MAN
CREATOR OF FORMS

V. WALLACE SLATER, B.Sc., F.R.I.C., M.I.Chem.E.

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THE BLAVATSKY LECTURE
delivered at the Annual Convention
of The Theosophical Society in
England, at Besant Hall, London,
May 12th, 1951

THE THEOSOPHICAL PUBLISHING HOUSE, LONDON, LTD.
68 Great Russell Street, W.C.1

Sold by
The Theosophical Press
Wheaton, Illinois

To
my wife

Made and printed in England by
STAPLES PRINTERS LIMITED
at their Rochester, Kent, establishment

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The work of the Fourth Creative Hierarchy in the physical world, with particular reference to the technological applications of modern science

One important object of the descent of Man, or the Monad, into the physical world is the awakening of response in dense physical material, not only of the mineral kingdom but of matter itself. In this lecture it is proposed to place in perspective the achievements of our humanity, the Fourth Creative Hierarchy, in the use and manipulation of material things, through industrial development and applied science, in order to obtain some realization of the position and importance of the physical world in the Great Plan. We are using dense physical bodies for a definite purpose and we should therefore appreciate the 'reality' of physical matter. As C. W. Leadbeater says, 'He (the Monad) can never be apart from God, for the very matter in which he veils himself is also a manifestation of the Divine.'[1]

According to the occult teaching, man himself represents the archetype whence all nature's forms derive.[2] H. P. Blavatsky refers to Archetypal Man as the creative origin of all things.[3] In this sense, H. P. B. is using the term Man to embrace a meaning very much greater than what is usually meant when people speak of the human kingdom or of humanity. As E. L. Gardner puts it, 'man denotes a state of consciousness and not a particular form',[4] and in this sense man at any period of time is that channel (vehicle) which performs the particular function of 'bridging the highest forces contacted in that cycle to the lowest'.[4] Or as Annie Besant puts it, 'Man is that being in the universe, in whatever part of the universe he may be, in whom highest Spirit and lowest Matter are joined together by

Intelligence'.[5] In particular, this definition may be applied to each chain of the evolutionary system. In this the fourth chain, our present humanity, known as the Fourth Creative Hierarchy, has the responsibility of linking its highest spirit, *atma*, with the densest matter of its field of manifestation, the *dense physical.*

Glancing back to previous chains, we see the humanity of Chain I inhabiting forms on the mental plane and thus preparing the lower mind for subsequent use by our humanity. Part of this first chain humanity is now the Asura Hierarchy. The humanity of Chain II pioneered on the astral plane and now serves us through the Agnishvatta Hierarchy. The Barhishad Hierarchy assists our humanity on the etheric plane (physical I) as the achievement of the humanity of Chain III. The fields of action of the different hierarchies are shown in the following table.

FIELDS OF ACTION

Chain I	*Chain II*	*Chain III*	*Chain IV*	*Chain V*	*Chain VI*	*Chain VII*
Atma II						Atma II
Buddhi	Buddhi				Buddhi	Buddhi
Manas I	Manas I	Manas I		Manas I	Manas I	Manas I
Manas II	Manas II	Manas II	Manas II	Manas II	Manas II	Manas II
	Astral	Astral	Astral	Astral	Astral	
		Physical I	Physical I	Physical I		
			Physical II			

What this means is that each creative hierarchy, through itself, uses material hitherto undeveloped and thus unfolds in that material peculiar powers of response. In this sense each hierarchy is *creative* for its own cycle, hence the term Creative Hierarchies. The lowest matter reached by the humanity of the Moon Chain (Chain III) was etheric and thus the Lunar Pitris were able to give man (present humanity) his etheric double. 'Beyond this they could not go, but this sufficed for the shaping of physical evolution.'[6]

Our present concern is with the Fourth Creative Hierarchy, which has the responsibility of preparing dense physical matter. One approach to the study is to ask the question, 'What has man created?' He has surrounded himself by physically materialized

thought-forms, creations and inventions of the human mind: houses for shelter, implements for work and pleasure, vehicles for transport, luxuries of all kinds, and the whole range of industrial application. These are the results of our humanity's objectivization of his fourfold field of external activity, lower mind, astral, etheric and dense physical, which are the levels of the globes of the chain. Thus, while his consciousness ascends to atma, buddhi and manas, he descends to build forms at the four lower levels.

Again looking back to the humanity of the first chain, the corresponding activity there was that the Fifth (Asura) Creative Hierarchy (Humanity of Chain I) objectivized lower atma, buddhi, higher manas and lower manas, while ascending to or working from adi, anupadaka and higher atma. The point is made here, which will be discussed later, that the humanity of Chain I had the same relation to the lower mental plane as our humanity has to the dense physical.

Man's use of dense physical matter is twofold: first, with the help of the Barhishad hierarchy, he ensouls a physical form, and secondly, using the mental instrument provided by the Asura hierarchy, he builds external forms, projections of himself.[7] The range of man's consciousness is from atma II to physical I (etheric); this is his fivefold universe of atma, buddhi, manas, astral, etheric, sometimes made sevenfold thus: atma, buddhi, higher manas, antahkarana, lower manas, astral and etheric. He does not enter the dense physical but uses it as an instrument 'external' to himself. It also serves as an anchor in the sense of enabling man to hold his position in space. Here again we see his double use of dense physical material: for manipulating his outside world and as his own special vehicle. In the former, it is obvious that the manipulated forms are external, but as regards the latter it should also be clearly understood that he does not enter his dense physical body but works from the etheric. Man does not descend below ether 4, a fact which can be readily appreciated by a brief meditation on the physical vehicle beginning with the hair and the nails which are so obviously outside our consciousness.

Atma II Buddhi — Manas I	}	Man the Spirit
Antahkarana		
Astral — Manas II Etheric	}	His field of conscious activity
Dense physical		His work

Thus far the main emphasis has been on the fourth cycle. Before proceeding to expand the above idea, it is necessary to forestall any confusion which might arise when studying the work of the *Fifth* Root Race. Since that race is on the fourth globe of the *fourth* Round, it is only a rehearsal for the fifth Round, and therefore it is still actively concerned with the objective of the fourth cycle. Thus although the ability of the fifth root race may evolve higher mind, of the sixth root race buddhi, and of the seventh atma, all these root races, as the Fourth Creative Hierarchy, will direct their main interest towards the establishment of response in dense physical matter. It will not be until the next Round, the fifth, that humanity will really be concerned with manas (in the sixth Round buddhi, in the seventh Round atma). For a long time yet we shall be focused at antahkarana, the bridge, with our consciousness ranging downwards to the physical.

Similar remarks, in reverse, apply to the early root races in the sense that the first, second and third were rapid recapitulations of the first, second and third Rounds, just as the earlier Rounds themselves recapitulated the work of the earlier chains.

When considering what man has created on this earth, it is a popular attitude to attribute the mechanization of modern civilization to science, but technology dates back to the third root race. We have had the so-called Stone Age, Bronze Age, Iron Age, and now the Plastics Age, but all these are embraced within the larger cycle, round or chain, of physical technology. However one theorises on man's evolution in realms of thought, of aesthetics and of spirit, one has to face the fact that the principal practical achievements in manifestation have been technological.

H. P. Blavatsky gives a great deal about the occult background of humanity (cosmogenesis) and of man's evolutionary progress in general (anthropogenesis). She discusses religion, philosophy and science. She says little directly about technology, industry or commerce, although these may be fairly described as man's principal preoccupations. After all, most working men spend a third of every day in industrial occupations. We are left to translate the general principles of the *Secret Doctrine* into the language of our world. For this reason I have chosen technology as my subject, endeavouring to apply theosophical principles, as set forth by H. P. Blavatsky, to see if we can get an appreciation of the part which man has played in the 'building' of the dense physical world, which he is now playing in the release of powers in that physical world, and the part which he should play in the future. What is the dharma of the Fourth Creative Hierarchy?

MAN'S HEREDITY

It is proposed first to outline the passage of the life wave, which is to become the Fourth Creative Hierarchy, through the earlier rounds and races of the chain. As already stated, the field of activity set for the Fourth Creative Hierarchy embraces a fivefold universe, atma-buddhi-manas-astral-physical, on seven globes. Three globes are embryonic with vehicles of lower mental, astral and etheric matter, the fourth being a globe of balance with a dense physical body, and the remaining three globes of ascending achievement, etheric, astral and lower mental.

The life-wave makes seven complete circles or Rounds of the seven globes. During the first three Rounds the life-wave descends into matter giving birth to more and more material forms and impressing qualities on matter. This gives spirit the ability to *exist* at the different levels. In the fourth Round the life-wave evolves forms for struggle between spirit and matter. It is the Round of balance impressing relationship on matter with the inevitable conflict. In the remaining three Rounds the life-wave ascends and the forms which it has created become spiritualized, that is, matter is

fashioned by spirit into the perfect vehicle man needs for his own manifestation. This gives spirit the ability to *function* at the different levels. Also each Round evolves one kingdom of nature, the three elemental, the mineral, vegetable, animal and human in succession, to the highest perfection of its own type.[8]

In the first Round the principal activity among the kingdoms was that of the first elemental kingdom which evolved to the highest perfection for its type. At this stage the human kingdom, seven stages ahead in rank of the first elemental kingdom, was embryonic and archetypal. The intermediate kingdoms were equally in a state of embryo. In the second Round, the second elemental kingdom reached its highest perfection, while in the third the same applies to the third elemental kingdom. On those earlier Rounds of the seven globes our humanity was quiescent, passive, preparing to occupy forms but almost formless by our standards.

In the early Rounds the form building is effected by the four classes of the Barhishad hierarchy:[9] the first class with the most subtle bodies guiding the first Round; the second class with mental bodies guiding the second; the third class with astral bodies guiding the third; while those with the densest bodies, etheric, guide the fourth Round in which densest matter (dense physical) is formed. The *Secret Doctrine* gives a picture of these earlier Rounds by its references to the development of the element fire in the first Round, of the element air in the second, of the element water in the third, 'while the *Fourth* transformed the gaseous fluids and plastic form of our Globe into the hard, crusted, grossly material sphere we are living on. Bhûmi (the earth) has reached her *fourth* Principle.'[10]

'The fourth globe, the Earth, holds a unique position in the planetary chain, so also does the fourth Round, the fourth Kingdom and the fourth Race, etc. It is the point of balance of "Ezekiel's wheel", the battlefield on which the contending hosts of spirit and matter meet in almost equal conflict.'[11]

Thus we have arrived at the fourth Round when the mineral kingdom reaches its perfection, that is, the point of greatest hard-

ness and density.[12] It might be expected that humanity would still be quiescent as in the earlier Rounds; but this is not so; in fact, the fourth Round is often called the human Round, since the archetypes of each root race appeared at the very beginning of the Round on globe A. In parenthesis it may here be noted that similarly the archetypes of the mineral appeared on globe A of the first Round.

Following the above scheme to its logical conclusion, humanity will not reach its highest perfection until the seventh Round, but it has a peculiar duty (dharma) in this fourth Round. As already stated, the mineral kingdom reaches its perfection in this fourth Round; this has a twofold result: first, the monads of the mineral kingdom attain perfection for themselves at the mineral stage of evolution, namely the acquisition of such qualities as place, point, position, axes; secondly, dense physical matter is used on the fourth globe for the building of forms for the use of the perfecting mineral kingdom. Humanity, the Fourth Creative Hierarchy, has the task of preparing this dense physical matter for some future destiny in a manner similar to the preparation of the lower mental world by the Fifth Creative Hierarchy (Asuras). Human consciousness ranges from atma to etheric; it uses the dense physical but does not enter it.

Focusing attention on the fourth globe of the fourth Round, the early history of man on the Earth is fully described in the *Secret Doctrine*. The first root race had etheric bodies, huge forms drifting, senseless and passive.[13] The consciousness was at the atmic level and its objective was to establish itself at the lower mental level in matter prepared by the Asura Hierarchy. Neither fire nor water could destroy them; they were developing a vague sense of hearing.

The second root race had forms of curious 'pudding bag' appearance of slightly denser material. This is the first attempt to build a dense physical body; the body of the first became the etheric double of the second ('The Outer of the First became the Inner of the Second', Stanza 5,[14]) and so in the thin elastic coating

of dense physical material the sense of touch was added. In consciousness the second race was at the buddhic level, its objective being to establish itself at the astral level.

In the third root race both atma and buddhi had become 'subconscious', or rather they were focused in manas, the objective of this race being to establish itself in the etheric. Here we have the coming of the Lords of the Flame (from Venus) and the awakening of the mind, with still further development of the dense physical body.

It will be noted that, although the earlier races established their consciousness at lower manas, astral and etheric successively, they were throughout being prepared to handle dense physical material. It was not, however, until the fourth root race that man fully touched the dense physical. In that race, the consciousness of humanity was focused at the lower mind as its own monadic development, but man was now manipulating dense physical material as his dharma for the cosmic scheme. This approach to the subject may help towards an understanding of why we are urged to look upwards to spirit, while evolutionary forces drive the power downwards into matter. One might refer to man's use of lower manas as his own individual education, while his work on the dense physical was his work as a citizen of the cosmos. This latter is the hard task of the prodigal son, who descends into densest matter, as distinct from the life of the elder son who remains with the Father. If we are to place the physical plane in its true perspective we shall have to imagine structural and functional changes in the very substance of living matter as well as in that which lives. The human forms will wear out and perish but their imprint on physical matter will remain.

FIFTH ROOT RACE

The extremely difficult task, for humanity, of building a new vehicle, beyond the extreme limit of consciousness, needed an enormous stimulation of his mental principle. For this purpose the Asuras "tempted" man by giving him the power to divide, to build

forms, to think. Their special influence on us now in the fifth root race is the power to create, both at the lower mental level and at the dense physical, for all physical forms have their prototype in the mental world.

It may, on numerical grounds, be thought that the fourth root race on the fourth globe would be the climax on the fourth Round for humanity, but this is not quite so, because the peak is really established only when the principle of a particular cycle is objectivized. The lower mind cannot be objectivized until the consciousness can be raised to the higher mental level. Thus, although the fifth root race is only a rehearsal for the fifth Round, it is during this fifth race that the lower mind is thoroughly established through the focusing power of higher manas; at the same time the dense physical is quickened.

In this fifth race, consciousness has returned to higher manas, the direction being upward turned, but the drive upwards comes from the physical. Comparing the fifth with the third, one may say that, whereas the third endeavoured to establish itself in the etheric working from manas I, the fifth learns to function at manas I working from the etheric. This is done by merging etheric and dense physical into a unity and thus using a dense physical vehicle for mental evolution. The fifth is the culminating expression of the higher mind and in this sense it is a rehearsal for the fifth Round when the higher mind will become man's natural habitat. At present we are focused more at the bridge, antahkarana, and we shall be there for quite a long time yet.

Statements like that are apt to be misunderstood when taken in conjunction with the theosophical statements about the awakening of the intuition (buddhi) in the sixth race, or the use of will (atma) in the seventh. There should be no difficulty so long as the meaning of rehearsal is understood. H. P. Blavatsky calls the qualities (elements) of later Rounds 'presentments', which she says 'are absolutely beyond the range of human perception'.[15] Individuals within the life-stream will use higher mind, intuition and will in this Round but the average will not do so, and even those who do

will use them not as expertly as will happen in later Rounds. Here again H. P. Blavatsky puts this quite definitely: 'Nor is it part of the evolutionary law that the Fifth Principle (Manas) should receive its complete development before the Fifth Round', and 'Even in the coming Seventh Race, at the close of this Fourth Round, while our four lower principles will be fully developed, that of Manas will be only proportionately so.'[16] Even the 'advanced' egos will still have their responsibility for this Round so that the work of establishing lower mind and of vivifying dense physical matter will continue to the end of the Round using the added capacities of higher manas, buddhi and atma gained by the rehearsal.

CHARACTERISTICS OF MAN IN ANY CYCLE

In order to assess the value of the particular work of the Aryan race, the development of technology and science, and the present world-wide industrialism, it is necessary to understand the peculiar characteristics of the human kingdom independently of time and place.

The mineral, vegetable and animal kingdoms in earlier chains would have been unrecognizable by ourselves as being related to the present kingdoms, but there are certain characteristics of each kingdom which are common to every cycle and which serve to identify the stage in the evolutionary scheme. Thus the mineral characteristics are focus (position), axes, stability, resistance, inertia, rigidity; the vegetable characteristics are growth, reproduction, response, flexibility, fluidity; while in the animal kingdom we have movement, sensation. It is not easy to imagine these characteristics without physical forms; in fact it is beyond the comprehension of most of us; but the lists will serve to conjure up an idea of the possibility.

Following the same idea to the human kingdom, the characteristics may be imagined by the following adjectives: creative, adaptable, transmitting (as a channel for power).

The recognition by some scientists of the characteristics of the different kingdoms is clearly stated by E. F. Caldin. 'Matter forms part of beings of each kind, but it is in three different situations.

In the organism, matter is subject not only to the laws of inanimate matter (i.e. aggregation) but to the overriding law that the parts of an organism subserve the good of the whole. In a man, the bodily organism itself is subject also to the control of reason.'[17] Thus we have aggregation for mineral, organization for vegetable and animal, and reason or rationalization for human. Of mankind Caldin says, 'In practice, argument and purposive action are very general among mankind, and we may take it that no one consistently holds that he is not rational. The behaviour of my body, then, is subject not only to physico-chemical laws and to biological co-ordination, but also to occasional directives by reason, when I carry out some action that I have decided upon with some end in view.'[18]

It is now proposed to take a broad survey of the history of man on this planet to see how he has developed his surroundings, by applying what he inherited from humanities of earlier chains under the urge of his own particular dharma towards dense physical matter.

HUMAN EVOLUTION AND MAN'S USE OF TOOLS

Any review of the early history of man on this planet would be incomplete without some chronological reference, however brief. It is not easy to correlate occult chronology with that of science, since the *Secret Doctrine* gives a date of 800,000 B.C. for the first catastrophe of Atlantis with the fifth Atlantean subrace, the Semite, having been founded 850,000 B.C., while modern science speaks of the emergence of man as being only 500,000 years ago. In other words, modern archæological research affirms that man was a primitive palæolithic savage from 500,000 B.C. to about 35,000 B.C., whereas occult statements describe an advanced Atlantean civilization very much earlier than 500,000 B.C. However, there is a huge gap in science, since Leakey speaks of a large ape population as far back as 25,000,000 years.[19] Occult statements say that the nucleus of the Fifth Root Race was chosen from the above-mentioned Semite about 100,000 B.C., at a time which science gives for the palæolithic age and Neanderthal man.

This lecture is not concerned with the correlation of the two chronologies but is based on a broad sweep over human evolution on this globe. The subject is particularly concerned with the Aryan Race during the last few centuries, but requires an outline of the earlier history of man, ignoring whether the facts refer to Lemurian, Atlantean or Aryan, and whether the events took place during the last 500,000 years or over a period of 10,000,000 years. The following story of early man is generally taken from archæological discoveries such as would be recognized and acknowledged by modern science.

The story of man on this planet, in human form, begins with him as a food-gatherer just like the animals who shared the world with him. He began to differ from the true animal by his use of implements. For hunting he extended his limbs by weapons made of stone, hence the Palæolithic or Old Stone Age. It is of interest to picture early prehistoric man, or even pre-man (the *hominids* of archæology) learning to extend his consciousness into 'things'. I. W. Cornwall points out that Peking man, *Sinanthropus*, 'knew the use of fire, and some roughly worked implements, chiefly of quartz but including some worked bone and antler, testify to the beginnings of human industry'.[20] He gives the date as the Günz-Mindel interglacial period, i.e. about 500,000 B.C.

The new Stone Age, or Neolithic, is usually associated with that stage in human development when man actively co-operated with nature for food cultivation, both vegetable and animal. He was also learning to spin and weave, and to make clay pots. We speak of science as if it only developed during the last thousand years, but in Neolithic times there were embryonic sciences, such as 'the chemistry of potting, the biochemistry of baking and brewing, agricultural botany and the like'.[21] These sciences were based on active experimentation which made no discrimination between the essential operations and accidental embellishments.

Then came the revolutionary discovery of the metallurgical process whereby certain superior kinds of stone were found, after heating with charcoal in a primitive furnace, to produce a material

with peculiar qualities; it could be bent and hammered into shapes, it became liquid when heated and so could be cast in moulds, it could be used to make a tool more durable than one of stone or bone. Copper was probably the first metal to be discovered or used, but this was followed by silver, lead and tin. Then followed the discovery that an alloy of copper and tin, bronze, was a much stronger metal than either copper or tin alone. The influence of metallurgy on early civilization was comparable to that of the industrial revolution in the eighteenth and nineteenth centuries. Mining, smelting and casting demanded full-time attention, so that smiths and miners built up an extensive specialized industry.

During the same period, in the realm of transport, there is evidence of two-wheeled and four-wheeled carts having been in general use over 5,000 years ago. The wheels consisted of three pieces of solid wood mortised together and bound with leather tyres attached with copper nails. The wheels were attached in one piece with the axle and so axle and wheels revolved as a whole, being secured to the cart merely with leather thongs. Such carts may still be seen in use in Sardinia and Turkey.

The wheeled vehicles, however, could only be used where the surface of the land was either naturally level or had been made so by road construction. Such roads might have been made artificially or developed by continual use, e.g. as a footpath is gradually worn. To avoid the labour of human load carriers, of pack animals (the ass being the oldest) or of wheeled carts, civilization developed along the banks of rivers as man developed the use of boats for heavy transport. The commerce of antiquity, so far as cheap and bulky goods were concerned, was mainly water-borne.

The construction of waggons and boats calls for great skill in carpentry so that in the copper-bronze age there must have been a fairly well developed woodwork industry using stone and bronze tools.

About the same period we find the application of the wheel to the clayworking industry, in the potter's wheel.

Iron had been discovered in about 3000 B.C., but its manipulation was not generally introduced until 1200 B.C. when the Hittites

more or less monopolized the product, and so a new industrial era began, culminating in our modern civilization.

From this account it may be seen how man was extending his consciousness into the dense physical world beyond his own relatively puny physical body. His body might be six feet high, his arms less than three feet long, but he learned how to reach the high branches of trees by extending his arm by means of a wooden stick. Similarly he learned how to extend his arm into deep water by means of a fishing line.

No true animal has done this on its own initiative. Animals, birds and fishes, when they want to reach something beyond their own size or when they want to achieve what is beyond their original capacity, evolve a form with specialized limbs: the elephant's trunk, the giraffe's neck, the anteater's tongue, the mole's forefeet, the eagle's wing and the camel's water-carrying stomachs. These are specializations within animal species, a process which can lead to the ultimate extinction of the physical form, by its loss of the ability to adapt itself again to changing conditions.

The difference in man's use of physical matter is put very well by Gordon Childe: 'Man's equipment differs significantly from that of other animals. These carry their whole equipment about with them as parts of their bodies; the rabbit carries paws to dig with, the lion claws and teeth for tearing his prey, the beaver carpenter's tusks, most beasts hairy or furry coats to keep in warmth—the tortoise even carries his house on his back. Man has very little equipment of this sort and has discarded some that he started with during prehistoric times. It is replaced by tools, extra-corporeal organs that he makes, uses and discards at will; he makes picks and shovels for digging, weapons for killing game and enemies, adzes and axes for cutting wood, clothing to keep him warm in cold weather, houses of wood, brick or stone to provide shelter. Some very early "men" indeed had projecting, canine teeth set in very massive jaws that would be quite dangerous weapons, but these have disappeared in modern man whose dentures will not inflict mortal wounds.'[22]

It has been definitely stated by H. P. B. in the *Secret Doctrine* and more clearly described by E. L. Gardner in *The Web of the Universe*, that man preceded the animal, and it is interesting to see how this served as a rehearsal in the earlier Rounds for his work at the dense physical level in this Round and on this globe.

In those earlier Rounds, the Fourth Creative Hierarchy, our humanity, used vehicles which were then left for the lower kingdoms to use later in the chain. Thus the humanity of the first chain built mineral-like forms at the mental level, thereby establishing the manifestation of centres, angles and axes; our humanity brought this to the physical level, probably etheric, in the first Round of this fourth chain. Then the humanity of the second chain built plant-like forms at the astral level; here again our humanity brought this to the physical level in the second Round by using plant-like forms, i.e. forms which have the characteristics of consisting of fluid material with a membrane as an envelope. Compare this with the Second Root Race whose members were described as 'pudding bags'. Still later the humanity of the third chain built reptile-like forms at the etheric level and our humanity used this type of form in the third Round.

In this fourth chain, humanity is building a human-like form at the dense physical level. What has happened on this earth is that our creative hierarchy took the reptilian form and made therefrom mammalian forms which were left to be used by animal life. It is possible that humanity only took the forms to the etheric level and that animal life materialized the forms at the dense physical. This would not be contrary to H. P. B.'s statement that man preceded animal on this planet, but it would mean that man himself did not ensoul dense physical animal forms.

The suggestion is therefore made that man experimented in the development of tools by evolving specialized extensions within his own body, probably at the etheric level, but that he then left these forms for the animal kingdom, while he himself used a non-specialized form of great adaptability, and objectivized his instruments; hence the development of dense physical material as exten-

sions of man's consciousness, but not identified therewith, and the complicated build-up of industrial technology. The animal can only use the instruments within his own physical forms, so that its consciousness can only reach to the limits of sight and hearing. Man can use an almost limitless number of instruments and his consciousness can reach wherever these instruments can give or receive response: e.g. by radio he can circle the world, by plane he can ascend above the highest mountain peak, by submarine he can explore the depths of the ocean, by electron-microscope he can see the very small, by telescope he can travel out into space even beyond our galaxy, by machines he can achieve enormous feats of strength.

The above-listed achievements have jumped from the more primitive industrial activities of palæolithic times, of the bronze age, of ancient Egypt, Assyria, the Hittites, to the different kind of industrial and technological development of the last five hundred years; from clay pots, bronze ploughs, iron knives to combine harvester, electricity, jet propulsion and television.

THE IMPACT OF THE MIND ON CIVILIZATION

The special work of the fifth race on physical plane developments is the manipulation of material by the application of higher mind thinking serving as a focus point for lower mind creation which can be precipitated into outward form.

Reference has been made to the building of the human form from the reptilian. What actually occurred in the fourth Round of our chain was that man took the reptilian form and built the cerebrum on the cerebellum. Thus the cerebrum with the spinal cord was our humanity's contribution.[23] This made it possible for man to link up the higher mind through antahkarana with the lower mind, and hence with the dense physical vehicle. The fifth root race, in its rehearsal for the fifth Round, is able to establish the principles of the fourth cycle, namely, the lower mind and the dense physical form.

Humanity may be said to be at the bridge, antahkarana, which is

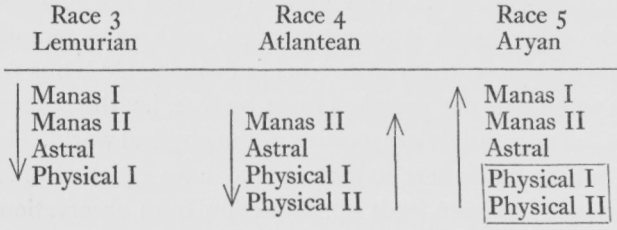
like a seed, first sending roots down into the lower mind, and then sending shoots up into higher mind. Millions of our humanity are still working in the roots and pressure upwards has to come from beneath.

The preliminary use of the higher mind brings about that aspect of human life and activity which may best be described as scientific; thus, whereas in the earlier races we see industrial development on practical technological foundations, in the fifth race we see how scientific thinking can revolutionize that industry and technology.

For balanced development there must be continuous interplay between the levels of consciousness, particularly between physical and mental. The higher mind needs the reactions of the physical just as the physical needs the direction of higher thought. In the early stages of the fifth race there was a tendency to ignore the physical and to weave elaborate theories with the mind. Among those who advocated an experimental approach was Roger Bacon in the thirteenth century, but it was his namesake, Francis Bacon, who particularly pioneered a more balanced approach of experiment and 'philosophy' by stressing the inductive method. He was impressed by the fact that so little progress had been made in scientific knowledge since the days of antiquity,[24] because the scholastics of the Middle Ages had 'with infinite agitation of wit, spun out of a small quantity of matter those laborious webs of learning which are extant in their books'. Modern science is based on experimentation; in using the mind, the physical world is not to be ignored. As H. P. B. says, lower manas rises up from beneath. Induction, the method by which science formulates its laws, is concerned with truth and derives generalizations from particular observations, responses from the outside physical world. Deduction, on the other hand, is only concerned with valid reasoning from premises whose truth is not being examined.[25] Thus for a deduction to be true the premises must be true, i.e. the induction must be based on accurate observation of the physical world. These points have been made here so that we may have a picture of how modern science has been built up: induction from observation of

the physical (reaction from physical II to manas II), generalization (manas I) and then deduction (play-back of life from manas I to physical II).

That summary illustrates how consciousness, at our stage of evolution, plays from point to point, level to level, and is unable to be in two places at exactly the same instant of time. The time interval may be so short, as it often is, that we appear to be conscious of two things at once, but what really happens is that there is a rhythmic movement of consciousness to and fro. A wheel may rotate so rapidly that the spokes appear as a solid disc. Similarly, consciousness oscillates between the mind and the physical so rapidly that the two appear to merge. Thus during the life of the fifth root race (sub-races one to five) the play of consciousness has oscillated from physical to etheric, physical to astral, physical to lower mental, physical to higher mental, the lower life gradually striving to the higher level. At the same time the higher life of the ego, not yet fully conscious, dips down to denser matter so that there is a parallel oscillation from ego to lower mental, ego to astral, ego to etheric, ego to dense physical. At the fourth stage the two directions blend to give the rhythmic pulsing of life between lower mental and dense physical; this is superimposed in the fifth race by the higher mental giving a rapid pulsation between higher mind and physical with this difference, that at this stage the physical is being blended, etheric and dense physical, into a unity, just as at a later stage (sixth race) the two minds will be merged. It is not without significance that the Barhishad Hierarchy helped us to build our physical forms but now influences us at higher mental.



The work of the fifth race, then, has the double function of blending etheric and dense physical, and of awakening the higher mind. We can see how this has taken effect in the developments of scientific technology, which will now be outlined, taking up the story where we left it, after the beginning of the iron age.

The new era may be said to have had its beginnings when man began to measure, classify and generalize in India, Persia and Egypt. Two examples of the Egyptian practical approach, *measurement* and experiment, are the balance, of which it was found the two arms must be of equal length, and the 3-4-5 right-angled triangle used for surveying and laying out buildings. Pythagoras went a stage further and showed that $3^2 + 4^2 = 5^2$, $9 + 16 = 25$, from which he *generalized* that in all right-angled triangles the square of the longest side was equal to the sum of the squares of the other two sides. Thus there is the Greek use of intellect and speculation.

The Renaissance brought the above ideas together combining material needs with logical enquiry, which Newton finally crystallized into what may be regarded as the accepted scientific method: experiment, classification, generalization, hypothesis, and deduction from the hypothesis. The lower mind analyses and classifies, the higher mind synthesizes and generalizes.

The direction of scientific investigation is the result of its impact on society. It is not always planned; Columbus set out to find the west route to China, he found America. Stainless steel was discovered by experiments on steels with special physical properties, when it was noticed that some of the rejected material did not rust. Society needs something to eat, to cure its ills, to clothe itself; the scientist tries to find what is wanted but stumbles on many more ideas outside the range of his original search. What has science achieved for our civilization?

In the fields of chemistry, biology and medicine, a study of the factors in the human body which are essential to right growth, health and well-being has resulted in the discovery of a number of master chemicals which are necessary in quite small quantities.

These are of two kinds, vitamins ingested with the food, and hormones produced by a ductless gland in the body itself. Then we have the range of insecticides such as D.D.T. and gammexane, the selective weed killers and plant hormones. Great advances have also been made in the last ten years in the field of anti-biotics: the sulpha drugs, penicillin and streptomycin. An idea of the extremely complicated mental set-up of modern biochemistry may be noted by the fact that the use of penicillin is resulting in the evolution of strains of bacteria which are now resistant to penicillin, and science has to try to solve the problem of how this happens.

Turning to physics, one of the latest branches is that of electronics with the thermionic valve used in the radio set, the cathode ray tube used in television, and radar for echo measurements of distance made possible by being able to divide time into intervals as small as one thirty-millionth of a second. Atomics, or nucleonics, is a branch of physics concerned with changes in matter itself, including the release of atomic energy.

Engineering science has introduced jet propulsion enabling rockets to travel at supersonic speeds up to 3,600 miles per hour. They have to be speeded up to 25,000 miles per hour to attain the escape velocity for this earth, which would mean the possibility of a rocket exploring outer space.

These are just a few examples of the effect of science in man's conquest of physical matter, of his growing ability to use his higher mind to create forms on the mental web, which he then precipitates into the physical world.

The accumulation of knowledge about the physical world is literally beyond any man's comprehension. In early races, the wise man of the tribe was able to know all that the tribe had acquired. In the nineteenth century, it was thought that all knowledge might be put into encyclopædias. At the present time, over one million scientific articles are published throughout the world every year. It has been calculated that by the year A.D. 2000 scientists will have 24 million books to consult and 300 million original papers, a truly gigantic attack by mind on matter.

Such is the story of the monad's journey, prepared for untold ages through mineral, vegetable and animal, culminating on this planet where for 18 million years he has gradually and painfully learned to manipulate physical material, both as a vehicle for his own life and in instruments for his use. This long journey was no illusion. The physical obviously has its own reality. What of the future?

Madame Blavatsky had a message to bring to western civilization. What would that message be now, 75 years later, in the present complex industrial, scientific and technological world?

SPIRITUALIZATION OF MATTER

The particular aspect of cosmogenesis and anthropogenesis to which this lecture is directed is the work of the Fourth Creative Hierarchy on dense physical material. This does not mean that one deprecates the great stress which theosophy has put on the reality of the spirit and the illusion of matter, but rather that the position of matter in the cosmic scheme shall be more clearly understood. Behind the idea of matter as an illusion there is also the fact that spirit is dependent upon matter, as light has no value without shade.

For millions of years we have been learning to exist and function at the dense physical level; this has not been for naught, and H. P. B. would be the first to acknowledge it.

'Before Evolution began, Prakriti, Nature, was in a condition of *Laya*, or of absolute homogeneity as "Matter exists in two conditions, the *s kshma*, or latent and undifferentiated, and the *sthûla*, or differentiated, condition".'[26] Differentiation of matter is the result of the descent of spirit. 'Every particle or atom of Prakriti contains *Jiva* (divine life).'[26] Thus the *mâyâ* or illusion of matter should not be taken to mean unreality but limitation. In its widest sense, *mâyâ* is the principle of form, i.e. the limitation on the life, of the form which it ensouls. One definition of *mâyâ* is 'the creative power by which the universe comes into manifestation'.[27]

Even the Masters, like ourselves, are subject to law. 'They are

limited by matter. They still inhabit this globe which they tell us is the lowest and grossest in our planetary chain.'[28]

The struggle between spirit and matter takes place in Heaven and on Earth. It was man's prerogative to descend into densest matter while the deva hierarchies remained to work above, which causes both human and deva to experience divine discontent. 'In Heaven—because the Divine Monad had voluntarily exiled itself therefrom, to descend, for incarnating purposes, to a lower plane and thus transform the *animal* of clay into an immortal God' so that 'the Angels aspire to become men; for the perfect man, the Man-God, is above even the Angels. . . . On Earth—because no sooner had Spirit descended than it was strangled in the coils of matter.'[29]

Man is the creator of forms. The devas, on the other hand, 'are copyists—but though they can copy and recapitulate exquisitely the designs given them from the inner planes, they cannot conceive and create *new* forms—a dual mind is needed for that'.[30]

At a recent lecture Lord McGowan, Hon. President of Imperial Chemical Industries, outlined the rapidity with which new forms had been built during the last one hundred years.[31] He regarded the outstanding changes to have been the change from stage coach to railways, sailing ships to the *Queen Mary*, hand labour to mechanization; developments in coal and iron, electricity, aluminium and rubber, petroleum, telegraph, telephone and wireless, electronics, radar, and jet engines. He pointed out the effect of the use of nuts, bolts and springs on the whole of industry. Man was no copyist here, but a creator.

At the same time, man has been exceedingly profligate in his use of what nature has provided. Coal and petroleum stocks are being used up as if there were infinite supplies. Let us look at the statistics of just one material used in the chemical industry, sulphur. This is used for the manufacture of sulphuric acid, an essential chemical for the whole industry, from fertilizers to pigments, medicines to the modern soapless detergents. In 1913 the world's supplies of sulphur came from Sicily, 400,000 tons a year;

its extraction from underground was just beginning to be developed in Louisiana, 250,000 tons a year. By 1950, the amount obtained in Louisiana was 5,000,000 tons a year. A geological survey gives the present sulphur reserves in the United States as 57,000,000 tons, i.e. only 11 years' supply. Thus it can be expected that, unless further stocks are discovered, the sulphur deposits will be exhausted by, say, 1970.

This example has been given merely to indicate man's responsibility to posterity, to the race. He must continue to create, or the race will die out. Hence the search for new sources of energy and for new materials. Creation must be continuous.

The forms which are created may be instruments, i.e. extensions of consciousness of the physical vehicle, or materials of the very substance of the physical world such as petrol, chemicals, food and the like. In every case, however, it is forms which are created, never forces. The forms are merely channels for the force. Thus man, in his own physical body, through extensions of that body, or by manipulation of physical matter, opens up material of the dense physical plane for the flow of forces from higher planes. This is the contribution of our humanity in the process of cosmogenesis, for all things 'thought out and constructed by man on earth are humanly-created projections of human thinking'.[32] This world may be regarded as the sphere of divine research and our present science as an instrument in the divine hand.

The important point to be emphasized is that, since the forms are created external to man's consciousness, he must be careful not to identify himself with them. The ascendancy of spirit means the ability to use instruments objectively, to recognize the dense physical as an important field in manifestation but not part of man's own consciousness. Pure science aims to understand nature; applied science controls the behaviour of matter by means of that understanding and manipulates nature for the welfare of men. Technology is the application of pure and applied science in working out and practising techniques for the control of material nature. Such is how a scientist describes man's work.[33] If for pure science

we read higher mind, for applied science lower mind, and for technology dense physical manipulation, we have a theosophical interpretation. It is particularly the technological results which we should recognize as external to ourselves. At the same time let us recognize the dignity of technology in its work on dense matter.

The objectivization of the results of science accompanied by the recognition of the spirit, working at higher mental, is one safeguard for humanity in the rapidly expanding release of force through man's created forms. H. P. B. refers to the danger: 'the nineteenth century has flitted away, leaving us a bewildering and overwhelming mass of scientific discoveries crushing upon us daily, with still further portents of almost terrifying discoveries reaching nearly to the supernatural, which threatens to momentarily open on us'. The Adepts foresaw these ominous, impending, terrifying discoveries and recognized the necessity of giving out to the world the teachings of Wisdom, so as to ward off, as much as possible, the dangers to humanity that must accompany them.[34]

Sir Richard Gregory in his British Association address for 1947 said: 'The accumulation and correlation of all natural knowledge acquired by observation or practical experience is the function of science, while the way in which it is applied and interpreted affords a measure of the strength of a community in the history of a civilization', while Lord Samuel in a letter to *The Times*, 23rd January, 1951, wrote of the current trends of our modern civilization: 'It is generally agreed that its strength lies in the striking development of science and in the advance of technology, its weakness in the lack of effective moral and spiritual standards. The intellectual is a tangled jumble. . . . Until this confusion is disentangled, until some kind of pattern is set on which our civilization may order itself, it cannot know what ends it should seek and how it should try to reach them.'

The world is flooded with new discoveries, but they do not naturally integrate into a unity unless they are taken up by men who are prepared to take all the reports from the various frontiers of knowledge and correlate them with old beliefs and with one

another. This is the urgent need, for philosophers with theosophical outlooks who can comprehend the inner as well as the outer in the world of man's fivefold universe, stretching, as it does, from the physical to atma.

God is vast and universal, but this is only one aspect; he is also meticulous, particular and detailed. Nature is both great and small; the atom is as well balanced and ordered as is the solar system. Man has to learn to work with the same breadth of experience; to handle the details of the material world with care, with loving attention, while keeping his centre at the spiritual level.

See how nature uses the material of Mother Earth; we can learn much from this. 'To earth each living thing restores, when it dies, that which has been borrowed to give form and substance to its brief day in the sun. From earth, in due course, each new living being receives back again a loan of that which sustains life. What is lent by earth has been used by countless generations of plants and animals now dead, and will be required by countless others in the future. No plant or animal, nor any sort of either, can establish permanent right of possession to the materials which compose its physical body.'[35]

Bodies perish, forms dissolve, man the creator returns to his spiritual home, but the spirit of the forms continues—that is the deep mystery of *pralaya*. Thus can we recognize the value of work on the dense physical, a privilege for our humanity, and its responsibility.

'Each cause started on the Physical Plane sets up action on every plane to all eternity. They are eternal effects reflected from plane to plane on to the "screen of eternity".'[36]

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