

98.

A. PRIMER

OF

INDIAN LOGIC.

(Based on Annambhatta's Tarkasangraha
Sec: 28 to 42.)

BY

P. C. Munuswamy, M. A.

Lecturer in Philosophy, Pachaiyappa's College, Madras.,

Miller Gold-Medalist, The Rajah Sir Ramasami

Mudaliar Gold-Medalist, P. Thiruvengada

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'A Short Introduction to Logic,'

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Knowledge,' etc. etc. etc.,

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PREFACE

THE book has been mainly designed to meet the requirements of B. A. students in Indian logic. It purports to present the essential of logic as contained in Annāmbhatta's Tarkasangraha Sections 28 to 42. The chief aim of the author is to present Indian logic in its relation to the European. However, it must be understood that the book also is an addition to the existing manuals on the subject. The author has endeavoured to give both the Sanskrit and English equivalents to all the technical terms. The practical value of the book has been enhanced by the addition of worked-out examples in *hetvābhāsas*. It is hoped the book might serve as a useful introduction to both the student and general reader.

Madras,

15th September, 1935.

} The Author.

"Nyāyāmbudhirdīdhitikāra yuktikalakolāhala.
durvigāhah !
tasyāpi pātum na payah samarthah kim nāma
dhimatpratibhāmbucāhah"!!

'Logic is real ocean whose water is salt and which cannot be approached owing to the tumults and uproars of the commentators. Is not then the water of the ocean capable of being drunk? Why not? Intelligent people, like clouds, can easily approach the ocean and drink its pure and sweet water.'

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CHAPTER I.

THE SIX SYSTEMS OF INDIAN PHILOSOPHY.

The Vedas are the earliest documents of the human mind that we have. There are four Vedas namely Rigveda, Yajurveda, Samaveda and Adharvanaveda. Each Veda consists of Samhita (Mantras), Brahmanas, Aranyakas and Upanishads. But in the Vedas primitive religion is dominant and here and there are passages containing philosophical lore. It is only in Upanishads that philosophical questions are discussed. They are called generally as Vedanta (end of the Vedas). They are not systematic treatises on philosophy but shrewd guesses at the Absolute (Brahman). Early Upanishads might have been written between 1000 B.C. and 300 B.C.

The essence of the Upanishadic teaching can be summed in the statement that Brahman is the ultimate reality. The inmost being in ourselves and things that we perceive is Brahman. The whole universe is only a manifestation of it. It is the spiritual spring which breaks, blossoms and differentiates itself into numberless finite centres.

Subsequent to the Upanishadic age, there was considerable philosophical speculation which finally culminated in the formulation of these ideas in the form of Sutras (aphorisms). These ideas were systematised into six systems of philosophy or shaddarsanas which was the pride and glory of ancient

India. These six systems are called orthodox systems (*astika darsanas*) since they accept the authority of the Vedas. The Buddhist, Jain and Charvaka systems are generally branded as unorthodox (*nastika darsanas*) since they repudiated the authority of the Vedas. It must however be borne in mind that all the systems, irrespective of their acceptance of the Vedic authority are not dogmatic but rational interpretations of the universe. The six systems are Samkhya, Yoga, Nyaya, Vaisesika, Purva Mimamsa and Uttaramimamsa (Vedanta). These systems are called *darsanas* because they give us a glimpse of the ultimate reality.

Kapila is said to be the founder of the Samkhya system. The earlier work on the Samkhya system is Iswarakrishna's *Samkhya Kārika*. The Sankhya thecrists explained the universe by means of two principles *prakṛiti* and *puruṣa*. Souls are many and there are three *gunas*, *satva*, *rajas* and *tamas*. *Prakṛiti* is in a state of unstable equilibrium owing to the preponderance of the one or more *gunas* and thus leads to evolution. Why should there be evolution? They state that world process is for the salvation and enjoyment of the *purushas*. Every *puruṣa* is enchained in the cycle of *samsara*. Soul's contact with matter is the root cause of pain and pleasure. Kapila said that *Tattvajnana* (philosophical wisdom) is the means of salvation. If any one understands and finds the distinction between *prakṛiti* and *puruṣa* he gets release from rebirth. Samkhya denies the existence of God and holds that *prakṛiti* and *puruṣa* are the causes for cosmic evolution.

Yoga philosophy was founded by Patanjali. On the metaphysical side there is no difference between

Yoga and Samkhya. In addition to prakriti and purusha Yoga believed in God. It also posited that tattvajnana is not sufficient to get release from the contact of prakriti and laid down yogic practices as the only means to moksha.

Gautama is the promulgator of the Nyaya system. Nyaya system is the logical science par excellence. Nyaya deals elaborately with *pramanas* and *prameyas*. The Vaiseshikas believed in a multiplicity of entities like, *dravya*, *guna*, *sāmānya*.

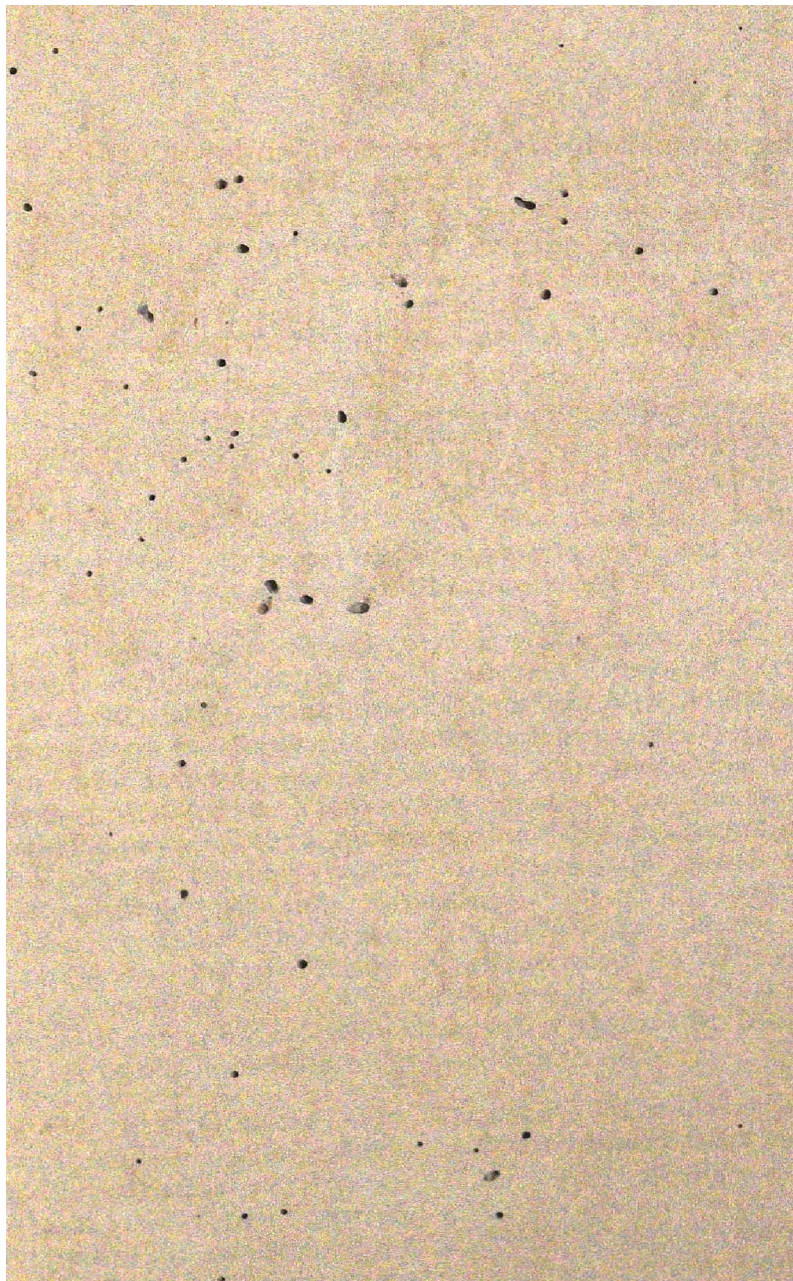
The Vaiseshika system deals extensively with padarthas. Kanada was the founder of this system. The chief tenet of this school is atomic theory which states that the world is constituted by a number of atoms.

Purva mimamsa is founded by Jaimini. Mimamsa is a systematic code of principles in accordance with which the Vedic texts are to be interpreted for purposes of sacrifice. The major portion of the Mimamsa system is concerned with the discussion of Vedic rituals and sacrifices. However there are discussions of metaphysical nature in it.

There are two schools in the Mimamsa system, the Prabhakara and the Bhatta. Mimamsa believed in *apurva* (unseen force) that brings rewards in the heaven to those who have performed Vedic sacrifices. The law of karma is the all important factor in determining births and deaths. They believed in the eternity of the Vedas and banished God from their system.

Uttara mimamsa is usually called Vedanta. Bāṇanārāyaṇa wrote the *Vedānta Sutrās* and laid

the foundation for the greatest philosophical system called *Vedānta*. Sivakanta Nilakantacharya wrote the first commentary on this work. His system is called in later ages as Saivasiddhanta. Sankara also wrote a commentary on the Sutas. His system is called Advaita which states that Brahman is the only reality and the world is an illusory appearance. Ramanuja has written a commentary on it. His system Visistadvaita states that sat, asat and Brahman are real. He believed in saguna Brahman. Madhava wrote his Dvaita commentary on it which states that God is *svatantra* and man is *paratantra*.





CHAPTER II.

NYAYA-VAISESHIKA LITERATURE.

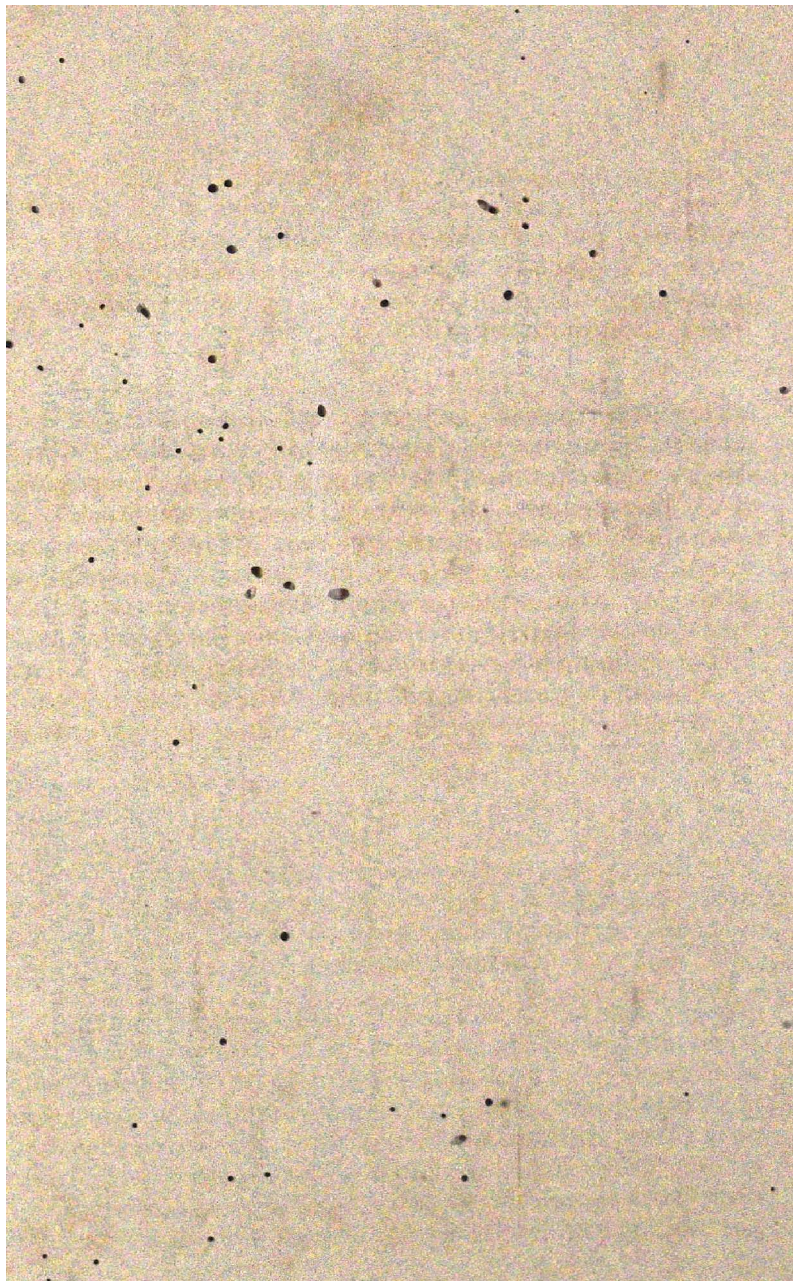
We can distinguish three stages in the history of Nyaya-Vaisesika literature. In the first period sutras were formulated ; in the second period commentaries were written upon the sutras. In the third period syncretist works were written amalgamating both Nyaya and Vaisesika doctrines.

Hindu logic in its rudimentary form can be found as early as the sixth century, before Christ. The first regular work on Nyaya is *Nyāya-Sūtras* formulated by Gautama in the Second century A. D. *Vaisesika sūtras* were written by Kanada before the birth of Christ. Vatsyayana wrote a commentary called *Nyaya Bhasya* on Gautama's Nyaya sutras, in the fourth century A. D. Prasastapada wrote a commentary on the Vaisesika sutras. About 600 A. D. Chandra wrote *Dasapathārtha Sāstra*, a Vaisesika treatise based on Prasastapada Bhasya only preserved in a Chinese version of 648 A. D. without influencing the Vaisesika system in India. H. Ui has now translated it into English.

In 9th Century A. D. Vacaspati Misra wrote a commentary called *Nyāyavārttika tātparyatika* on Uddyotakara's treatise called *Nyāya-Sucinibandha*. About the tenth century A. D. Udayana wrote a commentary on Prasastapada's Bhasya called *Kirana-vali* and also a commentary called *Nyāyavārtika*.

tatparya parisuddhi on Vacaspati's commentary on Uddyotakara's treatise. His famous work is *Kusumāñjali* wherein he states eight arguments for the existence of God. Gangesa's *Tattvacintāmani* is the most famous logical treatise on which there are thirty commentaries.

The third phase in the history of Nyāya-Vaiśeṣika literature is marked by syncretism. Now there is a tendency to amalgamate both Nyāya and Vaiśeṣika tenet. The most important syncretist works are Laugakṣi Bhaskara's *Taraka kaumudī* and Annambhatta's *Tarkasamgraha*. Thirty-five commentaries are written on the latter. According to tradition Annambhatta was a Telugu man who lived in Chittore District. Dignaga was the famous Buddhist logician who attacked virulently the Nyāya-Vaiśeṣika tenets and the writers on Nyāya-Vaiśeṣika took considerable pains to refute his criticisms.



Buddhi

smṛiti

anubhava

yathārtha

ayathārtha

pratyakṣa

anumāna

upamāna

sabda

samsaya

viparyaya tarka

nirvikalpaka savikalpaka

saṁyoga

samyukta samavaya

samyukta samaveta samavaya

samavaya

samaveta samavaya

viseshana viseshyabhava

hetvabhāsa

parathanumāna

pratijñā

hetu

udāharaṇa

upanaya

nigamaṇa

śavyabhichara

satpratipakṣa

viruddha

asiddha

badhita

CHAPTER III.

BUDDHI (COGNITION).

Nyaya-Vaiśeṣika¹ accepts seven categories *dravya* (substance) • *guṇa* (quality) *karma* (activity), *sāmānya* . (generality) *viśeṣa* (peculiarity) *samavāya* (inherence) and *abhāva* (non-existence). It enumerates twenty four qualities of which *buddhi* is the most important. It is the cognitive faculty which furnishes knowledge. According to the Nyaya-Vaiśeṣika system the knowledge of the categories (*prameyas*) dispels ignorance and purifies the soul which finally culminates in salvation.

Buddhi² is the property of the soul. Knowledge (*jñāna*) always inheres in the soul. Mind is an inner sense which directly apprehends pleasure, pain and cognition and perceptible qualities of the soul. Nyaya-Vaiśeṣika treats consciousness as a quality of the soul generated under certain conditions. But according to the Vedantins and Sankhya philosophers soul is pure *chit* (consciousness).

Annambhatta defines *buddhi* as *sarva vyavahāra hetu jñānām*. It is the cause of the utterance of words intended to communicate ideas. In short it is the cause of verbal expression. But this definition is too narrow as it fails to include indeterminate perception (*nirvikalpaka*) which is equivalent to an ineffable bare sensation. Being conscious of this defect, Annambhatta modifies the definition in his

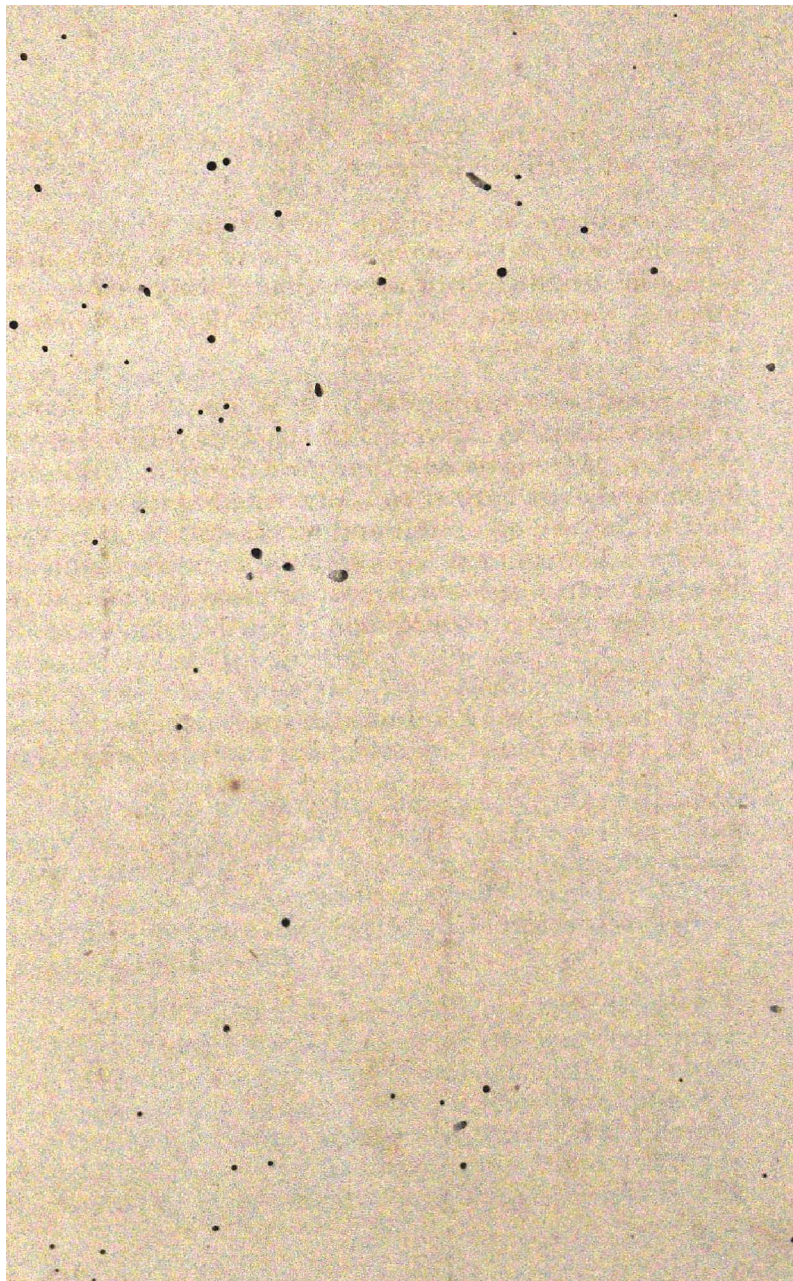
dipika as *jnanām buddhi*. Cognition gives knowledge and both are identical.

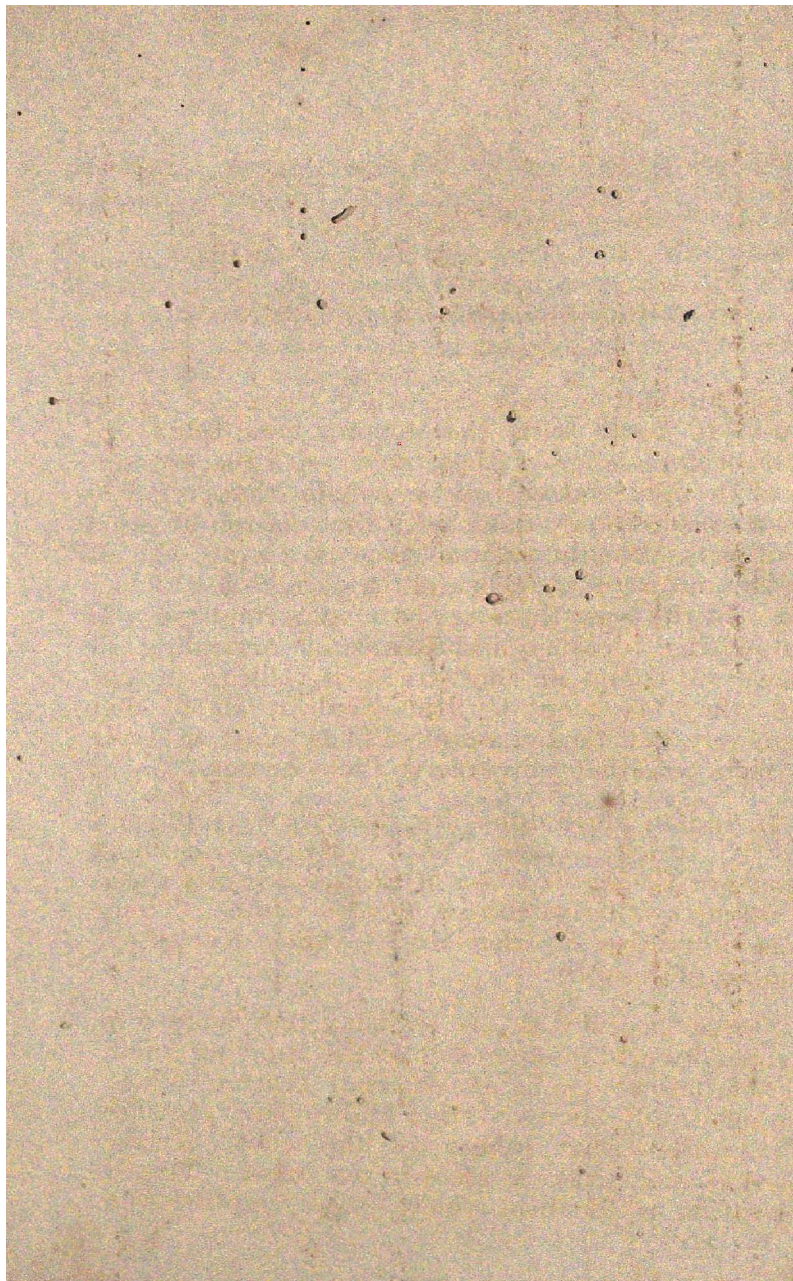
Cognition is divided into two kinds *smṛiti* (recollection) and *anubhava* (experience). *Anubhava* is again divided into perception (*pratyakṣa*) inference (*anumāna*) analogical judgment (*upamāna*) and verbal knowledge (*śabda*).

Smṛiti is remembrance. "It is due to *bhāvana* or impressions left upon us by past experiences. It is different from recognition (*pratyabijnā*). But the Mimamsakas (Bhattacha) and Advaitins explain recognition as due to perception and recollection (*smarana*). "This is that person" is an example of recognition. Recollections originate if past impressions are revived under proper conditions.

Criticism:—

The division of knowledge into experience and remembrance is not logical, since all experience is a synthesis of past and present knowledge. Knowledge is the interpretation of the present in the light of the past. It is a dynamic process and result of apperception.





CHAPTER IV.

NYAYA-VAISESHIKA EPISTEMOLOGY.

Epistemology is otherwise called theory of knowledge. It deals with the origin, conditions and nature of knowledge. Logic deals with the correctness of thought and various processes that regulate it. But epistemology deals with the relation of mind and objects, thought and reality. In a word it deals with the nature of objects and the nature of truth and error. In the west there are two important theories of knowledge Idealism and Realism. According to Idealism all things in the world are ideas in our mind; they are mental. But Realism states that objects are outside our mind. They exist in their own right whether we perceive them or not.

In Indian philosophy, the theory of truth and error is called *khyāti vāda*. Nyaya-Vaiseshika states *anyathā khyāti vāda*, Mimamsa *akhyāti vāda*, and Advaita *anirvachanīya khyāti vāda*. There are also a number of other khyati vadas recognised in Indian philosophy.

Nyaya-Vaiśeshikas are realists; they believe in an external world independent of the knowing mind. For them knowledge is an external feature which the mind simply knows. Mind knows pain, pleasure and cognitions that inhere in the soul. Knowledge does not exist as ideas in our mind. This is the position of Idealism which Nyaya emphatically

disowns. Cognition must not be regarded as transforming what it cognises ; to be known is no quality of the object but a relation *sui generis* (*svarūpa sambandha*). This is the view of the Nyaya-Vaisheshikas regarding the nature of knowledge and objects. They state that samavaya, samsarga samanya, visesha, guna, karma, etc., exist outside the mind as external relations. This is like the Russell's theory of external relations.

Anubhava is divided into *yathārtha* and *ayathārtha*. Before we study their theory of truth and error, we must understand their theory of judgment. They believe in subject-predicate relationship. This theory is known as attributive theory of predication in western logic. Every judgment contains *viseshya* (subject) and *viseshana* (attribute). Viseshana is also called *prakāra*. In the judgment ; 'gold is yellow' 'gold' is *viseshya* and 'yellow' is *viseshana*. This relation is technically called as *viseshaya-viseshāna bhāva*.

Yatharthajnana (true knowledge) is called *prama* and ayatharthajnana (false knowledge) is called *bhrama*. If we perceive an attribute as belonging to an object which really has it, it is truth. If we cognise an attribute (*prakara*) as belonging to an object which does not have it, it is error. As Annambhatta defines *tadvati tatprakārah anubhava yathārtha*, and *tadabhāvavati tatpra kārah anubhava ayathārtha*. To cognise a piece of silver as silver is truth ; to cognise a mother-of-pearl as a piece of silver is error (*suktav rajatham*). If silver is perceived as it is, it is true knowledge ; if nacre is perceived as silver it is false knowledge. It is false because *prakara* 'silverness' does not belong to the

perceived thing in the external reality. If our knowledge represents facts as they are, it is truth, if not, error. In other words, if there is correspondence between knowledge and reality, it is truth; if there is lack of correspondence between knowledge and reality, it is error.

The Nyaya-Vaiseshika theory of truth is called technically as *anyathā khyāti vāda* (theory of misapprehension). It consists in misapprehending or misinterpreting of one thing as another. In the phrase *anyathā-khyāti*, the term *khyāti* means cognition and *anyathā* means 'otherwise than what it is.' As Naiyayikas say, one thing is mistaken for another (*anyat anyathā grāhyate*.) This is called the correspondence theory of truth in the west.

We can compare this theory with that of the Prabhakara Mimamsakas. They state *akhyāti vāda* (theory of non-apprehension). Suppose we misinterpret the mother-of-pearl as a piece of silver, mother-of-pearl suggests to us silverness which is wrongly confused for the real thing mother-of-pearl. As soon as we see nacre, we remember silver and the error consists in non-apprehending nacre and silver which it suggests. The nature of false cognition lies in the confusion of what is perceived and what is remembered. In other words, according to the Mimamsakas, if we fail to discriminate the perceived thing from the remembered we get false knowledge (*bhrama*).

The Nyaya-Vaiseshikas are realists and they believe in the correspondence theory of truth. For them all relations are external. Bertrand Russell's theory of

external relations is similar to their theory of relations. The Nyaya-Vaisheshika theory of external relations suffers the same defects as Russell's theory. Thus the theory of external relations reduces the mind to a mere passive awareness of things. Modern psychology says that mind is not a substance but an activity; knowledge always exists in a series of interpretations.

The Nyaya-Vaisheshikas are realists. Their realism corresponds to the Neo-realism of Alexander. According to neo-realism when we perceive an object, we are aware of it. There is the compresence of the object. Their theory of truth has a number of fatal defects. Truth according to them is correspondence between knowledge and reality. But the pertinent question arises; what guarantee is there that my knowledge represents things as they really are. Now if truth were exclusively and solely, correspondence of mental known with the wholly unknown, we should never have the slightest knowledge, that our beliefs were true or false. Hence correspondence only represents the nature of truth and not the test of truth.

The Naiyayikas themselves have seen this defect and have fallen back upon pragmatic test as the only way of discovering the truth. Knowledge is true if it leads to fruitful activity if not false.

CHAPTER V.

FALSE KNOWLEDGE,

True knowledge (*yathārthajñāna*) is cognising what actually is and false knowledge (*ayathārtha*) consists in the lack of correspondence between the cognition and what is cognised. True knowledge is called *prama*; false knowledge is called *bhrama* or *aprama*. *Bhrama* etymologically means 'going astray.' False knowledge may be deliberately held and believed in: a man may have certainty which is yet untrue, and his position constitutes error proper. False knowledge may be real and involuntary arising from causes which he is unable to control.

Annambhatta divides false knowledge (*bhrama*) into three kinds: *samsaya* (doubt), *viparyaya* (error), and *tarka* (*reductio ad absurdum*).

Doubt is that knowledge where there is the presence or absence of the contrary features in the same object. Annambhatta defines it as the knowledge of contrary properties in one and the same object. Doubt therefore has three features: there must be knowledge of several qualities; they must be irreconcilable (*viruddha*) with one another; and they must be apprehended in one and the same object.

Doubt is different from indeterminate perception and conjecture. A bare sensation is psychologically more primitive and rudimentary than doubt. If we see at a distance an indeterminate object which

we conclude must either be a man or a pillar that is doubt. (*sthānuyvā purushovāiti*).⁹⁰

Error (*viparyaya*) is false knowledge. It is mal-observation. It is perceiving a thing differently from what it actually is. It is misapprehending one thing for another. One thing is mistaken for another (*anyat anyathā grāhyate*). If we cognise a shell or nacre as a piece of silver, it is error (*viparyaya*). That is also called by some Indian logicians as (*prat-yakshābhāsa*). 'The rustic who takes a tombstone brightened by the rays of the moon for a ghost or who interprets donkey's bray as the voice of a departed ancestor falls into this fallacy.'

There are certain errors which are involuntary and uncontrollable due to physical or external causes. If an object is far away from us, it looks dim and diminutive ; this case is also a special case of error.

Tarka is *reductio ad absurdum* or indirect argument. Annambhatta defines thus ; *vyāpyāropena vyāpakāropah tarkah* (the hypothetical admission of vyapya which leads to the admission of vyapaka.)

The error involved in this case is the false assumption which forms the basis of the reasoning. Tarka is intended to show that some thing must exist in certain manner, or else some absurd consequence will follow. The stock example is to prove the concomitance of smoke and fire. If any one doubts the truth of the above vyapti or generalisation, the logician resorts to a *reductio ad absurdum*. The logician rejoins by saying that if there is no fire, then there is no smoke and challenges the opponent to produce a case in which smoke is found in the absence of fire : this he cannot do, and therefore must admit the truth of the proposition.

CHAPTER VI.

PRAMANAS.

There are eight pramanas recognised in Indian philosophy. Pramanas are means of proof. They are instruments (karana) of valid experiences. The pramanas are the following *pratyaksha* (perception), *anumāna* (inference), *upamāna* (analogy), *śabda* (scriptural testimony), *arthāpatti* (presumptive testimony), *anupalabdhi* (non-cognition) *sambhava* (inclusion), and *aitihya* (hearsay).

The Indian materialists called Charvakas recognise only one pramana viz., perception, the Buddhists perception and inference, the Samkhyas perception, inference and scriptural testimony, Prabhakaras perception, inference, scriptural testimony, the Bhattas recognise perception, inference, scriptural testimony and non-cognition, and the Pauranikas recognise the above five pramanas as well as sambhava, aitihiya, and upamana. The Nyaya-Vaiseshikas recognise only four pramanas perception, inference, analogy and scriptural testimony, setting aside all the other pramanas as invalid.

Sambhava is inclusion. If I say that a bag contains one hundred rupees, it is certain that it contains fifty rupees. This is sambhava. Aitihiya is hearsay. 'A spirit dwells in this banyan tree' is an example of aitihiya. All the leading exponents of Indian philosophy except the Pauranikas

discard them as means of proof. Pratyaksha is sense-perception and anumana is inference. Finding the hill smoky; I *infer* that it is also fiery. Upamana is analogical inference and sabda is scriptural testimony. What is stated in the Vedas, we believe them to be true. Arthapatti is presuming certain things. It is a guess or conjecture. Chaitra is alive but he is not in his house. Naturally I presume that he is somewhere else. Presumption is called arthapatti. Anupalabdhi is non-cognition. It is perceiving the non-existence (*abhāva*) of a thing. But the Naiyayikas reduce this to a kind of pratyaksha.

Arthapatti is presumptive knowledge. The Mimamsakas recognise it as a distinct pramana; but the Naiyayikas state that it is a species of inference. On hearing that "Devadatta, who is fat, does not eat in the day," we at once conclude that he eats in the night. Gangesa includes this in the negative inference which establishes the absence of the middle term through the absence of the major term. This kind of inference is similar to the disjunctive syllogism in western logic. The above argument can be represented disjunctively.

A person to be fat must take his food either
in the day or the night

Devadatta who is fat does not take his food
in the day

∴ Devadatta must take his food in the night.

Thus we see the Naiyayikas only believe four pramanas viz., pratyaksha, anumana, upamana and sabda.

Modern philosophy accepts only two means of proof: sense-perception and inference. Occasionally even our senses dupe us. When we see the sun rising in the east and setting in the west, we are prone to think that the sun actually moves but in reality this is not. We know that perception is very often subjected to misinterpretation, error and hallucination. Every belief and perception should stand at the bar of reason before they are pronounced to be true. Nevertheless we cannot ignore knowledge afforded by the senses. Philosophy is the systematic reflection on the knowledge afforded by our senses.

Abhava (non-existence)

Abhava means non-existence. According to the Nyaya-Vaiseshikas it is a separate category which gives us negative knowledge. Abhava is of four kinds *pragabhāva* (antecedent-non-existence) *anyonyābhāva-pradhvamsā abhāva* (annihilative non-existence) and *atyantābhāva* (absolute non-existence.)

Before a pot is produced, it does not exist; we speak of the non-existence of a pot prior to its production. *Pratiyogi* is the thing of which a negation is predicated e.g., a pot is the *pratiyogi* of the negation of the pot. *Pratiyogi* is called counter-correlative. Pot is the *pratiyogi* (counter-correlative) of its antecedent non-existence. Mutual non-existence between a pot and a cloth is called *anyonyābhāva*. In other words, *anyonyabhava* means that pot and cloth mutually exclude each other. *Pradhvamsabhava* is the non-existence of a thing after its destruction. A pot is followed by its non-existence. *Atyantābhāva* is the non-existence of a thing in the past, present and future. The horn of a hare is a case of *atyantābhava*.

Definition (lakshana.)

Definition (*lakshana*) states an essential feature of an object. It is different from description which merely gives a verbal picture of the object. Description gives only an outward nature of an object. A *lakshana* is a specific feature (*asādhārana dharma*).

A correct definition must be free from three faults *ativyāpti* (over-applicability) *avyāpti* (partial inapplicability) and *asambhava* (total inapplicability). A definition must not be too wide (*ativyāpti*) e. g., A cow is a horned animal. In this case 'horned animal' includes also animals which are not cows. If we define a cow as an animal having uncloven hoofs, this definition commits the defect of *sambhava* (total inapplicability) because no cow possesses uncloven hoofs. If we define, a vertebrate animal as a quadruped, it commits the fallacy of *avyāpti*.

Samavaya (inherence).

Samavāya is a peculiar relation recognised by the Nyaya-Vāisheshikas. It is called in English as inherence. If one thing inheres in another thing, the relation between them is called *samavāya*. There is an eternal relation 'between the two which cannot exist separately (*ayuta siddha*). It must be distinguished from contact. When two substances come into contact with each other, their relation is called *samyoga* which is not intimate but separable; *samavāya* is also different from *sannikarasha* which is a special type of relation between the sense organs and objects.

Samavāya is an intimate relation existing between whole (*avayavin*) and part (*avayava*), qualities

(*guna*) and substance (*dravya*), motion (*kriya*) and moving substances (*dravya*), generality (*jāti*) and particularity (*vyakti*) and particular substance (*viśeṣa*) and eternal substance (*nitya dravya*).

Suppose we see a red cloth the relation between redness and the cloth is *samavaya*. The quality redness inheres in the cloth. Suppose we see a wheel moving. Movement inheres in the thing wheel and the relation between them is *samavāya*.

CHAPTER VII.

NYAYA-VAISESHIKA VIEW OF CAUSALITY.

Annambhatta states that there are two kinds of causes *sādhārana* and *asādhārana*. *Sadharana* karana includes god, time and space which are general and the common cause of all things. *Asadharana* cause is the cause which we generally speak of.

Annambhatta defines the cause as *kārya niyata purvavritti* but the Nyaya theorists would define a cause as invariable, immediate and indispensable antecedent of an effect. In Sanskrit the full definition is stated thus: *kāryaniyata vyavahita purvritti ananyathāsiddhamcha kāranam*.

The antecedent should immediately precede the consequent. Mere co-existence is not causation; pot and threads may be found in a place; but they are not causally connected. The phrase *ananyathāsiddha* sums up the essence of the cause. *Ananyathāsiddha* means literally 'not made out to be otherwise than indispensable.' In a word it means indispensable; without the cause the effect cannot follow. *Anyathā siddha* means 'variable factor.' If an ass precedes the production of a pot, we cannot say that ass is the cause of the pot. This will involve the fallacy technically called in western logic as *post hoc ergo propter hoc*. In finding out a cause, we

must ignore all variable and dispensable antecedents (*anyathasiddha*) and fall back upon *ananyathā siddha* (indispensable antecedent) as the true and real cause of a phenomenon. The cause must be discovered after finding the positive concomitance (*anvayasahachāra*) and negative concomitance (*vyatireka sahachāra*). Wherever A precedes and B follows is *anvayasahachāra* and wherever A does not precede and B does not follow is *vyatireka sahachāra*.

According to the Nyaya-Vaisesika system, *karya* (effect) is invariably preceded by its antecedent non-existence. As Annambhatta says *karyam pragabhāva pratiyogi*. An effect is the counter-correlative of its antecedent non-existence. To say that a pot is produced means that it is created for the first time and that it never existed before. In this case the effect is pot which is *pratiyogi* of its antecedent non-existence (*pragabhava*). In other words before the pot was produced it was non-existent. In other words cause does not contain the effect. According to the Naiyayikas cause and effect are different things mechanically connected. This view is called *asatkāryavāda*. According to this theory effect is something new which comes out of the cause ; to use Llyod Morgan's phrase, it is an emergent product, like water which emerges newly from the combination of two parts hydrogen with one part of oxygen. But it does not mean that it comes from nothing. The Samkhyas believe in *satkāryavāda* which states that the effect is only a modification of the cause.

These two views emphasise the different aspects of causation. Modern view of causation states that causal relation is mechanical and continuous.

Cause and effect are nothing but modifications or manifestations of same energy. Cause and effect are quantitatively identical. Wherever a regular sequence in events indicates a necessary connection, the events in question are said to exhibit causal relation. But cause and effect are energy transformations.

According to the Nyaya-Vaisesikas cause is of three kinds: *samavāyi kārana* (inherent cause), *asamavāyi kārana* (non-inherent cause) and *nimitta kārana* (occasioning cause). *Samavāyi kārana* is that in which an effect inheres. It is that which constitutes the effect; in a word it is the material out of which the effect is produced, e. g., threads are the *samavāyi kārana* of the cloth. It is an inseparable relation between the effect and cause. This relation also holds between substance and motion. If a thing is moved by the impact of some force, the thing or substance is the *samavāyi kārana* of the motion. *Asamavāyi kārana* is the non-inherent cause which inheres in the same substance with the effect or with the inherent cause. It is that which is found in the inherent cause. The conjunction of threads is the non-inherent cause of the cloth because it is found inhering in the threads. Colour of the threads is also the non-inherent cause of the cloth because colour is found in the threads which is found in the cloth. In a word the colour inheres in the threads which inhere in the cloth. *Nimitta kārana* is occasioning cause which includes the agent and instruments that produce the effect. Loom and weaver are *nimitta kārana*.

We may now compare Nyaya view of causation with that of Aristotle. He enumerates four kinds of

causes—the material, the formal, the efficient and the final. The material cause is literally the matter used in any construction; marble or bronze is the material cause of a statue. The formal cause is the form, type or pattern in the mind of the workman. The formal cause of a building is the architect's plan. The efficient cause is the agent which produces the statue. The workman is the efficient cause. The final cause is the end, or motive that compelled the architect to produce the work in question. It may be the subsistence, profit or pleasure of the artificer.

Though *samavāyi kārana*, (inherent cause) includes Aristotle's material cause or Vedantin's *upādāna kārana*, it is not an exact parallel to it, because inherent cause not only includes the material out of which a thing is made but also the relation between substance and motion. For example, in the motion of a ball, ball is the inherent cause of the motion. Now it becomes evident that *samavāyi kārana* does not actually correspond to Aristotle's material cause.

Asamavāyi kārana also does not exactly correspond to formal cause. In so far as *asamavāyi kārana* deals with the nature of the component parts of an object it is the formal cause of Aristotle. But when it deals with the features of the component parts like the colour of the threads, it is certainly different from the formal cause.

Nimitta kārana is both efficient and instrumental. Perhaps, *nimitta* may correspond to the efficient cause of Aristotle; it must be remembered however that *nimitta kārana* implies both the agent and instruments that produce the effect.

Criticism:—

The Nyaya-Vaisheshika analysis of causation is obviously taken from human industry. It throws no light upon causation in the order of nature ; such a view is scientifically untenable. Nyaya view has the same defects like that of Aristotle. According to modern science, causal relation is continuous and mechanical. Wherever a regular sequence in events indicates a necessary connection, the events in question are said to exhibit causal relation. Causality is mechanical and purposeless sequence of events. This is the real meaning of cause in science.

THE DIFFERENCE BETWEEN KARANA AND *Kāraṇa*.

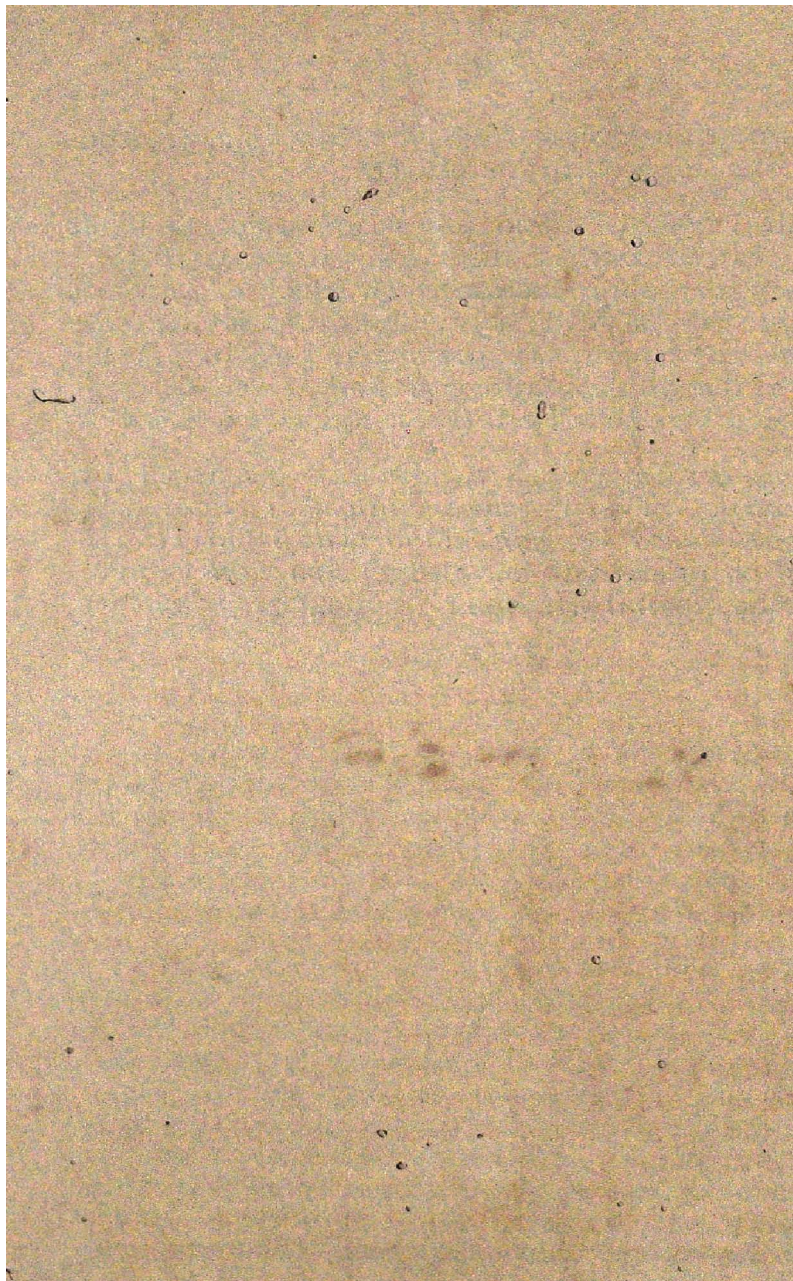
Karana literally means an instrument. He felled the tree with an axe. Here axe is the *karana*. Annambhatta defines *karana* as *asādhāraṇa kāraṇa* which means the special factors that contribute to the production of the effect. In the production of a pot, potsherd, potter's stick etc., are called *karana*.

There are two views regarding the nature of *karana* in Nyaya-Vaisheshika philosophy. The older school states that a *vyāpāra* is caused by *karana* and finally both contribute to the effect. In other words, *karana* produces the effect by an activity or function (*vyāpāra*). For example, a potter's stick is a *karana* in the sense that it causes the rotation of the wheel which results finally in the production of a pot. A sense organ is a *karana* of the perception in as much as it produces perceptual knowledge by

its intermediate *vyāpara* which is *sannikarsa* (contact of the senses with the object).

The modern school does not accept this. It states that *karāna* is the most indispensable of factors for the production of an effect e. g., wheel stick etc., As Mill says 'the cause is the sum-total of the conditions, positive and negative taken together; the whole contingencies of every description which being realised, the consequent follows.'

Anumiti (inferential cognition) is produced by the *karāna* (efficient cause) *anumāna* (inference). *Lingaparāmrāsa* or *pakshadharmatajnāna* is the *karāna* of inferential knowledge, *upamāna* (similarity) is the *karāna* of *upamiti* (analogical judgment).



CHAPTER VIII.

PERCEPTION (PRATYAKSHA.)

Generally we obtain knowledge by means of sense-perception. When we see a tree standing before us, it is a percept. Perception is the cognition which is produced through sense organ coming into relation with the object. *Sannikarsha* is a kind of relation between the mind and the object.

There are two kinds of perception viz., *nirvikalpaka* and *savikalpaka*. *Nirvikalpaka jñāna* is indeterminate knowledge. In a judgment there are subject and predicate. In indeterminate knowledge we do not find the subject-predicate relationship. It is inexpressible in language. This may correspond to the judgment of quality in western logic.

Nyaya-Vaisheshika also recognises supernormal or transcendental perception (*alaukika pratyaksha*). The supernormal perception is of three kinds; *sāmānya lakshana*, *jñāna lakshana* and *yogaja*. When we perceive a general term, manness we get *sāmānya lakshana*; when we perceive a flower which brings to the mind the idea of fragrance as; belonging to it, it is *jñāna lakshana*; intuition of the yogis is called *yogaja*.

Ordinary perception which is due to sense-relation (*sannikarsha*) is of six kinds. They are the

following: contact (*samyoga*), inherence in what has come into contact (*samyukta samavāya*), inherence in what is inherent in a thing which has come in contact (*samyukta samaveta samavāya*), inherence (*samavāya*), inherence in an inherent thing (*samaveta samavāya*) and the relation of predicate and subject (*viseshana viseshya bhāva*). When we perceive a jar with our eyes, the sense-relation is contact (*samyoga*). When the colour of a jar is seen, the sense relation is 'inherence in a thing which has come in to contact' (*samyukta samavāya*) because colour inheres in the jar which comes in contact with the eyes. When colourness (*rupatva*) in the colour of jar is seen, the sense relation is 'inherence in a thing which has come into contact.' In this, colourness inheres in a thing which has come in contact with the eyes. When sound is perceived by the ears, it is inherence (*samavāya*), because the sound inheres in the ear which is a portion of ether; when we perceive soundness (*śabdatva*), there is inherence in a thing which inheres (*samaveta samavāya*); for soundness inheres in sound which inheres in the ears. According to the Nyaya-Vaisheshikas, ear is made of ether which is the cause of sound. When we perceive the non-existence of a jar it is predicate-subject relation (*viseshana viseshya bhāva*). The seat of the non-existence of the jar is the floor and non-existence of a jar is a quality of the floor with which the eye has come into contact.

CHAPTER IX.

SVARTHANUMANA AND PARARTHANUMANA

Inference is of two kinds *svārthanumāna* and *parārthanumāna*. Svārthanumana means inference for one self and pararthanumana means inference for others. Inference for one self is the conclusion which he himself has derived by *parāmarsa*. A person by repeated observation (*bhuyodarsana*) will find out the invariable connection between smoke and fire and arrive at a *vyāpti* (generalisation): Wherever there is smoke there is fire. He may see a mountain and doubt the presence of fire in it. On seeing the smoke on it, he remembers the generalisation wherever there is smoke, there is fire and consequently he infers fire on the mountain thinking that it is always associated with smoke. This kind of inference is called inference for oneself. Inference for others is a syllogistic expression. The argument is put in five different steps which compels the assent of another. We prove the conclusion by stating all the logical steps involved in an argument. This is called *pañchāvayava vākya*; in this case one demonstrates his thesis to others.

The division of inference into two kinds is not without significance. Knowledge is the result of thinking which is a living function of man. The development of knowledge is not a mechanical pro-

cess—not a mere addition of parts together like the bricks in a building. As Creighton says, “It is a moving system of functions not a structure of fixed mechanical parts.” Knowledge does not grow by piecing together parts but it is something that is akin to life.

Svārthānumāna reveals the true nature of intellectual growth; knowledge is a personal factor. *Parārthānumāna* is inference for others; it is a statement of facts in a methodical way. It is an impersonal representation of facts. Here the argument is stated in an objective manner. It is torn off from its living context and exhibited as an argument *per se*. For a Naiyayika logic can never lend itself to a formal treatment. It is not a mere science of consistency. But this fact has been very recently appreciated in western logic.

CHAPTER X.

NYAYA-VAISESHIKA SYLLOGISM

According to the Nyaya-Vaisesikas, inference is of two kinds, *svārthānumāna* (inference for oneself) and *parārthānumāna* (inference for others). Impersonal representation of inference in a syllogistic form is called inference for others. It is stated in a five-membered syllogism. By putting the argument in a series of steps, we can easily demonstrate its certainty. The arguments that are generally made for oneself are enthymatic. Inference involves mental transition and this is depicted in a series of logical steps.

The five members of a syllogism are *pratijna* (thesis), *hetu* (reason), *udāharana* (example) *upanaya* (application) and *nigamana* (conclusion).

The mountain has fire (*pratijna*).

For it has smoke (*hetu*).

Whichever has smoke has fire, as in a kitchen (*udāharana*).

The mountain is like that i.e., it has smoke (*upanaya*).

Therefore the mountain has fire (*nigamana*).

The syllogism is usually stated in Sanskrit thus :—

Parvato vanhimān

Dhumavattvāt

*Yoyo dhumavān savahnimān yathā mahā-
nasah.*

Tatha'cha ayam

Tasmāt tathā iti

Pratijna is the thesis to be established. It consists of *paksha* (minor term) e. g. 'mountain and *sādhya* (major term) e. g. fire. It is what we are going to prove. *Hetu* (reason) states why *paksha* is associated with *sādhya*. It tells the reason which establishes the *pratijna*. Generally the reason (*hetu*) is stated in the ablative case. In the above example smoke is reason. In the *udāharana* (example), a *vyāpti* with a *sapaksha* is stated. In other words, the universal is stated with an example. Without the universal (*vyāpti*) no inference can take place. *Upanaya* is application. It states that the *paksha* contains *hetu*. It is the application of a general principle to a particular instance. After stating the universal, we proceed to show further that the minor term contains *hetu* which is in its turn associated with *sādhya* (major term). This is variously called in Sanskrit as *linga parāmarsa* or *pakshadharmata*. *Nigamana* is the conclusion. It is not a mere reiteration of *pratijna* (thesis). The conclusion is stated in the last to show that it is not vitiated by any fallacy during the process of reasoning. The aim of the five *avayavas* (members) is to indicate respectively what is to be proved, the reason on which the thesis rests, the universal which is basis of inference, the application of the universal to the particular and the conclusion which is arrived at without being vitiated by any fallacy.

The Nyaya-Vaiseshikas of the syncretist school

accept only the above-mentioned five *avayavas*. But Vatsyayana enumerates ten *avayavas* viz., *jijnāsa* (the desire of knowing the *sādhya*), *sāmsaya* (doubt regarding *sādhya*), *śākya-prāptih* (Belief in the probability of *sādhya*), *prayojana* (the object of discussion), *sāmsaya vyudāsa* (removal of doubt) and the other five *avayavas*. The first five, mentioned above, are purely psychological and hence they can be safely set aside as having no logical interest. The complete syllogism is called *nyāya-prayoga* or *pañcā-avayavavākya*.

Many people have forced themselves into the belief that some members of the syllogism are vestigial in character. They also state that some parts of it are superfluous and this superfluity has been inherited from the time when Nyaya was a method of debate and not yet a syllogism. But such a view seems groundless if we only understand the Nyaya view of inference. For the Naiyayika, inference is both deductive and inductive and for him all the members are essential. *Pratijna* is stated first to avoid misunderstanding. Many people confuse or forget the issue when they argue. Generally persons argue without knowing what it is that they are seeking to establish. So to avoid such intellectual aberrations the Naiyayika states the thesis first.

The reason (*hetu*) is stated next separately. Without adducing the reason nothing can be proved. It is evident that in every syllogism the reason should be stated clearly.

The citing of a *udāharana* is very fundamental to a syllogism. Universal is stated with an example. Without the universal no inference can take place.

As Bosanquet says "Inference cannot possibly take place except through the medium of an identity or universal which acts as a bridge from one case or relation to another." By stating the example, the Naiyayikas make syllogism both deductive and inductive. For them syllogism is not purely a formal process and for them the antithesis between deduction and induction does not exist, e.g.

Wherever there is smoke, there is fire as in a kitchen.

In this case the real concomitance or connection between smoke and fire is found in a kitchen. Truth and non-contradiction are the vital elements in a Nyaya Syllogism. Aristotelian logic is concerned with the formal correctness and not with factual correctness. It is a formal science *par excellence*, e.g.,

All crows are birds

All men are crows

∴ All men are birds

Such fantastic conclusions are unthinkable to a Naiyayika. All the schools of Indian logic maintain the importance of udaharana.

Upanaya is an important feature in a syllogism. It is bringing a particular case under a general law. In the language of Nyaya system, it is finding out the sadhya in the paksha through hetu which links both. This corresponds to the minor term in western logic. The necessity of the minor term in a syllogism clearly reveals the necessity and importance of *upanaya*.

Nigamana is the conclusion. The conclusion is not a mere repetition of the *pratiṇa*. The statement of the conclusion has a purpose to serve and the purpose being to state that conclusion is the natural outcome of the premises unvitiated by any fallacy.

Comparison of the syllogism of the Naiyāyikas with that of the Mīmāṃsakas.

The Naiyāyikas recognise five members, the Mīmāṃsakas three members, and the Buddhists only two members. According to the Mīmāṃsakas, the syllogism which consists of three parts may either begin with an example or end with same e. g.,

All that is smoky is fiery, as a kitchen

The hill is smoky

∴ The hill is fiery

or

The hill is fiery

Because it is smoky

All that is smoky is fiery as in a kitchen.

The Buddhists maintain that a syllogism consists of two parts. e.g.,

All that is smoky is fiery, as a kitchen

This hill is smoky

The Mīmāṃsaka's syllogism with *udaharana*, *upanaya* and *nigamana* is similar to the Aristotelian syllogism of Barbara type.

The Comparison of the five-membered syllogism of the Naiyāyikas with the three membered syllogism of Aristotle.

The Nyaya-Vaiseshika syllogism contains five parts viz., *pratijñā*, *hetu*, *udāharana*, *upanaya* and *nigamana*. The Aristotelian syllogism contains only three parts : major premise, minor premise and conclusion. Major premise corresponds to *udāharana*, minor premise corresponds to *upanaya* and the conclusion corresponds to *nigamana*. The Nyaya syllogism can be stated in an Aristotelian form.

All that is smoky is fiery

The mountain is smoky

The mountain is fiery

The fundamental difference between the two is the hypothetical statement of *vyapti* and the example. In Nyaya syllogism, there is a harmonious blend of deduction and induction. By stating the example, one is led to think that *vyāpti* is arrived at after the investigation of the particular instances. In Aristotelian syllogism, the major premise is taken for granted; it needs extraneous processes for its justification and truth. The truth of the conclusion depends upon the truth of the premises. In short, given the premises the conclusion necessarily follows. Formal logician does not care for the material validity of the syllogism. His main concern is to find out the formal correctness of the syllogistic process. But in the Nyaya syllogism the case is different. It is both deduction and induction, proof and discovery, analysis and synthesis. It is whole containing parts. In Aristotelian logic deduction depends upon induction and

induction depends upon deduction. They are antithetical; one is deducing a particular from a universal and the other is discovering the universal from the particular. Though deduction and induction involve one another, yet they are distinct and separate processes of reasoning. But the Nyaya syllogism is a self-contained process. It is an argument where the major premise and conclusion find their justification in the same process.

Further the mere formalism of the Aristotelian logic is eschewed since the Naiyayika insists on adducing an example to a vyapti.

All men are crows

John is a man

∴ John is a crow

In this example the conclusion is perfectly valid and does not commit any fallacy. But materially the conclusion is absurd. And the Aristotelian logic is concerned with formal correctness and not with factual correctness. But such absurd syllogisms are unthinkable to a Naiyayika. If we make any vyapti we have to give an example for it. In the above no example can be cited illustrating the instance truth of the *vyāpti*: All men are crows and hence there can be no inference from such a statement. But this fact has been egregiously ignored by Aristotelian logic. However the tendency in modern logic is to abandon such a formalistic procedure.

By stating the *vyāpti* in a hypothetical form, the Naiyayikas place their syllogism on a more rational basis. Thus they avoid the criticisms of Mill and Charvakas that are usually levelled

against the syllogism. If the universal is a mere summation of particulars, then logically there can be no conclusion at all. By stating the universal in a hypothetical form, the Naiyāyika justifies the validity of syllogistic reasoning.

Pratijna seems to be an excrescence and probably it would have been inherited from the time when Nyaya was a dialectical science. *Hetu* is stated for clarity in reasoning. But the same is reiterated in the *upanaya*. But the Naiyāyika would contend that *upanaya* is an application of a particular instance to a universal (*paksha dharmata*). Strictly speaking *hetu* is not an essential feature of a syllogism and Aristotelian logic rightly eschews it.

Both the Naiyāyikas and the formal logicians state that there are three terms in a syllogism viz., *paksha* (minor term), *sādhya* (major term) and *hetu* (middle term). The middle term is important in both of them. The defect of middle term gives rise to *savyabhichāra* (undistributed middle) in both Nyaya and Aristotelian syllogisms.

The Naiyāyikas can also draw negative conclusion by having *vyatireka vyāpti* (universal negative). But the particular conclusion the Naiyāyikas never recognise. The Nyaya syllogism is always of Barbara type.

The Aristotelian syllogism is certainly superior to that of the Nyaya. A syllogism containing three members is more compact than one having five members. Aristotelian syllogism contains figures and mood, whereas the Indian syllogism contains only one variety. It is an undeniable fact that we

argue in a variety of ways. This fact the Naiyayikas have miserably overlooked. The Aristotelian syllogism has the characteristics of comprehensiveness, exhaustiveness and precision which the Nyaya syllogism ingloriously lacks. But even three-membered syllogism is a limited form of inference. It cannot adequately represent all the modes of arguments. Recently mathematical logic has sprung to fulfil the inadequacy of formal logic of Aristotle.

CHAPTER XI.

NATURE OF ANUMANA.

Inference is an intellectual process by which from certain premises we draw a conclusion. To infer is to arrive at a truth not directly through perception, but as a consequence of some truth or truths already known e.g., when I see a circle of stones I infer that they were arranged by human hands.

Annambhatta defines inference as due to *parā-marsa* (subsumptive reflection). Let us study some of the technical terms before we take up inference proper. There are three terms *paksha* (minor term), *sādhya* (major term) and *hetu* or *sādhana* (middle term). In the following example,

Wherever there is smoke, there is fire, as
in the kitchen.

This hill has smoke.

∴ This hill has fire

paksha (minor term) is hill and *sādhya* (major term) is fire and *hetu* is smoke. The universal statement like wherever there is smoke, there is fire is called *vyāpti* (universal or major premise). The middle term in Indian logic is variously called as *linga*, *hetu* or *sādhana*; *vyāpti* is the universal proposition

containing *sādhya* and *hetu* and without *vyāpti* no inference is possible.

Inference is due to *parāmārsa*, and this is a complex cognition containing various factors. Annambhatta defines *parāmārsa* as *vyāpti visishta pakshadharmatajnāna*. *Parāmārsa* is a complex mental process arising from a combination of the knowledge of invariable concomitance (*vyāptijnāna*) and that of the presence of the reason (*hetu*) in the subject (*paksha*). The presence of the middle term in the minor term is called technically as *pakshadharmatajnāna*. In the inference that the hill has fire because it has smoke, the paramarsa takes the form : the hill has smoke which is invariably concomitant with fire (*vahnivyāpyā dhumavan parvatāh*)

Wherever there is smoke there is fire is the law stating the invariable concomitance (*sahacharya niyama vyāpti*). Subject adjunctness (*pakshadharma*) consists in the invariable concomitance (*vyāpya*) being present in things like a mountain (*vyāpasya parvatadivritittvam pakshadharma*).

Nature of Vyapti

What is a vyapti ? Annambhatta defines vyapti as consisting in *hetu* (middle term) being co-existent (*hetu vyāpaka*) with *sādhya* (major term). The invariable concomitance of *sādhya* (major term) and *hetu* (middle term) is *vyāpti*. Gangesa defines it as *hetu vyāpaka sādhya samāndhī karanyam vyāptih*.

Annambhatta defines *vyāpti* as *sahacharyaniyama* which means universal co-existence. It is also

called *avinābhāv asambandha*. *Avinābhāva sambandha* means invariable connection between *sādhya* (major term) and *hetu* (middle term); without the one other cannot exist. Some other Naiyayikas define *vyapti* as *anauṣādhika sambandha* or unconditional and necessary connection between *sādhya* and *hetu*. It is relation not brought by an accidental feature. The relation between the major and middle terms is free from *upādhis* (accidental circumstances). In the following example, wherever there is fire, there is smoke, the relation between them is not unconditional and necessary but depends upon the contact of fire with an adventitious condition wet fuel (*ārdrendhana samyoga*). To take another example where there is a conditional concomitance or relation. A crystal (*sphaṭika*) becomes red in the vicinity of a China rose (*japa*). The crystal being red is an accidental feature due to the reflection of a China rose in it. Hence *vyāpti* is unconditional, necessary, universal and invariable relation between *sādhya* and *hetu*.

CHAPTER XII.

INFERENCE (*Continued*).

How do we arrive at a *vyāpti* ?

How do we arrive at a *vyāpti* (universal law) ? Annambhatta criticises the view which states that *vyāpti* is the result of *bhuyodarsana* (enumeration). After finding a number of instances of smoke and fire associated together, we make an assertion that wherever there is smoke, there is fire. But this theory the Naiyayikas do not accept. Even in western logic induction by enumeration is beginning rather than the end. As Bacon says pertinently that one contrary instance may overthrow the whole conclusion.

The Naiyayikas say that the relation between major and middle terms in a *vyāpti* is one of *avinābhāva*, *anauṣādhika* and *sahacharyaniyama*. *Avinābhāva* means invariable connection and invariable relation between *sādhya* and *hetu* can be ascertained by means of positive (*anvaya vyāpti*) and negative (*vyatireka vyāpti*) tests. This can be illustrated with reference to a *vyāpti* like, 'Wherever there is smoke, there is fire. The positive test (*anvaya vyāpti*) is the following : 'Wherever there is smoke, there is fire, as in a kitchen (*yatra dhumahtatra agnih yathā mahānase*). The negative test (*vyatireka vyāpti*) is the following : 'Wherever there is no smoke, there is fire as in a lake (*tatra vahnih nāsti tatra dhumopi nāsti*). Mere invariable connection is not causal but

it must also be necessary. In other words *sādhya* cannot exist without *hetu* or *vice versa*.

The phrase *ānaupādhika sambandha* brings out the unconditional aspect between *sādhya* and *hetu*. The connection must be free from upadhi (adventitious factor). A crystal becomes red in the vicinity of a China rose (*japa*). The crystal being red is an accidental feature due to the reflection of a China rose in it. Sometimes the Naiyayikas may resort to *tarka* to prove *vyāpti*. Thus according to them *vyāptijnāna* is the result of scientific analysis of content and not of enumeration (*bhuyodarsana*).

The Bhatta View of inference

The Bhattas maintain that universal generalisation is not a necessary condition of inference. According to them inference is from particular to particular. After observing a number of instances of smoke and fire together, we come across another instance of smoke and conclude that it will also be associated with fire. They also say that the universal is a synthesis or an 'aggregate of particulars'. The Bhatta view of inference is similar to that of Mill.

The Bhatta theory of inference commits the same defects as that of the Mill's. The same criticisms that are usually levelled against Mill may equally be applied with same force to the arguments of the Bhattas. The Naiyayikas take particular pains in criticising the view of the Bhattas.

The Charvaka theory of inference

The Charvakas are the Indian materialists. They accept perception (*pratyaksha*) as the only *pramāṇa*

and renounce all the rest. They emphatically deny inference as a method of reasoning. The Charvakas state that if *vyāpti* refers to the known or observed particulars, it can not have any reference to the unknown particulars since they radically differ from the former; or if *vyāpti* represents a universal containing all the observed and the unobserved cases, then nothing remains to be known through inference. In other words, if the universal is based on some cases, it cannot have universal validity, or if it is based on the examination of all the cases, inference becomes superfluous.

J. S. Mill also voices forth the same opinion when he says 'that in every syllogism considered as an argument to prove the conclusion, there is a *petitio principii*.....that no reasoning from general to particular can as such prove anything. Since from a general principle we cannot infer any particular, but those which the principle itself assumes as known.....The inference is finished when we have asserted that all men are mortal, What remains to be performed afterwards is mere deciphering our own notes.'

The same criticisms that are applied to Mill's view can be applied to the Charvaka's theory also. The Charvaka's view fares no better than the Mill's.

Different kinds of syllogism having different kinds of *vyāpti*

According to Annambhatta *linga* is of three kinds. Concomitance between major and middle term may be of three kinds. In other words, there may

be different kinds of universal generalisation leading to different conclusions. The study of different kinds of *linga* throws some light on Nyaya view of induction.

The three kinds of *linga* are *anvayavyatireki* (concomitance in affirmation and negation) *kevalānvayi* (concomitance in affirmation alone) and *kevalavyatireki* (concomitance in negation alone).

The *anvayavyatireki* has got both positive and negative concomitance. In a word, it possesses both positive and negative tests. This kind of universal concomitance is the result of the application of the Joint Method of Agreement and Difference. We cannot compare this to the Method of Difference because nothing is eliminated by means of experiment. In the Joint Method of Agreement and Difference, positive and negative instances are formulated by means of observation. 'Wherever there is smoke, there is fire as in a kitchen.' is the positive instance (*anvayavyāpti*) and 'wherever there is no smoke, there is no fire' is *vyatireka vyāpti* (negative instance.) The syllogism containing *anvayavyatireki* gives both positive and negative conclusions.

Kevalānvayi has only positive concomitance between *sādhya* and *hetu*. In a word, there is only positive test. The *sādhya* and *hetu* cannot be eliminated. They always exist in association but never in separation. The negative instance is impossible. In the example, jar is namable, because it is knowable, like a cloth, there is only positive concomitance between knowability (*prameyatva*) and namability (*abhideyatva*); for all things are knowable and namable. In such a case we cannot produce a negative instance (*vipaksha*).

Though we know that what cannot be named cannot be known, yet the proposition cannot be established because we cannot adduce an example having negative concomitance. Such syllogisms having this kind of *linga* yield only positive conclusions.

Western logic also recognises such cases where there is only positive concomitance. To establish the causal connection it resorts to the Method of Concomitant Variation. We know the connection between gravitation and the falling of bodies ; but we cannot eliminate gravitation completely and see what will happen in its absence. In such cases, we simply vary the force of gravitation and find out the concomitant result. Indian logic recognises such cases where there are no negative instances, but do not apply the Method of Concomitant Variation to establish their causal connection.

The *kevalavyatireki* has negative concomitance alone. In the example, 'living organisms have souls, since they possess animal functions,' there can be a negative concomitance only (*kevalavyatireki*) as in the case, what has no soul has no animal functions like that of a pot. But the positive concomitance cannot be found, because the law which has animal functions has a soul cannot be illustrated for the conclusion has precisely the same extension as the subject and cannot therefore be found anywhere outside it.

To take another example :—

Earth is different from the rest for it has smell.

Whichever is not earth has no smell, as water.

In this case positive concomitance cannot be illustrated. We cannot give an example because all varieties of the earth come under the paksha. The major term does not abide in anything else but in the minor term.

Paksha is the minor term in which the presence of *sādhya* is not yet known for certain and is yet to be proved, as a mountain when smoke is relied as proof.

Sapaksha is an example in which *sādhya* is known to exist, as in a kitchen in the above example.

Vipaksha is a counter-example in which *sādhya* is known not to exist, as in a tank in the example.

According to the different types of *vyāpti*, we have different kinds of syllogistic conclusions. *Kevala vyatireki* gives only negative conclusion and *vyatireka vyāpti* also yields negative conclusion.

The syllogism having *kevalavyatireki* is the following :—

What is different from the earth has no smell, like water.

Earth has smell (the absence of *gandhābhāva*).

∴ Earth is not non-earth.

To cite an example for *anvaya vyatireki* having *vyatireka vyāpti*.

Wherever there is no fire there is no smoke
as in a tank.

The tree has no fire.

∴ The tree has no smoke.

This corresponds to Celarent in formal logic
e.g.,

No man is an angel.

Plato is a man.

∴ Plato is not an angel.

CHAPTER XIII.

FALLACIES (HETVABHASAS)

Hetvābhāsas are mistakes in reasoning. They are different from false perception (*bhrama*). They are five in number *savyabhichāra* (undistributed middle), *viruddha* (contradiction), *satpratipaksha* (counter-balanced reason), *asiddha* (false assumption) and *bādhita* (absurdity). *Hetvabhasa* literally means semblance of reason or show of proof.

The fallacies are generally due to the incorrectness of the middle term. A middle term to be valid must be found in the minor (*paksha*) and also be found in a similar instance (*sapaksha*) as in a kitchen and be absent in a counter-example (*vipaksha*) as in a lake. The middle term should not be contradicted (*badhita*) by the facts and not be counter-balanced by another proof (*asatpratipaksha*). The fallacy (*hetvābhāsa*) occurs if we violate any one of the above rules.

Savyabhichāra is also called *anaikāntika*. Literally it means 'straying away'. It is of three kinds *sādhārana* (common), *asādhārana* (uncommon) and *anupasavahāri* (non-conclusive). It must be remembered always that fallacy generally occurs owing to a defect in the middle term.

The fallacy of *sādhārana savyabhichāra* occurs when *hetu* (middle term) is present in a place where

major term (*sādhya*) is not present. The following argument commits the above fallacy. The mountain has fire because it is knowable. In this argument knowability is found in a tank where fire is not present. This animal is an ox because it has horns. This is also another instance committing the same fallacy.

This fallacy actually corresponds to 'the undistributed middle' of Aristotelian logic. The above fallacy can be represented thus :—

- All oxen have horns
- This animal has horns
- ∴ This animal is an ox

The conclusion is wrong because the middle term 'horns' is undistributed. The Naiyayikas call this fallacious because *hetu* (middle term) is present in an animal other than ox. In other words, all horned animals are not oxen. This fallacy is called *savyabhichāra* which literally means that reason (*hetu*) strays away; in a word, the middle term (*hetu*) includes more than what is denoted by the major term (*sādhya*).

Asādhārana savyabhichāra is the reason which is present only in the subject (*paksha*) and not present in any similar example (*sapaksha*) or counter-example (*vipaksha*). The following example commits the above fallacy. In this case *śabdatvā* (soundness) is present only in sound, and nowhere else, eternal or non-eternal. Sound is eternal, because it is audible.

Expressing this syllogistically we get :

Whatever is eternal is audible.

Sound is audible.

∴ Sound is eternal.

Evidently this commits the fallacy of undistributed middle. Indian logic is not purely a formal process ; we have to append an example to the major premise. In the above case, the sound alone is an example of the major premise (what is eternal is audible). *Paksha* is also sound and the rule of syllogism is that *paksha* and an example should not be identical. In other words both should not have the same extension. If there is an identity between the minor term (*paksha*) and example (*vipaksha*), as in the above we will commit the fallacy technically called *āsādhārana savyabhichara*.

Anupasamhāri savyabhichāra is that *hetu* (reason) which has neither positive nor negative example. The following argument is an example of this fallacy. All things are non-eternal, because they are knowable. In this instance no example can be given since all things are treated as *paksha* (minor term) ; this fallacy occurs when the *vyāpti* is destitute of an example, whether affirmative or negative. The above argument also commits the fallacy of undistributed middle.

Non-eternal things are knowable.

All things are knowable.

∴ All things are non-eternal.

The expression *anupasamhāri* is very suggestive. It means non-conclusive. Non-conclusive

signifies that the argument has no real conclusion. For a Naiyayikā the universal is always a connection of attributes. He does not even recognise *quasi generic* universal commencing with 'all.' If the universal is a mere summation of particulars, then really there is no inference. We can argue with Mill that inference is finished when we assert such a universal and the conclusion merely repeats what is already contained in the universal. The following is an example of this type of inference:—

All the books in my shelf are logic books.
 This is a book in my shelf.
 ∴ This is a logic book.

Here there is a show of proof and really there is no inference at all because the so-called major premise is a collective statement. But this criticism holds good only when there is a collective universal; but when there is a generic universal, there is real inference. Syllogism is a strictly limited form of inference, but within its own limits it is quite valid.

Viruddha is a fallacy where *hetu* (middle term) is invariably connected with the non-existence of *sādhya* (major term). In this fallacy there is incompatibility between the two statements. The following is an example of the fallacy:

This hill is full of fire.
 Because it is full of water.

Annambhatta gives the following example. Sound is eternal because it is produced. Here productivity is the contradictory of eternity, for what-

ever is produced is non-eternal. To say that an animal is a horse because it has horns¹ is to commit this fallacy because the horns are never associated with the horse.

Satpratipakṣha is one for which there exists another reason which proves the contrary of the consequence. *Hetu* can be counter-balanced by another reason which proves the non-existence of *sādhya* (major term). e.g., sound is eternal, because it is audible, like soundness. Here eternality of sound can be counterbalanced or refuted by another plausible argument like the following. Sound is non-eternal, because it is producible. These two arguments mutually refute each other and there is no real conclusion.

Asiddha is a fallacy of false assumption. It takes things for granted which really never exist. It is of three kinds *āśrayāsiddha*, *svārūpāsiddha* and *vyāpyatvā siddha*. *Āśrayāsiddha* is unproved assumption regarding the place or abode of an object, e. g., sky-lotus is fragrant, because it is a lotus like the lotus of a pond. Here sky-lotus is imaginary and does not really exist. *Svārūpāsiddha* is the false assumption concerning the nature of the object, e. g., sound is a quality, because it is visible, like colour. In this case visibility cannot be predicated of sound, which is only audible. Another example of this fallacy is: The lake is a substance because it has smoke. *Vyāpyatvāsiddha* is the reason (*hetu*) which is associated with a conditional factor (*upādhi*) e. g., the hill is full of smoke because it is full of fire nourished by wet fuel. In this case 'contact with wet fuel (*ārdrendhana samyoga*) is condition attached to *hetu*.

Upadhi

An *upādhi* is an adventitious condition which is only invariably connected with *sādhya* (major term) but not invariably connected with *hetu* (middle term). It is a condition that is constantly associated with the major term but not always associated with the middle term. Smoke is a sign of fire, but fire is not a sign of smoke unless it is in contact with fuel. Its contact with wet fuel is an *upādhi*. There are cases of fire where there is no smoke as in a red hot ball of iron.

Upādhi is a conditional factor. *Bhrama* is false knowledge due to misinterpretation of one object as another. It is *mithyājnāna*. If we misapprehend nacre as silver, it is *bhrama*. False perception due to *upadhi* is also a species of error. *Bhrama* is due to misinterpretation owing to a defect in the sense organ; whereas *sopādhika bhrama* is due to *upādhi* or accidental feature. A crystal appearing red in the vicinity of a China rose (*japa*) is an instance of *sopādhika bhrama*.

Bādhita is contradiction. It occurs when there is the knowledge that the major term which is assigned to the minor term, does not really abide in it e. g., fire is cold, because it is a substance. This argument is wrong because 'fire' and 'cold' negate each other. In this fallacy *hetu* (reason) is contradicted (*bādhita*) by our actual experience.

In *bādhita* there is contradiction between minor term (*paksha*) and major term (*sādhya*). But in *viruddha* there is contradiction between *hetu* (middle term) and *sādhya* (major term). In *svarupāsiddha*,

hetu (middle term) cannot be a quality of *paksha* (minor term). The argument 'sound is inaudible because it is a quality of ether' is an example of *bādhita*. The argument 'sound is eternal because it is produced' is an instance of *viruddha*. The statement 'sound is a quality, because it is visible, like colour' is an example of *svarupāsiddha*.

In European logic syllogistic fallacies are purely formal and consequently do not refer to the content of the argument. Accordingly fallacies are divided into two kinds formal (deductive) and material (inductive). But in Indian logic the case is different. Nyaya-Vaisesika syllogism is both deductive and inductive, both formal and material, *a priori* and *a posteriori*, analytic and synthetic. Formal logic is the science of consistency. The propositions must be consistent with one another. In formal logic, non-contradiction is made the high court judge. Aristotelian syllogism is only concerned with the formal validity of syllogism.

In Indian logic, a syllogism is concerned with both formal and material validity. Since *hetu* (middle term) forms the connecting link, its detailed study is necessary. Indian logic is dialectical in character and hence a person can ascertain truth and achieve victory by exposing the fallacies in the argument of his opponent. To expose the opponent, one has to bring to light false assumptions, contradictions, absurdities non-sequiturs etc. And in this lies the value of *hetvābhāsa* recognised in Indian logic.

VARIOUS EXERCISES WORKED OUT

1. A pot is all-pervasive because it is existent. In this argument, there is the fallacy of *bādhita*, because pot and all-pervasiveness contradict each other. Our sense perception tells us that a pot is not all-pervasive (*vibhu*).

2. The golden hill (*Meru*) is full of fire because it is full of smoke. This syllogism also commits the fallacy of *bādhita* because *Meru* (celestial mountain) cannot be associated with fire. *Meru*, the abode of gods, cannot contain fire in it.

3. Atoms are non-eternal because they are corporeal. This argument commits the fallacy of *bādhita* because atoms cannot be non-eternal. According to Nyaya-Vaisheshika philosophy atoms are eternal.

4. The soul is all-pervasive because it is perceived everywhere. This commits the fallacy of *bādhita* because soul is atomic and cannot be all-pervasive according to the Nyaya-Vaisheshikas.

5. The hill is fiery because there is vapour. The fallacy contained in it is *viruddha* because the quality 'vapour' is not associated with fire.

6. There is primordial matter because it evolves into the universe. This argument commits the fallacy of *āśrayāsiddha* because primordial matter according to Nyaya-Vaisheshikas does not exist. Only Samkhya believes in primordial matter.

7. All is transitory, because they can be known. This commits the fallacy of *anupasamhāri* because no example can be adduced since all things are treated as *paksha*.

8. This animal is a horse because it has horns. This syllogism commits the fallacy of *viruddha* because 'horns' is always associated with the non-existence of horse.

9. The lake is a substance because it has smoke. This argument commits the fallacy of *svarupasiddhā* because *hetu* 'smoke' does not exist in *paksha* (lake).

10. Sound is not eternal, because it is a product. This commits the fallacy of *viruddha* because producibility is associated with non-eternality. If there is contradiction between *sādhya* (major term) and *hetu* (middle term) it is *viruddha*. If *hetu* (middle term) cannot be a quality of *paksha* (minor term) it is *svarupāsiddha*.

11. The mountain is fiery, because it has smoke. The mountain is not fiery because it is a bare rock. The two opposing arguments neutralise each other and hence there is no conclusion. In this argument there is the fallacy called *satpratipaksha*.

12. This man is an Englishman because he is white. This commits the fallacy of *sādhāraṇa savyabhichāra* because *hetu* 'white' is also found in objects other than Englishmen, as in a swan.

13. The mountain is full of fire, because it is knowable. Here 'knowability' is associated with things other than 'fire'. 'Knowability' is found in tank where there is no fire. Hence this commits the fallacy *sādhāraṇa savyabhichāra*.

I Point out the fallacies in the following arguments.

1. Sound is momentary because it exists ; sound is eternal because it is the quality of ether.

2. This mountain is fiery because it is full of water.

3. An atom has parts because it has shape.

4. Sound is audible because it is a quality of ether.

5. The skull of a deceased person is pure because it is the limb of a being that had life, as a conch shell.

6. Ether is a substance because it has qualities

7. The hill is full of smoke because it is full of fire nourished by wet fuel.

8. All can be named because they can be known.

9. All is eternal because they can be known.

CHAPTER XIV.

Nature of Upamāna

Upamāna is the knowledge that is arrived at through the similarity of one thing with another. It does not exactly correspond to analogical reasoning in western logic. When we cognise a thing through its similarity (*sādrisya*) with something already known, it is *upamāna*. *Upamāna* or similarity is the *karana* of analogical judgment. The stock example that is generally cited for *upamāna* is the following. A person after learning from a forester that *gavaya* (*bos-gavaeus*) is like a cow, goes to the forest and finds a strange animal resembling a cow and consequently concludes that the strange animal is *gavaya*. By seeing a strange animal similar to cow, he recollects the words of the forester i.e., *gosadrisya gavayah* (*Gavaya is like a cow*) and then concludes. "This is the animal denoted by the word *gavayah*" (*asaugavaya padavāchyah*). Thus we see that knowledge obtained by comparing one thing with another is called *upamāna*.

Upamāna or similarity is the cause of *upamiti* (analogical judgment). Annambatta defines it thus : *saṃjñā saṃjñi sambandhajnānam upamitih*. It is the knowledge of the relation between a name and the object denoted by it ; knowledge of similarity (*sādrisyaajnānam*) is the efficient instrument (*karana*) of such cognition. This doctrine is fundamentally connected with their theory of denotative or signifi-

cative power of a word (*saktigraha*). According to *saktigraha*, every word has *śakti* (potentiality) to refer to a particular thing. The hearing of a word produces the recollection of the object denoted by the word. On hearing of a word pot, we are able to recollect a thing known as pot. The potentiality of a word is ascertained from various causes. *Upamāna* is a cause which produces this *śakti*. In the sentence 'A *gavaya* is like a cow' the potentiality of *gavaya* is found through comparison.

All the schools of Indian philosophy except the Nyaya-Vaiseshika reject *upamāna* as a valid means of knowledge (*pramāna*). They generally bring *upamāna* under inference, e.g.,

Whatever is like a cow bears the name
gavaya.

This is like a cow.

∴ This object is to be called *gavaya*.

But the Nyaya-Vaiseshika defends their inclusion of *upamāna* as a separate *pramāna* by saying that *upamāna* involves an act of comparison. Their defence is futile since they are confusing psychological with logical. Inference as such involves the act of comparison. In an inference, we compare the major and minor term with reference to the middle. Hence we conclude that mere conservatism of the Nyaya school is mainly responsible for retaining *upamāna* as a separate *pramāna*.

Comparison of *upamāna* with analogy in western logic

In ordinary language analogy is often used to denote any kind of resemblance between two things.

The Nyaya-Vaiseshikas have given the ordinary meaning of analogy to *upamana*. Hence *upamāna* corresponds to analogy in its ordinary sense. We identify certain objects through their similarity with other objects. The identification through similarity is *upamāna*.

But analogy, as it is understood in western logic has a distinct meaning. It is a process of inference from one instance to another. In other words, analogy is a form of reasoning in which, from the resemblances of two or more things in certain respects, their likeness in other respects is inferred. The following is generally adduced as an example. Mars and the earth resemble one another in a number of ways: they both revolve round the sun; they are both subjected to the law of gravitation; they both have only one moon: therefore we infer that Mars also may be inhabited since it may resemble the earth in that respect also. Analogy is a generalisation based on mere likeness or resemblance. As a formal process, analogy commits the fallacy of undistributed middle (*savyabieāra*). The analogical reasoning as an inductive process, has degrees of value. As Creighton says "an argument from analogy may have any degree of value, from zero almost up to the limit of logical certainty."

The similarity between *upamāna* and analogy is only *superficial* and not fundamental. Both the processes involve the act of comparison. In the case of *upamana* the act of comparison only helps the identification of objects. This process is of immense value in identifying plants referred to in *Ayurveda* literature. In the case of analogy, the act of comparison gives a generalisation. *Upamāna* is identifica-

tion of objects through their similarity with others. But analogy is a generalisation based on similarity or resemblance. *Upamāna* is merely a psychological process whereas analogy is a logical one.

Further *upamāna*, as it is understood by the Nyaya-Vaisesikas can safely be brought under the inferential process. And all the schools in Indian philosophy other than the Nyaya-Vaisesika are right in repudiating *upamāna* as a distinct *pramāna*. *Upamāna* is only a species of inferential process.

CHAPTER XV.

SABDA (SCRIPTURAL TESTIMONY).

All the orthodox systems (*astika*) in Indian philosophy accept *sabda* as a separate *pramāṇa*. It is an undeniable fact that we acquire knowledge from books which contain words conveying meaning. Knowledge derived from a speech is called verbal knowledge (*sabda-bodha*). But *sabda pramāṇa* as it is understood in Indian philosophy means the truth of the Vedas *i. e.*, the statements made in it can be accepted as true.

The acceptance of the Vedic authority has led many to pronounce Indian philosophy as dogmatic. Such a radical view is only true of Mimamsa which believes in the eternity of the Vedas. Of all the schools in Indian philosophy, Nyaya-Vaisesika has given the most rational justification for believing the Vedas to be true. *Sabda* is based on extrinsic validity of proposition (*paratah pramāṇa*), and hence it is immune from the charge of dogmatism. However it must be remembered that all the orthodox systems in Indian philosophy except the Mimamsa, accept the Vedic authority only to give sanctity to their system. And the same spirit of sanctification is exhibited in the attempt of tracing the origin of their system to the Vedas.

The Nyaya-Vaiseshika insists that *sabda* should be considered as the words of a reliable person (*āpta vākyaṃ sabda*). An *āpta* is one who always speaks the truth and whose veracity is undoubted. As Annambatta defines *āptastu yathārtha vakta*. According to them *sabda* is not included in inference because we do not make use of *linga* in the former. *Sabda pramāna* must be accepted because it is the word of a trustworthy person. The statements made in the Vedas must be accepted as true because they are spoken by God who is supremely trustworthy. The following is generally adduced as an illustration of *sabda pramāna*. If we want to cross a stream, we ask a reliable person (*āpta*) on whose words we can have trust, whether the stream is fordable or not. After having been told that the stream is only knee-deep, we venture to cross it. This kind of knowledge obtained from an *āpta* is called *sabda*.

The Buddhist's view of *sabda*.

The Buddhists refuse to accept *sabda* as a distinct *pramāna*. They include it under inference. Just as when we see smoke, we infer the presence of fire, so also when we hear a true word we infer the reality which it stands for. Thus every word or sentence stands for an idea and they are related in a causal way. The words, if uttered, convey ideas to our minds. This theory explains the psychological nature of language and it does not explain the validity of statements as such. We have to fall back on extra-psychological principles to discriminate the true verbal knowledge from the false. In a word, the truth of a statement can be found only by the application of coherence or pragmatic test. The Naiyayikas rightly insist on *paratah pramāna* to find

the validity of verbal expressions. They also rightly insist on having expectancy, consistency, contiguity and potentiality in a verbal statement.

The Mimamsa view of sabda.

The Mimamsakas believe in the permanence of sound only to establish the eternity of the Vedas. According to the Mimamsa the Vedas are not the work of either man or god, but they exist for ever in their own right. They say that god who is incorporeal cannot utter the words which are contained in the Vedas. On the other hand, if we urge that he assumed a human form for the purpose of revelation, we are making him finite being subjected to the limitation of material existence thus depriving the Vedas of its supreme worth and authoritativeness. They even went so far as to deny his existence in their zeal to establish the supreme authority of the Vedas. They denied the existence of god on account of the presence of moral and physical evil in the world.

The Mimamsa says that sound is eternal : it is a quality of the ether, and like it eternal. The beating of a drum reveals it to our ears, but does not call it into being ; when any letter is pronounced, we recognise it at once with absolute certainty, which would be impossible if its existence were only momentary. To believe in the eternity of sound, they formulated the intrinsic validity of propositions (*svataḥ prāmānya vāda*).

The Mimamsakas seek to support their view that *varṇa* is eternal by stating that we recognise the same *varṇa* though uttered several times. This

sound *g* which I now hear is the same as that *g* which I heard many times before (*so'yam gakah*).

But the Nāiyāyikas criticise the Mimamsakas by saying that we recognise *g* in a number of utterances because it has a *jāti* of which a particular sound is only a *vyakti* (individual). To use their homely simile; it is like the flame of a lamp which, relit after being extinguished, is nevertheless regarded by us as the same, like that of the one which originally had in its place.

Svatah prāmānyavāda of the Mimamsakas and *parata prāmānya vāda* of the Naiyayikas.

The Mimamsakas state *svatahprāmānya vāda* (intrinsic validity of the cognitions). Every cognition is true in itself; for the water we actually see and the water seen in a mirage produce similar tendencies to action on the part of the percipient. All direct apprehension is valid. Cognition in itself does not produce invalidity. It is memory that is mainly responsible for the invalidity of our cognitions. When we see a piece of shell and mistake it for silver in this cognition, memory intervenes in the process and makes us confused of what is perceived with what is remembered. Cognitions are valid in themselves; but memory is the sole cause which confuses our perceptions.

If there is an apparent error, it does not lie in the cognition. The man whose vision is defective sees two moons, the images not being fused in one as usual; the man who sees the white conch as yellow fuses the perception of the conch with the yellowness of the bile which prevents his eyes seeing true

The factor that is corrected is not the cognition but what is cognised. Cognitions are *per se* valid but they become false owing to some external factor. In other words cognitions are subject to external invalidation. The two forms of such invalidation are discovery by other means of the real character of the object, and discovery of defects in the instruments of cognition, such as bile in the eyes. This is called self-validity of cognitions (*svatah prāmānya vāda*). The theory of eternity of the Vedas entirely depends upon this.

The Naiyayikas repudiate this theory and state the theory of extrinsic validity of cognitions (*paratah prāmānya vāda*). They declare that the truth of the cognition must be established by an inference, ultimately by an appeal to facts. If every cognition is valid in itself it would be impossible for us to feel doubt. Doubt makes us believe not in the self-validity of cognitions. In the judgment 'I see a horse,' the validity of their cognition is proved by actually handling the object. Similarly a cognition of water is considered to be true when we verify it by drinking. Every cognition depends upon verification for its validity. Cognitions in themselves are neither true nor false ; but they attain the validity by a process of verification. According to the Naiyayikas, validity and invalidity of cognitions are not intrinsically made out (*svatogrāhya*) or intrinsically brought about (*svatojanya*). The cognition becomes valid if it leads to fruitful activity, if not, it becomes invalid. This is the doctrine of the Naiyayikas called *paratah prāmānya vāda* which means truth and falsity depend on extrinsic considerations.

The Characteristics of a valid statement (*sabda*).

Words by themselves alone convey no meaning; they derive sense by serving as members in a sentence. Mere collocation or grouping of words convey no significance. There are three requisites that every statement should satisfy to acquire meaning. They are *ākāṅkṣā* (expectancy), *yogyatā* (consistency) and *sannidhi* (contiguity).

Every word in a sentence requires some other word to give a complete meaning to the whole. This is what is called *ākāṅkṣā* (verbal expectancy). A word by itself cannot convey complete meaning without its syntactical connection with others. For example, cow, horse, man, elephant does not produce any judgment because there is no verbal expectancy.

Yogyatā states that there must be consistency or compatibility in a statement. The statement should not be contrary to our experience, in a word, it should not be absurd. A statement should neither be inconsistent with other statements nor there be any absurdity in a statement itself. Sprinkle with fire. In this example there is no *yogyatā*; hence it is invalid.

Proximity (*sannidhi*) consists in the utterance of words in a sentence without undue delay. If the words in a sentence are uttered at great intervals they convey no meaning. Words like 'Bring a cow' uttered at long intervals cannot produce a valid judgment, owing to the lack of proximity (*sannidhi*).

The Naiyayikas insist that every verbal knowledge (*sabda*) must contain the above three factors. Thus they are unconsciously applying the test of consistency or coherence to find out the truth of statements. This is no longer *sabda* but becomes an inferential or rational cognition. We believe the statements of others because they are verifiable and not because they are uttered by great men. An *āpta* according to modern science becomes a person who makes a verifiable and consistent statement.

THE MADRAS UNIVERSITY B. A.
QUESTION PAPERS.

March 1931.

I. What are the different kinds of causes mentioned in the *Tarkasamgraha*? Do they resemble and if so, in what way, Aristotle's classification of causes into formal, material, efficient and final?

II. Compare the five-membered syllogism with the western three-membered one, bringing out their relative merits.

III. In what respects, if any, is *upamāna* comparable to argument by analogy?

IV. For what considerations is doubt (*samsaya*) brought under erroneous knowledge (*apramā*)?

SEPTEMBER 1931.

I. Explain, giving illustrations, *avyāpti*, *atavyāpti*, and *asambhava*.

II. Distinguish (a) Indeterminate perception from determinate.
(b) *Kāraṇa* from *karana*.

III. Why is the third member of the Indian syllogism called example (*Udaharana*)?

Bring out its significance for the validity of the syllogistic argument.

- IV. Explain *linga*—*paramārsa*, *paksadarmata*, *kevalanvayi*.

MARCH 1932.

1. Distinguish between an intimate cause (*samavāyikāraṇa*) and a non-intimate cause (*asamavāyikāraṇa*). Mention an instance where the destruction of a substance (*dravyanāsa*) is due to the destruction of its intimate cause; and also an instance where the destruction of a substance is due to the destruction of its non-intimate cause.

2. Distinguish between 'inference for oneself' (*svārthānumāna*) and 'inference for others' (*parārthānumāna*); and analyse the steps involved in each.

3. Explain the definitions of correct knowledge (*pramā*) and incorrect knowledge (*apramā*), as given in the *Tarkasamgraha*. How would you make sure that a certain piece of knowledge conforms to the definition of correct knowledge?

4. What are the conditions which must be fulfilled by a collocation of words in order to convey a meaning? Illustrate your answer.

5. Examine the following inferences, naming the fallacies, if any, involved therein:—

(a) Sound is eternal, because it is audible (*śabdo nityaḥ śravaṇattvāt*).

(b) The sky-lotus is fragrant, because it is a lotus (*gaganāravindam surabhiḥ aravindatvāt*).

(c) All is non-eternal, because all is knowable (*sarvam anityam prameyatvāt*).

(d) The body has hands, &c., because it is apprehended, as having hands, &c. (*sariram hastādimat hastadimattayā pratiyayānatvāt*).

SEPTEMBER 1932.

I. Distinguish between a common cause (*sādhārana kāraṇa*) and a special or peculiar cause (*asādhārana kāraṇa*). What are the eight common causes of all effects ?

II. Distinguish between indeterminate perception (*nirvikalpa pratyakṣa*) and determinate perception (*svavikalpa pratyakṣa*), and explain the nature of the sense-object relation (*indriyārtha sannikarsa*), out of which arises the perception of sound and of sound-ness (*śabdatva*).

III. Construct a five-membered syllogism (*pañcāvayava nyāya*) to prove that 'sound is non-eternal' ('*śabda*' *nitya*), and explain how this method of proof combines induction with deduction.

IV. What is analogy (*upamāna*) ? Distinguish it from perception and inference.

V. Examine the following inferences, naming the fallacies, if any, involved therein :—

(a) There is fire on the mountain, because there is blue smoke there (*parvato vahnimān niladhumāt*).

(b) The hare's horn is eternal, because it is uncaused (*sasa-visāṇam nityam ajanyatvāt*).

(c) There is no smoke on the mountain, because there is no fire there (*parvato dhumābhāvavān vahnyābhāvāt*).

(d) There is no fire on the mountain, because there is no smoke there (*parvato vahnyābhāvavān dhumābhāvāt*).

MARCH 1933.

1. Compare the definition of 'cause' given in the *Tarkasaṅgraha* with any analogue known to you in Western Logic ; and explain the threefold classification of causes with reference to a weaver producing a coloured cloth.

2. The Naiyayikas refuse to recognize presumptive implication (*arthāpatti*) as an independent means of valid knowledge. Are they justified ?

3. 'Indeterminate perception is only a logical and not a psychological stage in the order of perception.' Explain the distinction between determinate and indeterminate perception, and examine the correctness of the above statement.

4. What are the conditions of a good probans (*saddhetu*) ? Discuss their significance in the light of the conditions of a good hypothesis, as understood in Western Logic.

5. Explain and discuss briefly the view that the validity of a cognition is extrinsic to the cognition.

6. Identify the fallacies in the following arguments :—

(a) Devadatta is wise, because he is a man, like Socrates.

(b) Graduates are happy, because they have taken their degrees.

(c) The Chimaera is fierce because it is a monster.

(d) *Bolshevists* are courteous, because they are of the aristocracy.

SEPTEMBER 1933.

I. Compare the seven 'padarthas' with the categories of Aristotle?

II. Explain the nature, functions and fallacies of definitions as understood in Indian Logic. How does the treatment compare with that of Western Logic?

III. What is meant by super normal perception (alaukika pratyaksa)? For what reasons does the Naiyayika recognise it?

IV. Distinguish with examples the three types of inference (Kevalanvayi etc.) What analogues have they in Western Logic.

V. Explain analogy (Upamana) and examine its claim to be a distinct means of valid knowledge.

VI. Identify the fallacies in the following arguments :—

(a) The horse is fleet of foot, because it is equine.

(b) Graduates are happy because they are unemployed.

(c) Devadatta must have been shot since he suddenly fell down dead.

(d) A tiger is a domestic pet because it belongs to the class of cats.

March 1934.

1. Describe the various modes of contact between sense-organ and object. Explain in particular the mode of contact whereby there is perception of (a) sound-ness (*śabdātva*), and (b) non existence.

2. Construct a five-membered syllogism to prove that 'Devadatta is mortal' and discuss how far this may be said to satisfy the quest of truth more adequately than the Aristotelian syllogism.

3. What do you understand by *parāmarśa* (subsumptive reflection)? Does it fulfil any function in inference? Is it recognized in Western Logic?

4. The Naiyayika holds that validity is extrinsic to the cognition. State his position briefly and examine it.

5. What does the Naiyayika understand by *upamāna*? Discuss if it can be reduced to a mode of inference.

6. Distinguish between *sakti* and *lakṣaṇa* (express and implied import), and explain the varieties of *lakṣaṇā*.

7. Identify the fallacies in the following arguments :—

(a) Fire is cool, because it is a substance, like water.

(b) The barren woman's son is dangerous, because he is malicious.

(c) Indians are punctual, since they have no conception of the value of time.

(d) Plato must have been a good philosopher, since he was omniscient.

MARCH 1935.

1. Distinguish between *Karana* and *Kārana*, and compare Annambhatta's view of *Kārana* with Mill's definition of *cause*.

2. How does Annambhatta define cognition (*buddhi*), and what, according to him, are the different forms of cognition?

Describe the steps through which perceptive knowledge is supposed to pass according to the *Naiyāyikas*.

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3. Give a clear account of the nature and function of *Vyāpti* in Indian Logic, and consider whether it is right to speak of *Vyāpti* as a generalization from simple enumeration of instances.

4. What is the ground on which syllogisms are classified in Indian Logic under the heads *Kevalānvayin*, *Kevalavyatirekin*, and *Anvayavyatirekin*? Illustrate each of these forms of argument.

5. Explain clearly the Nyaya view of analogy (*upamāna*), and examine whether there are any points of affinity at all between it and analogy in the Western system of Logic.

6. Examine any TWO of the following arguments, and name and describe the fallacies you may find involved in them :—

(a) This man is an Englishman, because he is white.

(b) The man in the moon is mortal, for he is, like other men an animal.

(c) The earth is eternal, because it is created.

SEPTEMBER 1935.

1. What is Annambhatta's definition of effect (*Kārya*)? Point out how this view differs from the *Satkāryavāda* of the Sankhyas and colours the Nyaya system of philosophy.

2. Describe and illustrate the different kinds of causes mentioned by Annambhatta, and compare them with those of Aristotle.

3. Explain what is meant by *Nirvikalpaka-jñāna* and *Savikalpakajñāna*, and consider how far Annambhatta is right in regarding the second form of *jñāna* as perceptual knowledge.

4. What do you understand by *Parāmārśa*? What are the elements of the Western syllogism which it involves, and how are they combined in it? Illustrate your answer.

5. The processes of induction and deduction blend together and constitute a syllogism in the Indian system of logic. Comment.

6. Mention the factors involved in cognition according to the Naiyayikas, and show, with reference to a concrete illustration, how these factors co-operate in giving us knowledge.

7. Examine any TWO of the following arguments, and name and describe the fallacies involved in them :—

(a) Man is not mortal, because he is rational.

(b) All things are transient, because they are knowable.

(c) Colour is a quality, because it is audible like sound.

R1-2
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APPENDIX I.

HETVABHASAS.

Tatra—sādhyābhāvavadvrttiḥ sādharāṇaḥ anā-
pāntikāḥ, yathā ' parvato vahnimān, prameyātvāt ' iti;

Sarvasapakshaviapakshavyāvrttāḥ pakshamātra-
vrttiḥ asādharāṇaḥ ; yathā ' śabdaḥ nityaḥ, śabdatvāt;
iti.

Anvayaavyatirekadrstāntarahitāḥ anupasāmhāri
yathā ' sarvaṃ anityaṃ, prameyātvāt ' iti.

Sādhyābhāvavyāpto hetuḥ viruddhaḥ ; yathā,
' śabdāḥ nityaḥ krtakātvāt iti,

Sādhyābhāvasādhakam hetvantaram yasya sa-
satpratipakshaḥ ; yathā ' śabdaḥ nityaḥ, srāvanātvāt,
śabdatvāt, ' śabdāḥ anityaḥ, kāryātvāt ghatavat.

Asrayasiddhaḥ yathā ' gaganāravindam sura-
bhi, aravindatvāt, sarojāravindavat.

Svarupasiddho yathā ' śabdaḥ guṇaḥ chāksuṣhaḥ
tvāt, rūpavat. ' Atra chākṣuṣatvaḥ sabde nāsti, śab-
dasya srāvanātvāt.

Sādhyābhāvo hetuḥ vyāpyatvasiddhaḥ. ' Parvato
vahnimān, vahnimātvāt ' ityatra ārdrendhanasam-
yogāḥ upādhiḥ.

Yasya sādhyābhāvaḥ pramānāntareṇa niśchītaḥ
sabādhitāḥ—yathā ' vahnir anuṣṇaḥ, dravyātvāt ' iti.

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