmony are restored.

The outer conflict is based mainly on the inner conflict. If the inner conflict, in man's mind, ceases then the outer conflict also ceases. The conflict in outer Nature reflects the inner conflict. If mankind is constituted of holy beings, with peace of mind, there is no reason why there should be disharmony, wars, sickness and calamities or catastrophies of Nature. So, the real remedy for inner and outer harmony and peace lies in spiritual wisdom and in the practice of meditation.

Evolutionary Bias

During the last three quarters of a century or more, there has been a rising tendency among an increasing number of scientists to accept Darwin's theory of Biological Evolution without having any critical second thought over it. It so happens that most scientists accept it as if it were natural for men and women of their class and their stature to accept it even though there might have been accumulating an increasing mass of strong evidence against the theory. One finds that, on an average, almost every other month, a fact or two come to light which go against the very basic assumptions or the consequent explanation of the Theory of Evolution, and yet scientists accept this theory without ever seriously doubting it, or without ever trying to have a fresh look over it or a new appraisal of it.

What can this unexpected behaviour be due to?

There could be many explanations of this unexpected reaction of scientists. One of these could be that their own research work, for which they have been awarded, rewarded or applauded, is based on the acceptance of Evolution theory and it has now become a vested interest for them not to re-open the issue or not to raise any serious doubt about the theory at this stage, for that would amount to denouncing their own research work. Such a person who can muster enough courage to announce to the whole world that his own research work, done over a life-long period and recognised by prestigious science-forums, is wrong because the Evolution Theory on which it was based was wrong, would only be the rarest of the rare.

Secondly, in this life, when things are costly and one has so many things to do to keep life going, it would be extremely hard for a person to find enough time, will, energy and patience to go through all the evidence that has been collected for and against it ever since it was first formulated by Darwin, and then, facing all odds, to write a new thesis that should be so forceful in its formulation and impact as to root out the well-established Evolutionary bias from the mind of innumerable number of intelligent men, women and children. So, no one would, ordinarily, think of going against this theory and of putting one's hand in a hornet's nest. *He would be only a genius, no less than Darwin himself, who would do this work with a will, made of granite, and a spirit that is irrespressible*

and dauntless. Such being the demands of the job, who, among scientists, should take upon himself to open up the pandora's box of the Evolution Theory?

Thirdly, it requires a very high degree of humility and open-mindedness to weigh the available evidence, both for and against the Evolution Theory, in the balance of unbiased reason and to arrive with an independent mind, at the conclusion that follows. Scientists are men of convictions; they have a deep feeling that they are rational par excellence and that their thinking and their work are founded on the bed rock of their thorough understanding and independent judgement. In this sense, they have a 'religion' of their own. Most of them are 'religiously attached' to their scientific beliefs. So, it is not easy to shake them from this belief once they have accepted it. A scientist of high stature is required to tell them in a very sophisticated way that the Theory of Evolution in which they have been believing upto now, is wrong. Only a Newton, a Kepler, a Galileo or an Einstein can do it or can do it well. Others can do only piece-meal work in this direction. They can draw the attention of the scientific community to the new evidence against the Evolution Theory and will take a very long period to create sufficient awareness among a large number of scientists so as to reach a critical mass, replacing ultimately the strongly entrenched Theory of Evolution. Only a scientist with a very high stature and a great international reputation for his work can raise a loud enough voice as to be heard with respect and attention by the brethren from his community. Others would therefore, ordinarily, not venture to criticise this theory and thereby, invite criticism of their own work and of themselves.

Whatever be the explanation for the unexpected attitude of the scientists, the fact remains that many scientists today think that it is natural for the members of their community to believe in 'Evolution'. Not only that, they think that one who believes in Evolution would also, naturally, be an atheist. An instance relevant to the present context is that of Subramanyam Chandrashekhar, a world-famous astrophysicist who shared the Nobel Prize in 1983 for his work in Physics.

Chandrashekhar was interviewed for the Daily Hindustan Times by Sanjay Kumar and P.G. Krishnan. The interview was published in the issue of May 31, 1987 of The Hindustan Times under the title: "Why I am not a believer?"

In this interview, Chandrashekhar said, in answer to one question, that he is an atheist. When he was asked by the interviewers why he is

an atheist, Chandrashekhar replied that he believed in Evolution. The words uttered by him and recorded in the interview, are: "We believe in evolution", that man evolved. As a scientist, I do consider it inconsistent to explore the external world in terms of rational ideas." The words 'we believed in Evolution' show that he did not speak merely for himself, for the pronoun 'We' (first person, plural) clearly indicates that he spoke for the scientific community in general. And, the construction of the sentence indicates that he also thinks that it is only natural for the scientists to believe in Biological Evolution.

His own field of work, for which he is famous, is based on acceptance of Evolution Theory

If one tries to understand this kind of attitude of a top class scientist, one would naturally come to the conclusion that, as an astrophysicist, Chandrashekhar's own work is based on the acceptance of the theory of cosmic evolution, which is akin to and is, more or less, joined to the Theory of Biological Evolution and, since Chandrashekhar has had the honour of sharing the prestigious Nobel Prize and since his work in the field of astrophysics has Evolution as its basic assumption, he takes for granted the concept of Biological Evolution also, even though he himself has not studied every bit of that theory with an unbiased mind nor has he ever seriously studied the large amount of evidence that has gathered against the Theory of Biological Evolution.

What do we mean by 'new kind of evidence' against Evolution Theory?

When we speak of a large mass of evidence against Biological Evolution we have in our mind three kinds of evidence—one, which consists of new facts that have come to light and which cannot be explained satisfactorily by the Evolution Theory and, two, such new facts which give further strength and support to the existing evidence against the Theory of Evolution. And, three, such facts which already existed but which missed our attention before.

We do not wish to dwell at length on all the three types of evidence nor do we wish here to give a number of instances of each type. However, we will give here only one or two instances from the large mass of evidence, that has collected, so as to make clear that this kind of evidence deserves serious consideration but, we do not know why, serious attempt has not been made to consider this type of evidence, to which Evolution Theory gives no satisfactory explanation.

Example of some evidence against Biological Evolution

One kind of evidence against Biological Evolution is what is known as 'symbiosis' or 'symbiotic partnership'. Certain forms of life are dependent on, or are helpful to, each other. But, according to Evolution Theory, the two such inter-dependent species of beings must not have evolved simultaneously. So, the question is, 'How then symbiosis came into play?'

An example may be given of beetle and the Mimosa tree, both of which have symbiotic relationship to each other. The behaviour of the species of beetle, called *Oncideres* raises many questions that have not been answered by the evolutionary biologists.

The female of this species of beetles first goes to the Mimosa tree. There may be an innumerable variety of trees around but the she-beetle finds out the Mimosa tree, ignores all other kinds and climbs up this particular tree, only for laying eggs. In the process of climbing, she crawls out on a limb and, as she crawls, she cuts a longitudinal slit with her mandible and then deposits her eggs beneath the slit. It seems that she understands that her larvae cannot survive in live wood. So, she cuts a clear 30-centimeters circular girdle through the bark all around the limb and, down into the cambium. She takes about eight hours to do this job and, at the end of this work, the limb dies at the girdling and falls to the ground. This action on her part ensures the welfare of her offspring, for the larvae can now feed and grow into the next generation.

The Mimosa tree which, thus, is necessary for the survival and growth of this species of the beetle also gains by this behaviour of she-beetles. It has been found that the Mimosa tree which are left unpruned by the beetle, have life-expectancy of twenty-five to thirty-five years. But those trees, which are pruned every year by the she-beetles, which cut a girdle around the limb, flourish even for a century. So, this friendship between the beetle and the Mimosa is good for and helpful to both of them.

Now the question is: "If the theory of evolution is true, the beetle and the Mimosa tree must have appeared at different stages of evolution. The time-gap between the appearance of their species must have been some millions of years. Even if they had evolved during the same period, not removed by long span of time, the question is: "How the beetle and the Mimosa symbiotic relationship came into play?" No satisfactory answer to this has as yet been given by the Evolutionists.

Another Example

Another example may be given of a species of bacteria that came to light only as recently as 1982. Research submarines, designed to descend 2,500 meters or more into the wide and deep holes below the bottom, of the sea, discovered colonies of the bacteria in the superheated sea water that gushed out under tremendously high pressure. The temperature of this water, in many cases, was higher than 300°C and its high pressure, naturally, was much higher as compared to steam. As is known to modern Biology, life, at such a high temperature as 300°C and at such a high pressure as comes out from the deep hole at the bottom of the sea is inconceivable. At such a high temperature proteins, nucleic acids and enzymes would be split up into their constituents and then each one of these would fly away. According to the existing knowledge of Biology, any living thing would die instantly at this temperature. Based on this knowledge, the biologists or bacteriologists have an autoclave in their laboratory which they use as the surest means of destroying microbial life in steam under pressure. But strange as it would seem, when samples of water were brought from these deep sea vents, in titanium syringes and sealed in pressure chamber heated to 250°C, it was observed that the thriving colonies of bacteria, present in it, not only survived but reproduced themselves.

Another strange fact about this bacteria is that these could be killed only by chilling them to the temperature of boiling water which is generally used to kill bacteria!

The biologists were amazed to observe these facts. When they saw these bacteria under the electron microscope, they found that these bacteria looked like any other and had the same essential structures - cell walls, ribosomes, etc.

Now the Evolutionists are suggesting that these bacteria, and not the unicellular amoeba, was the original arche-type of life and it is this which was the ancestor of us all. In other words, they are saying that man did not evolve from amoeba as was originally thought.

Well, if that was the case, the evolutionists should explain how these bacteria learnt to cool down so that other forms of life, which live at lower temperature, could evolve from them. They are unable to explain this. So who knows that tomorrow these very people will not say that there was no such evolution as they have been saying?

Today, we have millions of different species, living at different

temperature and in different conditions. We have examples of such species as live at the cost of others and we have also examples of other species which help each other to live. All or most of these have been existing as far as human knowledge goes. Where then is the question of one species evolving out of the other? From the similarity observed between two different species, it would be wrong to conclude that one evolved out of the other.

Whatever be the truth, nobody takes a fresh look at the theory of Evolution and thus the Evolutionary bias continues to be. However, since the theory of Evolution has had its impact on almost every other branch of knowledge, it is essential to think afresh over it, in the light of the evidence against it.

Origin of the Universe

—The Hen First or the Egg First?—

Many modern scientists believe that the universe originated from a 'Cosmic Egg', by a catastrophic explosion, called 'big bang'. They rule out its creation by God. On the contrary, many religionists believe that, originally, God created the world. The question is which one of these two hypotheses is more rational? Can anyone of these be sustained on the basis of reason or scientific proof? Was the universe created at some point of time or it is eternal?

Over the past two millennia or more, man has been concerned with the great mysteries of existence. He has formulated many theories to answer this question: "How and when did this universe or the world come into existence?" Most of the major religions also have tried to solve this cosmic riddle in their own respective way. Over the last four or five centuries, astronomers, astrophysicists and geologists also have tried to tackle this question in their own typical ways and have formulated many theories, or, better, call them 'hypotheses' because, actually these have not yet attained the status of 'theories'. We will discuss here only the most popular and most fashionable or current theories of origin, to see if these have satisfactorily solved the question.

Big-bang Theory

One of the two most popular theories, mentioned in science books, was first proposed by the Belgian astronomer Georges Edward Lemaitre (1894-1966). In the year 1927, he suggested that, at a point of time-call it 'zero time' - the matter and energy of the Universe were literally squashed or compressed together into one huge mass, perhaps no more than a few light year* in diameter. He called that huge mass the 'cosmic egg' because, according to him, the cosmos was 'born' out of it. Lemaitre said that this 'zero time' when the 'egg' exploded refers to a point of time about 2 billion of years ago. But, since Geologists considered the Earth to be older than 2 billion years, some cosmologists, later, raised this figure to 5 billion and, subsequently, to 13 billion years ago.

* Light travels at the rate of 186,000 miles per second. So, in one minute, it covers a distance of 186,000X60 miles. The distance covered by it in one year i.e. 186,000x60x60x24x365 miles is known as 'one light year'.

Originally, the Matter, which formed the cosmic egg, was hydrogen gas. Hydrogen atom is made of two particles only. There is a central proton, carrying a positive electric charge and there is an outer electron, carrying a negative charge. As long as these sub-atomic particles exist separately in the atom, there is a limit to which a mass of hydrogen gas can be compressed. But when the critical pressure is surpassed, the electron and proton in every atom of hydrogen gas may be considered to have been squashed very very hard or condensed very densely together so as to form a mass of electrically uncharged particles, called neutrons. Such a mass of compressed neutrons is also called 'neutronium'. It would have a density of 1,000,000,000,000,000 grammes per cubic centimeter and would be far denser than any known thing, for this is the ultimate limit in compressing that can be reached and, at this stage, the mass of Matter becomes unstable.

Now Lemaitre says that, at 'zero time', the densest and unstable cosmic egg exploded in what we can now only imagine to have been the most gigantic and catastrophic explosion of all time. Sir Arthur Eddington, a famous English Scientist, adopted and popularised this hypothesis and, later, Russian - American astrophysicist George Gamow¹ (1904-1968) upheld and propagated it enthusiastically. It was Gamow who gave it the name 'Big-bang Theory'².

According to this theory, the fragments of that catastrophic explosion, which were sent hurtling out in directions, became the galaxies. Not only did portions of the cosmic egg form the present-day galaxies but, on a more subtle level, the cosmic egg broke up to form various atoms and 102 elements we know today. But, here we will only consider whether the formation of 'cosmic egg', and its subsequent explosion or 'big-bang', and the consequent formation of galaxies from it was possible as it is explained in science-books.

Does this 'theory or hypothesis solve the question of origin?

On reading this big-bang theory, one is bound to ask: "But where did the 'Cosmic Egg' come from? Which hen' laid the 'egg'? And, whether that 'hen' was first or the egg was first? In other words, how did Hydrogen or its electron and proton or neutronium originate?"

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1. *George Gamow : Chapter on the Evolutionary Universe, in Scientific American book, published by Simon and Schuster, Inc., Rockefeller Centre, 630, Fifth Avenue, New York.*
 2. *Issac Asimov : The Universe-From Flat Earth, to Quasar, Penguin Books, 625, Madison Avenue New York.*

To answer this question, scientists take refuge in the concept of Eternity and in the law of conservation of mass and energy. They say that the Matter, making up the cosmic egg, was always there because Matter is Eternal and is always conserved; it never gets annihilated.

Well, let us take it for granted that Matter forming the cosmic egg was always there; the crucial question is whether the matter was there in the form of the cosmic egg? If one says: "Yes, it was always in the form of cosmic-egg", then one would like to ask: In that case, the cosmic egg should have remained stable in that form for there was nothing else there to disturb it; why did it suddenly (at 'zero time') cease to be stable? What led to its explosion after billions of years of stability? What were the forces, which, originally, had been keeping it stable and what new forces now, suddenly, brought about the explosion? Scientists have no satisfactory answer to these questions on which depends the validity or credibility of this theory.

Is the Scientists' answer satisfactory?

No doubt, scientists have tried to solve these and such other problems but the question is whether these have been satisfactorily answered to give it credibility.

A much too common answer the scientists give is:

"Before the 'cosmic egg' came into existence, there was an exceedingly thin gas. This gas had its own vastly diffused gravitational field. Gradually, over billions of years, the gas collected and the mass of the gas grew close together. As the substance of the Universe grew more compact, the gravitational field became more intense until, after many billions of years, the Universe went on contracting at a greater and greater speed. In this process of contraction, it produced higher and higher temperature as the gas compressed into smaller and smaller volume. This temperature-rise increasingly countered the gravitational contraction and began to slow down the process of contraction. However, the inertia of matter kept it contracting more and more, till it was past the point where the temperature effect had just balanced gravitation. Finally, the universe contracted to a minimum volume, represented by the cosmic egg. At some point, the outward push of the temperature and of radiation, finally overcomes the gravitational force, and this builds up into a force that results in the 'big-bang'. In the view, the cosmic egg becomes a momentary object.

How the 'cosmic egg' was first formed?

Now let us read again the italicised lines above and think over them,

keeping in view Newton's first Law of Motion which states that "everything keeps in its state of rest or motion unless there is an external force which is applied to it." *The question is: "Since there was nothing else besides the thin gas, what led the gas to collect and to draw close? Since the force of gravitation was the same as it had remained 'for billion of years'; how did it increase so as to cause contraction of the gas-substance? According to the First Law of Conservation of Mass and Energy, the total mass and energy in the universe remain the same; they neither increase nor decrease; so, the question is what additional force or energy outside the gas-mass originally led the gas-particles to draw closer and closer? No scientist, to this day, has solved this riddle.*

Moreover, none has ever stated specifically the actual size of the cosmic egg, or its total mass, or the force of explosion that rent it into fragments so that its pieces hurtled away and managed to attain 'the escape velocity' to form galaxies. Also, the question is: "If the cosmic egg hurtled its segments to form galaxies, wherefrom the Matter in the space between these galaxies came?

Further, the universe being infinite or of very vast expanse, did the hydrogen gas fill the whole universe or the thin cloud occupied only a part of it? If it filled a part of it, why did it occupy only that much density or thinness and neither more nor less? If it filled an infinite space, how could, then, its so weak gravitational field, especially as its farther parts, lead it to contraction?

Another question is whether the parts of the cosmic egg that hurtled out and formed galaxies will continue receding from each other for ever or their velocity of recession will slowly decline with time and will reach a momentary zero mark? And, then, will the galaxies finally begin to come together again, slowly at first and then more and more rapidly and will, finally, condense to form something like the cosmic egg, constituted of hydrogen again? Following the formation of the cosmic egg, will there be another big bang and will the whole process start over again, in the fashion of the egg giving birth to the hen and the hen laying an egg and the egg again breaking to give birth to another hen, the series extending to infinity.

If the relationship between the cosmic egg and the universe is as between an egg and a hen, where is the question of origin or 'the beginning'? Where is the irreversible change and the final ending? As the universe is right now, so will it be again an indefinite or infinite number of times, each time after an explosion, according to this theory. Thus, it

fails to explain any origin in the actual meaning of the term.

Steady-State Theory

Certain astrophysicists, such as Hermann Bondi, Thomas Gold and Fred Hoyle considered 'big-bang' to be impossible. They adopted, after some modifications, a new model of universe, suggested by an English cosmologist Edward Arthur Milne. Milne assumed that the general scheme of appearance of the universe would be the same from any point in space from where an observer saw it. An observer may be on any galaxy; from there he would find all the galaxies distributed symmetrically about him in all directions. He would find the general density of Matter also the same everywhere. He would find himself at the centre on an observable universe. He termed this concept as the 'Cosmological Principle'. The cosmological principle seems to require an infinite universe, for, otherwise you could not imagine yourself at its centre by being anywhere. If the universe were finite, you could imagine yourself transported to its very edge and, from there, you would find all the galaxies on the side and nothing at all on the other. Einstein also assumed only one aspect of the cosmological principle when he considered that Matter was distributed evenly in the universe, but he considered the universe to be finite though the finite universe could have, in it, infinite galaxies. But a concept on an infinite universe following the cosmological principle, could not fit well with the notion of the cosmic egg as possessing a finite size and as exploding into a finite number of galaxies. So, what was the solution to this problem? The scientists got stuck at this point. It would be interesting to know that George Gamow was ready to consider the cosmic egg as of infinite size! But how could then other postulates, such as the extensive gas cloud, etc. fit well with this theory?

As a way out, Hermann Bondi, Thomas Gold and Fred Hoyle favoured the Cosmological Principle but they thought that it was incomplete. For, while it allowed the Universe to be unchanged with the observer's position in space, it did not say anything about his position in time. So, these three scientists believed it logical to suppose that the universe would have to be essentially the same for observers at all times as well as in all places. They termed this the 'perfect cosmological principle'.

But, we can all see, the universe changing in two important aspects. Firstly, the distance between the galaxies is growing steadily larger, for the galaxies are receding. So, an observer, say, two billion years afterwards, would not see the galaxies where we see them to-day. Secondly, hydrogen in the stars is steadily fusing into helium and other complicated atoms so it

means that a time will come when all hydrogen gas will get converted into helium. At least, in these two aspects, the universe cannot be considered steady. These two points are a strong evidence against the 'perfect cosmological principle', proposed by these three scientists.

To remove this lacuna, these fore-named three astronomers advanced a solution in the year 1948! They suggested the hydrogen was continually being created out of nothing. They called this 'the continuous creation theory' or 'the Steady-state Theory by assuming that by the time a galaxy will recede into oblivion' another galaxy in its place would have come up and, by the time some hydrogen would be converted into helium, any equal quantity of hydrogen would have been created, out of nothing (mark the words out of nothing) to take its place so that to an observer the universe would always look to be steady or in a 'Steady state'.

Is this Theory Scientific and Rational?

According to the first law of Thermodynamics, which is also called the 'Law of conservation of Matter and Energy', the total quantity of matter and energy in the universe remain constant. In other words, no more can be 'created' so as to be added to it nor can any part of it be 'destroyed', to be lessened from it. Over and above this, the assumption that hydrogen is being continually created out of nothing' seems to be ridiculous, utterly unscientific and against man's rational sense. It seems to be like a tale of magic or a fairy tale. How could something be created out of nothing? *Bhagwad Gita* also emphasises upon the truth of the law of conservation when it says: "A thing cannot be created out of nothing nor can that which exists be annihilated out of existence."

But, indeed, it is strange that the proponents and protagonists of this theory say that hydrogen can be created out of nothing! Then any other thing also could come out of nothing? The above-named astrophysicists say that 'the Law of conservation of Mass and Energy' is merely an assumption based on the fact that mankind has never observed energy to be created out of nothing.* They say that the requirements of 'the continuous creation theory' or 'steady state theory' are very small indeed, for, the creation of even one atom of hydrogen per year in a billion litres of space is enough. They say that creation at this rate will be too small to be detectable by any instrument man possesses.

Obviously, they want to change the Law of Conservation from 'Energy

* Fred Hoyle: *Astronomy*, Doubleday and Co. Inc, New York, 1962 () *Galaxies, Nuclei and Quasars*, Harper and Row Publishers, New York, 1965.

cannot be created' to 'Energy has never been observed to be created' (Note the change in the wording and the resulting meaning.) They do not want to answer the question. "How can Hydrogen or (any other thing) be created out of nothing?" They side-track a very important and fundamental law without any verifiable evidence and a laboratory-proof. The real issue involved is not whether a small or a big quantity of Matter can be created or not, nor the issue is whether the rate of creation is small or great; the very solid issue, it must be noted, is whether something can be created out of nothing. By accepting this proposition, science would change into fantasy or fiction!

Again, they say that the Law of Conservation is merely an assumption based on the fact that mankind has never observed (note the words 'never observed') energy to be created out of nothing. In fact, this comment applies to their theory, for that is based on more assumption and no one has ever observed something being created 'out of nothing'.

Moreover, the question of creation raises so many other questions, connected with it, such as: "Who creates it? How does it get created?" and "where from does the energy required for carrying out the act of creation come?" All these questions in regard to creation of hydrogen are left unanswered.

Furthermore, the theory of Hoyle, does not solve the problem of origin of the universe and the galaxies and of hydrogen even if this last be assumed to have been formed out of nothing.

Another Unproved Assumption

Besides the arbitrary assumption that hydrogen is being continually created out of nothing, there is another assumption of the scientist who propounded the steady-state theory. It is that the galaxies are separating or receding from each other not as result of some explosion but as a consequence of some more subtle effect. Scientists—Hermann Bondi and Raymond Arthur Lyttleton assumed that the positive charge on the proton might be very slightly larger than the negative charge on the electron. They thought that if the positive charge of the proton were larger only by billionth of the size of the electron's negative charge, it would suffice to build up a generally positive charge on all galaxies but, because of being too small, it would not be detectable even by the most sensitive of instruments that man now has. This positive charge on all the galaxies, they thought, would cause the galaxies to repel each other and, thus, would cause them to undergo a steady mutual recession. As has been pointed out earlier, these scientists have said, in regard to their first

assumption, that the rate of creation of hydrogen would be so small that man, with the best available instruments, will not be able to observe it, and now, in regard to the positive and negative electric charges also they say that the difference would be so small that, with the best available instruments man would not be able to observe it. Is this a scientific way to get a theory accepted? This is exploitation of man's weak position because of lack of extremely sophisticated instruments of this field. Simply because man would not be able to detect it, therefore, they want him to accept it! Strange! The theory should stand on firm ground.

As admitted by them, this assumption also is not based on any observation as to the positive charge being slightly greater than the negative charge. This is just a speculation so as to replace the unbelievable 'big-bang' theory.

Further, as said earlier, Hoyle and other scientists say that, by the time the present galaxies have receded outside the visible universe, new galaxies would have appeared in their place. These new or young galaxies would have been formed from the hydrogen created continually, out of nothing. And, so to an observer, the universe would always look to be the same; it would not look empty because of some galaxies having receded out of view because, by the time the old galaxies disappeared, the new ones would have appeared, in their place. **But, how hydrogen, created out of nothing, would condensate and form galaxies?—none of the scientists has explained this.** Isn't this like counting the chickens before the eggs have been hatched?

It would seem that the theory aims at an eternal universe in which things were not created in the remote past by a big-bang but are being created continually. The Big-bang theory also, as shown earlier, leads to the concept of an eternal universe where a cosmic egg explodes into galaxies, etc. and where galaxies contract into a cosmic ball, and the cosmic ball explodes again to form galaxies and the universe. And, yet both these theories do not explain any origin, in real sense of the term. Why not, then, believe that the world is eternal and things are continually changing their form so that, after a cycle, they come back to have the form and the position from where they started? Would not that be more rational and more scientific, for we practically find this cyclic recurrence of the ecclesiastical phenomena and of many other natural phenomena? The world, in that concept, would be a cosmic drama which repeats itself after having occurred and re-occurred. This is what Shiv Baba has told us through Prajapita Brahma.

How were the Universe, Stars and Planets formed?

Scientists are caught in a hot goose-chase or what, in logic, is called 'infinite regress'.

The Theory of Evolution has influenced man's all fields of thinking. It has left its great impact on History, Philosophy, Astronomy, Biology, Geology, Chemistry, Physics and almost all other branches of knowledge. While the Theory of Biological Evolution says that all living species evolved after originating suddenly from a single-celled amoeba in the 'primordial soup', the astronomers believe that stars also evolved from one to the other after sudden origin. From the point of view of energy, astronomers have classified stars into various types-(1) Main Sequence, (2) Red Giants, (3) Super Giants, and (4) White Dwarfs. The astrophysicists say that these stars evolve from one to the other, in this order, beginning with the stars in the Main Sequence, over millions or billions of years. They further say that all stars or astronomical bodies have been formed through the processes of condensation, etc., over billions of years, from clouds of primordial matter, consisting mostly of hydrogen gas, which, like one-celled amoeba in the biological evolution, is made up of one proton and one electron for the cosmological evolution.

In fact, on this theory of cosmological evolution stands the super-structure of the 'Theory of Biological Evolution', for the latter theory is based on the belief that the Earth was, originally, a part of the sun and was a molten and hot matter, and it slowly, cooled and, after billions of years of this cooling, the atmosphere, necessary for biological evolution, appeared. Some other evolutionary scientists think that life on earth also originally came from some star, or, that the earth also was originally formed from a hot or incandescent gas cloud as the stars were formed. It is, therefore, utmost important to discuss the validity or the merits and demerits of this theory concerning the formation of stars and planets, for, if this theory fails then the result will have very wide repercussions as it will affect almost all branches of knowledge or man's total thinking.

Is the theory of star-formation based on observation?

Needless to say that no one has ever observed the birth-to-death cycle of a star nor has anyone ever seen a star traversing the line of transformation from one type to another, for, according to the astrophysicists themselves, this process of evolution takes place billions of years and the duration of man's life, compared to this period, is almost nothing. It is, therefore, very strange that, while astronomers themselves admit; that they have no detailed knowledge of even one single star, they formulate theories and general principles about all stars. In this context, the words of a prominent astronomer, Stuart Inglis are worthy of attention. Says Inglis: "...for any single star, we cannot yet tell accurately its age, its past and its future."¹ Another well-known astronomer, Abel also has made a similar remark. Comparing man's most extensive observation of an individual star of observing the ageing process of man, Mr. Abel says that, generalisation about a star on the basis of observation, is as deducting laws and making generalizations about man by studying his ageing process for only ten seconds out of his life span of a three scores-and-ten, and inferring the rest on guess.²

However, despite such admissions by many scientists, practically all books on astronomy gloss over the complexity of the problem and the poverty of human knowledge on the subject most superficially and make all sorts of guesses and express implicit faith in the theory that stars were formed spontaneously by condensation of interstellar clouds and by gravitational attraction. The average reader accepts this idea readily even though common sense and available data indicate that the formation of stars, in the fashion, proposed by the scientists, is impossible.

Common-sense view of the current Theories

Most scientists, who have formulated theories, concerning the formation of stars or protostars, say that the stars are formed by slow-contraction and then condensation of interstellar gas cloud over a period of billion of years. But our common sense and scientific intuition should tell us that gases expand rather than contract. Anyone who has doubt on this point can observe this behaviour of gases in a laboratory. Our experience of pumping air into our volley ball or football bladder, or tube

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1. *Inglis, S.J.: Planets, Stars and Galaxies, 2nd Ed., 1967, John Wiley and Sons, Inc., N.Y., p.325.*
 2. *Abel G.: Exploration of the Universe, 2nd. Ed., 1969, Holt, Rinchart and Winston, N.Y.,*

of our bicycle during our childhood days, should also remind us that, in order to push air in, and to have it concentrated into small volumes, lot of pressure is required and for exerting pressure, energy is required. The reason for this is that, ordinarily, gases have a tendency to expand and we have to overcome that tendency and have to push them in so as to condensate. So, if the interstellar gaseous clouds or the incadescent gas mass were to contract and condensate to form a star, pressure and energy would be required to squeeze the gas inward. How did that happen? Wherefrom did that external pressure and energy come?

It would be interesting to know that, in order to overcome this difficulty, some astrophysicists hypothesise some other hotter clouds which surrounded the clouds that condense into the form of stars. They say that the molecules at the surface of the inner clouds were bombarded by the faster moving molecules of the outer of surrounding cloud that was hotter than the inner cloud. Since the inner cloud, according to Lyman Spitzer,³ an internationally known astrophysicist at Princeton, has a temperature of 100°Kelvin, the outer cloud, according to the physicist, Jastro, should be 10,000°Kelvin,⁴ and this second cloud should be of ionised Hydrogen (HI).

Now, it can be seen that, in order to get rid of the difficulty of contraction and condensation of the gas-clouds, scientists have brought in other (hotter) surrounding gas clouds, but this has made the theory less acceptable, for it now has additional questions to answer. For example, one question would be: "How did the inner cloud of neutral hydrogen become 100 times cooler than the outer cloud to be 100 times hotter (with a temperature of 10,000° Kelvin) than the inner cloud, which has a temperature of 100° Kelvin?" Without explaining what factors brought down the temperature and some condensation of the inner clouds, how can one assume it to be correct and leap over to the next step of explanation? Certainly, one would like to know how the interstellar cloud, which according to Spitzer, has a temperature of 10,000° K, become that much hotter? It should be known that this temperature (10,000° Kelvin) is one-

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3. *This statement was made by Lyman Spitzer in a paper presented at the Goddard Institute for Space Studies in New York, in a lecture on star-formation, NUFFIC International Summer Course in Science, in 1960. It was quoted in Aller, L.H. and D.B. McLaughlin in 'Stellar Structure', The University of Chicago Press, Chicago, Ill, p.577.*
 4. *Jastro, R., and A.G.W. Cameron, editors: Origin of the Solar System, 1963, Academic press, N.Y. pp.43-44.*

and-half time hotter than the temperature of the sun! So, it is natural for one to ask: "How could an extended region of interstellar material attain such a high temperature? If one says, as the scientist Bart Bok says,⁵ that it became heated by the nearby very hot O and B class stars,⁶ then one would ask: "How did these O and B class stars condense before there were other stars to heat up the gas of which these new ones are made?" Evidently, another gas cloud would be necessary for the explanation of these other, i.e. heating stars and still stars would be required to heat the gas cloud that formed these preceding stars? Thus, the scientists are caught up in infinite regress or what is reminiscent of chicken-versus-egg dilemma.

This apart, the most amusing part of this is the faith of the physicists and cosmogonists that, the hot and the cold cloud remained unmixed for millions of years, over which period the processes of contraction and condensation were in progress.

Thus, it is clear that man's hard common sense and scientific intuition do not accept these theories which seem to be highly inadequate and are also against known and observable behaviour of gases, and lead to infinite regress. Let us now consider these theories in little more scientific terms.

Consideration of the data suggested by Scientists

Lyman Spitzer, an internationally known authority on cosmogony, has suggested certain values for calculations⁷ which explain the formation of stars by condensation. We will now use those and see if the star-formation, in this way, is possible.

Let us consider an interstellar cloud, massive enough to form the sun, 2×10^{30} Kilograms. Spitzer has given the temperature of the cloud as 100°kelvin. The volume of the cloud, calculated on the basis of a

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5. Page, T. and L.W. Page, editors, 1968:; *Stars and clouds of the Milky Way*, the MCMillion Co., N.Y., pp.210.
 6. 'O' and 'B' class stars are bluish-white stars, possessing unusually high surface temperatures. The 'O' class stars have much greater than 25,000K and the 'B' class stars have 11,000 to 25,000K temperature. This temperature is much higher than that of the sun which is a temperature of about 6,000K.
 7. Jastrow, R. and A.G.W. Cameron. Editors, 1963, 'Origin of the Solar System', Academic Press, N.Y., pp. 39 to 53.

relationship that Spitzer has given, will be $5.64 \times 10^{47} \text{ M}^3$ cubic meters⁸.

The calculations show that, by the time the radius of the thin cloud shrinks to 100 times the sun's radius, its main temperature will have risen to $100,000^\circ$ Kelvin. The volume of the cloud, after shrinking to 100 times the sun's size⁹ would be $1.40 \times 10^{30} \text{ m}^3$.

It can be seen, from this result that, as the volume of the gas has been reduced by a factor of 400 trillion¹⁰, the temperature has risen by a factor of 100 only.¹¹ Obviously, because of contraction and condensation, the energy per mole of gas mass will increase. If it does not get radiated in the process, condensation and star-formation will not take place. In order that it may radiate energy, the process of radiation will take a long time, it cannot be spontaneous. So, spontaneous formation of stars from interstellar gas-mass is impossible.

Textbooks of nuclear physics explain that such a system should radiate about half of its energy if it contracts¹². If this energy were to remain in

8. Spitzer has said that the mass of the cloud, divided by its radius, squared, must be equal to $7.6 \times 10^{-3} \text{ gm/cm}^2$.

$$\text{So, using cgs units, } \frac{2 \times 10^{33}}{r^2} = 7.6 \times 10^{-3}$$

$$r^2 = \frac{2 \times 10^{33}}{7.6 \times 10^{-3}} = 2.63 \times 10^{35} \text{ cm}^2$$

So, $r = 5.13 \times 10^{17} \text{ cm}$ or $5.13 \times 10^{15} \text{ meters}$

The volume of the cloud V_1 is $\frac{4}{3} \pi r^3$

$$\text{Using MKS units, } V_1 = \frac{4}{3} \pi (5.13 \times 10^{15})^3 \\ = 5.64 \times 10^{47} \text{ m}^3$$

9. The sun's radius is known to be 432,000 miles. Since the cloud after shrinking, is 100 times the Sun's radius, so it is 43,200,000 miles. Considered in meters, it is 6.95×10^{10} meters. So, the volume after condensation of the cloud, according to the formula $V = \frac{4}{3} \pi r^3$
 $= \frac{4}{3} \pi (6.95 \times 10^{10})^3$
 $= 1.4 \times 10^{33} \text{ m}^3$
10. Previously, the volume of the gas cloud was $5.64 \times 10^{47} \text{ m}^3$ but now it has become $1.40 \times 10^{33} \text{ m}^3$.
 $\frac{5.64 \times 10^{47} \text{ m}^3}{1.40 \times 10^{33} \text{ m}^3} = \text{about } 4 \times 10^{14}$, i.e. about 4 trillion.
11. Previously, the gas-cloud had a temperature of 100° K , but now it has a temperature of $100,000^\circ \text{ K}$. So it is now 1000 times.
12. Smith, C.M.H. 1966, A text book of nuclear physics, Students Edition Pergamon Press, Oxford, p.757.

the cloud, as in the present case, its temperature would rise to 2000,000° k rather than 1000,000° k. Our scientific intuition should tell us that, for such a cloud, it is more natural to expand than to contract.

Further, let us consider that the gas cloud is an ideal gas because its material is so spread out. By calculating the entropy-change, we will find that the entropy must decrease by 33 entropy units for every mole of material in the cloud!¹³. This goes against the theory of spontaneous formation of stars. For, applying the Second law of Thermodynamics, we find that, even if we accept the data given to us by the proponents of the theory of spontaneous stellar formation, we find that the reverse process (i.e. expansion) rather than the gaseous cloud would be bigger and that the cloud would condensate into cluster of stars rather than a single star, even then there must be entropy decrease and, so, there cannot be spontaneous condensation.

The cloud would have an outward push

Another very important point is that, even at 100° kelvin, the Thermal motion of the molecules would be greater than the gravitational pull inward. While the outward force¹⁴ would be 9.72×10^{20} newtons, the inward pull will be 1.52×10^{19} . In other words, the outward push will be

13. The formula for calculating entropy-change as given in all standard text on Thermodynamics is:

$$ds = C_p \frac{dT}{T} + R \frac{dV}{V} \text{ where } S \text{ is the entropy, } T \text{ is the absolute temperature, } V, \text{ the volume.}$$

C_p the molar heat capacity at constant pressure, and R is the universal constant. Here C_p rather than C_v has been taken into account because volume of the gas is not constant.

14. According to the ideal gas law, the outward push of the cloud can be calculated by the formula $PV=nRT$ where P is the Pressure, V is the Volume of the cloud, R is the universal gas constant, and T is the absolute temperature. So, if we want to know the Pressure then

$$P = \frac{nRT}{V} \text{ The total force (F) outward over the whole surface of the cloud is quantity}$$

multiplied by the surface area of the cloud.

$$\text{So, } F = PA = \frac{nRTA}{V}$$

64 times the inward pull. So, it has a very great tendency to expand rather than to contract.

In this context, it should be known that the smaller the object, the more successfully it can contract unless the equilibrium between thermal push outward and gravitational pull inward has reached. The reason for inward pull being greater in smaller objects is that the inward gravitational pull is inversely proportional to the radius squared whereas the outward push is inversely proportional to the radius; so, if the radius increases, the inward pull will highly decrease. **In the case of gas clouds, since their radius is very large, it is natural that the inward gravitational pull will be proportionally much less and, therefore, the gas cloud will have tendency to expand rather than to contract. So, even if we take for granted the terms and conditions chosen and the data supplied according to the will and choice of the proponents of the spontaneous condensation theory, the calculations lead us to the conclusion that this theory is unsound.**

Scientists themselves also are dissatisfied with this theory

It would be interesting to know in this regard that Spitzer himself also is not convinced by his own calculations and by the scheme he has proposed and outlined. So, at one place in his writings, he has said: "It should be emphasised that all this discussion is quite tentative and serve principally to point out some of the problems involved¹⁵. After outlining his hypothesis of star-formation, he further says: "as one indication of the many uncertainties in star-formation theory, should be noted that, possibly some of the stages do not even arise during the actual process of star birth¹⁶.

Mr. G.R. Burbidge, another recognised authority on evolution of elements in stars admitting that star-formation seems to be so improbable that it couldn't happen the way. It has been outlined by the prominent

The gravitational inward pull for the whole cloud can be calculated by the hydrostatic relationship, according to the formula:

$$dP = -\rho GM(r) / r^2$$

----- where r is the radius of the cloud, P is the pressure ρ is the density,

$$dr$$

and $M(r)$ is the mass of the whole cloud expressed as a function of r . The total force (F) inward at the surface = PA which would be $(2/3\rho p^2 Gr^2) (4\pi r^2)$.

15. Jastro, R. and A.G.W. Cameron., op. cit., p.41.

16. Ibid., p.42.

cosmogonist and astrophysicist says: "If stars did not exist, it would be easy to prove that this is what we expect"¹⁷. He said that because he was convinced that the assumptions regarding condensation of a star from interstellar material would violate a good deal of laws and processes of Nature.

Encyclopaedia Britannica also has termed the whole question of star-formation and galaxy-formation as "a challenge to cosmological thought",¹⁸ because the cosmologists have not been able to meet this challenge.

Formation of Galaxies

We have already discussed in brief, the theory of spontaneous formation of stars by condensation of interstellar gas-clouds and have shown that the theory is not sustainable. The formation of galaxies is naturally much more problematical. In addition to problems that we confronted in the case of star-formation, an additional one is the problem of the shape of galaxy which has a middle disc or nucleus and there are spiral arms, one on either side of this disc. According to the estimate of scientists, these contain about 100 billion stars and about hundred globular clusters. Each cluster contains several tens of thousands of stars that revolve round the galaxy as satellites, and the galactic corona. But it is a notable point that no one has been able to explain satisfactorily how the condensation of stars took this particular shape.

Moreover, the scientists now know that if they say that the stars have condensed from koinomatter (regular Matter) exclusively, then many problems confront them which they cannot solve. If, on the other hand, they say that the stars have condensed from a mixture of koinomatter and antimatter, i.e. ambiplasma, then again it becomes difficult to justify this view because, by its very nature, ambiplasma must incur annihilation which fact is of fundamental importance. Current literature on the subject of galaxy formation mentions 'proto-galaxies' but almost none has been observed so far nor has any satisfactory model of it has even been explained satisfactorily on paper. The scientists are led into the same kind

17. This statement was made at a lecture on star-formation, at NUFFIC International Summer Course in Science, 1960. It was quoted, later, in Aller, L.H. and D.B. McLaughlin, 1965, *Stellar Structure*. The University of Chicago Press, Chicago, 111.p.577.

18. *Encyclopaedia Britannica*, 1964, *Cosmogony*, p.580.

of infinite regress in this case also.

So it would be appropriate to conclude that, as alternative to theories of formation of stars proposed by man do not stand the test of scientific reason and hard common sense, the solution to the problem must lie some-where else. The solution is not that God created the stars as the Bible says or other religious texts say, because God also must create according to some laws and, as has been pointed out, the laws of physics do not explain this. The only right course then is to understand that this universe, with its sun and stars is eternal and that only changes in it take place. Never has there been a time when there were absolutely no stars no galaxies, no clusters or no nebula. If it is assumed that none of these were there in the beginning, then, no theory would be able to explain the formation of even a single star. Only if most of them have been there that a theory would be able to explain how a 'new' one was formed or 're-formed'. In fact, nothing, in the world is 'new' nor is anything 'born,' it is only 're-born' after a cycle. This is what Shiv Baba has explained to us through Prajapita Brahma.

***Metaphysics built on Physics:
Spirituality supported by science***

Are souls and God Discrete particles or they are one continuous whole?

People now generally believe that what science says is correct. Their this belief is based on the thought that the findings of science have resulted from objective observations and are experimentally verifiable and practically demonstrable. Many theologians and scholars, therefore, now try to find support for their religious concepts or doctrines in science, especially physics. So that people may believe in their religious concepts also. The present article discusses whether the religious or metaphysical theory of Monism is supported by the Quantum Theory.

It has become a common trend for scholars to find support for their metaphysical concepts in theories of physics. Many learned people try to present the authenticity of their spiritual beliefs by quoting parallels from findings of science, especially in the field of Physics. For this purpose, Quantum Theory is, perhaps, the one which is most often used. Quantum Physics is now like another Bhagwad Gita; metaphysical interpretations of Quantum physics vary widely as interpretations of the Gita vary. It is now well-known that verses of Shrimad Bhagwad Gita have been explained differently by various scholars of Monism and Dualism to support their own respective theological concept of the nature of the ultimate Reality, or God and the cosmos. In a similar fashion, various metaphysical constructions are now being built on the Quantum Theory.

It is for each one to judge for himself or herself whether a particular meaning being given to a finding of Quantum Physics is correct or not but one cannot help stating here that certain meanings being read in the findings of the Quantum Physics are prima facie incorrect, for these are opposed to the very basics of the Quantum Theory.

In order to explain this to a common reader, it would be useful to give a brief historical background of this theory and its origin.

Origin of the Quantum Theory

Max Planck was the physicist who brought forth the first crucial idea of the Quantum Theory in the year 1900. Planck at that time was

struggling with the problem of 'black-body radiation'. Before we proceed further, it would be better to know what is black-body radiation?

Let us suppose that there is placed a metal bar in a dark room which is light-tight. This metal bar is the 'black body' because in a dark room it cannot be seen. Now if this bar is heated, it becomes, first, dark red, then red, then orange, then yellow and, finally, white as the temperature rises. Now this glowing 'black body' radiates energy. This is called 'Black-body' radiation. This radiation results in the black-body radiation-curve. The amount of radiant energy, given off by such heated bodies varies with wave-lengths and temperatures. Many attempts had been made in the past to find a mathematical equation that gave the measurement of the emitted energy but these failed. Then Planck with an incredible leap of intuition, made what is now called 'Quantum Hypothesis'. He supposed that the material of the black body (i.e. any physical object) consisted of "vibrating oscillators (actually the vibrating atoms.) He hypothesized that energy was not emitted as an unbroken stream or as something continuous but as discontinuous bit or discrete portions which he called: 'quanta'. He specified the amount of discreteness by a number 'h', later called as 'Planck's constant'. Planck, with the aid of his quantum hypothesis, deduced the experimentally verifiable blackbody radiation law. This Planck's constant, which has dominated the calculations of atomic physics for more than eight decades now is 0.66259×10^{-34} .

The Prussian Academy, on October, 1900, said: "The formula given by Herr. M. Planck, after our experiments had already been concluded... reproduces our observations within the limits of error".

The change in physics brought about by the Quantum Theory

The Quantum Theory marked the start of modern physics. It brought a great change in the physicists concept of Matter. Previous to Planck's theory, most physicists conceived of the world of nature or Matter as a continuum. They thought of the forms of Matter blending into one another in a smooth, continuous way. Now the Quantum Theory said that the 'Continuous view' of the world must be replaced by a 'discrete' one. Let us explain this difference by giving an example.

If we look at a huge pile of wheat from a great distance, it appears to be a 'continuous' and smooth hill. It does not appear to be made up of 'discrete' grains of wheat. But when we come closer enough to the pile, we recognise that we were previously under an illusion or we had a mistaken view. The discrete grains of wheat can now clearly be seen. These discrete grains are the 'quanta' of the pile of wheat.

Planck's work now broke with the idea of the continuum in nature.

Light also is 'Light Quanta'

The far-reaching implications of Planck's theory had not been apparent till 1905, when Einstein, who was then almost alone among the contemporary physicists, who appreciated its significance, carried the Quantum Theory into a new domain. Einstein, postulated that not only black-body radiation but all forms of radiant energy—light, heat, X-ray, etc. actually travel through space in separate and discontinuous quanta. For example, the sensation of warmth we experience, when we are sitting near a fire, results from the bombardment of our body by innumerable quanta of radiant heat. Similarly, sensations of colour—red, yellow, blue, etc. arise from the bombardment of our retinas by Light quanta which differ from each other because of their various frequencies. He thus called light as 'Light quanta' because, according to him, it was made of 'discrete particles'.

Evidently the spiritual implication of this theory goes against Monism which says that God is one continuous and all-pervading and immanent principle.

The Photo-electric Effect

In the year 1905, Einstein applied Quantum Theory to what is known as Photo-electric Effect. Let us explain briefly what is Photo-electric Effect.

When a beam of light strikes against a metal plate, the plate ejects a shower of electrons. If it is violet light that falls on the plate, electrons will be ejected at a certain velocity. If the beam is yellow or red, light-stream of electrons ejected from the plate will move at a lesser velocity. The intensity of the ejected radiation will be proportional to the number of electrons ejected but the velocity of the ejected electrons will depend on the colour of the light. In other words, the vehemence of the electrons ejected or torn from the plate will depend on the wave-length of the radiation. Even if the light-source is removed to a considerable distance and is dimmed to a faint glow, the velocity of the electrons that prop forth from the metal plate, i.e. the velocity of the ejected electrons, will remain undiminished because it depends upon the colour (i.e. the wave-length) of the light falling on the plate and not on the intensity. This phenomenon is known as 'Photo-electric Effect'. Now let us explain how Einstein applied the quantum Theory.

'Einstein theorised that these peculiar effects could be explained only

by supposing that all light is composed of individual particles or grains of energy which he called 'photons'. He explained the photo-electric effect by the reasoning that the photons of violet, ultraviolet and other forms of high frequency radiation have more energy than red and infra-red photons, and that the velocity with which each electron flies from the metal plate is proportional to the energy content of the photon that strikes it. Einstein expressed these principles in a series of equations which won him Nobel Prize and influenced very profoundly later work in Quantum Physics and Spectrescopy. Television, for instance, is based on Einstein's Photo-electric law.

The fundamental conclusions of Quantum Theory and Photo-electric Law are against Monism

We have given the above information to say that Plank's quantum principle and Einsteins' Photo-electric Law are based on the basic assumption that Matter is not continuous but is discrete and that even Light which appears to be continuous is, in fact, made of particles, called photons.

In view of this, one is amazed when some scholars and even scientists—some of them physicists—try to find support for their Monistic view of God in the Quantum Theory. They say that Matter, Souls and *Brahm* (or God) are essentially not different; they are only the varying manifestations of one and the same principle or element, call it by any name. They overlook the fact that the Quantum Theory goes against their contention rather than support it.

In the first instance, they seem to forget, or they lay aside the truth, that all Matter or its various forms (energy included) is inconscient; it does not have the attribute, called consciousness, which characterises souls and God and makes it very different from them (Souls and God) Ontologically. They seem to have the wrong notion that Matter, which has subtle forms-as of light of various colours-takes at some stage, a form in which it is extremely subtle and is of the form of conscient and invisible lights. They entertain this notion without substantiating it by any evidence, proof or explanation. It should be remembered that in actual practice, we do not see Matter manifesting itself into any conscient form. For instance, Light, which is a subtle form of Matter (or Energy) does not give even the slightest, the least or the minimal indication of having consciousness. If we had noticed that Matter develops within itself the quality of consciousness as it becomes subtler and subtler, then we may have been justified to theorise that Matter and souls are derivatives of

each other or that they are different manifestations of one same principle. But in reality we do not notice any sign of consciousness at any stage or in any form of Matter.

Secondly, Quantum Physics tells us that all material forms are discrete; they are not continuous. Even light is made up of particles, called photons; All Matter is made up of atoms which, in turn, are made up of electrons, protons and neutrons—discrete particles again. All forms of energy are made up of quantas' i.e. discrete particles; nothing is continuous. **What appears to be whole is only an illusion because, in truth, it is made up of small particles or innumerable quanta. The Photo-electric Law and Quantum principle are in contradiction to the belief in Monism which says that all that is visible or invisible is one whole, continuous, non-discrete principle, called *Brahm*, God or whatever.** In other words, Metaphysics of Monism cannot be built on the physics, especially the Quantum Theory. Other observed quantum phenomena and also the Statistical Mechanics also go against Monism.

What is Statistical Mechanics?

The theory of Statistical Mechanics was invented by James Clerk Maxwell, the Austrian Physicist Ludwig Boltzmann and the American physicist J.W. Gibbs. According to Statistical Mechanics, a gas (also air which is a mixture of gases) consists of molecules or atoms bouncing off each other in rapid random motion like a room filled with flying tennis balls. The tennis balls hit the walls and each other. Same happens in the case of the molecules or atoms of gases.

Now since atoms are so small that these flying particles cannot be seen, the basis of Statistical Mechanics could not directly be tested. Einstein thought over this problem. In those days, many physicists did not believe in the Atomic Theory, i.e. they did not think that Matter is made up of atoms. For example, Mach Herst did not believe in it, the Russian-born German famous physical chemist Friedrich Wilhelm Ostward did not believe in it and many others did not believe in it because there was no direct evidence for it. But now Einstein experimentally proved it.

There is, of course no doubt that, even previous to Einstein, the atomic hypothesis was used by various scientists and many considered it to be correct but it was not a universally accepted theory. In 1738, Daniel Bernouilli; a Swiss Mathematician had published a book, titled Hydro dynamics in which atomic hypothesis was used and Statistical Mechanics was employed in Physics for the first time to demonstrate the truth of Boyle's Law for gases which said that, temperature remaining the same,

the pressure on the sides of the container of a gas increases in proportion as the gas shrinks because the gas is composed of particles which put pressure on the container. In 1808, John Dalton, the great English Chemist, published 'A New System of Chemical Philosophy' in which it was explained that each element consisted of characteristic atoms and these atoms were involved in all chemical reactions and recombinations. Later, in the nineteenth century, in the year 1811, Amedeo Avogadro also enunciated a principle according to which, under standard conditions of temperature and pressure, all gases at a given volume contain the same number of molecules. Further, in 1865, J. Lookschmidt gave even the number of molecules in a given volume of gas at one atmosphere of pressure and at zero degree centigrade. He said that the gas molecules are about one fifty millionth of an inch in diameter. This formed the basis for calculating the 'molecular weight' of gases and the measurements have even shown that, under the same condition, there are about 4.5×10^{19} molecules in a cubic centimeter of gas. All these observations and measurement were there and yet some scientists did not believe in the atomic hypothesis. Einstein now gave an experimental substantiation of this hypothesis. In 1905, he published a paper on what is known as Brownian Motion. Let us explain briefly what is 'Brownian Motion' and what is its background history.

Brownian Motion also proves that Matter is made up of discrete particles

Robert Brown, a Scottish botanist, did some experiments in 1827 which are now known after his name. Brown took pollen grains-particles from various plants which measured something like $1/5000$ of an inch. He immersed them in water. On observation, he discovered that these particles performed a constant, agitated and erratic or random motion which had apparently nothing to do with any currents moving in the water. At first Brown thought that these pollens were, perhaps, alive and that was why they move. But then he repeated the experiments with dried pollen particles of plants that had been preserved in a herbarium for upwards of twenty years. He also extended his experiments to inorganic substances, such as manganese, bismuth, nickel, etc. He put their microscopic particles in water. And after all these observations, he wrote: "These motions were such as do satisfy me, after frequently repeated observations, that they arose neither from currents in the fluid, nor from its gradual evaporation, but belonged to the particle itself.

But Brown made the wrong assumption that these microscopic particles

represented some sort of new state of matter. He gave to it the name "active molecules". He wrote in his conclusions: "the active molecules were found in abundance". Later, however, many investigators who studied the phenomenon, gave qualitatively correct suggestion as to what Brownian Motion was. These people noted that the liquid itself was made up of molecules. These molecules themselves were in a state of constant and random agitation so that they gave movement to the suspended particles such as of pollen, etc. But no one gave any experimental evidence nor did they give any quantitative measurement of this movement. It fell to Einstein's luck to do this. One of his three famous papers, published in 1905 was on Brownian Motion:

In this paper, Einstein said that if you put into a gas or a liquid relatively large grains of pollen which could be seen under a microscope, you could see them move around. He said that the pollen grains are so small that they get bounced and jiggled by the atoms hitting them just as would be a basket ball being hit by tennis balls. Einstein even gave a formula in regard to the quantity of Brownian motion. Perrin, the French scientist, did some important experimental work in regard to this and confirmed Einstein's quantitative predictions. Einstein showed that the average distance travelled by the Brownian particle increased as the square root of the elapsed time so that, given enough time, the particle will move or be moved by the impact of the molecules, far from its starting point. This precise measurement, given by Einstein, proves that liquids also are composed of discrete particles or quanta, namely molecules. No doubt is left about this, for their molecular movement could even be measured.

Now all this, which goes under the name Quantum Theory, substantiates that **nothing is continuous or one whole. Solids, liquids and gases, all forms of radiation, including light are made up of discrete particles.** This should set at rest all metaphysical speculations concerning God on the basis of Quantum Theory. But, one feels sorry to note that there are some physicists and theologians who still construct their theories of Monism based on this!

There is another thought to think. If God only appears to be a continuous whole but is, in fact, composed or constituted of innumerable particles (souls) as a big pile of wheat appears to be a continuous whole from a distance, then it means that He is composed of innumerable discrete conscious quanta, i.e. infinite number of discontinuous or separate souls. This, however, cannot be because innumerable, separate, conscious particles will give to the whole (if there be one) a split personality and such cannot be God's personality. God is one single person a unity-

consciousness. He is not a jumble or conglomeration of consciousnesses. A conclusion that can be derived from the Quantum Theory is that Matter can be (and actually is) composed of innumerable discrete particles or quanta but God cannot be (and is not) composed of number of innumerable particles (souls). In other words, God is not (and cannot be) omnipresent, all-pervading or one who permeates the whole universe. There are innumerable souls and God is one-supreme among them all. Quantum Theory in physics gives quantum principle in metaphysics, and this latter runs counter to the belief that God is one whole, omnipresent or immanent power. God can only be a discrete particle—a infinitesimal point of light, for light is the ultimate form of energy.

Again, if Matter, Souls and God (*Brahm* as they are called) are essentially non-different and the difference appears to be only because of illusion, then one might ask such type of Monists "What is your aim after all and what is the intrinsic nature and the worth of philosophy you sell? Are you trying to say that not only is Matter energy in its subtle form but also that subtle energy such as light becomes conscious at some stage? If so, then, even at that stage, it must be composed of discrete quanta, i.e. very subtle sub-atomic particles (even though conscious). In other words, it cannot be a continuous whole; even then this is what Quantum Theory points out.

Moreover, by saying that Matter, at a highly subtle stage, is conscious *Brahm* (or God,) are not you making people materialistic rather than spiritualist? Are not you telling them that Man is, originally, Matter? Is it, then not some form of materialism you are selling under the pseudonym 'Spiritual philosophy'? Are not you making people 'matter-conscious' rather than 'soul-conscious'?

If, on the other hand, you say that Matter is a manifestation of *Brahm* (God) and the difference between Matter and God is only one of degree or grade of consciousness and not of ontological nature, then aren't you trying to foist materialism though it looks to be a spiritual thought? For, your philosophy, by demolishing the demarcation between Matter and God (or souls), or by blurring the difference, has as much potentiality of making a person Matter-conscious as of making him soul-conscious in so far as it considers Matter and soul as only derivatives of or evolves of each other.

Thus, Monism cannot sustain itself by trying to take support from the Quantum Theory or from simple or scientific logic.

New Paradigm of Physics

As is well-known, it was Quantum Theory of Max Planck, the theory of Heat, called Thermodynamics and the theory of light as electromagnetic waves by James Clerk Maxwell and the theories of General and Special Relativity of Einstein that brought revolution in the twentieth century physics. In this chapter, I have drawn one or two conclusions from Einstein's Theory of General Relativity and from the Second Law of Thermodynamics or the Entropy Law and have suggested, as a lay student of Physics and also as a student of spiritual knowledge, a new paradigm of physics.

To present the new paradigm, I will refer first to Einstein's views on the overall geometry of the Cosmos or the Space-Time Continuum in which the stars, meteors, earth and other planets move. Einstein has said that the geometrical structure of the Universe or the curve of the cosmos as a whole is shaped by the sum of its material content. He has pointed out that, for each concentration of matter in the universe, there is a corresponding distortion of the space-time continuum. Each celestial body, each galaxy, each planet creates local irregularities in space-time like eddies around islands in the sea. The greater the concentration of matter, the greater the curvature of space-time and the total effect is an overall curvature of the whole space-time continuum.

The Universe is of the Form of a Sphere

Einstein has further said that the combined distortions, produced by the structure of the gravitational fields of all the innumerable masses of matter in the universe, cause the space-time continuum to bend back on itself in a great, closed cosmic curve. In other words, Space, according to Einstein, though finite, is unbounded and is curved; a mathematician would define its geometrical character as the four-dimensional analogue of the surface of the sphere. The scientists say that the radius of this can be ascertained by determining its materialistic content. Basing their calculation on the average density of matter in the universe, some scientists have even given the radius of this sphere.

Time also is Cyclic

Further, in this three dimensional world, to which Riemannian and not Euclid's geometry is applicable, not only the Space but Time also should be of the analogue of a sphere. Einstein has combined the concept

of space and time. He has explained that what we call 'a year' is simply a measure of the earth's progress in its orbit around the sun and what we call 'an hour' is actually a measurement in space as arc of 15 degrees in the daily rotation of the earth. Thus, Time which has always been considered eternal should also be looked upon as cyclic so that after a cosmic cycle, it will bend back on itself, for in Einstein's world, there are only circles; there are no straight lines.

Now referring to these concepts, I would like to suggest that we should not consider the physical history of the cosmos and of man as rectilinear but cyclic, for there are no straight lines in this four-dimensional space-time continuum. We should, instead, have the paradigm of cyclic order of events. The world does not move always in one direction, namely, of dissolution but, after a period, the cycle repeats.

Since Time is cyclic, there are no initial origins

One benefit of the concept of considering the world as a self-perpetuating universe will be that scientists will no longer have to bother to find out the origin of the universe, the galaxies, the species, etc. After all, man's all attempts upto now, to solve the problem of initial origin have not yielded to him any incontrovertible and universally acceptable solution. Every theory regarding the origin rests ultimately on the prior assumption that something was already in existence-whether free neutrons, energy quanta or simply blank inscrutable "worldstuff" or the 'cosmic essence' of which the multifarious universe was subsequently built up. The biological origin of species from inanimate matter, or the birth of ameoba in the primordial soup, also has not been irrefutably proved and, at least, it is not a scientifically demonstrable theory. I, therefore, ask; "If we cannot go to the 'initial origin' in the real sense of the term and have always to postulate that something had already existed, why not consider the suggestion that the world has always been there-parts of it going into the state of dissolution and rebuilding themselves at some other place-and some species existing and others developing from them?"

The concept that Time is cyclic will also solve the problem posed by Entropy Law

Considering the cosmic order as cyclic one, I think, also solves another problem, posed by the Second Law of Thermodynamics. As we all know according to this law, matter in the universe is perpetually changing and the change appears to be towards dissolution. All the phenomena of nature within the atom and outer space indicate that the substance and

the energy of the universe are inexorably diffusing like vapour through the insatiable void. The sun is slowly but surely burning out. The stars are dying embers and, everywhere in the cosmos, heat is turning into cold, matter is dissolving into (radiation and available energy is dissipating into) unavailable energy into empty space. The universe is thus progressing towards an ultimate 'heat death' or, as is technically defined, a condition of 'maximum entropy' so that all processes of nature will cease. All space will be at the same temperature. No energy can be used because all of it will be uniformly distributed in the cosmos. There will be no light, no life, no warmth, nothing but perpetual and irrevocable stagnation. Time itself will come to an end, for Time points the direction of entropy.

Now this conclusion of the Second Law of Thermodynamics, which forms an unshakable pillar of modern physics, unless understood in the framework of a cyclic universe would contradict the geometry of the cosmos; the concept of a beam of light closing on itself after covering a cosmic cycle or the idea of a space-time continuum which perpetuates itself through endless cycles. I, therefore, suggest that we should look on all phenomena which we study in Physics, Astro-physics, Geology, Paleontology and such other sciences in this new framework or new paradigm, namely of a cyclic space-time continuum.

What I have suggested should not look unfeasible. Already there are few contemporary theorists who propose that somehow, some-where beyond man's meagre knowledge; the universe may be rebuilding itself. In the light of Einstein's Principle of Equivalence of Mass and Energy, it is possible to imagine the diffused radiation in space, congealing once more into particles of matter-protons, neutrons and electrons which may then combine to form larger units which, in turn, may be collected by their own gravitational influence into nebulae, stars, etc. and thus the life-cycle of the universe may be repeating for all eternity. Presupposing the possibility of such events as these, one might arrive ultimately at the concept of the self-perpetuating universe, renewing never-ending time.

As regards the cyclic theory, according to which cycles of time occur during which a reversal of entropy takes place, little experimentation has been done in regard to this theory. The idea that there are cycles of space-time which repeat endlessly was familiar in ancient thought of Indians and it was a part of the belief of Stoics. An ancient belief of India is that there is first the Golden Age in which there is the maximum available energy and the matter and society are in the highest ordered state and then there is gradual deterioration in the level of the available energy and moral order through the succeeding Silver, Copper and Iron ages

and, at the end of the Iron Age, there is a great catastrophe as well as divine intervention for the reversal of the entropy and the re-establishment of the Golden Age and then the whole cycle repeats once again. Now this belief, based on intuitive and meditative understanding of the cosmos and the forces at work in the world and, based also on divine revelation, seems to fill the gap between Einstein's view of the world as four-dimensional space-time continuum on the one hand and the irrefutable Second Law of Thermodynamics or the Law of Entropy on the other hand.

As an aside to what I said about Entropy, I may add that it is really strange that though, in the modern world, scientists are willing to see the physical history of the universe as beginning with maximum available energy and moving towards decay and chaos, yet some of them continue to cling to the notion that history of moral level of mankind follows the exact opposite course, i.e. it has moved from a state of chaos to a 'progressively' more ordered state. This is a blatant contradiction to the Law of Entropy, applied in the moral domain.

Explanation of Precognition

Another advantage of considering Time as cyclic would be that we would be able to explain the phenomenon of precognition. Once we consider that each moment in time is a point on the curve of Time which, finally bend round on itself to form a rotating sphere, then we will naturally conclude that the Space-Time Cycle repeats. In other words, "the future is already written and what 'will be' already is." This will explain precognition.

The Cyclic view of Time will give more accurate view of period of radio-activity

Now, taking up the main thread of my arguments, I would like to say that if we consider various geological, geophysical and other events within the framework of the cyclic universe, not only will we have a more clear world-view but our understanding of many other physical phenomena will also be better. Take, for example, the phenomenon of radio-activity. It is thought that Uranium, which disintegrates at an invariable rate, must have come into existence at one specific time. The geophysicists who believe in an origin of the Universe or the earth, consider that if we make calculations based on the known rate of disintegration of Uranium, then billions of years have elapsed since Uranium began to disintegrate into Lead. They also think that there is no natural process leading to formation of Uranium from Lead. They are, therefore, unable to explain

how, after the whole Uranium has been converted into Lead, the universe will have Uranium again as one of the forms of matter. If instead of considering the time as linear and as having an origin, they consider it as cyclic, they would be able to understand this phenomenon of disintegration of Uranium better and more accurately. For, in that case, there will be no need to imagine that the whole stock of Uranium in the Universe will, one day, have been converted into Lead because the theory of Cyclic space-time continuum and cyclic Universe would imply that before the whole Uranium has exhausted itself by disintegration, a catastrophic event such as the chance nuclear explosions (there could be other events as well) would again convert Lead into Uranium and the cycle would repeat itself again. This concept would also save us from committing the error of considering the period of disintegration to have been billions of years because, in the new cyclic framework, we would not consider all Uranium stock in the 'beginning' to have been of Uranium without-Lead nor would we consider that the whole of it would disintegrate into Lead-without-Uranium in the end. This view of the Uranium cycle would give us the period of disintegration not billions of years but much much less.

The same Principle of cyclic universe would apply to the thermo-nuclear processes in the interior of stars, transmuting into radiation. Thus the duration of stellar life would also be considered cyclic.

I am not a physicist by training or by profession but as I said in the beginning, I am only a lay student of physics who is interested in considering the problems of physics and who tries to understand them in the light of spiritual revelations and knowledge based on intuition and meditation. From that background, I have just made an attempt to understand various phenomena of physics in the light of this new paradigm and I humbly suggest that eminent physicists give a serious thought to this end. if they think fit, do some experimentation in regard to this.

In order to get fuller view of Truth, physicists must know the self—the primary reality

Before I conclude, I would like to invite your attention to another important point. It is that we come to know the external world of things and events entirely from the perceptual experience, such as of vision, hearing, touch, etc., attained by means of our various sense organs and the mechanism of the brain. But we all know from our experience that the external world is other than the self which gets these experiences by virtue of its consciousness.

Take for example the case of visual perceptions. The image of an object is transmitted by nerve-impulses through the optic nerves to the visual cortex of the brain and there it gives rise to a specific pattern of activity. This explanation, given by the biological science, is however partly true. We have to add to this the truth that there, in the brain is the conscient self which interprets this neuronal pattern of activity and gets a conscious experience from the seen events. Without the presence of this conscient self, we can neither have a valid picture of the external world nor have any experience of it. It is this conscient self which interprets the retinal and neuronal data.

When I thus re-examine the nature of my sensory perceptions and my experience, it becomes evident to me that the experience of the external or objective world also is derived from the private experience of my inner self. Thus, all our experiences of matter and the basis of all attempted explanation of natural world in terms of physics, chemistry, etc. have the status of only a second-order reality, the primary reality being the self. Even the experience of knowledge of our relationship with our own body is of the status of second-order reality. So, whatever account or explanation we give of the external world, without explaining the primary reality of the self will be incomplete or distorted.

In support of this observation, I would quote here Eugene Wigner, a famous physicist, from his lecture titled; "Two kinds of Reality".

"There are two kinds of reality or existence—the existence of my consciousness and the reality of existence of everything else. This latter is not absolute but only relative. Excepting immediate sensations as the content of my consciousness, everything is a construct."

Wigner further says, "As I said, our inability to describe our consciousness adequately, to give a separate picture of it, is the greatest obstacle to our acquiring a rounded picture of it, is the greatest obstacle to give a separate picture of the world."

Schrodinger, the Physicist, who was awarded the Nobel Prize for his Wave Mechanics, wrote thus about the importance of knowing the self in his book, "Science and Humanism":

"Who are we? The answer to this question is not only one of the tasks but the task of Science."

I would, therefore, suggest as a student of spiritual knowledge and meditation and also as a student of physics that, in order to get a complete picture of reality, the Physicists would do better if they also know the self which is the primary reality and is different from the body and the brain.

I would like to close by indicating the difference of soul and the body by quoting Socrates from *Phaedo* in which there is a dialogue between Socrates and Crito and other followers before he was given a cup of poison.

“We shall try our best to do as you say,” said Crito.

“But how shall we bury you?”

“Any way you like” replied Socrates, “that is if you can catch me and I don’t slip through your fingers.” He laughed gently as he spoke, and turning to us went on:

“I cannot persuade Crito that I am this Socrates here who is talking to you...; He thinks that I am the one whom he will presently see lying dead. You must give an assurance to Crito for me... that when I am dead, I shall not stay but depart and be gone. That will help Crito to bear more easily...when he sees my body that being burnt or buried as if something dreadful were happening... No, you must keep up your spirit and say that it is only my body that you are burning; and you can bury it as you please...”

So, the self, as Socrates also pointed out, is different from this body. While the body dies and soul lives on and we can see and experience it by means of the art and science of meditation.

May you, therefore, know that art and science of meditation besides the science of physics, chemistry and biology! May you know the metaphysical truth about the self besides the physical truth about the world and thus have a blended view of the reality!

(The above paper was presented by the author at the Congress of Scientists, at Cologne, Germany on 21st, Nov.1985)

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1. Einstein: *Jermy Bernstein*, Fontana/Collins, 1974
2. *The Cosmic Code-Quantum Physics as the Language of Nature*: Heinz R. Pagels, Bantam Book, New York, 9183
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6. *Brain and Conscious Experience*: Edited by John Eccles, Springer-Verlag, New York, 1968
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8. *The Tao of Physics: Fritj of Capra*, Fontana/Collins, Oxford University, Press, 1975.

Cyclic Repetition of History

Is history a predetermined rise and fall of cultural and religious groups?

In ancient civilisations, societies or countries, history was believed to be cyclic and repetitive in its nature. In India, in the Vedas, the Puranas and the Epics, there are many references to cyclic concept of yugas (epochs) and of creation and destruction!¹ The traditional division of historical process, according to Hindu is fourfold—*Krita*, *Treta*, *Dvāpar* and *Kali*. In the first, virtue (*dhārma*) reigns supreme, in the second it declines, in the third it becomes sparse, and in the fourth it disappears.²

In the Jain tradition, in India, the wheel of time moves in the revolving rhythm of *Avasarpini* and *Utsarpini* ages.³ In Mahayana Buddhism, the wheel of History is symbolised by *Mandala* and, in Hinduism, it is represented by *Yantra* and *Swastika*.

Greek viewed Time as Cyclic

The Greek also saw history as a circle, not as a line. They called the circle as 'Great Time' and believed in the repetition of history on completion of this cycle or 'Great Time'. A writer says that the Greek had a 'nostalgia' for a periodical return to the mythical time of the beginning of things, to the Great time.⁴

Plato's *Republic* refers to a cycle of eternal recurrences when time and again society returns to Monarchy after passing through other forms of government.⁵ Polybius also believed in this type of eternal cycles of history. The Greek believed that history, must also be an appearance of some eternal 'Reality' which, in essence, remains cyclical and, hence, eternal.

Aristotle also was fascinated with the idea of cycles. He considered

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1. A.K. Banerjee's article in 'History of Philosophy Eastern and Western' p.123
 2. Prof. Budh Prakash: *Hindu Philosophy of History* in journal of History of ideas', Vol XVI, Year 1955, p.499.
 3. Cf. Sir Charles Eliot, *Hinduism and Buddhism*, New York, Barnes and Noble, 1921, Vol. 1, pp.42-47.
 4. Mircea Eliade, *The Myth of the Eternal Return*, Princeton, N.J. Princeton University Press, 1949, IX.
 5. Plato's *Republic*, Book VII and Collingwood's "Essay on Metaphysics", Chapters-II & III.

the world to be eternal and subject to periodic recurrence in the birth and decay of institutions and cultures and the recurrence of cultural patterns. He thought that coming-to-be and passing-away are processes always occurring in nature, their repetitive character being accounted for by the nature of matter itself.⁶ Aristotle thought that all metaphysical and astronomical elements had an allotted span of development, maturation and decay. The Greek believed that all social and political institutions begin, grow, wax strong and decay and they have their modes in the cosmic pattern.⁷ They believed that destruction ensues from man's avarice, lust for power and hatred of wisdom.⁸

Pythagoreans believed in recurrence

The Pythagoreans also, viewing a world in which night yielded to day and season yielded to season, thought it reasonable to assume that human experience, including successive incarnations, was reflective of the rhythmic patterns of nature. Their cyclic view was founded on the astronomical idea of a Great Year of the universe, a time at which all the heavenly bodies and the earth would return to the same position^{9,10}.

For them, as well as for the Stoics of Rome, the renewal of the world was an important theme.¹¹

Stoics thought that history repeats identically

Similarly, the Stoics also rigidly believed in cyclic repetition of history. They believed that both nature and men follow identically repetitive patterns. So, Chryssipus says that there will come again and again a Socrates, a Plato, the same friends in the same situations. The stoics considered that Fate supersedes any meaningful freedom and is identical with God and universal reason. They believed that man can only alter his re-action to events rather than choose or alter the events themselves.

Later Stoic philosophers, like Seneca, Epictetus and Marcus modified the determinism of the early Stoa but they considered that soul is taken

6. Aristotle, "On Generation and Corruption, Book 1, Ch. 3,(317b-319b) McKeon ed.478-484.

7. Mircea Eliade, "The Myth of the Eternal Return", p.32.

8. Grace E. Cairns, *Philosophy of History*, New York. 1962,p.216

9. Prof. Grace E. Cairns, *Philosophy of History*, New York, 1962,pp.205-206, Cf."The Pythagoreans and Eternal Recurrence."

10. W.K.C. Guthrie, *History of Greek Philosophy*, Cambridge University Press, 1962,Vol.1.p.281: "Once in being the cosmos was in all probability believed to be everlasting."

11. Mircea Eliade, *Op. cit.* pp. 122-123.

up once again after the world conflagration; and Seneca also believed in his own vision of cyclic destruction and rebirth.¹²

Likewise Mesopotamia, Egypt and China also believed in history cycles

Likewise, the cyclic concept of history is found in the ancient cultures of Mesopotamia and Egypt and China also. There it was based on the observation of the movement of planets and stars and human experiences.¹³

Thus briefly, we can say that the classical way of looking at history or the classical vision of time rejected the linear concept as unworthy of notice and, instead, it accepted the cyclical view and believed in successive deterioration. Moreover, Hesiod, the Greek historian, besides, giving the theory of five Ages and an idea of pattern in history, tried to find some common ancestors among many deities in his explanation of the world and took a geneological approach to the explanation of the origin and development of the universe.¹⁴ When the great age of Athenian culture appeared, then the theme of eternal recurrence was formulated in a more sophisticated manner. There seem to be many reasons, besides the observation of astronomical motions, for considering the history as cyclical.

Possible Reasons for belief in cyclic repetition

For example, one of the reasons is that the circle represents perfection and assures repetition of essential and permanent realities—souls, matter and God. So, all worldly events are subject to immutable law. What has been, will be. In other words, it can be said that another Pythagoras will teach at Croton after a full cycle has turned. “Another Socrates will drink hemlock¹⁵ and another Christ and Buddha will appear on the world scene in identically the same circumstances after history has turned full cycle.”

Again as Collingwood says¹⁶: “In history, tout lasse, tout passe, tout

12. Grace. E. Crairns, *op. cit.*...220/222.

13. Robert Paul Moha Professor of Philosophy. *The Catholic University of America, Washington, D.C..Philosophy of History- An Introduction* p.32.

14. Prof. Robert Paul Moha, “Philosophy” - *An Introduction. The Bruce Publishing Company. New York* p.23

15. C.F.J.B. Bury. “*The Greek Historian.*” *New York Random House. 1958* 1958 P.P. 205207.

16. R.G.Collingwood, *Essays in the Philosophy of History* edited with an introduction by W. Debbins, *University of Texas Press Austin* p.

casse; everything decays, and all movement is a movement away from something, a death. The growth of the steamship is passing away of that splendid thing the sailing-ship, the rise of fire-arms is the decadence of archery; the rise of Christianity...is the death of paganism..." Now this phenomenon of decadence of one civilisation, giving birth to another is as the death of a man gives his soul another vehicle in the form of a body elsewhere and this can be best compared with the form of a cycle. The cycle is the suitable form that represents this aspect of events which are in the form of decay of one civilisation or religion, giving birth to another.

Furthermore, as Isaiah Berlin says in his essay on 'Historical Inevitability', "*The more inevitable an event or an action or a character can be exhibited as being, the better it has been understood, the profounder the researcher's insight, the nearer we are to the one, embracing ultimate truth.*"¹⁷ In other words, there is an over-all scheme which is the goal of universe and the understanding of this history and, further history and, further, these can be understood as occurring and recurring according to laws.

We quote Isaiah Berlin: "To offer historical explanation is not merely to describe a mere succession of events, but to make it intelligible; to make intelligible is to reveal the basic pattern; not one of several possible patterns, but the one unique plan which, by being as it is, fulfils only one particular purpose, and, consequently, is revealed as fitting in; a specifiable fashion within the single 'cosmic' over-all scheme which is the goal of the universe, the goal in virtue of which alone it is a universe at all, and not a chaos of unrelated bits and pieces is understood, and more explanatory or illuminating-the 'deeper' the activity of the historian will be. Unless an event, or the character of an individual, or the activity of this or that institution or group or historical personage is explained as a necessary consequence of its place in the pattern (and the larger, that is, the more comprehensive scheme, the more likely it is to be the true one), no explanation-and therefore no historical account-is being provided."¹⁸

So, if we want to understand history, we must understand the purpose underlying the human activity and the pattern and overall scheme and one who explores will come to the conclusion that events of history show successive decay and form a pattern so that the end of chain of the

17. Sir Isaiah Berlin: *Essay on "Historical Inevitability"* in "*The Philosophy of History*", edited by Patrick Gardiner in *Oxford Readings in Philosophy*, Series Editor G.J. Warnock. Oxford University Press, P.162

18. Sir Isaiah Berlin, 'Historical Inevitability', *Philosophy of History*, p.162.

event joins the beginning to form a circle wherefore they recur in a circular fashion. For, we find the fall of one civilization giving us place to the rise of another civilization each such pattern event, as related to the former, forms a pattern which cannot extend into a line with open ends but which must trace a path so that the last events or groups of events, ultimately, cause the events which, once, were from where the history has started. For, the number of atoms in this world being fixed, as Democritus beleived, the events and persons, in the world, will only recur.

Agian, knowledge, to be rightly so called should enlighten us; it should enlighten us about the future as well as the past; it should explain to us laws which enable us to predict, with precision, the nature of future events and the character of persons. But this can be possible only if the events of the world are predetermined else how we can predict the future on the basis of fixed, universal laws? And, we all know that universal laws there are, underlying every event, even though we may have no perfect knowledge of all these laws.

Conclusively, therefore, if we had perfect knowledge of all the underlying laws of human psychology, sociology, etc. as a physicist or a chemist has the knowledge of invioable laws of physics and chemistry respectively, we will be able to predict every future event or future behaviour of every person. And, this would mean that the events are predetermined. And this predetermination would give to world history the cyclic repetition, for after a period, these predetermined events would take a determined course which cannot be of the form of an underterminable spiral or a straight line but a cycle. We quote again from a relevant writing of Sir Isaiah Berlin:

“If Newton was able in principle to explain every movement of every particular constituent of physical nature in terms of a small number of laws of great generality, is it not reasonable to suppose that lives of individuals, as well as social facts- the internal relationships and activities and `experiences' of societies-could be explained by the use of similar methods? It is true that we seem to know a good deal less about the subject matter of psychology and sociology than about the facts dealt with by physics or chemistry; but is there any objection in principle to the view that a sufficiently scrupulous and imaginative investigation of human beings might, one day, reveal laws capable of yielding predictions as powerful and as precise as those which are now possible in natural sciences? If psychology and sociology ever attain to their proper stature- and why should they not? We shall have laws enabling us, at least in theory (for it might be still difficult in practice) to predict (or reconstruct)

every detail in the lives of every single human being in the future, present and past with knowledge of all the relevant laws and a sufficient range of relevant facts, it will be possible to tell not merely what happens, but also why; for, if the laws have been correctly established, to describe something is, in effect, to assert that it cannot happen otherwise. The question 'why?' for teleologists means 'in pursuit of what unalterable goal?'; for the non-teleologists metaphysical 'realists' it means 'determined unalterably by what ultimate pattern?', and for upholders of the Comtian ideals of social statics and dynamics, it means 'resulting from what causes? -actual causes which are as they are, whether they might have been otherwise or not. The inevitability of historical processes, of trends, of 'rises' and 'falls', is merely de facto for those who believe that the universe obeys only 'natural' 'laws' which make it what it is; it is de jure as well- the justification as well as the explanation-for those who see such uniformity as not merely something given, brute fact, something unchangeable and unquestionable, but as pattern, plans, purposes, ideals, as thought in the mind of a rational Deity or Universal Reason,... as goal...self-fulfilling wholes, as metaphysical rationales, theological other worldly justification, as theodicies, which satisfy the craving to know not merely why the world that exists, rather than some other, or no world at all... All these theories are, in one sense or another, forms of determinism, whether they be theological, metaphysical, mechanistic, religious, aesthetic, or scientific.."

Thus, if we tie up various pieces of thread of the classical thought, we come to the conclusion that, speaking in general terms, the ancient Hindus, Buddhists, Jains, Greeks, Pythagoreans, Stoics, Romans, Egyptians, Athenians, Chinese, etc. believed in event of History as of predetermined nature which repeated after a cycle of Time or Great Year or Cosmic year. They also believed that history had a pattern of events of social and cultural groups and that it has a meaning and purpose too. They — the Greeks particularly—also believed in five Ages of history and in the decay in successive Ages. However, none of them had the knowledge of that pattern and purpose that governed and determined the cause of history. Shiv Baba, the knowledgeable, who is above the cycle of births and deaths, alone has its knowledge and He has now revealed it through Prajapita Brahma.

“World heading for a Nuclear Holocaust”

—President Reagan

The U.S. President, Reagan, speaking to 100 business executives on the eve of a vote on the MX Missiles by the Appropriation Committee of the House of Representatives, in Washington, said on 17th May: “I can’t believe that this world can go on beyond our generation and down to succeeding generations with this kind of weapons on both sides, poised at each other, without some day, some fool, or some maniac or some accident triggering the kind of war that is the end of the line for all of us.”

Isn’t it an irony of Fate that one who is supposed to have the power to take steps towards disarmament or arms-reduction also, speaks as a powerless puppet of Destiny or circumstances! He speaks in a tone of certainty about the nuclear catastrophe and yet, instead of showing any earnestness to work for detente, arms-reduction or elimination of a nuclear threat, pleads for building up MX missiles! Reagan puts all the blame on the Soviet Union and, making a plea for development of MX missile so as to put pressure on the Soviet Union to negotiate arms-reduction, says: *“I know it sounds silly to build (MXs) in order to get rid of missiles, but we are very dangerously close to not having the deterrent that we need to keep the other fellow from using his, or at least using them for blackmail”*. He says: *“We have paid a price for our past unilateral restraint and indecision.”*

On the other hand, Mr. Nikolai Blokin, President of the Soviet Academy of Medical Sciences, at a state-sponsored conference of Soviet “Scientists for nuclear disarmament and peace”, “also made the dooms predictions” and he, in turn, put all blame on Mr. Reagan and the USA. *In his address to the conference, which was opened by the Academician Anatoly Alxeandrov, president of the USSR Academy of Sciences, Mr. Blokin said: In the case of a total thermo-nuclear catastrophe, the death of a third of mankind can be expected only owing to the direct effects of having been hit by nuclear weapons and the aggregate number of victims might reach more than 2,000 million people.”* He further said: *“Remote consequences of a global nuclear war would be a massive increase in the number of fatal malignant tumours, affecting as many as 1.2 billion persons. The negative influence of nuclear warfare on the environment also would be immense,*

causing "conditions unfavourable for life" in some territories and "Possibly on the planet as a whole. There might be, for instance changes in the chemical composition and physical properties of the atmosphere, hydrosphere, lithosphere, flora and fauna, thermosphere, electro and magnetosphere of the earth."

Continuing, he contended: "The threat of nuclear warfare is becoming "more real" because of the huge `stockpiles" of such arms. he blamed the Reagan administration for distributing `legends' about both the inevitability and the `limited danger' of a nuclear exchange.

Thus, the conclusion one can draw from each one of the Superpowers making further preparations and yet blaming the other and yet realising that they are proceeding towards near-total destruction, is that this is the grim Destiny of the world or the inevitable Fate of mankind. People, who once used to raise fingers at Brahma Kumaris Institution for predicting the grim catastrophe, or who used to say that the mankind has yet 400 million years more to go before a major catastrophe takes place, should now come forward to contradict what is now obvious and what is now being stated by those who know."

Ghastly Scenario of an all-out Nuclear World War

Again, a report, prepared by an international committee of 10 scientists, appointed by World Health Organisation (WHO), was released on 10th May. The report gives a ghastly scenario of an all-out nuclear war. **It says that 4.5 billion people would be its "immediate victims". Of these, 1.15 billion will die almost instantly, 1.1 billion will be injured, whose chances of receiving any medical attention are "next to nil".** The 151-page report, compiled from various studies, assumes that 10,000 megatons of nuclear bombs "will be exploded all over the world-90 percent of them in Europe, Asia and North America."

The authors of the report include scientists from the U.S., the Soviet Union, France, Britain, Japan, Sweden and Netherlands. The report, prepared by them, says; "All of Europe, North America, and the Soviet Union would be heavily targeted, and sources of oil, gas, raw materials, shipping and industrial centres would be included in the destruction." It says: "Money, banking, investment, and all the trappings of advanced economies would disappear." It emphasises that, an all-out nuclear war, "devastation to the advanced economies of the world would be virtually complete."

According to this report, the post war period would be marked by hunger and "millions would be marked by hunger and "millions would

starve to death in the first few years." "Smoke from huge conflagrations could envelop much of the northern hemisphere," reducing the amount of sunlight reaching the earth's surface.

It further says: "The darkness and cooling effect could persist for many weeks, directly impairing agricultural activity, in the northern hemisphere if the war takes place during the growing season."

The report cautions: "Even if the attack is aimed only at military targets, the civilian casualties outnumber military casualties by 16-1. The report adds that "no state, in possession of nuclear weapons, has embarked on an extensive civil defence programme that could protect a large part of the population."

It would be relevant to refer, in this context, to the meeting of 610 parliamentarians, from five continents, and representing about 50 million constituents, in New York this year, and signing an appeal to halt the arms race. The appeal said: "There now exists roughly 50,000 nuclear warheads, with a destructive capacity equivalent to one million times the power of the Hiroshima Bomb. World Military expenditure totals 550 billion dollars annually, which approximately equals the total yearly income of the poorest one half of the world's population. About 40 percent of the world's engineers involved in scientific research are preparing more effective means of destruction. No longer can any nation by itself ensure that its own people, its productive forms, its tranquil villages and its great cities will not suddenly be rendered lifeless."

But it is a pity that all these appeals go unheard.

In this connection, it would be apt to recall the words of Mrs. Indira Gandhi, the Prime Minister of India, in her address at the inaugural session of the 7th Non-Aligned Summit: "*Humankind is balancing on the brink of the collapse of the world economic system and annihilation through nuclear war.*" Further: "*The hood of the cobra is spread on. Humankind watches in frozen fear, hoping against hope that it will not strike.*"

In the end, I should heartily thank Brahma Kumaris institution, particularly its founder, who gave unambiguous fore-warning of this to the world about fifty years in advance but, alas, the intelligentsia and the masses neglected it at their own peril. They will perhaps, wake up only when it is too late.

Brahma Kumaris had rightly emphasised that the year 1976 was very crucial in the history of the arms race. This is proved by the United Nations study on Disarmament as reported in newspapers in April (*Times of India, dt. April 4*): *The study, carried out by 11 experts, says that, after*

1976, the nuclear race had taken a new turn. I had read in another report which said that, in 1976, it had taken an irreversible turn. In other words, the fate of the world through a nuclear catastrophe was sealed in 1976 and a stamp of its being final was put on it, so to say. The study said that the pace of nuclear testing in 1977-81, period at around 50 tests a year was significantly higher than in the previous four years when the average was 37 tests a year. In the years between 1978 and 1982, when special sessions of U.N., General Assembly on Disarmament were held, world military expenditure exceeded 1,600 billion and, according to experts, one million dollars were spent on weapons every minute, in 1981, and about 12 percent of the global production of 14 particular important minerals, was being used for military purposes.

Sir, This is to refer to your Editorial in April issue, "Decalogue for government functionaries." You have correctly identified the shibbeloths and causes of corruption. The Wanchoo Committee which went into the ramifications of the black money-had identified 15 avenues. Mr. S.B.P. Pattabhi Rama Rao, Dy. Minister Finance, last month (April 8), recognised eight of these causes in the Parliament. These eight are: (1) Donations to political parties (2) Economy of shortages and consequent controls and licences, (3) Corrupt business practices, (4) High rates of taxation under the direct tax laws (5) Ceilings on, and disallowance of business expenses (6) High rates of sales tax and other levies (7) Ineffective enforcement of tax laws and (8) Deterioration in moral standards. If we analyse them, can be boiled down to (1) High discretionary powers of tax officials or permit and licence officials. (2) Donations to political parties and the consequent pressure on politician and above all. (3) fall in moral standards. The code suggested by you is therefore, most appropriate and timely.

The Entropy Law and the current state and the future of the world

In physics, there are two laws which deserve to be ranked as the supreme laws. These are the first and the second law of Thermodynamics. Albert Einstein, world's most eminent scientist, made the following observation about these laws:

'A theory is more impressive, the greater is the simplicity of its premises, the more different are the kinds of things it relates and the more extended its range of applicability. Therefore, the deep impression which classical thermodynamics made on me. It is the only physical theory of universal content which I am convinced that, within the framework of applicability of its basic concepts, will never be over-thrown."¹

As started in the above observation, the laws of Thermodynamics have a very wide range of applicability. These can be applied to Cosmology, Metaphysics, History, Economics, Development of Institutions, Military, Nuclear fission and to almost everything. It would, therefore, be of great advantage to know briefly what these laws are and how these explain the present state of the world and what these predict about the future.

The first and second laws of thermodynamics

The first law of Thermodynamics is the law of conservation. It says that energy can neither be created nor destroyed; it can only be transformed from one form to another form.

For example, when we use petrol or gasoline in the engine of our car, most part of it gets transformed into work, some of it changes into heat and some part goes out as exhaust products.

Now, in relation to this first law, it is very important to consider two things. One is that the shape, texture and movement of everything is made up of energy. Not only gasoline, coal or kerosene oil is made up of energy but rather human body, an automobile and a candle also are embodiments of various concentrations and transformations of energy. When a candle or a car is made, it is made of energy that has been gathered from somewhere else. It has not been created but transformed.

1. G. Tyles Miller, Jr., *Energetics, Kinetics and Life*, Belmont, Calif, Wadsworth, 1971, p.46.

The second important thing to be considered in this connection is that, when the candle is burnt, its energy does not get destroyed but is transformed from one state into another so that the total content of energy in the universe remains constant. So, it is rightly said that "there is nothing new under the sun."

The second law of thermodynamics says that everytime energy is transformed from one state to another, there is a loss in the amount of that form of energy which becomes available to perform work of some kind. This loss in the amount of 'available energy' is known as 'Entropy'. For example, if we burn a piece of coal, even then the total amount of energy remains the same but, due to the process of burning, some part of coal is transformed into sulphur dioxide and exhausts cannot be reburnt to get the same work out of it. This kind of 'loss', 'wastage' or 'penalty', is called 'Entropy'. The Second Law of Thermodynamics explains that the total entropy in the world is constantly increasing.² An entropy increase, therefore means a decrease in 'available energy'. Further, not only does available energy decrease, everytime something occurs in this world but the unavailable energy-form works as pollution. Thus, according to the Second Law of Thermodynamics, the world is moving towards a dissipated state and the pollution in the world is constantly increasing. Furthermore, "entropy, (i.e. the 'unavailable' or bound' energy or pollution) in the world always tends towards a maximum" - this is what German physicist, Rudolf Classius, who first coined the term 'entropy', says.

Rudolf Classius further says that, in a closed system, energy moves from a higher level of concentration to a lower level as heat always flows from a hot to a cold body so that, we find that, ultimately, they have reached a stage where there is no longer any difference in energy levels. This is known as 'the equilibrium state'. This is the state where entropy has reached the maximum, i.e. where no longer 'free energy' is available for work. For example, when water going over a dam falls into a river, its energy can be used to generate electricity, but, once it reaches the river level, it has no 'free' or available' energy. Its energy is now 'bound' energy and it is now in the state of equilibrium.

Now the important fact that needs to be pointed out in this context is that the earth is a closed system in relation to the universe; in other words, it exchanges energy but not matter with its surroundings. And the universe itself also is a closed system in the sense that it does not have any flow of energy from any other universe. The amount of energy in

2. *Nicholas Georgescu Roger, "The Steady State and Ecological Salvation, "Bio-Science", April, 1977, page 260.*

the universe has been fixed since 'the beginning of time' and will remain fixed till 'the end of time'. Such being the case, the two laws of thermodynamics mean, in their final analysis, that the fixed endowment of terrestrial matter that makes up the earth and the mountains is continually dissipating and what appear 'renewable sources' are really non-renewable sources ultimately. In Sir James Jean's words, "The universe is like a clock which is running down, which, so far as science knows, no one ever winds up. It is at present a partially wound up clock, which must at some time in the past have been wound up in some manner unknown to us."

So, the universe is like a clock, running down. The entropy is increasing continually. Even a farmer understands that, even with constant sunshine, it is impossible to grow the same amount of grass on the same spot year after year till eternity.

Now, these facts of science, based on laws of Thermodynamics, are well-established. In the past, there have been many attempts by well-known scientists such as J.C. Maxwell,³ Ludwig Boltzanan and Sir Arther Eddington⁴ to challenge these laws but their attempts ended up in strengthening the position of the Second Law.

Another aspect of Entropy Law From ordered to disordered state

Besides the energy moving from available to unavailable states and from concentration to low concentration, there is another aspect of the Second Law of Thermodynamics. The Entropy Law states that all energy, in an isolated system, moves from an ordered to a disordered state. The state in which energy-concentration is highest and available energy is maximum i.e. where entropy is minimum, is also the most ordered state. In Indian spiritual parlance, that state, where available energy has been highly dissipated and diffused, is also the most disordered state. In Indian Spiritual terminology, it is known as *Tamopradhān* state.

The above is in accordance with our everyday experience of the world around us. As things are let on their own, they do not tend to spontaneously move to more and more ordered states. If we leave our office unattended for a period, it becomes more and more disorderly.

Another aspect of the law is that whenever we make an attempt to reverse the entropy increase, it is only done by increasing the overall

3. Stanely Angrist and Loren Helper; "Demons, poetry and Life: A Thermodynamic View," *Texas Quarterly* 10 (September, 1967)pp.27-28.

4. Bertrand Russel: *The Scientific outlook*, Now York; Norton, 1962,pp.9091.

entropy of the surrounding environment. The scientists Angrist and Hepler say "Each localised, man-made or machine made entropy—decrease is accompanied by a greater increase in entropy of the surroundings, thereby maintaining the required increase in total entropy."⁵

Now, this has very great implication for the society. In practical terms, it means that the society deteriorates and becomes disorganised gradually. There is degeneration in its moral force, its spiritual stamina, the vigour of its character, the effectiveness of its religion and the sense of law and order. In ancient Indian spiritual lore, it has, therefore, been said that the moral and spiritual energy of the society goes on degenerating so that, ultimately, it reaches a stage of maximum entropy when God has to intervene to reverse the entropy and to bring about *Satyuga* or Golden Age when all material things have maximum energy-concentration, i.e. are *Satopradhān* and the souls also have maximum 'available' moral and spiritual energy. According to Dharma, the souls have, originally, 16 degrees level of energy-concentration and, gradually, due to entropy, the energy level goes down so that when there is maximum entropy and the level of energy-concentration is hardly three or four degrees, then God, the Highest Point—Source of Spiritual energy, reverses the spiritual entropy by means of Godly Knowledge and Raj Yoga and the material entropy gets reversed by means of fission of nuclear weapons, Natural Calamities, etc. so that the earth, the water, the air and their products get again the maximum energy-concentration or *satopradhān avasthā*. In other words, when the society has passed through its four stages of *Satyuga*, *Tretāyuga*, *Dwapuryuga* and *Kaliyuga* and is in the fifth, i.e. the *Sangam Yuga*, then God descends to reverse the entropy. The need of God's act in such a situation is evident because, according to the Entropy Law, in a closed system, entropy increase cannot be reversed without increasing the entropy in the surroundings and, therefore, in real terms, an outside source of energy is required to raise the energy concentration without lowering the energy level in the surroundings.

It would be of interest to the readers to know that the Greeks also considered history as a process of continual degradation. The Greek historian, Hesiod, has described these five ages as the Golden, Silver, Brass, Iron and Heroic Age. The Greeks believed that each of the succeeding Age was more degraded. The Golden Age was the highest. It was a period of affluence and peace. This was the belief:

5. Stanley Angrist and Loren Hepler, "Demons, Poetry and Life—A Thermodynamic View", *Texas Quarterly* 10, Sept., 1967, pp.27-28-29.

"In the beginning, a golden race of mortal men was made by the immortal dwellers in Olympus... They lived like gods, with hearts free from care, without part or lot in labour and sorrow. Pitiful old age did not await them, but were ever the same in strength or hand and foot. They took their pleasure in feasting. They were away from all evils. When they died, it was as though they were overcome by sleep. All good things were theirs and the grain harvest was yielded by bountiful earth of her own accord- abundantly and ungrudgingly-while they, in peace and goodwill, lived upon their lands with good things in abundance."⁶

The following is what has been said about the Iron Age:

"For now, in these latter days is the Race of Iron. Never by day shall they rest from travail and sorrow, and never by night from the hand of the spoilers. The father shall not be of one mind with the children, nor the children with the father, nor the guest with host that receives them nor friends with friends. Parents shall swiftly age and swiftly be dishonoured... The righteous man or the good man or he that keeps his oath shall not find favour, but they shall honour rather the doer of wrong and the proud man. Right shall rest in might of hand, truth shall be no more."

The Greeks believed not only in inevitable process of decay during the each subsequent age of history but, they also believed that, finally, the universe would approach chaos and then God would intervene once again and restore the original conditions of moral and material perfection; so that the process would then begin once again. Thus, they did not believe in the evolution of man from the state of chaos or disorder to a state of civilisation and development but from a state of perfection to a state of moral degeneration and also in repetition of the world cycle.

Similarly, the Romans also originally believed in a process of continual degradation. Horace, a Roman, has said: "time depreciates the value of the world."⁷

The Christian view of history is also almost the same. Though they abandoned the Greek concept of cycles, they believe that, originally, God created man in His own image and sin entered into the world later.

Entropy Law and Evolution

The Second Law of Thermodynamics, as explained here-above points

6. *Iasac Asimov, " In the Game of Energy, and Thermodynamics, you can't Even Break Even, Smithsonian, August, 1970,p.9.*
7. *Theodore Roszak: Where the Wasteland Ends," Garden City, New York, Double-day/Anchor Books,1973,p.139.*

out, to use the words of Sir James Jeans again, that "The universe is like a clock which is running down." But, the evolutionists say that the world has been building up from simpler to more complex forms over billions of years. Evidently, this view of the evolutionists is contrary to the well-established Second Law of Thermodynamics. For, in actual practice, we observe that the changes in the actual physical universe are caused by running down and not by building up. For example, complex atoms, like those of uranium and thorium dis-integrate into less complex ones like radium or lead, but it has never been in the reverse order. The complex stars also break down into nebulae and this happens in a few hours' time, as observed at present; it does not happen in millions of years. Similarly, the sun burns about 250 million tons of matter per minute. Such a huge process of annihilation must have been going on in the stars also. Evidently, it is not a process of building up of energy or of evolution of more complex forms but it is a process of dissipation and disintegration into simple forms. The theory of evolution, being contradictory to this well-established law, is erroneous, Sullivan says, in his book 'Limitation of Science': "One of the least disputable laws of Physical Science states that the universe is steadily running down...we live in a wasting universe... But the fact that the energy of the universe will be more disorganised tomorrow than it is today implies, of course, that the energy of the universe was more highly organised yesterday than it is today. Following the process backward we find a more and more highly organised universe. This backward tracing of time cannot be continued indefinitely. Organisation cannot, as it were, mount up and up without limit. There is a definite maximum and the definite minimum must have been in existence a finite time ago. And it is impossible that this state of perfect organisation could have been evolved from some less perfect state. Nor is it possible that the universe could have persisted from eternity in that state of perfect organisation... Thus the accepted laws of nature lead us to a definite beginning of the universe in time..."

Likewise, Dr. Allan Sandage, of Mount Palomar, California, says that the universe had a definite beginning and it will not last for ever.

In the light of the above, it would be only natural and proper to conclude that the theory of evolution is wrong and that the world has been undergoing a process of degeneration from Golden Age to the present Iron Age and this process has taken a finite period, extending over not millions but only some thousands of years-5000 years to be exact.