CHAPTER 1

INTRODUCTION

CONCEPTUAL FRAMEWORK OF NATURE

1.1 PHENOMENA OF NATURE

The word 'Nature' as it is used in philosophy assumes up a wide perspective. It is not only the nature of forests, mountains and wild life, it is also the nature of astronomy in its vast reaches of space and time and of physics and chemistry in their atomic and sub-atomic analyses. In this perspective, human life may appear a detail and relatively accidental, yet the term 'Nature' as we here use it, is not set in contrast to man; his works and his culture; but includes them in a single individual system of phenomena. Hocking (1957) maintains that nature implies continuity among all phenomena; their inter-dependence on one another; their rise out; and, passing into one another in a single system of events.

Punzo (1970) ascertains that Nature in this sense denotes the same object as 'Universe' or 'World', but with a particular meaning of its own. It is the name we give to the Universe, when we consider it as a region of regularity. Nasr (1960) contends that nature is vast; enigmatic; relentless; apparently unconceived, presenting formidable difficulties to life's occasional abundance. Nature is our permanent riddle; eternal tomb of our race and of all the life she has brought forth.

These are some of the innumerable aspects
which nature presents with reference to ourselves and our interests. But what is nature itself? Erikorian (1946) represents that in Baldwin's Dictionary of Philosophy there are listed some thirtyseven different meanings for the term 'Nature'. In philosophic discussions 'Nature', in fact, is the oldest idea in the western intellectual tradition. It is the Latin version of the Greek \( \phi i\delta\alpha\varsigma \).

Sage men early wrote books on Nature. But what they were actually writing about, has been a subject for debate ever since Aristotle (384-322 B.C.), who attempted to see what they should have been doing, and it is a theme for vigorous controversy among scholars to-day.

Phenix (1959) holds that the word nature is admittedly ambiguous. It can be taken to mean everything, that is in man, society and all cultural creations, must belong to nature. Such an inclusive concept of nature is generally set in opposition to a dualistic world view, which holds that there are two realms, nature and supernatural, and that the supernatural is prior to and even more real than natural. Against this the naturalist maintains that there is but one world, one reality, called nature, which consists of all existing entities. Horne (1937) asserts that unlike Socrates (469-399 B.C.), to Aristotle (384-322 B.C.), the proper study of mankind is not men but nature. The things of men are transient but the things of nature are permanent, universal and necessary.

Edward (1967) explains that nature is in
principle intelligible in all its parts but it cannot be explained as a whole. For this would presumably require reference to a natural cause, and outside nature as a whole, there are no natural causes to be found.

Ferd (1961) writes that nature is sum and substance of all that is, and to know nature is to come to terms with it in the most promising way i.e., by social and tested experience and methods. Elmanjittam (1943) recalls:

The infallible guide for men is Nature. The Universal Mother, Benevolent, Soothing, Loving, Fondling nurse. Near and dear is she...
Follow her and you'll ne'er go astray.
Your past sins will be cleansed and a new ray will beam forth showing you the way into Eternity. She heals and cures your maladies, which out of stupidity, wanton pleasure-hunt and Heart-inspiration, want of self-control and Hoving senses rage. Have wrought upon you,
Emptying out the Divine image,
Calm and still is the whispering of the Nature-God, who comes to you when you are left to Yourself. when passion - emotion waves cease and solitude reigns. So grand are those
Moments when God's thrilling voice one hears
Blessed that spot where Infinity reveals a Living way.

Beatty (1939) states that the provision of mankind was
but the racing of a child separated from his Mother Nature and his only hope of recovery was a return to Nature. So everything invented by man was at a discount and all that conformed to its original pattern of nature was upheld as ideal. The love of nature was expressed in Wordsworth's (1807) oft quoted lines:

"The anchor of my thought, the nurse,
The guide, the guardian of all my
Heart and soul of all my moral beings."

Even more significant is the poem:

"My heart leaps up when I behold
A rainbow in the sky:
So was it when my life began:
So is it now I am a man;
So be it when I shall grow old,
Or let me die!

So Wordsworth (1927) believes in the value of the great simple things of life and nature, the primitive and general principles and powers of mind and heart.

In the words of Shattasharya (1958) Tagore (1861-1941) points out that we often speak of nature as our mother but we rarely embrace her. We put on shoes, and the footwear is a barrier to love. He says that instead of covering the wide earth it is better to wear shoes. Tagore (1905) in Abaran, sees no sense in covering the feet. Once he called shoes the hoovers of man. Man has been given sensitive feet and yet he would like to be one with
Boas (1957) considers that the term is vague; its employment may be a mere fashion of the day. Nature, in fact, has normally been employed as one term in an intellectual distinction, it has been set over against something else, some other realm of being. Gilson (1940) remarks that in Greek thought the great contrast between nature and law is convention, first developed by the sophists, and was broadened by Aristotle (384-322 B.C.), into the distinction between nature and art, the whole of man's intellectual activity. In the thirteenth century, nature was injected by those who were dissatisfied with the traditional Augustinian concern with the soul and God alone, into the Platonic hierarchy of realms of being. The natural was contrasted with everything in that hierarchy above man's sensitive soul, with the supernatural. Schellenberg (1962) narrates, "Spirit develops out of nature; nature itself has a spiritual element in it; it is undeveloped, slumbering, unconscious, benumbed intelligence."

Kahn (1960) holds that the science of nature is not a personal creation but a group understanding, and it must have been handed down in some regular manner. Perhaps the accumulation and transmission of the knowledge of nature was, from the earliest times, the work of an organized association. Collingwood (1943) tells that in the history of thought there have been three periods of constructive cosmological thinking; three periods, that
is to say when the idea of nature has come into focus of thought, becomes the subject of intense and protracted reflection, and consequently acquired new characteristics which in their turn have given a new aspect to the detailed science of nature that has been based upon it.

107 THE GREEK VIEW OF NATURE.

Wolff (1976) refers that the Greek word for World or Universe is Kosmos, so we call the study of the nature of the world cosmology. Greek natural science was based on the principle that the world of nature is saturated or penetrated by mind. Greek thinkers regarded the presence of mind in nature as the source of that regularity or orderliness in the natural world whose presence made a science of nature possible. The world of nature, they regarded as a world of bodies in motion.

Talcotnute and Brumbaugh (1954) ascertain that the earliest Greek philosophers had a curious way of summarising that speculative contributions. These summaries were often reduced each to a single sentence. Each sentence identified the world in all its diversified complexities with the arché or basic stuff from which it was thought to have arisen. Thus we hear:

All things are water
All things are Air
All things are Soundless
All things are Fire (The Flux)

Burnet (1930) conducts that the founder of the
Milesian School, and therefore the first man of science, was Thales (624-550 B.C). In the words of Zeller (1931) Thales writes further-more that the earth floats in the water like a piece of wood on assumptions which made comprehensible the fixed position of the earth in the centre of the world. Burley and Allen (1970) support that how did Thales come upon it? The role of water is common to several Babylonian creation myths. The Eridu poem, the text of which comes from the seventh century, narrates that in the beginning there was no temple, no tree, no city, and no living being, 'all lands were sea'.

Brunbaugh (1964) believes that to the Greeks Thales' concept of a systematic development of natural science made him the great pioneer of thought. But modern scholars are likely to choose for their hero his successor, the more poetic and flamboyant, Anaximander (611-547 B.C). He can truly be called the first real philosopher. Russell (1957) also argues that Anaximander held that all things come from a single primal substance, but that is not water, as Thales held. It is infinitely external and ageless, and it compasses all the worlds. The primal substance is transformed into the various substances with which we are familiar, and these are transformed into each other.

Burgess (1979) holds that Anaximander called his substance divine, a remnant, no doubt, of the group of religious interpretation.

Burnet (1914) expresses that a third resident of
Miletus, Anaximenes (588-525 B.C.), was not satisfied with the accounts which had been given by these two thinkers who had preceded him. Hicks (1925) points out that Anaximenes took for his first principle air, which is unlimited. He held that the stars move round the earth but do not go under it. He writes simply and unaffectedly in the Ionic dialect. Therefore, for Anaximenes, the cosmological question changes from, 'what are things made of' to 'what brings about differentiations in the ultimate substance'? The answer to the second question introduces a theory of change, the principle of condensation and rarefaction.

Clark (1957) remarks that the Ionian philosophers of the seventh and sixth centuries B.C. devoted so much attention to the cosmological problems that Aristotle, who is by far our most important authority for the history of early Greek thought, refers to them, as theorists of nature. According to Aristotle, the characteristic of this Ionian cosmology is the fact that whenever its devotees ask the question: 'What is nature'? they at once convert it into the question, 'What are things made of'? Or according to Consier (1925) what is the original unchanging substance which underlies all the changes of the natural world with which we are acquainted.

Frost (1959) concludes that these philosophers of Miletus were interested in discovering the original 'stuff' of which all else in the universe was made. They were
followed by a group of philosophers who, although they were interested in the same problem, were most interested in finding out in what ways the many things in the universe were related.

1.3 THE RENAISSANCE VIEW OF NATURE

According to Collingwood (1945) the word 'Renaissance' is applied to an earlier phase in the history of thought, beginning in Italy with the humanism of the fourteenth century and continuing, in the same country, with the Platonic and Aristotelian cosmologies of that century and fifteenth.

Hyde (1961) explains that this view of nature began to take shape as antithetical to the Greek view in the work of Copernicus (1473–1543), Telesio (1509–1588), and Bruno (1548–1600). The central point of this antithesis was the denial that the world of nature, the world studied by physical science, is an organism, and the assertion that it is devoid both of intelligence and of life. It is therefore, incapable of ordering its own movements in a rational manner, and indeed incapable of moving itself at all. The movements which it exhibits, and which the physicist investigates, are imposed upon it from without, and their regularity is due to the laws of nature, likewise imposed from without.

Randall (1944) observes that instead of being an organism, the natural world is a machine—a machine in the literal and proper sense of the word, an arrangement of bodily parts designed and put together and set, going for a definite purpose by an intelligent mind outside itself. Lewis (1934) emphasises that roots of belief in naturalistic education are found in the act forms of the early Renaissance
period, a trend which has been presented in the moving words of a scholar, "By a natural process, the world nature broke in upon the medieval dream of hell and paradise and eternity. In the fresh naturalistic sculpture of the thirteenth century Churches, one can watch the first uneasy stir of the sleeper, as the light of morning strikes his eyes."

Horne (1932), while giving the Renaissance view of nature, tells that they sought in nature the macrocosm of which man was the microcosm, the big world of nature and the little world of man were one. How did then man and nature come to be divorced? Drinkwater (1951) claims that the Renaissance thinkers, like the Greeks, saw in the orderliness of the natural world an expression of intelligence. But for the Greeks this intelligence was nature's own intelligence, for the Renaissance thinkers it was the intelligence of something other than nature, the Divine Creator and ruler of nature. This distinction is the key to all the main differences between Greek and Renaissance natural science.

Borensza (1955) states that each of these cosmological movements was followed by a movement in which the focus of interest shifted from nature to mind. In the history of Greek thought this shift took place with Socrates (469-399 B.C.). Whereas previous thinkers had not neglected ethics, politics, or even logic and the theory of knowledge, they had concentrated their main
effort of thought upon the theory of nature. Socrates reversed this emphasis and concentrated his thought on ethics and logic, and from his time onwards, although the theory of nature was by no means forgotten even by Plato (427-347 B.C.), who did far more work on that subject than is generally realized, the theory of mind predominated, and the theory of nature took the second place.

Gore (1934) holds that Greek thinkers in general take it for granted that mind belongs essentially to body and lives with it in the closest union, and that when they are confronted with reasons for thinking this union partial, occasional, or precarious, they are puzzled to know how this can be. In Renaissance thought this state of things is precisely reversed. For Descartes (1596-1650), body is one substance and mind is another. Each works independently of the other, according to its own laws.

Just as the fundamental axiom of Greek thought about mind is its immanence in body so the fundamental axiom of Descartes is its transcendence. Descartes knows very well that transcendence must not be pushed to the point of dualism. The two things must be connected somehow, but cosmologically he can find no connection short of God, and in the individual human being he is driven to the desperate expedient, justly ridiculed by Spinoza (1632-1677).

White and Patrick (1935) recall that even Spinoza (1632-1677), with his insistence on the unity
of substance, is in no better case, for thought and extension are in his philosophy two utterly distinct attributes of this one substance, and each, as an attribute, completely transcends the other. Hence when in the eighteenth century the centre of gravity in philosophical thought swung over from the theory of gravity to the theory of mind, Berkeley (1685-1753), being the critical point here as Socrates (468-399 B.C.) was for the Greeks, the problem of nature inevitably states itself in this form, how can mind have any connection with something utterly alien to itself, something essentially mechanical and non-mental, namely nature? This was the question at bottom the only question, concerning nature which exercised the great philosophers like Berkeley (1685-1753), Hume (1711-1776), Kant (1724-1804) and Hesse (1770-1831). In every case their answer was the same: namely, that mind makes nature, nature is, so to speak, a by-product of the autonomous and self-existing activity of mind.

1.4 THE MODERN VIEW OF NATURE

Jeans (1932) maintains that the modern view of nature owes something both to Greek and to Renaissance cosmology. Like its predecessors it is based on an analogy. What is new about it is that the analogy is a new one. As Greek natural science was based on the analogy between the macrocosm nature and the microcosm man, as man is revealed to himself in his own self-consciousness, as Renaissance natural science was based on the analogy between nature as God's handiwork and the machines that are the handiwork
of man, so the modern view of nature, which first begins to find expression towards the end of the eighteenth century and ever since then has been gathering weight and establishing itself more securely down to the present day, is based on the analogy between the processes of natural world as studied by natural scientists and the vicissitudes of human affairs as studied by historians.

Kilpatrick (1934) ascertains that like the Renaissance analogy this could only begin to operate when certain conditions were fulfilled. Renaissance cosmology arose from a widespread familiarity with the making and handling of machines. The sixteenth century was the time when this familiarity had been achieved. Modern cosmology could only have arisen from a widespread familiarity with historical studies of the kind which placed the conception of process, change, development in the centre of their picture and recognized it as the fundamental category of historical thought. Knight (1940) contends that we find it first in Turgot and Voltaire. Transposed during the next half-century into terms of natural science, the idea of 'progress' became the idea which in another half-century was to become famous as that of 'evolution'.

Spencer (1911) points out that in its narrowest sense, evolution means the doctrine especially associated with the name of Darwin (1809-1882) though not first expounded by him, that the species of living organisms are not fixed repertory of permanent types, but begin to exist and
cease to exist in time. The origin of this tendency, which can be traced at work in various fields of natural science for more than a hundred years before Bergson (1859-1941), must be sought in the historical movement of the late eighteenth century, and its further development in the growth of the same movement in the nineteenth.

The implications of this principle have been worked out by Whitehead (1919) and summarize that there is no nature at an instant. The tendency of all modern science of nature is to resolve substance into function. All natural functions are forms of motion, and all motion takes time. At an instant, if there is no motion, no natural function, and therefore, no natural substance.

1.5 HUMAN NATURE

Very little is known of human nature and one reason for this is that man has always made great efforts to hide his true nature. We do not know the origin of mankind. Russell (1922) recalls that for countless ages the hot nebula whirled aimlessly through space. At length it began to take shape, the central mass threw off planets, the planets cooled, boiling seas and burning mountains heaved and tossed, from black masses of cloud, sheets of rain deluged the barely solid crust. And now the first germ of life grew in the depths of the ocean, and developed rapidly in the fructifying warmths into vast forest trees, huge ferns springing from the damp mould, sea monsters breeding, fighting, devouring, and pressing away. And from the
monsters, as the play unfolded itself, man was born, with the power of thought, the knowledge of good and evil, and the cruel thirst for worship. Duff (1950) says, "We are here because we are here and no man that has ever lived can give a better reason." To some people it may appear pitiable that we mortals should not know where we came from and where we go. We see around us men and women at their best and at their worst and the humdrum of life provides us with a mean or norm.

But a definite 'Standard' or 'Yardstick' is hardly possible or even necessary in assaying human nature, which is nakedly exposed only during stress or emergency or by pure accident. A King or President, Prime Minister or Bishop or great Financier, who dared to expose his real nature to the world would be ruined. But mostly the mass is so blind, apathetic, ignorant or helpless, that a great rascal with aid of bounce, bluff and a working knowledge of human nature may stalk brazenly through life, loudly advertising hoofs and horns. The ordinary man is so frightened when other men begin to know his true nature that he hastens to disguise it as quickly as possible; by dissimulation, mystification, hocus-pocus, exaggeration, romance and rationalization.

Reyna (1971) explains that since education is a process of directing the development of persons, it follows that the nature of persons is a matter of central importance for the philosophy of education. On first thought it might
seem that of all things our knowledge of human nature should be the most reliable and certain, for it has to do with ourselves, whom we constantly, directly and most intimately experience and with others of our kind, whom we also regularly encounter in our common life in a great variety of ways. Actually nothing is more puzzling, nothing prompts such difficult questions as man himself.

Saahakian (1965) holds that according to Aristotle man has not a single nature, but a three fold nature; animal, vegetable and rational. The Aristotelian definition of man encompasses all the three. Man is a (vegetative) rational animal. Since the moral task of man is to actualize or realize his nature and is as much as his nature is three fold, all the three must be cultivated. Martin, Clark, Clarke and Ruddick (1941) conduct that man as a part of the world is, no more and no less than any other part, a temporary manifestation of nature. As regards his substance, he is just a part of the cosmic substance, from which his entire being is derived and to which it returns at his death.

Yogi (1963) states that this perplexity partly reflects the extra-ordinary complexity of human beings. Man is indeed 'fearfully and wonderfully made'. But perhaps the more important reason is so precisely the fact that man is himself so deeply and vitally involved in being human that he cannot clearly and surely know what he is. Klubertanz (1953) narrates that it is impossible
to built the real definition of man. Man is one of the many material things found on this earth. Together with plants and animals he has a vegetative life. And finally man is the only kind of material being who has intellect and will, or in a single term, reason.

Perkins (1959) contends that this perplexity about human nature is a stimulus to philosophic reflection. It is precisely about such concerns that critical analysis and disciplined speculation may be most fruitful. But whatever the difficulties in thinking about human nature are, one fact is clear that nothing is so interesting. At once magnificent and petty, exalted and debased, free, yet in chains, boundless but circumscribed, man contains within himself a world of contrasts which invite inquiry, stimulates action and stirs imagination. In fact, to understand man is to understand the whole world, 'for the world means man's world'.

The philosophy of education, therefore, requires reflection about human nature, not only because education is concerned with the development of persons but also because the understanding of man is the key to every experience about which man as a mirror of the world, may reflect.

1.5.1 DISTINCTIVE FEATURES OF HUMAN NATURE

Falchemberg (1962) considers that man is a machine composed of an infinite number of organs. The natural machines formed by God differ from the artificial
machines made by the hand of man. Organisms are complexes of ondes of which the soul is supreme, while the rest which serve it, form its body. Ritter (1933) maintains that man possesses an elementary or terrestrial or visible body and a sidereal or astral or invisible body (the spirit), which comes from the regions of the stars, and a soul, which originates in God. Bailey (1928) observes that man's life epitomizes the life of the cosmos. Cosmic nature is human nature writ large.

Man has many things in common with the other kinds of beings. He has physical properties in common with everything material. He shares with all living things in process of nutrition, growth and reproduction. He is like the animal in powers of self-initiated movement and his responsiveness to sensory stimulation. He is one of the mammals as concerns the bearing and feeding of offspring. Any full description of human nature would need to take account of all these facts. Sabine (1961) expresses that like all natures, human nature is thus a set of capacities tending towards the distinctly human ends of virtue and happiness. But the virtues are primarily internal principles of man's self-realization, and they are not in themselves completely sufficient for happiness. Weiss (1947) tells that human nature consists of those characteristics which are distinctive of the adult human being and that distinguish him from the lower animals. Here our intention is merely to state some of the ways in which human nature differs from
the nature of other kinds of beings, to discuss some of the characteristics which man does not have in common with rocks or plants or lower animals. These characteristics are:

- Brain Capacity
- Relative Few Instinctive Patterns
- Long Dependency
- Culture
- Language
- Symbols
- Reason
- Imagination
- Memory
- Conscious and Unconscious
- Anticipation
- Purpose
- Will
- Self-Transcendence
- Freedom
- Spirituality

1.6 PHYSICAL WORLD

Russell (1922) emphasizes that philosophy may be approached by many roads, but one of the oldest and most travelled is the road which leads to the reality of the world of senses. Titus (1968) considers that the term 'Universe' refers to the totality of things, to everything that exists. The term thus includes the earth, the sun,
the stars, and their contents. The term 'world' may also be used in this sense, although commonly we restrict it to the earth and its inhabitants.

Gruber (1961) ascertains that although dates are highly speculative and subject to constant revision with the discovery of new evidence, archeologists estimate that the present world on which we live took 4000 million years to evolve. The earth was formed in a lifeless atomic age. About 1550 years ago under fortunate circumstances, by chance or by design, unicellular life began. The prototaxa came into existence during the Archeozoic age. It took some 500 million years for the earliest living forms to emerge during the prototaxic age. During the Paleozoic era from 520 to 252 million years ago, fishes and amphibia, insects, reptiles, and land plants appeared. It took 90 million years more for the birds and mammals to develop. During the Cenozoic era, from 70 to a million years, the first primates appeared, culminating in the origination of man in the Pliocene period and developing into the genus 'Homo' in the Holocene period in which we are now living.

According to Smiley, Dietrichson, Keyt and Miller (1962), Lucretius (96-55 B.C.) holds that this universe is not bounded in any direction. If it were, it would necessarily have a limit somewhere. But clearly a thing cannot have a limit unless there is something outside to limit it, so that the eye can follow it up to a certain
point but not beyond. Since there is nothing outside the
Universe, it can have no limit and is accordingly without
end or measure.

Halverson (1976) writes that this world is like a
gigantic machine whose parts are so numerous and whose
processes are so complex that we have thus far been able
to achieve only a very partial and fragmentary understanding
of how it works. Webb (1947) supports that the physical
universe is a vast whirl of activity. If it stops for a
single second, all the stars, all the planets, everything
that we can see, would instantly dissolve and disintegrate.
For all matter is traceable to activity, if it ceased to be
active, it would cease to be matter, it is all movement,
all vibration, but under direction, moving according to
law and order.

All matter, all the solids, liquids and gases that
comprise our earth and our bodies, can be resolved into the
common denominator of atoms. Joad (1944) maintains that
the Unverse comes into existence solely as a result of the
collision of atoms. Random movements set up a vortex, or
whorl of atoms, which spreads wider and wider.

Butler (1951) recalls that among Plato's
contemporaries, Democritus (460-370 B.C.) had brought
atomism to its highest formulation. At Ailetus, in
the Seventh Century, and probably before, certain Greek
thinkers tried to find a single or universal substance to
which all the varying aspects of nature could be traced. It
used to be thought that the atom was the ultimate basis of matter and it was a minute speck of hardness, solid and indivisible. But more recent experiments have proved that the atom is nothing like that. It is in fact a universe of itself. Like the physical universe it contains a number of bodies revolving at high speed round a central core of nucleus.

The atom has no shell or skin, for its circumference is merely the sum total of the orbits of these revolving bodies. These bodies are comparatively few in number compared to the space they occupy. Half a dozen bees buzzing round inside a cathedral would bear much the same relation as the revolving bodies do to the whole of the atom. The atom, then, has a comparatively larger space by a few rapidly revolving bodies.

These bodies have been found to be none other than minute charges of electricity, negatively charged, with no more substance than an electric spark, and they are termed electrons. The central core, or nucleus, consists of protons, of which there may be one or more in each atom, and these are positively charged. The rest of the atom is space. This discovery spelt the doom of materialism. It began to be known that there is no such thing as solid matter as it had been previously understood. Existing theories as to the nature of the universe had to be radically revised.

So it is that the solids, liquids and gases we
meet with, are all composed of atoms. In varying degree of composition and cohesion, the atoms of each substance have a different assortment of electrons and protons. Steel, wool, steam and flesh, vary only in the composition of their atoms and their degree of cohesion. That is to say, the atoms of which steel is made vary from the atoms of which steam is composed because there is a different grouping of protons and electrons in them. There is, therefore, no hard lump or solid in matter at all. Thus we see that the physical universe is composed of space with some great cohesive masses of physical atoms floating about in it, which we call heavenly bodies.

Woodbridge (1965) says that the ordinary man has no doubt about the existence of an external world of objects both living and non-living which are independent of him. Edward (1967) depicts that the entire knowable universe is composed of natural objects, which came into and pass out of existence, in consequence of the operation of natural causes. Jeans (1937) contends that in very recent years our knowledge of the physical universe has been vastly extended through the co-operative achievements of sciences, of astronomy, mathematical physics, and astrophysics, assisted by the arts of photography and by our marvellously perfected modern telescopes. The stars of our galaxy are not arranged in a sphere, but are in the form of a gigantic disc, likened sometimes to a revolving cart-wheel, whose outer rim is the Milky Way - the latter composed of stars too distant to be resolved by the eye. Its
longer diameter is now thought to be about 100000 light years and its shorter diameter 20000 light years, remembering that a light year is about six million-million miles.

Eddington (1937) points out that in this universe each planet has its own parts and its own movements, the one does not move to the place of the other nor do the parts of one move either naturally or unnaturally from one to the other, the motion of each is proper to each within its sphere. This physical universe is a thing of wonder, a highly organised system in which eternal cycle of birth, life and death goes on. The universe is reliable, it does not behave eccentrically, it is not chaotic. The Creator is an Artist and Mathematician. Eddinburg (1928) explains that the universe is planned, it operates in accordance with law and order, we may take it that the energy or electricity of which the atoms are composed is a manifestation of the Life-Force of God, His breathing out. Here our flesh and blood and bones are the slowest form of that light, vibrating right at the bottom of the cosmic spectrum. When we come to know ourselves intrinsically as being of Light, then shall we be able to transcend our material limitations.

Meanwhile we must accept those limitations with all disabilities that are entailed. But as we travel onwards, we can obtain refreshment by lifting our thoughts momentarily to the vision of that freer, wider and grander life which is as yet hidden from human sight.
According to Tomlin (1952) Socrates (469-399 B.C.) believes to lay bare the secrets of the universe, its origin and destiny must assuredly take centuries of patient investigation; perhaps these secrets will never be fully revealed to man.

SPIRIT WORLD

Halverson (1976) presents a picture of a two-storied universe, one part of which is perceivable by us and the other part of which is not. In the unseen part dwells God, who created the world at some free moment and who continues to live in it. Fotheringham (1899) ascertains that the spirit rules over and fills this world and it contains all the things. According to Fairbanks (1898) the material universe of stars and planets and constellations which we see on a clear night floating in a sea of space, is not geographically separate from the spirit world, the two are coincidental, they interpenetrate.

Many people who have not given much thought to the subject are apt to think of God's heaven as being situated somewhere beyond the farthest star, located beyond the edge of the physical universe. Such a conception is on a par with the old-fashioned notion of an almost human God seated upon a throne. The spirit world and the physical world are both manifestations of God's thought, God's planning, in different degrees of density and in different rates of vibration. Greenberg (1950) writes that there are more worlds than this one and it is due to the presence everywhere of one Eternal Substance that it embraces all plurality and number within itself.
Titus (1968) supports that God is the Creator and Lawgiver who permits His creation to administer itself through natural laws. Ulich (1960) tells that Eternal Being neither can be seen nor heard, it can only be felt. It communicates itself neither to our eyes nor to our ears, only to our hearts. He dwells in spirit world. Quite obviously we cannot think of our friends who have departed into the world of spirit as having to drag a weary body of flesh and blood with them. Yet the spirit world and the physical world have the same basis, the same origin, which is the projected thought of God.

We may think of these substances in terms of ice, water and steam. All these three are basically the same yet they comprise solid, liquid and gas. Steam turns into water, water turns into ice. Let us think of God's conscious planning in terms of steam, water and ice. The realm of pure spirit corresponds to steam. Steam is condensed into water, corresponding to the realms into which we pass at death. The density of water is increased by freezing until it becomes what we call a solid ice, corresponding to the physical world in which we live. It is all the same substance but in different degrees of density. The ice can float about in the water and steam can pass through the water without unduly disturbing it. Thomas (1929) states that each form of this substance provides a suitable environment for intelligent life to dwell in, a polar-bear thinks ice fine to live on, a fish likes the sea. Similarly
the world of spirit is just as solid and real to those who dwell in it as our world is to us. They have bodies designed for that particular environment.

Browning (1905) believes that the material universe that we see and find so vast and fascinating and perplexing is as nothing compared to the greater universe of spirit, of which the physical universe is only a part. From our physical viewpoint we only see a collection of heavenly bodies in a great continuum of space. So far no scientific experimentation or deduction has brought us any evidence of what that space means. But in fact the space which puzzles us so much is really the spirit world. In fact the physical universe which we see is only a comparatively few physical bodies floating about in the universe of spirit. Our laboratory experiments prove that nature abhors a vacuum, so we have reason to believe that space is not a vacuum. Space forms a medium through which our light-rays and wireless-waves travel.

We give the name of ether to this content of space. Ether interpenetrates our earthly atmosphere and the solid earth, for wireless waves go through these things also. So we give to the substance of which this spirit world is composed the name of etheric matter. In order that they may be comfortable in such an environment the beings who live in it are given bodies of similar substance, etheric bodies. So we have etheric beings functioning in an environment of ether.
Gruber (1961) expresses that some of our leading scientists are drawing very near to the conception of a physical universe of materialized thought. Webb (1947) recalls that the universe looks more like a great thought than a great machine so that we ought to hail mind as a creator and governor of matter. Also that reality is better described as mental than material. Our senses, including the brain, only give us indications of the physical objects around us.

1.8 WHAT IS NATURALISM

In the words of Stocking (1946), "Naturalism is the type of metaphysics which takes nature as the whole of reality. That is, it excludes whatever is supernatural or other-worldly. Whatever appears independent of natural law, such as human life or the products of imagination, is really a part of the scheme of nature. Everything comes from nature and returns to nature. No doubt, there is something for which science has to search, but that hidden thing is nature itself, not anything beyond or behind nature."

'Naturalism' stands for education in accordance with nature. To educate an individual one must understand the nature of his growth. Both the end and the process of education are to be determined by the study of the nature of the pupil. Naturalism advocates a system of training which does not depend upon school and books but upon the manipulation of actual life of the educand. Education is merely the fostering of natural development and true education takes place when the nature, powers and inclinations
of the child are allowed to develop freely. The child, rather than the educator, the school, the book or the subject-study, is in foreground.

1.9 ROUSSEAU AND TAGORE AS NATURALISTS

The outstanding champion and exponent of eighteenth-century Naturalism was Jean Jacques Rousseau. He is regarded by Adams (1960) as perhaps the most prominent naturalist who ever wrote on education. His naturalism is a reaction to conventionalism and artificiality that overlaid all aspects of life in his days. He says, "God makes things good, man meddles with them and they become evil."

He gave to education a new edge. His famous treatise Émile has exercised a unique and lasting influence on educational thought, next only to that of Plato's Republic. The educational ferment that he created through his treatise is still alive and many an educational reformers have walked in his footsteps. In the words of Susan (1929), "Before Pestalozzi, before Froebel, the author of Émile laid the foundations of our new theory of education and taught the civilised world remorse and shame for the needless suffering and the quenched joy throughout long ages that darkened the dawn of childhood."

Tagore's naturalism wanted to rescue the child from the tyranny of books and the teachers. Like Rousseau, he did not want purposefulness, which belongs to the adult mind, to be forced upon the children in school. When once purposefulness is introduced, it becomes a torture to the child because it goes against nature's purpose. In his
View, nature is greatest of all the teachers for the child and therefore, there should be as little of interference as possible at every step by the human teacher in the process of the child's learning. The curriculum of his school is flexible to meet the individual needs. Classes are held in the open, except during rainy season. Children enjoy the natural scenes and are allowed to hear the sweet melodies of the birds. Lessons are sometimes stopped for it. He intended to educate the children through playful activities. Actually he did not like to make the educational process boring and tiresome. It is only in the later childhood that he introduced purposeful work. The children were allowed to enjoy and to express their feelings in painting, drawing, music and poetry. His education is according to nature and in the very lap of nature as that of Rousseau. He prefers the calm, deep-flowing rivers rather than the raging-torrents.

Both, Rousseau and Tagore were Naturalists in the true sense of the term. Though they had different backgrounds but the educational philosophy of both of them have much to provide the lines on which education in our country can be made life-like and useful for the individual as well as for the society.

1.10 STATEMENT OF THE PROBLEM

The investigator feels that development of Educational Philosophy of Rousseau and Tagore needs to be critically reviewed. Precisely the problem stated is:

"COMPARATIVE STUDY OF NATURALISM IN EDUCATION AS CONCEPTUALIZED BY ROUSSEAU AND TAGORE."
1.11 OBJECTIVES OF THE STUDY

The topic under study is of comparative nature. It deals with the comparative study of the Naturalistic Philosophy of Rousseau and Tagore. An attempt is also made to make clear the modern concept of education and to see relevance of their educational views in the present day times. The purpose is to see whether the educational views of these two personalities make any hold and significance in the modern times.

Broadly speaking the following are the fundamental objectives of the study:

(i) To highlight the main features of the Naturalistic Philosophy of Education of Jean Jacques Rousseau.

(ii) To delineate the salient characteristics of the Naturalistic Philosophy of Education of Rabindranath Tagore.

(iii) To compare the philosophical exposition of Rousseau and Tagore on the basis of common elements as well as divergent views in the Educational Philosophy of these two thinkers.

1.12 JUSTIFICATION OF THE STUDY

This study is of a philosophical type as the title suggests. Many efficient scholars have tried to analyse the manifold contributions of Rousseau and Tagore in different spheres of human knowledge. Attempts to consolidate their views on education as well as their naturalistic philosophy have also been made. Hence, it is not a virgin soil. Rather, it is an old story re-told. Wherein, then, lies the utility of this
venture? In fact, to assume anything like finality in the analysis of a mastermind, is an absurdity. Although there is glut of works on the philosophies and lives of Rousseau and Tagore, yet there is hardly any dependable study discernable to show their comparative exposition of naturalistic philosophies on education. The following brief but authentic survey of literature testifies this claim:

The two volumes of Herley (1873 and 1886), entitled 'Rousseau', narrate the biographical sketch of Rousseau and his achievements respectively. Davidson's (1929) 'Rousseau and Education to Nature', is a beautiful exposition of Rousseau and his education in the context of Nature. This is one of the most valuable and significant studies on Rousseau's Naturalism and can be rightly claimed as a classic on the subject. Hudson (1903), in his work 'Rousseau and Naturalism in Life and Thought', deals with the impact of naturalism on the life and philosophy of Rousseau.

In another work, 'Rousseau on Education', Archer (1926) unfolds Rousseau's philosophy of education and practice propounded by him in Emile and other works. Claydon (1930), in his book entitled 'Rousseau: The Man and His Works', deals with the biography and works of Rousseau in nutshell. Rousseau was one of the most sincere writers who have ever lived, and if he said a thing it was because he believed it intensely. Cobban's (1934) 'Rousseau and the Modern State' throws a flood of light on the origins of many of the fundamental political ideas of the nineteenth century and of the present day. One of the greatest aid in the comprehension of these
ideas, quite apart from any influence, he may or may not have exercised.

Watkins (1920), in his two volumes of 'Political Writings of Jean Jacques Rousseau', defines Rousseau's thought on political theory. Though endowed by nature with no great gifts of analytical clarity, he perceived the political and social motivations of men with uncommon intuitive insight. Green (1925), in his work entitled 'Jean Jacques Rousseau', exhaustively deals with the biography of Rousseau. Boyd (1925) purely deals with Rousseau's theory of education in his work 'The Educational Theory of Rousseau'.

Vaughan's (1932) 'The Political Writings of Jean Jacques Rousseau', is a work in two big volumes. The leading ideas of the works of Rousseau have been sufficiently discussed in both the volumes. Very few men can ever have crowded so much, into so short a space. Broome (1955), in 'Rousseau: A Study of His Thought', describes the works of Rousseau including those on education and philosophy. Hardly anywhere do we find assembled in the ideas of one man as many new tendencies. In a general sense, without committing ourselves to any particular interpretation of his influence, it is clear that this was enormous. 'The Confessions of Jean Jacques Rousseau' by Crocker (1955) gives a very valuable appraisal of Rousseau's merits and drawbacks committed by him in his life time with reference to Confessions.

The two volumes of Onasens (1966) entitled 'Jean Jacques Rousseau', presents a detailed biographical study
which takes an objective view of Rousseau's life and what he said about it, based on a close reading of his complete correspondence and the Confessions. Masters (1968) in his work, entitled 'Political Philosophy of Rousseau', deals with Rousseau's views on political problems such as Sovereignty, General Will, and Social Contract etc. Rousseau comprehends the whole political thought of his day here. The value of his work lies in the fact not that he was able to resolve, but that he was able to perceive, some of the basic perplexities and contradictions of modern political life. Robinson's (1969) 'Jean Jacques Rousseau, His Thought and Relevance Today', is a work of considerable importance. This little book is an attempt to present succinctly those educational views of Rousseau which are still important for the present as well as for the future.

Dear (1972), in his work entitled 'Jean Jacques Rousseau and his World', has presented the life history of Rousseau clearly and exhaustively. The description is also made of the age of Rousseau. Really, it would be hard to find a life more erratic and inconsistent, more tragic but sometimes farcical than that of Rousseau. Crinsley (1973), in 'The Philosophy of Rousseau', explains the philosophy of Rousseau and briefly touches upon his philosophy of naturalism. In education, in politics, in ethics, in literature, in social customs, one finds him at the entrance to all avenues, leading to the present.

The earliest study of Tagore's educational experiment was, perhaps, the valuable little monograph in Bengali entitled 'Brahmavidyalay' by Chakravarty (1911).
The name was 'Santiniketen' by Pearson (1916), which also gives a charming, but brief account of Tagore's school up to the date of its publication. Lal's (1932) 'Reconstruction and Education in Rural India', contains a valuable account of Tagore's educational work; but it admittedly stresses the various aspects of rural education, and nearly half the work contains the author's own views on the problem. Sen's (1943) 'Rabindranath Tagore on Rural Reconstruction' is more recent and is also confined to the field of rural education.

Spence's (1945) work under the title 'Rabindranath Tagore', is a very modest one. It seeks only to present Tagore as a man, thinker, and a poet, in such a way that the young student or general reader, without any specialist knowledge, can appreciate something of his greatness. Another important work is entitled 'Gurudev Tagore', by Narasimhan (1946). Here the author has taken upon himself the interesting task of compiling a symposium on the great poet and thinker.

Manjimohan's (1948) book entitled 'The Poet of Hindustan', is important not only because it deals with the thoughts of The Great Rabindranath but also because it reveals the workings of a reflective mind, on the problems of religion which was at once spiritual and social.

The recent work in Bengali, however, deserves a special mention, namely, 'Rabindranathandaran' by Bhattacharya (1937) of Calcutta University. It is undoubtedly first attempt to treat in one single volume some important aspects of Tagore's educational philosophy. Though not as full and comprehensive as the vastness of the theme demands and
wanting in a unified and integrated character as a whole, it is a pioneer work in this field. 'The Environ of Tagore', by Ali (1960), is essentially a socio-ecological survey of the National Extension Service Block entered at Shriketan. As indicated in the title itself, this concise study pertains to the region of Tagore's Visva Bharati also. Banerjee (1961), in his work 'Now Thou Singest My Master', gives an introduction to Tagore's poetry. However, the thought that unfolded itself through his poetry more or less pervades his other writings. This is particularly true of his serious prose writings also. A treatment of Tagore's poetry, therefore, incidently will give a general idea of the distinctive features of his writings as a whole.

The next work of considerable importance is Kriplani's (1961) 'Tagore: A life'. This full length biography is the author's personal homage in the Centenary Year. 'The Genius of Tagore', by Kalravanta (1961), is divided into two parts. Part I deals with the many aspects of Tagore's versatile genius and also contains a sample of his writings. Part II deals with the various aspects of the great Indian culture which blossomed forth in the beautifully integrated personality of Tagore. Mani (1961) gives a comparative exposition of education as held by Gandhi and Tagore in his study, 'Educational Ideas and Ideals of Gandhi and Tagore'. This is a very useful work to distinguish between the educational philosophies of both the writers. In Mukherjee's (1961) 'Himself a True Poem', an attempt has been made to study Tagore, calmly and steadily, avoiding all
Importance.

'The Philosophy of Rabindranath Tagore' by Radhakrishnan (1961), is an attempt to interpret Tagore's Philosophy in the light of its own fundamental principles. The popularity of the writings of Tagore shows that there is neither East nor West in realms of spirit, and that his work meets a general want and satisfies a universal demand. In 'Education for Fulness' Mukherjee (1962) has made a humble attempt to fulfill the grave want in the field of Tagorian studies by undertaking an investigation into the educational philosophy of Tagore.

Sinha's (1962) study entitled 'Social Thinking of Rabindranath Tagore', contains Tagore's basic ideas on social problems. He went deeply into many of our social problems and brought a keen historical sense to bear on them. Unlike his contemporaries, he was convinced from the outset that the formidable social impediments to our National progress would be removed only by approaching them scientifically. The appropriateness of this approach to India's many social problems in this period of reconstruction will impress all serious minds.

Verma (1964) has made a valuable addition to Tagoreanas by undertaking a study entitled 'Rabindranath Tagore - Prophet against Totalitarianism'. Through careful analysis of some of his novels and plays, and interpretation of his poetry, Verma has brought out vividly the element of humanism in Tagore's life and thought. A study like this would have been welcomed at any time but has a special significance today when the Indians realize afresh the
value of human ideals which alone can assure happiness, prosperity and progress for man.

In 'Heroinas of Tagore', Majumdar (1968) reveals that Tagore is a minute observer of the manners and customs, ideas and beliefs, as well as of the various strata of society from which he has drawn his heroines. A research study by Gopal (1974), entitled 'Social Thought of Rabindranath Tagore', might appear to be entirely different. The emphasis here is on the social and allied aspects of the thought of Tagore. The study indicates that Tagore was not only a social thinker indulging in armchair theorizing but a practical social reformer as well.

A survey of the above referred works and studies reveals that a number of scholars on Rousseau and Tagore have been engaged in bringing out the varied facets of these two philosophers from their isolated angles. Either these scholars have thrown their lights on the philosophies or their educational theories, or their biographies, including their national or international relevance in various periods of time etc. But no exhaustive effort has been made to make a comparative study of these philosophers from the point of view of natural education propounded and practised by them. The present study is, therefore, an attempt to fill up this lacunae amongst the works on education, philosophy and naturalism of Rousseau and Tagore, and vividly brings out the merits of each philosopher where they are alike, differ, or unique in their naturalistic philosophy in education for the existing or futuristic generations of educationists of East and West.