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CONTENTS

Reducing Verbal Testimony to Inference : Responses from Dharmakīrti's Pramāṇavārttika

K. Bhima Kumar

In classical Indian philosophy verbal testimony[1] (*śabda*) as a *pramāṇa* is an independent source of valid knowledge accepted by all schools except the Cārvāka, the Vaiśeṣika and the Buddhists. Verbal testimony (*śabda*) literally means verbal knowledge. It is the knowledge of objects derived from words or sentences. However, all verbal knowledge is not valid. Nevertheless, in the Nyāya tradition verbal testimony as a method of valid knowledge (*pramāṇa*) is defined as valid verbal testimony. It consists in verbal assertions of trustworthy persons.[2] The earliest commentary extant on the *Nyāya-sūtra*s is the *Nyāya-bhāṣya* by Vātsyāyana. In this commentary Vātsyāyana has explained the term *āpta* as "the person who has the direct knowledge of an object and intends to communicate correctly the result of his experience and is competent to express whatever he intends to communicate is known as *āpta*".[3] The elucidation in the *Bhāṣya* thus presumes three things.

1) The person transmitting knowledge linguistically must have first-hand knowledge of the things that he is speaking about.
2) He or she must have the desire to communicate this knowledge impartially to others without any distortion.
3) To be able to communicate whatever he or she intends to communicate effectively.

As long as there is no reason to suspect the credibility of the speaker or writer, he or she can conventionally be taken not only to be one who expresses his or her knowledge of certain state of affairs but also to be one who communicates facts. Those facts are giving

us an opportunity to know such state of affairs as he or she has known it. It is only when one perceives the words and understands their meanings that he acquires knowledge from a verbal statement. Thus verbal testimony as a source of valid knowledge consists in understanding the meaning of the sentence of a trustworthy person. A sentence is a group of words (*pada*) arranged in a certain way having a certain meaning. However, any combination of words does not make a significant sentence. The construction of an intelligible sentence must conform to four conditions. They are namely expectancy (*ākāṅkṣā*), mutual fitness (*yogyatā*), proximity (*sannidhi*) and intended meaning (*tātparya*).[4] *Ākāṅkṣā* or expectancy is meant that quality of the words of a sentence by which they expect or imply one another. *Yogyatā* is the second condition of the combination of words in a sentence or mutual fitness. It consists in the absence of contradiction in the relation of the objects denoted by a sentence. *Sannidhi* or *āsatti* is the third condition of verbal knowledge. It consists in the proximity between the different words of a sentence. That is the constituent words must be continuous with one another in time or space. *Tātparya* as a condition of verbal knowledge stands for the meaning intended to be conveyed by a sentence. A word may mean different things in different cases. Whether it means this or that thing in a particular case depends on the intention of the person who uses the word. With these four conditions as soon as one understands the meaning of a sentence and feels sure that the speaker is an authority, there arises in him knowledge of things.

Verbal testimony as the method of valid knowledge is quite different from perception, since the object apprehended by it is beyond the reach of the sense organs. Nor it cannot be regarded as a case of inference, since it does not satisfy the three conditions prescribed for a valid *hetu*. In the case of inference, the object to be inferred (*anumeya*) is the subject as characterised by the *sādhya*. Such an inference is possible only when the *hetu* is known to exist definitely in the locus. This condition which is known as *pakṣadharmata* is not possible in the case of verbal testimony. In the case of verbal testimony the subject (*locus*) itself is the object to be proved, since that is what is expressed

by the word. Moreover, unless the subject is established, how can there be any definite cognition of the *hetu* as existing in such a subject? Secondly, in the case of verbal testimony, there is no possibility of concomitance between the *hetu*, (namely the word) and the *sādhya*, (namely the object), since often the object spoken of does not exist at the place or at the time where the word exists. Hence, we cannot think of any concomitance between words and the objects denoted by them, which is very much essential if we are to treat verbal testimony as a case of inference. Based on such arguments the advocates of the verbal testimony namely the Sāṁkhyāyanas, the Naiyāyikas, the Mīmāṁsakas, and the Vedāntins grant autonomy to testimony as a legitimate source of valid knowledge.

However, as it is said above that the Cārvāka, the Vaiśeṣika and the Buddhists do not accept verbal testimony as an independent source of valid knowledge. The schools who recognise verbal testimony as a separate means of valid knowledge maintain that when a word is known, recollection of the corresponding concept which bears a relation to the word takes place as a result of which the meaning is comprehended. On the other hand the Cārvāka points out that the conventional relation between the word and its corresponding concept is characterised by multiplicity.

Moreover, the origin of convention itself is open to serious controversy in as much as, when existing of a relation between a word and its corresponding concept is asserted for the first time. It is done rather arbitrarily according to the whim of the speaker, and consequently, the so called conventional relation cannot stand the test of logic and reason. Hence, as there is no relation between a word and its meaning, the world is not a position to signify sense, and has no authenticity. The Cārvāka utilised the argument in order to demolish the proposition of a challengeable character of the Vedas and says that the Vedic sentence like all other requirements for verbal testimony is in a position to serve as the linkage between the object of the experience and the auditory organ and consequently the whole knowledge is capable of being explained as perceptive knowledge being affected through the process of extraordinary type of contact.

The Cārvāka denies authenticity to the word and says that as words do not have meaning, they don't have any validity or authenticity. The proposition of words having relation with their corresponding concept is a myth, since words are neither absurdly with meanings nor are meaning caused by words, nor can the word bear any conventional relation to its corresponding concept. The form of the words is entirely different from that of the meaning and the two have entirely different substrata. Consequently, the relation of identity cannot serve as the linkage between the two. All words do not heed to comprehension of meanings, and so the former cannot be regarded as the cause of the latter. Sentence does not have any authority and authenticity. Cārvāka opines that, the proposition of the opponent, that the sentence uttered by an expert is authoritative but not acceptable. Since a sentence cannot acquire authenticity simply by the reason it's being pronounced by the expert. The expertise of the expert is required to take assistance from other factors, which are exposing to all fallacies and defects. Thus, for Cārvākas verbal testimony is incapable of being regarded as a valid means of knowledge.

The Vaiśeṣika too do not accept verbal testimony as a separate and independent form of *pramāṇa* and reduced it to the form of inference. The validity of scriptural statements is an inference from the authoritative character of the speakers.[5] Vaiśeṣika repudiates the Mīmāṁsā theory of the eternity of sound and the absolute authoritativeness of the Vedas.[6] The Nyāya bases the validity of the Vedas on the ground of the direct communication from seers who had realised the eternal truths and laws; the Vaiśeṣika infers it from the unimpeachable veracity of the inspired seers. According to the Vaiśeṣikas the scriptures give us real knowledge and not mere speculation. It is knowledge of the things as they are, and in this sense has no beginning, though it is always directly known and realised by some beings in its entirety and by others in part. The Vedas, as collections of sentences, presuppose intelligent authors, and they must be possessors of complete and accurate knowledge of heaven and unseen destiny (*adṛṣṭam*). Gradually this authorship was assigned to

God. The authoritativeness of the Veda follows from its being the word of God.[7] The meaning of words and sentences must be understood before they give us knowledge. Since the understanding of meaning depends on the recognition of universal concomitance, verbal knowledge for Vaiśeṣika is a case of inference.[8]

The Buddhists do not admit verbal testimony as a separate source of valid knowledge. The Buddhists view testimony as a kind of inference. This is because in it we infer the truth or falsity of a statement from the character of the person who makes that statement. An effort is made here to elucidate how the Buddhists defended their position of treating the expressions of the Buddha as a source of knowledge while denying testimony as a legitimate source of knowledge and reducing it to inference with special reference to Dharmakīrti's *Pramāṇavārttika*. The Buddhist logicians Diṅnāga[9] and Dharmakīrti[10] tried to comprehend the verbal testimony under the process of inference. For Diṅnāga, verbal testimony cannot be separated as it is either perception or inference. Trustworthy means either the person speaks truth or that the thing spoken is trustworthy and true. In the former, the credibility of the person is derived from inference, where as in the latter, our belief is based on perception. In both the cases, verbal testimony can be regarded as a separate source of knowledge. Verbal testimony is of the nature of inference because it is based upon the common character of corroborativeness belonging to the words of a reliable person. Though, verbal testimony is like inference, since it conveys the knowledge of an object through a sign, yet the sign here is different from what it is in inference, indicating as it does whether the words come from a reliable person or not.

Dharmakīrti points out the words have no connection whatsoever with the external things. Words are not even conventionally connected with things. They are conventionally connected concept. Thus it is said that words call forth concept in the mind and concepts call forth the words. And it is one this account that words give rise to cognitions that bear no form of the external things at all. Verbal statements are the effects of the intention of the speaker. They enable us to infer the intention of the speaker. But, whether they enable us to understand

a general intention of the speaker or a particular intention was not considered by Dharmakīrti.

In the *Pramāṇavārttika,* Dharmakīrti discusses the Nyāya and Mīmāṁsa theories of verbal testimony and argues that there is no real connection between a word and its object. That is to say, no word can give us any knowledge of a real object. Accordingly, testimony does not communicate reality. However, it is interesting to note that Diṅnāga and Dharmakīrti have regarded the Buddha as *pramāṇabhūta* which means the one who is of valid cognition and considered his words to be trustworthy even with regard to things which are beyond the realm of sense experience. This seems to be inconsistent with their fundamental position that rejecting verbal testimony on one hand and on the other admitting the words of the Buddha as authentic.

Dharmakīrti in his *Pramāṇavārttika* initiated a discussion on the critique of testimony by holding the view that since words do not have any inseparable relation (*nāntarīyakatva*) with the objects, the words cannot establish the existence of the objects. They are only expressions of the intention of the speaker. His intention is that words are not just as the things are, for if that were so, on the basis of the words, the nature of the objects could be ascertained. However, it is not the case. The force of the argument lies in the basic thesis of his epistemology, which explains that we can prove the existence of an object on the basis of something only when there is an inevitable relation (*svabhāva pratibandha*) between the latter and the former. The inevitable relation or *svabhāva pratibandha* which is replaced as *nāntarīyakatva* is the force which can establish the connection of a sign with an object. In the case of testimony, the sign is the word, and there is no inevitable necessary connection between the word and the object. The absence of such necessary connection is proved by the fact that if there were such a connection, the nature of the object could have been ascertained from the word. However, that is not the case. From the word 'cold', we cannot ascertain the nature of cold. Here the existence of the object cannot be proved from words. In other words, testimony is not a *pramāṇa* with regard to the actual real object. However, from this, it would be wrong to conclude that

testimony does not have any worth. The worth of testimony lies for Dharmakīrti in expressing the intention of the speaker (*vaktrābhiprāyasūcakāḥ*). These words are produced on the basis of the intention (*āvivāks*) of the speaker. Since there is a causal relation between the words and the intention of the speaker, there is a necessary relation *nāntarīyakatābhāva* between the two. Thus being inseparably connected with the intention of the speaker, words can make only this intention known.[11] However, not every will of a person which is the basis of his intention corresponds to a reality as it is. In that case, the speaker's intention which is based on such will, even when they are made known through words, would not be faithful to the real thing itself. The word being not connected by nature with another object, namely the reality, is not able to make the latter known.[12]

Dharmakīrti in the second chapter of his *Pramāṇavārttika,* emphasizes that words by themselves do not express a thing. It is on the strength of a particular linguistic convention (*saṁketa*) that denotative words put in a meaningful sentence are made to express certain intentions or denote real object by the speakers who use these words. The intentions of the speaker are meaningful constructions made out of concepts which are mentally derived from perceived real objects, momentary particulars (*svalakṣaṇa*). For the Buddhists these concepts are 'unreal', because they are not as real as the particulars from which they are derived. Nevertheless, these unreal concepts are very useful tools when they can impart information about real objects that produce useful effects. Such information is correct insofar as the hearer, on the basis of it, strives for and really acquires the desired effect-producing (*arthakriyākārī*) objects.

The view of Dharmakīrti that words do not reveal any real object, seems to be inconsistent with the observation made by Diṅnāga in his work namely *pramāṇasamuccaya*. Diṅnāga regarded testimony as a *pramāṇa*. However, he reduced it to inference.[13] In general, the words of a reliable person do not disagree with reality and the knowledge based on such words is an instance of inference. Again as inference is accepted as a *pramāṇa* by the Buddhists, it follows that Diṅnāga has regarded the knowledge based on the words of a reliable person to be

a case of inference on the ground that both inference and testimony are *avisaṁvādaka* which do not disagree with reality. That means for Diṅnāga testimony is a *pramāṇa* though it is not different from inference. However, for Dharmakīrti as we have seen, that the words do not depict the nature of the object. It seems that there is an inconsistency between the views admitted by Diṅnāga and Dharmakīrti. However, Dharmakīrti himself resolves this inconsistency with reference to our practical behavior. When Diṅnāga accepted testimony to be an inference, his intention was not to describe the real authoritativeness of the testimony but to highlight the fact that human behavior is often dependent on the guidance of the testimony. For Diṅnāga a person in this world cannot live without depending on the authoritativeness of the sacred tradition. This is because from the testimony of great people we come to know about the great blessings and the great misfortunes, which result or do not result when one performs or does not perform some act, the consequences of which acts are not within the reach of one's present experience. At the same time, a person realises that testimony is right, based on the fact that we do not see any contradiction to the statement regarding the acts and their future consequences, when a person actually is in a state of great blessings or great misfortunes. By taking such pragmatic considerations into account Diṅnāga regarded testimony which gives us valid knowledge is an instance of inference.[14] Insofar as a statement of trustworthy person (like Buddha) in general is reliable and thus reveals an object in an indirect manner as does inference. Diṅnāga considers the knowledge generated by such statement, to be of inferential nature even in the case when the statement of the reliable person refers to an object which is not directly verifiable. So long as in the latter case no contrary results are perceived, there is no reason to disagree from the rule that the statement of a reliable person is like an inference. The entire discussion on testimony in the Buddhist frame work can be understood from the following verse of Dharmakīrti.

āpta vādā'visaṁvādasāmānyād anumānata!
buddheragatyabhihita parokṣe' pyasya gocare![15]

The above verse explains that the words of a reliable person generally do not disagree with our experience and the cognition based on the testimony is inference, even in those cases where the object of such testimony is beyond the range of any other means of knowledge, since in those cases there is no other possibility to explain it. A reliable statement for Dharmakīrti is one having 1) whose words are coherent, 2) for which there are means that are appropriate for attaining the desired end, and 3) which expresses what is useful to a human being.[16] Such a reliable statement alone is made the subject of investigation as to whether it can be considered as a *pramāṇa* or not. A sentence or a statement which does not possess the above three characteristics, is not made the subject of investigation. Dharmakīrti clearly explained that the trustworthiness of such sentences about perceptible objects and imperceptible ones can be determined through the two *pramāṇa*s namely perception and inference. The cognition of inaccessible objects though is produced by the words of a reliable person does not only inform us of the intention of the speaker rather informs us about the nature of reality. Accordingly, such cognition by virtue of its character of non-disagreement with reality is regarded as inference and not on account of its natural character of being composed of words.[17]

Dharmakīrti offers two arguments for considering testimony as a case of inference. Firstly, the cognition from testimony rests on the fact that the character of non-disagreement with object (*avisaṁvāda*) is shared in common by the statement of a trust worthy person as a *pramāṇa* and inference as a *pramāṇa*.[18] Secondly, when we know through our own power of perception and inference the correctness of the truth concerning the thing to be abandoned (i.e., suffering). The truth concerning the thing to be attained (the avoidance of suffering) along with the causes of both, namely the causes of suffering and the causes for the removal of suffering or the eightfold path we see that these statements are true as they do not disagree with reality. Thus, it can be concluded that the cognition originating from testimony is a case of inference.[19]

Further, in the Buddhist Epistemological framework, the concept of meaning plays an important role in verbal testimony. There are

various theories in Classical Indian Philosophy regarding the meaning of the word. The Buddhists refute the opponent views of *Jāti* (the universal), *jātimad* (the particular) in this context, and try to establish their own theory of meaning of *apohavāda*.

According to the Buddhists word cannot signify the real thing. The real is only the thing is itself, which is momentary which comes and vanishes away at one and the same time and therefore, is outside the group of word. Diṅnāga points out that the names are products of conceptual constructions, vice versa the conceptual constructions are the products of names; they are related to each other, casually the names cannot even touch the real. The names and the real are two different things. The name cannot signify the real. Word or name can signify only the generic form of a thing through the exclusion of others (*apoha* or *anyāpoha*). For Diṅnāga, a word can express its own meaning only by repudiating the opposite meaning. *Apoha* is negative in nature.

Diṅnāga explained the theory of *apoha* in the Chapter II of *Pramāṇasamuccaya.* He admits that *apoha* can possess name characteristics of the realists, universals such as oneness, eternality complete subsistence in each individual etc. *Apoha* is not the object of sense perception. It is apprehensible only through word or inference.

The concept of *apoha* depends upon the law of contradiction. The words blue and non-blue negate each other just because there are opposite to each other. According to Diṅnāga similar exclusion of others is due to the non-apprehension of the meaning of particular word. In other words, a particular word excuses the other particular word just because its own meaning is not apprehend in the other ones.

Diṅnāga and Dharmakīrti emphasized the negative aspect of the meaning of words. A word expresses its meaning only through the negation of the opposite meaning. The negation of the opposite (*apoha*) is the concept constructed by thought and exhausted in that negation. The difference between the realistic theory of Naiyāyikas and the Mīmāṁsakas and the *apoha* theory of Buddhists regarding the meaning of word is that the realistic theory lays more emphasis on the positive and real character of a universal, the Buddhist theory, on the contrary emphasis on the negative aspect of *apoha.*

The Buddhist logicians do not accept verbal testimony as an independent source of knowledge because there is no relation of a word and an external object referring to it. If there is a relation between them it would be either identity (*tādātmya*) or causality (*tādutpaṭṭi*). The relation of identity cannot distinguish a word and its object because these two are quite distinct from each other. A relation of identity is known oneness and if oneness is accepted among the two distinct objects the cat and dog would be one. Moreover, there is not any relation of causality between words and object. This is because, the relation between world and object neither positive relation of agreement nor negative relation of difference to be understood. For instance, a pot is produced with a lump of clay, a stick, water, wheel etc. without the operation of words. It is assumed that there is a different kind of relation other than identity and causality between word and an external object. Then it would follow that a man without knowing the significance of the meaning can get the definite meaning of a word just as a jar is cognized which is illuminated by a lamp. However, it may not happen for a stranger who does not grasp any meaning from the word fire when he hears it for the first time. A word denotes an object when the denotation and significance is known. This connection is untenable because it cannot up held by any reason, for any significance can be applied to any object. Thus, after examining all the factors thoroughly it is found that there is no justification for the settlement of a relation between a word and an object. Hence, the Buddhists rely on an object which is either perceived or inferred; it is used to prove that there are actual facts corresponding to a statement, Buddhists reduced to perception. Thus, the Buddhists do not admit the validity of verbal testimony.[20]

Whatever Buddha taught, was mainly for removal of sufferings and the causes of both suffering and its removal by a reliable person. Accordingly, the non-contrary character of such knowledge constitutes the trustworthiness of these objects. With the help of the above two different arguments, Dharmakīrti tries to present justification in support of Diṅnāga that *agama* means an inferential source.

Diṅnāga in his *Pramāṇasamuccaya* conveyed his respect to the Buddha by regarding him as a means of valid cognition (*pramāṇabhūta*). In the verse - *pramāṇabhūtāya jagadhitaiṣiṇe praṇamya śāstre sugatāya tāyine,* Diṅnāga considers the Buddha as *pramāṇa* and possessing four virtues. Here Diṅnāga seems to use the word *pramāṇa* in two different ways. The first one is purely epistemological i.e., as a source of valid knowledge and secondly, more general connotation where authority means right measure. The perfection in cause (*hetu*) and effect (*phala*) makes the Buddha, the religious authority and makes him a *pramāṇa*. In this instance, cause refers to the Buddha's striving for the welfare of the world (*jagadhitaiṣin*) and his being the teacher (*śāstrī*) while effect refers to the Buddha's being the well-gone (*saguta*) and his being the savior (*tāyin*). These four virtues serve the purpose of describing the nature of Buddha's religious authority. For this reason, Diṅnāga considers the Buddha's being as a *pramāṇa*. Dharmakīrti also endorses this view.[21] Thus for Buddhists, verbal testimony or knowledge conveyed by words, refers to words used in a coherent, meaningful sentence, which teaches suitable means and expresses what is useful to man. Coherently formulated sentences which refer to practicable methods to gain something and which, moreover discloses a desirable human goal, can really communicate practical knowledge about real objects to the hearer, even though such statements do not reveal particular objects themselves as direct perception does. The trustworthiness of a meaningful statement is tested only afterwards when the hearer really perceives and acquires for himself the effect of the particular that was described in the statement. In the context of the Buddha, we can notice that his teachings constitute trustworthy knowledge and reveal to the hearer facts that were not known before him. Since the Buddha's words are *avisaṁvādaka* and *ajñātārthaprakāśaka*, he can be considered as a means of valid knowledge. Further, the important feature of verbal testimony consists in its emphasis on the intention of the speaker. In the case of the Buddha, the intention is to help other people who are engulfed in the world of suffering. Thus, for Buddhists verbal testimony can be considered as an inference because in it we infer the truth or falsity

of a statement from the character of that person who makes that statement. There is no need to postulate an additional *pramāṇa* called verbal testimony, which is admitted by the orthodox schools.

Notes

[1] Verbal Tesimony (in Sanskrit it is translated as *śabda*) means an articulate sound, that is, a word with meaning, and applies to a verbal expression consisting of one or more words. It is also called '*āpta-vākya'* (the statement of a trustworthy person) or *āgama* (authentic word).

[2] *āptopadeaḥ śabdaḥ*, Vidyabhusana. S.C., (Trs.) *The Nyāya sūtras of Gotama*, The Panini office, Allahabad, 1913, I. 1.7.

[3] *āptaḥ khalu sākṣātkṛtadharma yathādṛṣṭasyarthasyacikhyapayisiya prayukta upadeśa.* That person is called *āpta* reliable who possesses the direct and right knowledge of things, who is moved by desire to make known (to others) the thing as he knows it, and who is fully capable of speaking of it.

[4] Visvanath's *Bhāṣāpariccheda*, Nirnaya Sagar Press, Bombay, 1916, p. 82.

[5] Gangānāth Jhā (Trs.) *Padārthadharmasaṁgraha* of *Praśastapāda* with the *Nyāyakandali* of *Śrīdhara,* E.J.Lazarus & Co., Benares, 1916, IX.1.3.

[6] Nandalal Sinha (Trs.), *The Vaiśeṣika sūtras of Kaṇāda,* Second Edition, The Panini Office, Bhuvaneśwarī Āśrama, Allahabad, 1923, ii.2.21-37.

[7] *Tad vacanād āmnāyasya prāmāṇyam iti,* Nandalal Sinha (Trs.), ibid., vi.1.1-4.

[8] *ibid*., iii,1.7-15.

[9] Diṅnāga must have lived possibly about 500 A.D and born in a Brāmaṇa family in Siṁhavaktra near Kāñcī, modern Conjeeveram in the Madras Presidency. Diṅnāga was admitted to the religious system of the sect and attained erudition in the Tripiṭaka of the Hinayāna under the guidance of Nāgadatta, a Paṇḍita of the Vātsīputrīva sect. Afterwards he became a disciple of Acarya Vasubandhu with who he studied all the Piṭakas of the Mahāyāna and Hīnayāna. A few years later he was invited to Nalanda where he defeated Brahmana Sudurjaya and other Tirtha dialecticians and won them to the doctrine of Buddha. Diṅnāga refuted chiefly the Tirtha Controversialists and he was called a "Fighting Bull". He was a man of vast learning and wisdom, and practised during his life-time twelve tested virtues. The *Pramāṇasamuccaya* is one of the grandest literary monuments of Diṅnāga.

[10] Dharmakīrti was born about 635-650 A.D. From childhood he endowed up with a very keen intellect and attained great skill in the fine arts, in the Vedas and Vedāṅgas. Dharmakīrti is the author of numerous works of Logic. The *Pramāṇavārttika-kārikā* is one of them.

[11] *te hi vaktur vivakṣāvṛttaya iti tannātarīyakās tāmeva gamayeyuḥ,* Karnakagomin's *Pramāṇa- vārttikasvavṛttiṭīkā*, Kyoto: ed. Rahula Samkrityayana, Allahabad: Kitab Mahal, reprinted, Rinsen Books, 1982, 71. 24-25.

[12] *na ca puruṣecchāḥ sarvā yathārthabhāvinyaḥ, na ca tadapratibaddhasvabhāvo bhāvo'nyam gamayati*, Karnakagomin's *Pramāṇavārttikasvavṛttiṭīkā*, Kyoto: ed. Rahula Samkrityayana, Allahabad: Kitab Mahal, reprinted, Rinsen Books, 1982, 71.25-26.

[13] *āpta vāda' visaṁvādasāmānyād anumānata*.

[14] *nāyam puruṣo' nāśritya āgamaprāmāṇyamāsituṁ samartho' tyakṣaphalānām keṣāṁcit pravṛttinivṛttyormahānuśaṁsā pāyaśravaṇāt tadbhāve virodhādarśanāc ca, tatsati pravarttitavye baram evam pravṛtta iti parīkṣayā prāmāṇyam āha*! Karnakagomin's *Pramāṇavārttikasvavrttiṭīkā, Ācārya Dharmakīrte's Pramāṇavarttikam (Svārthānumānaparicchedaḥ) Svopajñavṛttyā Karṇakagomiviracitaya Taṭṭīkayā ca sahitam*", Kyoto: ed. Rahula Samkrityayana, Allahabad: Kitab Mahal, reprinted, Rinsen Books, 1982, 72. 1-3.

[15] Dharmakīrti's *Pramāṇavārttika,* tr. Satkari Mookerjee and Hoijun Nagasaki, Patna, Nava Nalanda Mahavira, 1964, verse. 219.

[16] *saṁbaddhānuguṇopāyaṁ puruṣārthābhidhāyakam, parīkṣādhikṛtam vākyam ato 'nadhikṛtam param,* Dharmakīrti's *Pramāṇavārttika,* tr. Satkari Mookerjee and Hoijun Nagasaki, Patna, Nava Nalanda Mahavira, 1964, verse. 217.

[17] *tasyāsyaivamhūtasyāptavādasya avisaṁvādasāmānyād adṛṣṭavyabhicārasya pratyakṣānumāṇāgamye' pyarthe pratipattes tadāśrittvāt tadanyapratipattivad avisaṁvādo'numīyate! tataḥ śabdaprabhavā'pisati na śabdavadabhiprāyam nivedayatyevetyarthāvisaṁvādād anumānam api!* Karnakagomin's *Pramāṇavārttikasvavṛttitīkā Ācārya* Dharmakīrte's *Pramāṇavārttikam (Svārthānumāṇaparicchedaḥ) Svopajñavṛttyā Karṇakagomiviracitaya Taṭṭīkayā ca sahitam*", Kyoto: ed. Rahula Samkrityayana, Allahabad: Kitab Mahal, reprinted, Rinsen Books, 1982, 72. 23-25.

[18] *anyathā' ptavacanasyā' visaṁvādād anumāṇatvam ucyate*! Karnakagomin's *Pramāṇavārttikasvavṛttiṭīkā, Ācarya* Dharmakīrte's *Pramāṇavārttikam (Svārthānumānaparicchedaḥ) Svopajñavṛttyā Karṇakagomiviracitaya Taṭṭīkayā ca sahitam*", Kyoto: ed. Rahula Samkrityayana, Allahabad: Kitab Mahal, reprinted, Rinsen Books, 1982, 72.26.

[19] *heyopadeyatattvasya sopayasya prasiddhitaḥ / pradhanārthavisaṁvādad anumānam paratra va*! Dharmakīrti's *Pramāṇavārttika,* tr. Satkari Mookerjee and Hoijun Nagasaki, Patna, Nava Nalanda Mahavira, 1964, verse. 220.

[20] S. C. Chatterjee, *Nyaya Theory of Knowledge*, Calcutta, Calcutta University, 1939, p.348.

[21] Dharmakīrti's *Pramāṇavārttika,* tr. Satkari Mookerjee and Hoijun Nagasaki, Patna, Nava Nalanda Mahavira, 1964, II, Verse 1-7.

A Historical Note on Sacred Geography of Medieval Tamilakam

S. Jeevanandam

Introduction

Sacred geography is a cognitive landscape that generated a powerful sense of land, location, and belongingness to the particular society. It is an important cultural element of the religious and spiritual tradition of the world. It constructs an idea of cultural homogeneity on the basis of religion. The concept of 'holy' land is an agency and gives a sense of association and pride towards the particular land and society. This is a universal phenomenon. This could be witnessed by the conflict over the geographical terrains of Palestine, Ayodhya etc. In this context, the particular paper is trying to understand the conceptual framework of the idea called sacred geography and giving its special reference to Medieval Tamilakam.

Sacred Geography is the study of qualities of the sacred and related cultural activities that are imposed on certain place and expressed in a spatial context. It examines the cultural superimposition of spirituality over the geographical reality. Usually, civilisation revolves around the three factors of nature (geography), human (history) and human experiences (cultures born of contacts).[1] The conception of sacred geography connects the above mentioned three elements. It is a complex relationship between the existing physical features and human activities.

In the Indian context, the conceptual framework of sacred geography played a key role in the unification of the culturally diverse vast territories of the Indian sub-continent. Pithawalla stated that geography was an aid to the unification of lndia's cultures.[2] It unified

the cultures of different regions and could construct the path for the common heritage.[3] It becomes essential for inter-provincial and inter-communal relations. Diana L. Eck pointed out that the confluences go beyond physical geography to create a virtual geography of interconnectedness, which binds all India together and facilitates the rich tradition of religious pilgrimage between key sacred sites in the landscape.[4]

The term 'Sacred Geography'

The conceptual frame work of 'Sacred Geography' is considered as an evolutionary child of geographical school. The study of geography emerged as a separate discipline in the end of the eighteenth century. Alexander on Humbolt and Karl Ritter introduced two new principles in geographical studies as physical and social geography.[5] This precise approach widened the study area of geography into regional particularities with concepts of physical and social aspects. Physical geography studies the world's surface such as the distribution of land and sea, its position, its shape etc.[6] On the other hand, social geography studies the relationship of human beings with their physical settings and environment, as well as their conscious activities, and continues progressing in adapting itself and in transforming it to its needs.

Social geography was subdivided into many sub-groups such as economic geography, political geography, cultural geography etc.[7] John Pinkerton, nineteenth-century geographer, stated that these divisions are small segments of the field each of which is of interest to different groups of specialists who need not even be geographers.[9] The method was adopted by various disciplines such as history, sociology, and anthropology to understand their study area. He further pointed out that the new approaches in the field can be divided into general, sacred, ecclesiastical and physical.[10]

The term 'sacred geography' is unique itself. It is a compound of two words, sacred and geography. The understanding is that the spiritual elements imposed upon the reality, which is a geographical element. Scientifically, there is no place(s) that could be named as

sacred geography on the earth. It is merely a cognitive understanding. The idea, 'Sacred' is an embedded, intrinsic attribute lying behind the external, empirical aspect of all things.[11] It provided a system of meanings. Durkheim explained the distinction between sacred and profane. In general, symbolism plays a primary role in the recognition of sacredness and it differentiates the particular object from others. Their shapes possess the power of what they symbolize. Mircea Eliade, the veteran historian of religion, argued that sacredness is a feature of the place.[12] Emile Durkheim, the French sociologist, stressed humanity's role in attributing sacredness.[13] The sacred always manifests itself as a reality of a wholly different order from "natural" realities.[14] Therefore, the concept of sacred geography is a cognitive region. It differentiates sacred place(s) or centre(s) from others. In general, it is a study of religious network[15] or a study of the religious geography of any religious order.

Sacred geography as a term was first used by Thomas Tucker Smiley in 1824.[16] He wrote twelve pages pamphlet to explain to students of the Bible about the relationship between the scriptures, their Biblical place-names and their geography .[17] However he did not attempt to explain or elaborate it further than a plain adjectival use of the word sacred.[18] As the geography of the Holy Land, this was most simply, a new branch of geography, called *geomorphology.* According to Anthony Thorley, sacred geography is part of the important post-enlightenment academic rediscovery of an animistic worldview relevant to Western Culture.[19] Mai Lootah referred to sacred geography as a powerful agent in the science of cartography.[20]

Sacred geography varies from religion to religion. These differences result in specific cultural and historical facts as well as geographical conditions. The circumstances of a wandering life in an isolated region, the need to form or unify a state organisation, the pattern of an early chain of missions or military conquests, the lasting prestige and sacred quality of ancient civil and religious centers: these and countless other factor may determine how sacred geographies are shaped. It has the functions of creating a sense of place and a certain order in the world.

Sacred geography is a cultural construction of the particular place and space. Sacred places have multiple levels of meaning in Indigenous cultures. Sacred places are defined as one and distinguished from other places. Manifesting the sacred, any object becomes something else, yet it continues to remain itself, for it continues to participate in its surrounding cosmic milieu.[21] They are no longer ordinary places like others.[22] It provides existential incidences, the feeling that one belong to a particular place, characterises peoples' relationships with their homeland. Mircea Eliade referred it as Hierophanie.[23] Every religion has its own association with the particular space such as Mecca (Mohammedans), Jerusalem (Jews and Christians), Rome (Christians), Srirangam[24] (Vaishnavite Hindu sects) and Kashi[25] (Saivite Hindu sects). The medieval churches helped to construct the Holy Roman Empire to counter the Arabs' intervention in Europe.

The sacred places are acts of creation, usually designed by a World Maker. Through the use of symbols, networks of meaning are imposed upon the land; such spatial orders clarify the differences between places. Such difference is intensified with the special spiritual presences and qualities that set certain locales apart from advisory profane space. Those places well charged with the supernatural power. An ordinary place could be made sacred through mythology, and is continually consecrated by rituals. There are patterns of religious meaning which have traditionally been constructed on the mythic presuppositions of divine plurality and plenitude.[26] Richard Townsend mentioned that in the passage of time, sacred places became invested with the accumulations of mythical and historical meanings in complex layers of cultural memory.[27] In general, people used to perform their ritual practice either at that place or direct towards it like Mecca.

The places are revealed through the society's mythology (sacred truth), thereby becoming the physical manifestations of the mythological system. These networks form the sacred geographies, and religious meanings imposed upon it. Those lands must contain in the form of natural features and human-made symbols that establish communication between the earthly and the spiritual, embodying,

collecting values and shared norms of conduct. It forms a unifying ground and develops the culture, for it stems from the marking, exploitation and defense of territories that helps to unite humankind.

Sacred geography is primarily associated with the places of pilgrimage which bring the traditions of the gods and goddesses, heroes, heroines and sages to the living embodiment in geography. On many occasions, sacred places are identified with the elements of water, trees (Tamil form of *talavirutcam),* mountains, hero-stones, structures, and idols. In Indian religious traditions of rituals, reverence is linked primarily to the place of hills and rock outcroppings, to the headwaters and confluence of rivers, to the pools and groves of the forests and to the boundaries of towns and villages.[28] The river is an ancient and complex cultural symbol in India.[29] To find the earthly manifestation of a mystical sacred mountain, we must instead rely on qualitative assessments of landform shape, relative location, inter-visibilities (line of sight views of one sacred mountain from another), folklore, place names, ceremonial use, and previous explorations.

The Sacred Geography of Medieval Tamilakam[31]

The study of sacred geography of medieval Tamilakam is important in understanding the social transformation of the society. Classical Tamil society in general was considered as secular.[32] The absence of puranic (Vedic) elements in the Sangam period could help the researchers in constructing the secular characteristics of ancient Tamil society. The secular Sangam concept was further strengthened by the subject matter of Sangam literature, which was largely speaking about the existing worldly life rather than the other world.[33] This was a significant difference of Sangam literature from the Sanskrit, Prakrit or Pali literary world views; whereas, the core aspect of the Sangam literature could be seen and held as essentially dealing with realistic world view.[34] Kamil Zvelebil, a prominent linguist also categorised the Sangam period as secular and non-ritualistic.[35] The recent Keeladi archaeological excavation also highlights the non-religious nature of the early Tamil society.[36] However, the post- Sangam literary works

such as *Paripadal* and *Tirumurukattruppadai*[37] lighted up us the gradual changes in the social and cultural history of the early Tamil world. Vaiyapuri Pillai, the renowned Tamil scholar stated in his book *Tamizhar Panpadu (Tamil Culture)* that the intervention of Brahminical cultural value was gradually infused over the indigenous tradition.[38] Kanakasabhai, Tamil scholar mentioned the settlements of Brahmins in the Tamil country.[39] A song of *Paripadal* also ridiculed Vedas and stressed that the idea of love was more important in human life.[40] The extension of a religious institution like the temple in the later period could witness the agrarian expansion of medieval Tamilakam.

Tamil[41] is considered as one of the ancient languages of India and its literature bears the reflection of the life of an entire people.[42] The ancient Tamil were keen on their environment. The classical Tamil literature, which is collectively called Sangam[43] literature (literature of Academies), perceived the geographical units as a contemporary physical reality[44] and it used to highlight the human intervention on nature. Martha Ann Selby and Indira Viswanathan Peterson wrote that classical Tamil literature is explicitly conscious about the close relationships among language, a geographical territory, and culture.[45]

Sangam poems were largely discussed about the human content and mundane life.[46] The concept of *Tinai* (landscapes) in Sangam age classified the society into five ecological *(nilam)* regions: *kurinji* (montane), *mullai* (pastoral), *marutham* (riverine), *neithal* (littoral) and *palai* (arid). These ecological regions determined the characteristic features of that society.[47] It further explained the geophysical aspects of each region, the flora and the fauna, the economic activities, the religion, the diet of each region, and behavior pattern, which was unique to each region.[48] In addition, the *attruppadai*[49], the bardic genre of Sangam literature that was placed in the later Sangam age, frequently described the different regions that one has to pass through before they reached the abode of the patron.[50]

The Sangam classics identified each region with specific deities such as Murukan *(kurinji),* Mayon or Mal *(mullai),* Vanjiko or Seyyon *(marutham),* Kadaloan *(neithal)* and Korkkai *(palai).* Kamil Zvelebil

mentioned that the classics much concerned about the life of ordinary though idealized men and women, not the life of sacerdotal or ruling nobility, of a priestly class, of nuns, monks or of any elite groups or groups of society.[51] He further added that it is very different from all strata of Sanskrit literature of a sacerdotal class.[52] However, the Sramanic religions of Buddhism and Jainism significantly influenced the ancient Tamil. In the meantime, the medieval historian Champakalakshmi witnessed the presence of the Brahminical tradition in an amalgamated form in the early Sangam age.[53] Buddhist and Jain organization took a great interest in Tamil language and literature.[54] The later Sangam literature carried the discussions about the morality on the basis of Buddhist and Jain ideology. In 470 C.E., Vajranandi, a Jain monk, established *Dravida Sangha* (Dravidian Association) in Madurai to patronize Tamil language.

The influence of Brahminical religious values was not predominant in the ancient Tamil tradition. In the early medieval period, *bhakti* tradition and temple centered religion have postulated very different Brahminical cosmographies, which was different from the Sangam period.[56] The later and post-Sangam literatures of the fourth to the sixth century C.E., *Paripadal* and *Tirumurukattruppadai* marked a new era in Tamil culture and a new milieu in the Tamil religion and worship.[57] The social transformation progressed from the third century C.E., onwards, due to the socio-economic and political changes in the society.

The general decline of trade in the post-Sangam period, especially inland and maritime, led to the emergence of the land-based economy through a land grant system, namely, grants made to the Vedic Brahmins as *brahmadeya* and to the temple as *devadana*.[58] Champakalakshmi stated that this marked the transformation of Tamil society from a kin-based, tribal organization to a hierarchically structured organization and a monarchical polity based on the principles of the *Dharmasastra* (p. 438). An idea of absolute or universal godhead entered into the Tamil ethos.[59] The vernacular rendering of the Puranic religion was established.

The later Sangam literature, *Paripadal* and *Tirumurukattruppadai* provided a clear picture about the cultural and religious changes of its contemporary society. The former discussed about the deity called, Mal the popular deity of Vaishnava sect. Sivathamby the prominent Tamil historian, suspected the inclusion of *Tirumurukattruppadai* among Sangam works.[60] In general, *Tirumurukattruppadai* represented the transition of tribal or folk form of the worship into the temple centred new religious tradition. The song of *Tirumurukattruppadai* were composed by some Nakkirar and it highlighted the sacred centre and greatness of Lord Murukan, the ancient Tamil god. This is the first known literary evidence regarding sacred geography of Tamilakam. Nakkirar detailed the sacred abodes of Murukan, which is popularly known as *padaividus* (sacred abodes). He detailed the six sacred abodes of Murukan: Tirupparankumam[61], Tiruchchiralaivai[62], Tiruvavinankudi[63], Tiruverakam[64], Kunruthoradal[65], and Palamudircholai[66]. In general, the sacred geography of the Murukan cult could mark the transition element of the folk cult of Tamil, which incorporated the Brahminical religion. The social context of early Murukan worship was one of the kinship-based productions in all eco-zones and revolved around an exchange between subsistence level foods systems.[67]

The cult of Murukan has emerged out of local traditions, localised Puranic myths, and folk beliefs that have been in circulation for a long period of time, myths which were codified, and elaborated or improved upon at various points of time.[68] The folk deity from a specific tribal context became a universalised regional deity and a dominant godhead of a larger pan-Indian tradition through a process of interaction with, and acculturation by, a formal religious system, namely, the Sanskritic.[69] According to Champakalakshmi, the universalisation of the Murukan cult and the emergence of its sacred geography, which transforms a folk deity of the Sangam classics into a transcendental god as a result of the synthesis between an essentially local, folk or popular cult deity, and the Sanskritic, Brahminical-Puranic tradition, and the Agamic forms of worship.[70]

In Sangam society, land is the least documented item of gift, although it was the major mode of redistribution.[71] The social transformation of early medieval Tamilakam led to the establishment of temples, which were directly related to the development of the agrarian economy.[72] According to Rajan Gurukkal, the medieval historian, temples sprang up in southern India on a large scale during the period of agrarian expansion.[73] The settled agrarian economy helped in the extension of temple activities. Chola rulers encouraged the making of more *devadana*.[74]

In general, the pre-modern temple institutions played a multiple role in functioning as a site of socio-religious interaction of the medieval Tamil society. It also acted as a means of consolidating local communities and integrating them into the government and state.[75] Therefore, the medieval historians refer to the temple as a site of the new social formation[76] and temple acted as the institutional means of coordination of landed households into the corporate body.[77] The construction of structural temples became an important political activity of early medieval Tamil rulers such as Pallavas, Pandiyas and Cholas. They encouraged the construction of temples and they perceived temples or religious institutions as resource centres to strengthen their political and economic power through the nexus of religion.

In addition, Pandiya, Pallava and later Chola rulers gave importance to Brahmin, the so-called cultural elite and a priest, and it helped Brahmins to consolidate their position in society. Burton Stein, the medieval historian, stated that the adoption of devotional, temple-centred form of ritual by Brahmins required a new scale of support from the peasants of the plains.[78] The *Velvikkudi* Grant of Parantakan Nedunjadaiyan (769-770), the Pandiya king, mentioned that the village Velvikkudi was gifted to a person Narkorran also known as Korkai Kilan by the Pandiya ruler, Palyagasalai Mudukudumipperuvazhudi when he completed *velvi* (yagna).[79] The Pandiya ruler Kadungon (590-620) gifted a village of Srimangalam as a *Brahmadeyam* to twelve Brahmins.[80] The Brahminisation influenced the indigenous Tamil and emphasized the Brahminical ideology in their society. Brahminical

ideology created its own mythology and legends in Tamil country. Brahminical ideology linked kings and Brahmins together. Kings and Brahmins were interdependent for their social and economic status. The construction of temples and establishment of *Brahmadeyas* satisfied both the economic needs and consolidation of the vast empire.[81] In medieval period, Cholamandalam[82] and Tondaimandalam[83] witnessed the higher number of Brahmin settlements. Sathianathaier, the Tamil scholar, in his work *History of Nayaks of Madurai,* numbered 646 *brahmadeya* in medieval Tamilakam and most of them located in Tondaimandalam (307), Cholamandalam (300), Pandiyamandalam[84] (25) and Kongumandalam[85] (14).[86]

The *bhakti* (devotional worship) movement of medieval Tamilakam systematically enhanced the popularity of the agamic religion by using the temple site.[87] The concept of *bhakti* was used to consolidate the contradictory agrarian relations of contemporary village society.[88] The initial phase of the *bhakti* movement side-lined caste differences and brought all in an umbrella coalition called Saivite (who considered Lord Siva as a supreme deity) and Vaishnavite (who considered Lord Vishnu as a supreme deity). The propagation of the *bhakti* ideology by Tamil *bhakti* saints and the patronage by the kings and nobles increased the importance of temples. The *bhakti* saints, who are identified as Nayanmar (Saivite saints) and Alvar (Vaishnavite saints), propagated the ideas, themes, and symbols from one level to another. They acted as cultural mediators, and it is difficult to exaggerate the importance of oral tradition as a medium for the dissemination of ideas in traditional India.[89] They used music and dance as a powerful medium for the diffusion of the *bhakti* ideology.[90] They culturally linked village and town, Brahmin and non-Brahmin, north and south, the traditional folk and classical cultures, and the little and the great traditions.[91] Rajan Gurukkal mentioned that the saints were fundamentally connected to the expansion of *Brahmana* localities.[92]

The *bhakti* ideologies created a strong antagonism against the heterodox religions such as Buddhism and Jainism. It created a strong sense of belongingness to Brahminical religion in the Tamil country.

The sacred geography could establish the historicity of the conflict between orthodox religions and heterodox religions. Champakalakshmi pointed out that the period of the fifth to the twelfth centuries was one of conflict and persecution, and of the triumph of Brahminical religions over the Sramanic religions.[93] The stories of persecution were narrated in the later Saiva hagiological works like *Periya Puranam* (twelfth century Saiva text) and later *Thalapuranam* (texts of temple history from twentieth to eighteenth century). The *bhakti* exponents themselves gave vent in their hymns to their animosity towards Buddhist and the Jains in no uncertain terms.[94]

The mythologies of the *bhakti* saints detailed the religious conflict between the heterodox and orthodox religions. Tirunavukkarasar *alias* Appar was one of the important Saiva Nayanmars. He was converted from Jainism to Saivism with the influence of his sister, Tilakavathi. The Cave inscriptions of Tiruchirappalli recorded the conversion of the Pallava king, Mahendravarman I.[95] The converted Appar advised the Pallava king to destroy the monastery of Jains at Pataliputra and used its materials for constructing a Siva temple called Gunadaravichchuram in Tiruvadhigai.[96] Another prominent Saivite saint, Tirunanacampantar, who composed the first three Tirumurais of *Panniru Tirumurai* (the twelve sacred texts of Saiva sects), was connected with the persecution of the Jains in Tamilakam, especially in Madurai (the capital city of Pandiya dynasty), Aroakkam, Magaral, and Aryaperumbakkam in the Tondaimandalam.[97] Mangayarkarasi, the Pandiya queen, and Kulachchirai, the minister of Pandiya dynasty, invited Campantar to influence the Pandiya king Maravarman Arikesari[98] (640-670) to perish Jains from the state. The conflict ended with the massacres of Jains in the state.[99] Campantar stated that the Brahmins should live long, the glory of the king should prosper and the bad things (Jain) should fade.[100] The other Saiva saints also propagated Saivism and popularize the sacred geography in the Tamil country. Dandi Adigal and Nami Nandi Adigal entered into conflict with Jains in Tiruvarur. Tirumangai Alvar, the contemporary of Nandivarman II Pallavamalla (730-795), robbed the Buddhist *vihara* at

Nagapattinam of a golden statue of the Buddha to carry out additions to the Vishnu temple at Srirangam.[101]

The Tamil *bhakti* saints deemed all the centres as sacred and introduced the practice of visiting the sites and singing about them, and thereby the concept of pilgrimage became popular, thus created a cognitive region called sacred geography. The Saivite and Vaishnavite saints travelled through the countryside and praised the deities and the temples believed to be sacred to them. Each hymn is said to have been composed at a particular place and either the name of that place or the name under which the god was worshipped there was usually mentioned in the text of the hymns. The temples that were eulogised by the Saivite saints for a particular temple are called as *padalpetrathalam* or *vaipputhalam*.[102] According to the tradition, there were 274 Saivite temples *(pati, thalam)*[103] in Indian subcontinent and temples that were extolled by Alvars were known as *mangalasasanampetrathalam* or collectively called as *tirupadhikal,* which were numbered as 108.[104] The importance of a *padalpetrathalam* or *mangalasasanampetrathalam* can be easily understood from the fact that even in modern days, a rich and pious moneylender of *Nagaratar* (medieval merchant community) would never consider renovating any other temples than that which was sanctified in the songs of a saint.[105]

The temples, *padalpetrathalam* or *mangalasasanampetrathalam,* received special prominences in the society. It is the detailed study of these references which allows us to reconstruct the sacred geography of medieval Tamil Saivite and Vaishnavite traditions. The hymns expressed an altogether new religious sensibility, an intimate devotion to the personal deity that was the characteristic feature of the temple centred *bhakti*.[106] There were few temples frequently mentioned among all other sacred centres and popular in the hymns of the saints. Brahmapuram temple in Sirkazhitaluk of Thanjavur district in modern Tamil Nadu is one among them that was repeatedly referred to in the hymns under a dozen names. Tiruvarur temple, located only about eight miles south of Brahmapuram, was repeatedly eulogised in the

hymns of all three saints.[107] In Vaishnavite tradition, all the credit goes to the centres like Srirangam and Tirumalai (modern Tirupathi), which was mostly eulogised by Alvars. The position of the deity in the sanctum was special in Vaishnavite traditions. The posture differed from temple to temple. Sixty-seven idols of Vishnu in the 108 sacred temples were in a standing posture, seventeen idols were on sitting posture and ten idols were in a lying down posture.[108]

In general, these temples were widely spread and concentrated in Tamilakam and their distribution pattern also interesting.[109] The delta region of the Cauvery was one of the most densely populated parts of Tamilakam[110], and it has a greater number of temples. However, in Pennai, Vaigai, and Tamirabarani river valleys, the number of temples were comparatively lesser than in Cauvery Delta.[111] Out of 274 Saiva sacred shrines, 269 were situated in southern India and the remaining few were in the Himalayan regions.[112] As far as Vaishnava shrines are concerned, ninety-five shrines were in Tamilakam and the remaining thirteen were spread over northern India.[113] The 269 and ninety-five Saivite and Vaishnavite temples were unevenly distributed. The fertile Cholamandalam had the 190 Saivite and forty Vaishnavite temples. The rest of the temples were in Pandiyamandalam that conceded fourteen Saivite temples and eighteen Vaishnavite temples; Tondaimandalam had thirty-two Saivite temples and Vaishnavite temples, Nadumandalam had twenty-two Saivite temples and two Vaishnavite temples, Kongumandalam had fourteen Saivite temples and Malaimandalam had only one Saivite temple and thirteen Vaishnavite temples. There is no Vaishnavite temple in Kongumandalam, Eelam (modern Sri Lanka) and Tulu Nadu.

Conclusion

The medieval Tamil sacred geography explained the social transition of the primitive to an agrarian society. The Saivite and Vaishnavite *bhakti* saints propagate the *bhakti* tradition and temple centred religious activities. The temples that were eulogised by the Saivite and Vaishnavite saints were called as *padalpetrathalam* and

mangalasasanamthalam. The *bhakti* movement became a strong base for orthodox religion and created an antagonism towards heterodox regions of Buddhism and Jainism. They popularised the Brahminical religion and caste consolidation of the Tamil society.

Notes

[1] Pithawalla, M.B. 'Geography and Culture', *The Indian Geographical Journal,* vo1. l6 (4), 1941, p.378.
[2] *ibid,* p. 376.
[3] *ibid,* p. 377.
[4] Eck, Diana L. *India: A Sacred Geography, N*ew York, 2012, pp. 1-3.
[5] Bridgwater, William and Seymour Kurtz. ed., *The Columbia Encyclopedia,* New York, 1963.
[6] *ibid.*
[7] Bridgwater, William and Seymour Kurtz. 1963, *op.cit.*
[8] John Pinkerton is the author of *Modern Geography* (1802) and he discussed about nature and methodology of geography.
[9] Sitwell, O. F. G. 'John Pinkerton: An Armchair Geographer of the Early Nineteenth Century', *The Geographical,* vol. 138 (4), 1972. p. 472.
[10] *ibid.*
[11] Walker, Deward. 'Sacred Geography in Native North America', in Bron Taylor, ed., *Encyclopedia of Religion and Nature,* London, 2005, p.1449.
[12] Eliade, Mircea. *The Sacred and the Profane: The Nature of Religion, S*an Diego, 1957, p. 26.
[13] Durkheim, Emile. *The Elementary Forms of Religious Life,* New York, 1995, p. 441.
[14] Eliade, Mircea. 1957, op.cit, 10.
[15] Thorley, Anthony. 'Sacred Geography: A Conceptual Work in Progress', *Spica,* vol. IV (2), 2016, p.4.
[16] *ibid,*
[17] *ibid,*
[18] *ibid,*
[19] *ibid,* p.8.
[20] Lootah, Mai. 'Science and Scripture: How did Faith Influence Cartographic Methods used to Determine the Qibla, The Sacred Direction of Islam?', *Spica,* vol. IV (2), 2016, pp.32-59.
[21] Eliade, Mircea. *1957, op.cit,* p.12.
[22] *ibid.*
[23] *ibid.*
[24] Srirangam is the famous Vaishnava temple, which is located in Tiruchirappalli, the modern district of Tamil Nadu, India.

[25] Kashi is the famous Saiva temple, which is located in Varanasi, Uttar Pradesh, India.

[26] Eck, Diana L. 2012, *op.cit.*

[27] Townsend F, Richard. 'Geography', in Mircea Eliade. ed., *The Encyclopedia of Religion,* Vol. V, New York, 1987, p.509.

[28] Eck, Diana L. 'India's Tirthas: 'Crossings' in Sacred Geography', *History of Religions,* Vol. 20 (4), 1981. p.323.

[29] *ibid* p.324.

[30] Blake, Kevin S. 'In Search of a Navajo Sacred Geography', *Geographical Review,* Vol. 91 (4), 2001. p.715.

[31] Tamilakam is a cognitive cultural region of Tamils. According to *Chilappathikaram* (Classical Tamil literature), the geographical limit of Tamilakam were from Venkata Hills (Tirupathi) in the North to Cape Comorin in the South and from the Bay of Bengal in the East, to the Arabian Sea in the West of modern Indian Subcontinent.

[32] Kailasapathy, K. *Tamil Heroic Poetry.* Oxford. 1968. p.3.

[33] *ibid,*

[34] Subbiah, Ganapathy. *Roots of Tamil Religious Thought,* Pondicherry, 1991, p.160.

[35] Zvelebil, Kamil. *The Smile of Murugan on Tamil Literature of South India,* Leiden, 1973, p.20.

[36] Rajan, K; R. Sivanantham and M. Seran. *Keeladi: An Urban Settlement of Sangam Age on the Banks of River Vaigai.* Chennai. 2019.

[37] The Tamil literary historians positioned *Paripadal* and *Tirumurukattruppadai* as literature of the post-Sangam period based on its content and ideology.

[38] Vaiyapuri Pillai, S. *Tamizhar Panpadu* (Tamil Culture), Chennai, 1949, p.41.

[39] Kanakasabhai, V. *The Tamils Eighteen Hundred Years Ago,* New Delhi, 1904, p. 230.

[40] *Naanmaraiviriththunallisaivilankum*
vaimozhippulaviryi! kenminsiranthathu;
katharkamamkamaththuchsiranththathu; Paripadal, Song no. 9. Lines. 11-15. (Kesikan, Puliyurk. *Ettuthokaiyul Onrakiya Paripadal: Mulamum Uraiyum,* Chennai, 2009, p.93.).

[41] The word Tamil refers to language and people, who are living in the southern part of Indian subcontinent.

[42] Zvelebil, Kamil. 1973, *op.cit,* p.12.

[43] Sangam literature is the earliest collection of poems of ancient Tamils. The poems were composed between 200 B.C.E. and 300 C.E. The unique anthology is divided into *akam* (inner world) and *puram* (outer world) based on the content, which it discussed.

[44] Sivathamby, K. 'Early South Indian Society and Economy: The Tinai Concept', *Social Scientist,* vol. 3 (5). 1974, p.25.

[45] Selby, Martha Ann and Indira Viswanathan Peterson. ed., *Tamil Geographies: Cultural Constructions of Space and Place in South India,* Albany, 2008, p.4.

[46] Zvelebil, Kamil. 1973, *op.cit*, p.20.
[47] *ibid*, p.100.
[48] Sivathamby, K. 1974, *op.cit*, pp.21-22.
[49] According to the *attruppadai* tradition, the bards are moving from place to place for patronage and guide them to specific places in different eco-zones.
[50] Sivathamby, K. 1974, *op.cit*, p.25.
[51] Zvelebil, Kamil. 1973, *op.cit*, p.12.
[52] *ibid*.
[53] Champakalakshmi, R. *Religion, Tradition and Ideology: Pre-Colonial South India*, New Delhi, 2011, p.13.
[54] Zvelebil, Kamil. 1973, *op.cit*, p.48.
[55] *ibid*,
[56] Selby, Martha Ann and Indira Viswanathan Peterson. 2008, *op.cit*, p. 8.
[57] Champakalakshmi, R. 2011, *op.cit*, p.14.
[58] *ibid*, p.438.
[59] *ibid*.
[60] Sivathamby, K. *Drama in Ancient Tamil Society*, Madras. 1981. p. 84.
[61] Tirupparankunram is situated in the west of modern Madurai district in Tamil Nadu.
[62] In modern days, the place is known as Tiruchendur, which is located in Tirunelveli district of Tamil Nadu.
[63] Tiruvavinankudi is identified as Palani and it is situated in Dindigul district of Tamil Nadu.
[64] Tiruverakam is known as Suvamimalai that located on the hill lock of Kumbakonam district of Tamil Nadu.
[65] The abode is found as modern Tiruttani, which is located in Thiruvallur district of Tamil Nadu.
[66] The temple is located in Madurai district of Tamil Nadu.
[67] Champakalakshmi, R. 2011, *op.cit*, p. 199.
[68] *ibid*, p. 197.
[69] *ibid*, p. 198.
[70] *ibid*, pp. 197-198.
[71] *ibid*, p. 199.
[72] Spencer, George, W. 'The Sacred Geography of the Tamil Shaivite Hymns', *Numen*, vol. 17 (3), 1970. p.6.
[73] Gurukkal, Rajan. *Social Formation of Early South India*, New Delhi, 2012, p.292.
[74] Subbarayalu, Y. *South India under the Cholas*, New Delhi. 2013. 148.
[75] *Jeevanandam*, S and Rekha Pande. 'Temples in Medieval Tamilakam - A Study of Institutional Linkages', in K. Krishna Naik and E. Siva Nagi Reddi ed., *Cultural Contours of History and Archaeology*, Volume -VI, Architecture. New Delhi. 2015, p.81.

[76] Gurukkal, Rajan. 2012, *op.cit*, pp.291-305.
[77] *ibid*.
[78] Stein, Burton. *Peasant State and Society in Medieval South India*, Oxford, 1984, p.83.
[79] Krishna Sastri H. ed, *Epigraphia Indica*. vol. XVII. New Delhi, 1923-24 (Rpt. 1983) pp.291-309.
[80] Nagaswamy, R. *Studies in Ancient Tamil Law and Society,* Madras, 1978, p. 5.
[81] Jeevanandam, S. 'The Sacred Geography of Medieval Tamilakam - A Study of Distribution Pattern of Saiva and Vaishnava Temples', in Birendranath Prasad. ed., *Monasteries, Shrines and Society: Buddhist and Brahmanical Religious Institution in India in Their Socio-Economic Context,* New Delhi, 2011, p. 248.
[82] The physical boundary of Cholamandalam is the present day districts of Thanjavur, Tiruchirapalli, Tiruvarur, Nagapattinam and Chidambaram.
[83] Tondaimandalam is the geographical division of modern Kancheepuram, Vellore, Thiruvannamalai, partly Cuddalore and Viluppuram districts of Tamil Nadu and Chittor district of Andhra Pradesh.
[84] The landscape of Pandiyamandalam is covered with the modern districts of Madurai, Theni, Tirunelveli, Sivagangai, Thoothukudi and Virudhunagar.
[85] Kongumandalam is the part of present day districts of Salem, Karur, Erode and Coimbatore.
[86] Sathianathaier, R. *History of Nayaks of Madurai,* Madras, 1924, pp.23-30.
[87] Gurukkal, Rajan. 2012. *op.cit*, p. 293.
[88] *ibid,*
[89] Spencer, George W. 1970, *op.cit,* p. 242.
[90] Gurukkal, Rajan. 2012. *op.cit*, p. 294.
[91] Singer, Milton. 'The Cultural Pattern of Indian Civilization' *Far Eastern Quarterly,* vol. XV (I), 1955, pp. 32-33.
[92] Gurukkal, Rajan. 2012, *op.cit*, p. 292.
[93] Champakalakshmi, R. 2011, *op.cit*, p. 438.
[94] *Ibid,* p.439.
[95] E. Hultzsch. (trans. and ed.), *South Indian Inscriptions.* vol. **I,** Madras, 1890, no. 33.
[96] Vellaivaranan, Ka. *Panniruthirumurai Varalaru,* vol. **I,** Annamalai Nagar, 1972, p.204.
[97] *ibid*, pp.60-171.
[98] The Pandiya king, Maravarman Arikesari (640-670) was also known as Kun Pandiya and Ninra Sir Nedumaran.
[99] Vellaivaranan, Ka. 1972, *op.cit,* pp. 123-148.
[100] *ibid*.
[101] Sastri, K.A.N. *Development of Religion in South India,* Bombay, 1963, p.46; Minakshi, C. *Administration and Social Life under the Pallavas,* Madras. 1977, pp. 207-208.

[102] Pillai. K.K. *Thamizhaga Varalaru Makkalum Panpadum*, Chennai, 2009, p. 233.
[103] Peterson, Indira Viswanathan. *Poems to Siva,* New Delhi, 1989, p.12.
[104] Pillai, K. K. 2002. *op.cit*, p. 233.
[105] Chettiar, Ramachandra. 'Geographical Distribution of Religious Places in Tamil Nadu', *The Indian Geographical Journal,* vol. 16 (1), 1941, p.45.
[106] Gurukkal, Rajan. 2012, *op.cit*, p. 293.
[107] Spencer, George. 1970, *op.cit*, p. 239.
[108] Etiraj, A. 108, *Vaishnava Divya Stala Varalaru,* Karaikudi, 2006, pp.25-26.
[109] Jeevanandam, S. 2011, *op.cit,* p.242-252.
[110] Davey, Ranganatha T.B. 'The Historical Geography of the Cauveri Delta with Special Reference to the Tanjore District', *Journal of Madras Geographical Association*, vol. 12 (2), 1987, pp.83-94.
[111] Spencer, George W. 1970, *op.cit*, p. 236.
[112] Peterson, Indira Viswanathan. 1989, *op.cit*, p.12.
[113] Jeevanandam, S. 2011, *op.cit*, p.245.

Revisiting a Tenth Century Copper Plate Inscription : A Rāṣṭrakūṭa Record Restruck by the Paramāras

Dev Kumar Jhanjh

The importance of Copper-plate charters, for understanding the history of early-medieval India (c. 600-1300 CE), is undeniable. The absence of any paramount power in this phase, paved the way for the emergence of several regional powers, whose political ambition led them to engage into constant conflicts to prove/claim their supremacy. Prominent among them were the Pālas of eastern India, Pratīhāras of central India, the Rāṣṭrakūṭas of Deccan and others.[1] There is a plethora of documents to understand the power politics of these powers individually, and the contestation that took place among them. This paper seeks to address a kind of power politics between the Rāṣṭrakūṭas and the Paramāras through the study of a copper-plate charter, which typifies one of these political contestations. The charter is further interesting and important because it is a restruck copper-plate, initially a Rāṣṭrakūṭa record which the Paramāras attempted to obliterate to engrave their own statement, at a later period.

Before embarking upon the detail of this inscription, we may have a look into the tradition of restriking copper-plate charters. Both D. C. Sircar[2] and Richard Salomon[3], in their pioneering works under the same heading *Indian Epigraphy,* have mentioned about the palimpsest. In Sircar's word:

> ... sometimes old or rejected copper plates were utilised for the preparation of fresh charters. In such cases, the old writing is completely lost even though sometimes traces of hammering are noticeable on the plates. But, in some cases, the old writing was merely beaten in by hammering and the text of the new document

was written on the erasure. In such records, traces of the old writing are often visible under the later writing.[4]

Some of the finest examples are the Andhvaram plates of Vajrahastadeva (c. 10th century CE)[5] (Subrahmanyam 1955-6), two inscriptions on copper plate from Nutimadugu (c.10th and 15th CE)[6], Veligalani grant of Kapileśvara (1458 CE)[7] and obviously the present Rāṣṭrakūṭa-Paramāra grant, which is the central theme of this discussion.[8]

Copper Plate of Rāṣṭrakūṭa Suvarṇavarṣadeva (Govinda IV) (Śaka 851) and Paramāra Vākapatirājadeva (V.S. 1038)

Found at the village of Gaonri, situated about 5 kms. to the north-east of Narwal (18 kms. to the south-east of Ujjain) in Madhya Pradesh, three plates were edited, without translation, with a discussion by K. N. Dikshit in 1935-36, and subsequently re-edited (excluding the Rāṣṭrakūṭa grant) in 1978, again without translation by H.V. Trivedi, who offered some new identification of ancient place names along with some alternative evaluations of the previous readings. The plates are now preserved in the Indian Museum, Kolkata.

The plates are three in number and without any seal attached to them. While the back side of the first plate decrees a Rāṣṭrakūṭa charter, others explicitly belong to the Paramāras. The plates measuring 38.10/39.37cms. x 26.03/26.67cms. x 3mms. and weighing 6.43 kgms.[9], spread across twenty-two (Rāṣṭrakūṭa) and fifty-four lines (Paramāra). On the proper left side (wrongly called right side by Prof. Trivedi[10]) of the bottom of the last plate of the Paramāra record is incised a representation of flying Garuḍa in human form, with the nose of a bird, wearing a crown and holding a snake in the left hand with the right hand raised. The text of both the inscriptions is written in Sanskrit, with some errors in some parts; the character of the Rāṣṭrakūṭa epigraph is of northern variety; and the Paramāras used *Devanāgarī* script to engrave their statement. While the Rāṣṭrakūṭa record is dated Sunday the full-moon day of *Māgha* in the Śaka year 851 Vikṛita-Samvatsara (930 CE), the Paramāra grant was issued

52 years after the former-full moon day of *Kārttika* in the (Vikrama) year 1038 (982 CE).

The repeated mention of the Rāṣṭrakūṭas and the Paramāras in a single epigraph naturally arises multiple questions. Why and how did the Paramāras get hold of the Rāṣṭrakūṭa record and subsequently attempt obliterating earlier writings to engrave their own record on the same inscription? Is it merely an indication of the Rāṣṭrakūṭa-Paramāra political clash? Or there is something beyond this? These are the questions which we are going to address, and finally an attempt will be made to understand its overall significance. These queries push us to look into the details of the document to explore the proper picture.

During the ninth and first half of the tenth centuries CE, the Rāṣṭrakūṭas of Mālkheḍ and the Gurjara-Pratīhāras of Malwa continued their long-term political rivalry. From the time of Gurjara-Pratīhāra king Vatsa (c.783-84 CE) and Nāgabhaṭa II (c.815-33 CE) and Rāṣṭrakūṭa rulers Dhruva and Govinda III (c.783-815 CE), they, with brief intervals, continued their fight for about a hundred and fifty years.[11] After the Gurjara-Pratīhāras, with the rise of the Paramāras in Malwa, they inherited this former pattern of rivalry. The third quarter of the tenth century CE witnessed the political rivalry between the Rāṣṭrakūṭas and the Paramāras.[12] The Panher inscription informs us about the political contestation between Rāṣṭrakūṭa ruler Khoṭṭiga (c.967-972 CE) and Paramāra king Siyāka (c.945-972 CE) and the conquest of the former.[13] Dhanapāla's *Pāiyalacchi* (verse. 276) (c.972-973 CE), besides corroborating this event, also throws light on the devastation of Mālkheḍ, the Rāṣṭrakūṭa capital by Paramāra Siyāka.[14] This time he looted the booties from the Rāṣṭrakūṭa treasury and it is possible that the said copper plate, also following the same route perhaps, finally reached Malwa.[15] This plate belongs to Subarṇavarṣadeva (Govinda IV) (c.918/19-934 CE), the son of Nityavarṣa (Indra III). The object of the inscription was to record the donation of an area namely Payalipattana (line-13) situated in the western boundary of Mānyakheṭa or Mālkheḍ to establish a *sattra* or charitable feeding house where a thousand brāhmaṇas belonging to

different groups were to be fed — 360 Karṇāṭaka brāhmaṇas of Mālkheḍ, 300 belonged to the Kaṇvaśākhā, 240 Karahātaka brāhmaṇas, 72 *Catuścaraṇa* brāhmaṇas and 28 *Sahasrasāmānya.* The boundaries of the granted locality from the east were the Karigrāma, Maṇḍavaka, Nandasura, Nandalagrāma, Nāsapura, Yamalagrāma, Vellavaśa, Dhammaṇagrāma, Sellavi and Kapitthakheḍa. None of these localities have been identified. The donated land Payalipattana has been labelled as a village by Dikshit, the editor of the inscription. But the term *Pattana* as a suffix to a place name denotes a township.[16] Besides, the presence of the expression *śulkotpatti* (line. 14) can only express its association with trade. *Śulka* was a transit duty which included toll, i.e. a tax for using roads or rivers, and octroi, a tax on the articles brought in for sale.[17] And here with the help of Google satellite imagery we find the Kagina river which was situated to the west of Mālkheḍ, possibly some area near Payallipattana as its location was on the same direction. Moreover, the establishment of a vast charitable feeding house for thousand brāhmaṇas, though the number may be conventional, is unlikely to have been located in a rural space.

We may now turn our attention to the Paramāra charter of Vākpatirājadeva (c.974-994 CE), the son of Siyāka, grandson of Vairisiṁha, the great grandson of Kṛṣṇarāja. It records the grant of seventy-eight portions of village Vaṇikā situated in the Āvaraka-*bhoga* in the Hūṇa-*maṇḍala* to twenty-six (wrongly stated thirty-six by Prof. Trivedi)[18] brāhmaṇas hailing from different parts of the country. According to Prof. Dikshit, Hūṇa *maṇḍala* evidently refers to the country ruled over by the Hūṇas in Malwa. The granted land Vaṇikā is to be identified with the village of Benkā, 15 miles north-west of Awār near which the Āvaraka-*bhoga* was placed. On the contrary, Prof. Trivedi inclined to identify this Āvaraka with the village known as Āvrā (approximately 30 kms. by road from Shāmgaḍh) wherefrom about 10 kms. in south-east there is Banī village which he identifies with Vaṇikā village and located it in present day Mandsaur district (in Madhya Pradesh) instead of Ujjain proposed by Dikshit.[19]

The present record is one of the most valuable accounts regarding the migration of the brāhmaṇas. Here we come across twenty-six

brāhmaṇas hailing from different parts — Bengal (Dakṣiṇa Rāḍha) Magadha, Madhyadeśa, Śrāvasti etc.; they received the share according to their qualification. Thus, the granted portions *(aṁśa)* to the Ṛgvedic brāhmaṇas are much more than the *Sāmavedi* and *Yajurvedi* brāhmaṇas, Therefore, the Magadha brāhmaṇa Sarvānanda, trained in *Ṛgveda* received eight *aṁśa* (….. *brāhmaṇasarvvānandāyapaṇḍitadīkṣi[ta] lokānandasunaveaṁśaustau…* line-14-15). Another Ṛgvedic brāhmāṇa Donāka from Dakṣiṇa Rāḍha acquired five *aṁsa* (...*brāhmaṇadonākāya-gosaraṇasu(sū)nave aṁśapaṁca …* line-21-22) which is more than the others. While in total four Ṛgvedic brāhmaṇas got nineteen shares (approx. five portions per head), Sāmavedi eleven brāhmaṇas acquired thirty-four portions (a little more than three portions individually) and the rest eleven Yajurvedi brāhmaṇas received twenty-five shares (about two and half portions each). However, the numerical strength of the Sāmavedi and Yajurvedi brāhmāṇas are much higher than the Ṛgvedic one and their immigration in large numbers from other areas also suggests their necessity for performing Sāmagāna for the Sāmavedis and the performance of sacrificial rituals by the Yajurvedis. These differentiation clearly reflects the social division among the brāhmaṇas, whose identity have clearly been mentioned here by citing their names, fathers' names, original places, *veda* and *śākhā*, *gotra* and *pravara*, portion of granted village. Below we present a chart by mentioning the details of each brāhmaṇas:

Sl. No.	Name of Donne	Father's Name	Original Place	Veda and Śākhā	Gotra and Pravara	Parts of Village granted
1	Sarvānanda	Dīkshita Lokānanda	Kanopā in Magadha	Rgveda, Bahvṛca	Sāmkṛitya-3	8
2	Mūlasthāna	Brahmapa-ṇḍita	Ayaka in Madhya-deśa	Sāmaveda, Chandoga	Vaśiṣṭha	3
3	Lohiṇa	Īśvara	Kāvaḍa	Yajurveda, Vajimādh-yandina	Gautama-3	3
4	Candrāditya	Pitavāsa	Candrāditya	Sāmaveda, Chandoga	Śāṇḍilya-3	4

Sl. No.	Name of Donne	Father's Name	Original Place	Veda and Śākhā	Gotra and Pravara	Parts of Village granted
5	Śābara	Raṇāditya	Kulāñcā	Do	Do-3	2
6	Agnihotrin Lohapa	Vāsudeva	Avivā in Aśuresa-maṇdala	Do	Vatsa-5	4
7	Donāka	Gosaraṇa	Vilvagavāsa in Dakṣiṇa Rāḍha	Do	Parāśara-5	5
8	Anantāditya	Surāditya	Khaḍupa-llikā	Yajurveda, Vājimādhya-ndina	Maudgalya-3	2
9	Vāmanas-vāmin	Dīkṣita Hari	Pauṇḍarika in Uttarakula	Sāmaveda, Chandoga	Gārgya-5	3
10	Ātuka	Ṛsiula	Umvarācara	Yajurveda, Vājimādhy-andina	Agastya-3	1
11	Puruṣottama	Līhā	? in Madhyadeśa	Do	Maitreya-3	4
12	Govindas-vāmin	Devasvā-min	Madhu-pālikā	Sāmaveda, Chhandoga	Kāśyapa-3	3
13	Sihaṭa	Mitrānanda	Śravaṇa-bhadra	Ṛigveda, Bahvṛca	Vatsa-5	4
14	Śaṅkara	Devāditya	Dardurikā in Sāvathikā	Śāmaveda, Chandoga	Bhārgava-3	2
15	Madhuma-thana	Acala	Mitilapāṭaka in Sāvathikā-deśa	Yajurveda, Vājimādhy-andina	Parāśara-3	2
16	Svayaṁtapa	Śrīnivāsa	Kheḍāpālikā	Do	Mauni-3	3
17	Nenaiyaka	Madhu	Kheṭaka	Ṛigveda, Bahvṛicha	Bharadvāja-3	4
18	Jāmaṭa	Viṣṇu	Ānoha	Yajurveda, Vājimādh-yandina	Bhārgava-3	2

Sl. No.	Name of Donne	Father's Name	Original Place	Veda and Śākhā	Gotra and Pravara	Parts of Village granted
19	Dedeka	Do	Do	Do	Do-3	2
20	Āvasthika Śarvadeva	Lohaṭa	Sopura	Sāmaveda, Kauthuma	Śāṇḍilya-3	2
21	Varāha	Śrīdhara	Kharjūrikā	Sāmaveda, Chhandoga	Māhula-3	4
22	Āśāditya	Māhula	Dapura	Ṛgveda, Bahvṛca	Vārāha-3	3
23	Bhāila	Hari	? in Lāṭadeśa	Yajurveda, Vājimādh-yandina	Kāśyapa-3	1
24	Devāditya	Līlāditya	Rājakīya	Sāmaveda, Chandoga	Vatsa-5	2
25	Muṁjāla	Īśvara	Nāndipura in Lāṭadeśa	Yajurveda, Vājimādh-yandina	Bhāradvāja-3	2
26	Amātta	Guṇākara	Śravaṇa-bhadra	Do	Vatsa-5	3

It is very difficult to identify the exact locations of these place names, wherefrom the above mentioned brāhmaṇas migrated. Sometimes it refers to a wide area and not a particular spot as the original home of the donee, i.e., the area of Madhyadeśa mentioned in this record, covers a vast region. According to Sircar, on the basis of *Manusmṛti* its eastern limit extended till Allahabad, Magadha according to the *Brahmāṇḍa* and *Vāyu Purāṇa*, and Varanasi according to Rājaśekhara's *Kāvyamīmāṁsā*, and Kājaṅgala (Kankjol near Rajmahal hills) and Puṇḍravardhana (Mahasthan in Bogra dist. in Bangladesh) in the *Mahāvagga* and *Divyavadāna*.[20] K. K. Dasgupta, therefore, concludes that the whole territory between the upper and middle Gangetic basin and the Yamuna-Chambal area is the central point of Madhyadeśa.[21] So, it is hardly possible to locate the exact location of the brāhmaṇas coming from Madhyadeśa. It is to be mentioned here

that as Madhyadeśa is viewed as a pre-eminent zone, a brāhmaṇa hailing from Madhyadeśa or claiming to have hailed from these, would possibly lead a special status or prestige to such a brāhmaṇa (brāhmaṇas). The ruler granting land to such brāhmaṇas, naturally would claim himself as patron of such eminent brāhmaṇas and thereby establish his own pre-eminence.

There are many more places like Madhyadeśa where identifying the exact location is problematic. Still attempt has been made to identify and re-identify the place names mentioned in the said epigraph by the editors. The place name Kulāñcā, wherefrom brāhmaṇa Raṇāditya hailed from, has been located by Dikshit in the Bogra district of North Bengal. According to D.C. Sircar, this place was inhabited by the *Kulina* brāhmaṇas and was situated in Śrāvasti region of Uttar Pradesh,[22] while R.S. Sharma identifies it with Korañca near Varanasi.[23] Another locality, mentioned in this Paramāra grant as Śāvathideśa or Śāvathikā, has been placed by Dikshit in some areas which lay between North Bogra and South Dinajpur in Bengal. Again, the identification of the Śāvathi is problematic as we find its various locations. P. N. Bhattacharya has suggested its different locations. Besides its location in Uttar Pradesh as Śrāvasti, he cited another Śrāvasti in old Kāmarūpa.[24] B.P. Mazumdar has expressed his doubts in identifying Sāvathideśa with Śrāvasti.[25] Place names the Kharjurikā, Sopura, Dapura, Āhoha, Avivā and Rājakīya *grāma* of the present grant have been posited within the province of Malwa by both the editors of the plate. In fact, Prof. Trivedi, moving further has traced out a number of villages resembling these names in Malwa. For example, Kharjurikā has been identified with Khajūriā-Paramār, Dapura with Devar, Rājakīya *grāma* with Rānevās or Rāipuriyā etc.[26]

Most of the brāhmaṇas mentioned in the Paramāra record are non-local. As these brāhmaṇas hailed from widely dispersed zones to Malwa, it may further demonstrate how Malwa was connected with these areas. Malwa's position as a corridor between north India and peninsula and its contacts with Gujarat in the west are clearly borne out in this record. In contrast to the restruck grant, the original

Rāṣṭrakūṭa record shows a preference for granting land to brāhmaṇas located within their own area— Mālkheḍ, Karhad etc.

Migrations of the brāhmaṇas from different areas to Malwa, evident in the above record, naturally raise the question that why did this migration take place? Put differently, what pushed these brāhmaṇas to leave their original homeland and to move towards Malwa or why the Paramāras invited them to their own terrain?

Possibly, the collapse of the Rāṣṭrakūṭas in 974 CE followed by the immediate rise of the Paramāras led the latter to invite brāhmaṇas in their homeland to mark their rule as legitimate. Even from the Rāṣṭrakūṭa realm brāhmaṇas came to Malwa. Political instability and uncertainty of the Rāṣṭrakūṭas probably compelled the brāhmaṇas living in the Rāṣṭrakūṭa territory to go somewhere else, and Malwa at that time was a destination imposed upon them by the Paramāras. That's why we see the movement of brāhmaṇa Naineyaka from Rāṣṭrakūṭa dominated Kheṭaka (Kheda of modern Gujrat) (Iine-32) and of Mumjāl from Nāndipura of Lāṭadeśa (present Nandodh of Narbada) (line-39). It continued even during the time of Paramāra king Bhoja also.[27]

Secondly, the Bengal brāhmaṇas had a strong command over the Vedas, which perhaps helped them to move beyond their realm and added further advantage to settle in a new area. The process was further accelerated by the declining condition of the Pālas, which pushed the brāhmaṇas of this area to move forward for their betterment, as mentioned by Swati Datta.[28] However, Swati Dutta's view on brāhmaṇa migration from Bengal due to waning Pāla power is not supported by the recent studies of Pāla polities.[29]

Furthermore, we have already mentioned about the migrant brāhmaṇas of Madhyadeśa, Kūlañcā, Kharjurikā, Sopura, Dapura, Avivā etc. B. N. Sharma is of the opinion that the respect and honour displayed to the brāhmaṇas of different regions by the Paramāras was responsible for this immigration to this region.[30]

Thirdly, brāhmaṇas were well accustomed with land grant donations which entailed bringing in new lands under cultivation. Thus, donating

land to them indirectly enhanced the process of agriculture. With addition to this, in this way, sometimes uncultivated area could also come indirectly under the arena of Sanskritization.[31]

Fourthly, the brāhmaṇas were sought after for legitimising a newly emerging power, especially during a victorious campaign. They had the expertise of imposing legitimacy to the rulers, particularly to those who lacked proper pedigree. That's why, these rulers invited them to make their prestigious genealogy, which would connect them with Solar or Lunar lineage, and donated the land to enhance their esteem. It is to be mentioned here that many theories exist regarding the origin of the Paramāras.[32] We do not know whether they belonged to high or low origin. If they had belonged to lower strata of the society, then there would be a considerable amount of possibility for inviting the brāhmaṇas to uphold their position.

Fifthly, economic gain played a very crucial role for the brāhmaṇas. It is to be noted here that the ruling authority was likely to have offered lucrative economic benefits to migrant brāhmaṇas. B. P. Mazumdar in his magisterial survey on fifty-seven inscriptions of north India has drawn the graph of economic gains acquired by this brāhmaṇas. In his word, 'It is possible to argue the threat of penury and the prospect of better living may have led to such movements of brāhmaṇas from the original habitats'.[33] Though Prof. Mazumdar has pointed out that in this procedure the local brāhmaṇas enhanced their position, but in our case it was opposite. Here, the brāhmaṇas from distant areas received prestigious portion in comparison to the local brāhmaṇas. This happened because the Paramāras maintained the criteria of donating land on the basis of Vedic learning which enabled the Ṛgvedic brāhmaṇas to score first, as we have seen earlier.

The above discussed Paramāra grant also reflects the presence of different administrative post like *Pattakilajanapada* (line : 8-9). This *Pattakila*, according to D.C. Sircar, stands for village headman[34] and in that way *Pattakila janapada* probably indicates to the post of head of *janapada.* We also find the mention of village unit like *maṇḍala, bhoga*

(line-7) etc. along with the mention of reference of taxes like *hiraṇya, bhāga, bhoga* (line-13). Pratipal Bhatia considers *maṇḍala* as the biggest unit divided into *viṣaya* and *bhoga* and which can further be subdivided into different *pāṭakas*.[35] From this division we can assume the hierarchies of Paramāra administration. The concept of hierarchy, according to B.D. Chattopadhyaya, can be considered in terms of both how rural residents were socially organised and how differentially individual villages existed in rural landscape.[36] The donee mentioned in the said record was not privileged with any administrative right. For that, they probably had to depend on the administration, *(pūrvoktṛvirabhuktābhuktikrameṇayathāsaṁbaddhamāna)*.[37] It is important to note that during c. 10th-11th century CE, copper plate charters often indicate natural boundary markers to delineate the granted portion of land from another. Significantly, in this land grant from Malwa no such boundary specifications are mentioned. On the other hand, we only have the names of the neighbouring villages as boundary markers, which possibly signify the area as the settled one. The significance of the above discussed inscription is manifold. The purpose of reissuing old record, as evident in present instance, possibly was done with political intention, since the Rāṣṭrakūṭa and Paramāra rivalry was quite well branded. The granting of plots of land to brāhmaṇas from the Rāṣṭrakūṭa territory is likely to symbolise the overpowering of the Rāṣṭrakūṭas by the Paramāras. Since the original grant recorded the donation of landed property located close to the Rāṣṭrakūṭa capital, the granted area certainly formed a part of the political stronghold of the Rāṣṭrakūṭas. By bringing the Rāṣṭrakūṭa grant and restriking the same to assign landed property in Malwa, the Paramāras seem to have underlined the claim that they succeeded in penetrating into the very core of the Rāṣṭrakūṭa domain. In that way, besides exemplifying the nature of restriking, the present record also draws the line of political contestation that occurred between the said two powers. Furthermore, its outlook on the Paramāra administration helps us to understand the political process that took

place in the then Malwa. Finally, what cannot escape our notice is the movement of the brāhmaṇas, in other words, their migration from different localities, distant as well as nearer to the Paramāra jurisdiction in Malwa, and in this way it deeply throws considerable light on the social history of Malwa too.

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We do not know why the photograph of the back side of the last plate has not been published by any editor.

Probably this is the earliest mention of the subdivision of Rāḍha in an epigraphic record.

The interpretation and re-interpretation of Jagjivanpur copper-plate of Mahendrapāla, the Pāla ruler, has thrown new light on the Pāla genealogy, which discards the theory of waning condition of the Pālas after the second half of the tenth century CE.

A brief version of this paper is available in Itihas Anusandhan, vol. xxxi, Paschimbanga Itihas Samsad, Kolkata, 2017, pp. 129-36.

Impact of Habitation Change on Traditional Health Care Practices : An Application of Cross cultural comparison in Medical Anthropology

Pinak Tarafdar

Introduction

Traditional Health Care Practices act as an indispensible age old aid mostly for the tribal population of all over the world. Traditional medical system — an ethnic specific is a comprehensive one and very difficult to put the form in a particular segment rather it mainly centers around two broad categories: 1) informal traditional medicines which include mostly folk system on social cultural aspects as well as magico-religious aspect of smaller group of people[1,2]; 2) the formal traditional medicine or a system based on concept of aurvedic, unani, sidh, nature cure, yoga, medical system etc[3]. The practice of former is primarily confined within the vicinity of the small group and the contingents are also explored and utilized through the local milieu[4]. Even the specialists (traditional healer) play optimum role if environment permits[5] which include the availability of herbal medicines as well as psychological support[6] vehemently exists in age old habitation areas. Changing of habitation place particularly for the tribal population may instigate adverse effect on any of the age old traditional practices; and traditional health care system can also be dismantled due to such undesirable incidence.

The Present Study

The present work has been conducted in a locale where a simultaneous habitation of autochthons and migrated populations are found for exploring the typical situation of cross-cultural comparison within the ambit of traditional healthcare practices. The application

of cross cultural comparison is one of the significant research techniques in medical anthropological study which enhances comprehensive understanding of age old health care traditions if it is to be studied among more than one community.

In this regard for the present study Bichline a multiethnic forest infested village comprising with Rabha, Munda and Oraon population is considered and it is situated under Rajabhatkhawa panchayat in the Alipurduar district of West Bengal.

Historical Background

A huge tribal migration took place during the later half of nineteenth century to earlier half of twentieth century specifically from chotonagpur tribal belt to North Bengal (northern part of the state West Bengal) and they had been brought by the British to join tea garden labourers. Along with Santal and Asur, Munda and Oraon are also significant[7,8]. On the other hand strong affiliation with both Mech and Koch establishes the status of autochthons for the Rabhas[9,10] which is also depicted by their age-old historical existence in the region and the surroundings.

Objectives

1. To explore the essential elements of traditional health care practices among the autochthon (the Rabha), the emphasis will also be given to unfold the contingent to the system, for instances — religion, magico-religious practices and extent of applications of herbal medicines.
2. To investigate the extent of continuation of traditional health care practices among the migrated tribal folk (Munda and Oraon) and it is also in terms of religion, magico-religious practices and extent of applications of herbal medicines.
3. To conduct a comparative study on the action of traditional healers belonging to antagonistic set of populations, the autochthons and the migrated one.
4. To evaluate the accessibility of modern biomedical healthcare institution by both of the population categories.

Methodology

The study is an outcome of the University of North Bengal sponsored research project conducted in the year 2014 in the village Bichline of Alipurduar (erstwhile Jalpaiguri district) of northern part of the state West Bengal. The entire field work was incurred for more than two months which was divided into two halves. Along with the mention of very basic quantitative data (for example number of families etc.) the article is exclusively based on various qualitative data which have been eventually collected through conspicuous research techniques viz. observation, interview, case study etc.

Village Bichline

The present ethnic composition of the village has started to grow up around 1946-1947 and the name Bichline became famous because of its middle position in between Nayabasti and Rabhabasti. Indulgence of involvement in forest based occupation might influence a number of migrated tribal population (Munda and Oraon) for staying in that locality. Even they preferred forest based jobs rather than joining as tea garden labourer. Being a dominant community[11] and as an autochthons (native) some of the Rabha people had also started to inhabit in that new settlement.

The village Bichline had been established before independence around 1930-1932, initially it was called 'forest village' and according to some of the aged informants the British administration had appointed local people to cut down the costly trees for selling.

The village Bichline is nearly about half an hour from Rajabhatkhawa station and 5-10 min. walking from Nayabasti. After Nayabasti, a mud built road straight away leads to the village Bichline, the road reaches to four points junction, mainly the left and right directions comprise the village inhabitation area and the straight away leads towards Rabhabasti. River Bamoni flows just behind the village very close to paddy fields. A multiethnic village comprises with Oraon, Nepali, Rabha and Munda population, considering the objective of the present study I have considered the Rabha, Munda and the Oraon population. Most of the Oraon families have been embraced with

Christianity. The administrative location of the village Bichline is as follows:-

District- Alipurduar (erstwhile Jalpaiguri), Block-Kalchini, Panchayat- Rajabhatkhawa, Mauza- Garobasti, Post Office- Rajabhatkhawa.

The People

The Rabha community is one of the significant scheduled tribe population inhabit in the village Bichline and the said community is characterised by distinctive customs and rituals observed throughout the year. They are primarily animistic but there is a degree of admixture of Hinduism with the traditional animism[12,13]. Rabha is a matrilineal society with usual tribe endogamy feature, the female plays pivotal role in family situation; further, most of the residences are matrilocal. Moreover, members of the society show reverence attitude to female members. Most of them speak in their mother tongue but also can communicate in Bengali which makes me comfortable to conduct the entire fieldwork. Although there were only four Rabha families in the village but the community can be recognised as dominant community[14] because of numerical preponderance in the vicinity (Rabhaline) and the surrounding areas. Agriculture, a prime occupation for the majority of the Rabha population takes place along with fishing, day labour and animal husbandry.

They have grown up a rigid sense of hierarchy as they think that they possess higher social order than that of Munda and Oraon, they never take food seating with them. But they take food from Nepali as they think that Nepali people are higher caste.

In comparison to Rabha families the Munda and Oraon families were more in number (35 families altogether) and inhabitant of the western and the eastern part of the village. Apart from their mother tongue they speak in Sandri language which is the lingua[15,16] franca of the region. They can speak in Hindi and some of them are also fluent in Bengali. Economically they are not sound and the amount of agricultural land occupied by them is less than the Rabha as the latter are the dominant community of the region. Most of them are

engaged as agricultural labourer; along with this fishing and forestry are the significant economic pursuits.

In the present context interrelation between Rabha and migrated tribal folk (Munda and Oraon) show a kind of hierarchical connotation where Rhabha grows superiority complex to the migrated one, but this perception is not completely accepted by the Munda, rather the latter do not admit that Rabhas are superior to them in any matter although both of the communities avoid inter-dining with each other and as a matter of social order marriage is strictly prohibited among them.

Concept of Health

Concept of good health among the indigenous (or the tribals) has its more accentuation on existence or non existence of supernatural entities. In spite of explanatory model[17] identifies two probable reasons viz. natural and supernatural for the occurrence of any sickness but the Rabhas hold significant dependency on supernatural connotation for their good health[18]. Likewise the Munda people and the animist Oraon of Bichline continue more or less same essence in the context of good health and keep prominent trust on various spirits and deities whereas the Christian converted Oraon curtails down the faith on their traditional deities and subsequently increases the dependency on biomedical treatments and the service providing institutions or agencies.

Worshipping of Deities and Health care Practices (Among the Rabhas)

Rungtuk Puja : In the Rabha pantheon Rungtuk holds one of the conspicuous positions and the deity does not have any biomorphic figure. *Huji* (Rabha priest) counts the auspicious day for the foundation of the Rungtuk. In the worship, the offering of *chakat* (rice bear) is one of the most vital parts of the rituals. Among the Rabha, *Runtuk* is a protective deity who protects from evil spirits and evil power. Failing of proper way of worship would cause of distress in the family and most of the members would be affected by major ailments[19].

Michik Bai : Goddess Michik Bai is worshipped for the welfare of the children. The worship is undertaken by *huji* (Rabha Priest) in the evening along with the offering of *atap* rice, flowers and sweets. One cock and one hen are also sacrificed along with the inevitable offerings of *chakat* (rice bear).

Nur Bai : In case of the pregnant mother or the child suffers from any disease, this deity is worshipped in the evening of any day, in the same room where the expected mother or the child stays. The *huji* worships the deity by offering *atap* (dry) rice, ripened banana and *chakat* (country liquour). Usually a duck or a pigeon is sacrificed and the blood is sprinkled at the place of worship.

(Among the Munda)

Sarhul or Baha Parab : In Mundari language *Baha* means flower and *Parab* is the festival, thus Sarhul is the festival of flowers. It is celebrated during Spring, (Bengali month of *Chaitra*), in the month of March-April. Sal trees get new flowers on their branches. It is a worship of the village deity who is considered to be the protector of the Mundas. The deities are worshiped with sal flowers. The *Pahan* (*ojha*) fasts for a couple of days during the season of the festival.

Karam : The *Karam* festival is a worship of Karam deity, the god of power, youth and youthfulness. *Karam* is held on an auspicious day of Bengali month *Bhadra* (August-September). Groups of young villagers usually visit the jungle and collect wood, fruits and flowers. These are required during the worship of Karam God.

Gohil Puja : It is held every year at the month of *Kartik* on the event of new moon night. The worship is conducted for safety and production of cattle. Mundas believe that through this ceremony they would get healthy cuff, enough milk and meat.

(Among the Oraon)

Dangir Thesa: A special kind of worship is performed in every seven years for the well being of the entire family. The event generally takes place in their house premises and primarily performed by the *pahan* (the Oraon priest) with the worshipping of a goat (black in colour), *haria* (country liquour), white flower and sweet items are the imperative requirement for the same. To conduct the worship a family

should arrange all the ingredients and sometime it is difficult for the economically backward one to meet all the needs, in such cases they are compelled to attend the worship occurs in the neighbouring houses. The *pahan* murmurs spell and all the participants pray together for their good health. After completion of the initial worship the *pahan* in association with the male members sacrifice the goat. Afterwards, they cook it and consume as a perspicuity along with *haria*. Offering rice and *haria* to the *pahan* is marked as a sign of reverence to the position.

Shikari Puja : Shikari puja stands for the appeasement which practically performs the worshipping of the several trees namely *Maina* tree, *Jujube* tree, *Shaal* tree (*Shorea robusta*) and the *Bakul* tree (*Mimusops elengi*). Most of the animistic Oraon families visit the jungle to perform this particular worship. The Oraon *Pahan* also goes with these people and performs the *puja* with water, *batasha* (molasses), betel-nut, betel-leaf and flowers. The *pahan* prays for the villagers to save them from any kind of injuries by the wild animals which very often take entry to the village from the jungle and subsequently destroy the life and properties. The worship is performed once in a year and thus plays a pivotal role to control the ill health and related complications. They retain a typical conception- 'failing to propitiate the forest deity would cause for ill health or to convert any of their bodily parts to animal like'.

Vaag Puja : Every Oraon family performs *vaag puja* to retain good health of children. The *pahan* performs the *puja* (worship) with *dhup-dhuna* (resin), water and typical magico-religious spell. Generally an Oraon family performs the said worship in the houses premises whenever a kid becomes ill or thought to be attacked by a ghost. To get rid of the name *vaag* signifies- 'expel of the soul'.

Supernatural Beliefs

Rabha

As a whole the Rabhas have immense belief on supernaturalism. These beliefs are also under the preview of religion. Folk beliefs are a part of oral tradition which is verbally transmitted through

generations. Some of the supernatural beliefs related with good health and well beings are as follows:-

1. Nothing should be plucked at night from the tree and even they do not allow to standing beneath tree just after sunset or at night, as the spirits live in the tree and they may cause harm to the person.
2. A pregnant woman is not allowed to go out at dusk as the evil spirits would be harmful to her as well as to her baby.
3. A newly married lady should not go out in the evening with open hair; else the witch would attack her.
4. To escape the evil eye or evil spirit, the mother and the baby should fasten a black thread *(jap)* on hand.
5. The expected mother must keep a piece of iron with her as a means of protection from the evil spirit.
6. It is inauspicious if they lost any inner garments and it would be more vulnerable in case of female.
7. They bury the cloths used as sanitary pads during the phase of menarche, as per their perception, any kind of unusual phenomena related to contagious magic[20] may be responsible for the occurrence of untoward situation during pregnancy.
8. They generally accuse malevolent spirit for suffering of various ailments and misfortunes.
9. To appease the spirit and deity they usually sacrifice the hen and cock.
10. Growing girl generally wear black bangles (*churi)* so that no evil can stunt their growth.

Munda

1. Scarring of evil spirit restrains the pregnant women to go outside the house in the evening.
2. The soul of the deceased person would attack the family members and close kin if the funeral proceeding is not done in proper way.
3. They sacrifice hen in the name of malevolent spirits to satisfy them and to protect the family members from the attack of it.

4. Among them the women is believed to practice in witchcraft.
5. Generally most of them avoid going under the tree after dusk, as it may be harmful because the spirits reside at the tree.
6. Unusual behavior of any person indulges them to get help from local ojha because they have a strong belief on spirit possession and ghost attack.
7. The expected mother must keep a piece of iron with her to protect herself and to the child from the attack of any malevolent spirit.
8. They think that after dead the soul of the deceased roams until the *umbel adar*, a particular rite is performed.

Oraon

1. Member of a family may get sick if an outsider takes entry inside the *kuldevi's* room.
2. Most often the malevolent souls or spirits are held responsible for onset of various ailments.

Typical magico-religious performances and Health care

(Only among the Rabhas)

Various kinds of magico-religious activities are very much evident among the Rabha and some of these significantly related to get rid of various kinds of ailments and misfortunes; the instances would more elucidate the present connotation, whereas these kinds of typical performances have not either been reported or observed by the Munda and the Oraon population.

Bulua Bai : A malevolent deity is worshipped if there is any unnatural behavior among any of the family members. Inception of such symptoms would indulge them to realise about the possession of Bulua Bai.

Serkir Betang : Appeasement is indispensable to protect the forest dweller and forest goers; the worship takes place inside the deep forest. The blood of sacrificial animals is borrowed to the home and subsequently sprinkled at the *Runtuk* during night.

Bulua Bai : Bulua Bai is one of the malevolent spirits believed by the Rabhas. It may be possessed by any member and as a result it would affect the body of person concerned. Huji (priest-cum-

traditional healer) can be able to detect the entire phenomena through the typical behaviour of the affected person. To cure him/her the *huji* performs various magical rites like *telpora* (magical means by oil), and *jalpara* (magical mean by water). To remove the influence of this spirit the *huji* also performs worship in the nearby forest. The particular spirit does not have either any figure or biomorphic feature. A small bamboo with branches called *pahla* is recognised as the deity because they believe this deity looks like a bamboo.

Dekal : It is the conception of spirits for which Rabha people suffer from various stomach disorders. So it is imperative to appease the spirit if such problem occurs to anyone. The relatives of the patient construct a platform *chadang* made of bamboo splits (*haplak)* where various offerings including rice, vegetables, chicken or pig are offered for the spirit. Afterwards, the *huji* try to communicate the spirit for requesting to plead the ailed person.

Joura Kal :

Joura is the spirit of the dead man. It is always a malevolent one. Applying some magical rites *Huji* can detect the person possessed by the spirit. In order to appease this spirit, an altar is made in the western side of the living room where the spirit is worshipped with the offerings of the powdered rice, *chakat* and sacrificial hen. All the offerings are thrown away immediately after the worship.

Traditional Healers in Action

(Among the Rabhas of Bichline)

The priest is known as *huji* who is a person authorized to perform the sacred rituals of all their religious festivals and especially acts as a mediatory agent between the people and their deities. The position of the *huji* in their society is very high and he is thought to be able to communicate to any God and spirit who are beyond the access of ordinary persons. He even also acts as a medical-man and frequently asked by the people to cure as they think that he possesses religious healing power. He generally does not take any fee for his services instead villagers offer him food, gifts, cock, hen and *chakat*.

According to the Rabha villagers of Bichline if the shadow of any spirit or bad wind touches anyone, she/he would suffer from illness and to rescue it is very usual to call the *huji* (Rameshwar Rabha) who is the traditional healer of nearby village Rabha Line, he deals with the soul and cures the affected person subsequently. He has a high position in their society. They belief that he has the power to deal with the souls, so whenever the Rabha people feel something wrong, they immediately seek help from the *Huji*. At first *Huji* splashes the murmured water on the entire house of the sick one and also throughout the room where the person is lying. Afterwards, he (Rameshwar) worships the Rungtak to satisfy the house deity and eventually proceeds to heal the ailing persons. He generally performs *jharphunk* (a typical magico-religious activity) with special type of leaf. Afterwards, he murmurs some magical spell by touching the forehead of the sick person and splashes murmured water to save him/her from the malevolent attack. This process is continued for some days after recovery or till *huji* confirms the departure of malevolent entity, hence Rameswar binds a black magical thread to save the victim from farther attack.

Rameswar Rabha himself added some more points on the magico-religious performances related with forest deity *Serkir Betang*. The worship takes place inside the deep forest. The blood of sacrificial animals is borrowed to the home and subsequently sprinkled in front of the *Runtuk* during night-time. After the forest worship he visits all the houses for individual worships inside their homes. During *Rungtuk* worship it is mandatory for the female members of the family to participate and initiate all the rituals in association with the priest. In connection with *Rungtuk* worship the offering hens should be consumed by the family members only.

Case Study (Healing by Rabha healer)

Name-Gayetri Rabha
Age-32
Sex-Female

Almost three years ago (from the date of interview) she had been attacked by a ghost. During the interview session she continued to

narrate that, 'My husband just passed away and we were observing the pollution period'. Two or three days later around 12 noon she went to the nearby forest to collect fuel and her hair was untied, usually she kept it likewise just after the bathing to dry it. 'Immediately after reaching the destination I felt some unusual phenomena happening surrounding me, as if I had been suspiciously followed by some invisible entities' — she said and she became faint after the incidence, 2-3 hrs later she became conscious, and luckily her family member took her back to home but she realised of gaining immense strength in her body. Her mother-in-law, who was sitting behind her narrated about her strange eyeballs and harsh voices, a kind of convulsions also observed in due course.

'Huji had been called on and he started magico-religious activities with me, tightly fasten me in a room and a black thread was also tied in my arm'- Gayetri stated. 'Huji splash murmured water on me and roamed around the house in circular fashion with a bamboo vessel (*baser tukri*)'- Gayetri continued. Afterwards, he worshiped *Rungtuk*, sacrificed a black hen, mixed the blood with the murmured water and splashed it again on Gayetri. 'Again I became unconscious, after 2-3 hrs I woke up, but was unable to move for long time'- she said. Further, she had to follow some of the directives up to six months, wearing of black thread, keeping iron object with her particularly while visiting the forest areas, not to visit anywhere with open hair particularly during dusk are the conspicuous among these.

After the initial management *huji* used to come continuously for 7 days, splashed murmured water on me and subsequently to the entire house — Gayetri continued to narrate that the black thread *(jap)* is the symbol of the body protection (*gatro-bandho*) from any kind of bad wind. After that incident she became very thin weak, gradually she recovered.

Traditional Healer in Action

(Among the Mundas of Bichline)

The priest among the Munda also acts as *ojha* and known as *pahan.* Bandhan Munda of 56 years age endowed with such activities performs

the sacred rituals of all their religious festivals and also acts as a mediator between the peoples and their deities. If someone feels seek he (*pahan*) is asked to find out the probable or the exact cause.

Munda population of the village believe conspicuously on the existence of soul or spirit which can be both benevolent and malevolent, moreover person can get sick if being attacked by malevolent one or may be also affected by the curse of the benevolent if fails to appease in appropriate means. To get rid of they generally call *pahan* who typically acts on the issue and subsequently captures the unruly soul in to the abode of hen, being a sacrificial object a hen containing the same destroys the evil part of the soul and transforms the affected person in to proper order. For more protection *pahan* sometime prescribes a *tabiz* (most often without any ingredients inside) for placebo effect[21] to cope up with unidentified evil entity. Munda people are more psychologically assured by the Bandhan's magico-religious procedures as it demonstrates more cognitive essence.

'People also having fever come to me'- Bandhan said 'I have to find out the causality of ailment and should act accordingly'; Bandhan continued. Most of them hold the personalistic belief system[22] which insists to seek immediate assistance from *ojha* like Bandhan who belongs to the same community. Supernatural interventions are being treated by magical spell along with coal, mustard, salt, dried chilli etc. Ghost attack cases are cured within one and half hours by the typical magico-religious performances. Fastening the white spelled thread to the newborn baby is one of the significant actions carried out by Bandhan to protect them from the bad eyes of evil spirit as well as to keep secure the health of the newborn. 'I don't have any fixed remuneration of my services rather I am happy with whatever they (the villagers) offer me like cooked food, haria, cock, hen etc.' he said. To retain his healing capacity he worships the Hindu Goddess Kali. Seeking help to Hindu God may be responsible because of not having sufficient knowledge and scope to exercise traditional 'Munda' wisdom on health.

Accessibility to Modern Medical system

Two medical institutions are situated in the vicinity of the village Bichline, first one is at the distance of around 3 km. nearby to the station Rajabhatkhawa, a health institution under the department of forest. During the present study the centre comprised with two doctors, one pharmacist, two staff and one health worker. The centre is equipped with basic infrastructure necessary for imperative pathological tests to detecting malaria; and according to one of the physician of the centre the area is very prone to malaria. The centre also provides the supports like child immunization, birth control and as well as emergency services. But it is devoid of any provision for the delivery patient and in-patient services are very feeble although emergency managements like supply of saline water etc. are available, but the critical patients are referred to Alipurduar hospital.

The second one a health sub-centre is at Pampu Basti a nearby locality of Bichline. According to the villagers in spite of infrastructural lacuna the health workers of the centre regularly visit the village and two among the three belong to the Oraon community.

Important Case Studies

Case-1
Name-Sonu Rabha
Age-36
Sex-Male

He told, 'Malaria is a common disease and occurs very frequently. The villagers prefer to opt biomedical treatment to get rid of'.

Around two years ago he suffered by the same ailment. The initial symptoms he had very high fever, severe headache and shivering of the body, the fever became very high at night. After two days he had been rushed to the nearest PHC located at Rajabhatkhawa. He did not opt for traditional treatment in this case because of the awareness about the reasons and symptoms of the disease. Moreover, naturalistic belief[23] of explanatory model[24] prevails in this context.

Blood test had been conducted at the PHC and eventually reported as malaria, but due to lack of infrastructure he was referred to

Alipurduar hospital. He was admitted at the aforesaid hospital for seven days. But the medicine continued for fifteen days, it took almost 1 month for complete recovery.

Case-2
Name- Minu Oraon
Age- 35 yrs
Sex- Female
Religion- Animist

'I was suffering from fever for so many days'- Minu started to narrate, 'meanwhile my husband informed the same to the nearest health sub centre at Pampu Basti'. Afterwards two health workers (incidentally the Oraon women stay in the same sector) came to her and collected blood sample for necessary diagnosis. On next day they (health worker) again visited and informed her about malaria infection, necessary medicines were also offered to her. After taking the medicines she became weak and drowsiness occurred. She took these medicines for one week. Continuously her health was deteriorating so she stopped taking the medicines.

After taking these medicines for one week she went to a Rabha healer at Rabha line. The *ojha* treated her with murmured water and *batasha* (a typical sweet item). She took this water and felt better.

After being treated by the *ojha* she has suddenly stopped the PHC's medicine and as a result the fever got relapsed. Afterwards she went to Alipurduar with her husband and consulted a private doctor. The doctor prescribed medicines with some vitamins. She had to take the medicines for one month and finally recovered.

Case- 3
Name- Tonu Munda
Age- 35 yrs
Sex- Female

'Suffering from fever for four to five days, visited PHC and took medicines but did not get any result. My fever intensified with vomiting tendencies and face became yellowish'- Tonu started to narrate about her ailment.

Being suspected for jaundice she rushed to a specialist traditional healer (Dinubala Roy) for jaundice. Dinubala gave a white powdered medicine which is to be taken after mixing with milk. During that time she had been advised not to take oil and turmeric and mostly had boiled food. It took around three days to get rid of the severe stage and subsequently she recovered within one month. After the preliminary treatment she visited a private doctor and provided by vitamin medicines.

Case: 4
Name-Chobi Oraon
Age- 56 yrs
Sex-Female
Religion- Christian

'Suddenly I felt down and lost my sense on the left part of the entire body' Chobi narrated. She was taken away to nearest PHC but referred to Alipurduar hospital as her situation became very critical. After necessary treatment over there she was discharged and advised to take regular medicine for her high blood pressure.

Conclusion

Hence dependence on age old medical knowledge is intrinsically imperative as in most of the cases the patients get rid by the placebo effect. But the efficacy of such effect has some contingent magico-religious practices which would be more perfect if it is surrounded by the age-old ecological setup.

In the existential process it is already evident that the Rabha people (autochthons) are capable for exercising more intensive traditional rituals to cope up numerous untoward situations as well as various ailments in comparison to Munda and Oraon(migrated) folk in the realm of North Bengal. Indeed, migration has been emerged as the conspicuous phenomenon which inevitable changes the ecological niche. As a consequence it is really challenging for a migrated population to persist indigenous knowledge on healthcare practices in different set up. It is also evident that conversion to western religion (Christian Oraon) more often down size the continuation of age old

tradition in general and traditional health care practices in particular[25]. In nutshell the Mundas and Oraon of the village Bichline are not in a position to get their optimum modern medical aid owing to lack of proper communication and ill equipped infrastructure. On the other hand they are also devoid of accessing the benefit of 'culturally transmitted traditional treatments' due to change of their original habitation place.

Notes

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Boats of Bengal: A Study of Riverine Transport in the Eighteenth Century

Baijayanti Chatterjee

I

> 'A waterway brought animation to the land all around… Without the Seine, Oise, Marne, and Yonne, Paris would have had nothing to eat, drink or keep warm by…'
>
> – Fernand Braudel[1]

Braudel's remark, in the context of Paris, underscoring the significance of river transport is well applicable in the context of Bengal in the eighteenth century where the Ganga-Brahmaputra rivers and its innumerable channels linked the different parts of the Province and ensured a prodigious movement of people and goods as well as overall economic buoyancy. According to Rennell 'all the salt and a large proportion of the food consumed by 10 millions of people' were 'conveyed by water within the kingdom of Bengal and its dependencies.' To this one must add the 'transport of commercial exports and imports, probably to the amount of two million sterling per annum'[2]. Conveyance over water was principally by means of boats designed according to the purpose of use thus varying in construction, speed and carrying capacity. This article will look at these different varieties of boats that sailed the rivers of Bengal in the eighteenth century and show how river transport by means of boats sustained the socio-economic life of the province of Bengal in the eighteenth century.

Our sources of information regarding these different types of crafts that sailed the Bengal rivers are relatively less but not altogether inadequate. Fine engravings of Bengali boats by Flemish artist

Balthazar Solvyns are our most important source of information regarding the different kinds of vessels that sailed the Bengal rivers. Also, in the accounts of foreign travelers like Thomas Bowrey and Stavorinus[3], we find mention of the different varieties of Bengali boats. Modern scholarship however has paid very scant attention to the superior craftsmanship that went into the making of these different varieties of boats and how these boats sustained the riverine transport network on which depended the trade and commerce of Bengal. For instance, K.K. Datta in his *Economic Condition of the Bengal Subah*[4] discusses the routes of transportation (both land and water) and the different kinds of conveyances over land like bullock carts and palanquins but he does not give any detailed discussion on the different kinds of boats that sailed the Bengal rivers and on which depended the trade and commerce of the region. A more substantive account of Bengal boats, however, can be obtained from Jean Deloche and S.N. Mitra's article[5] but the said article gives only a description of the boats without undertaking any discussion on how these boats were crucial to the riverine transport network which sustained the provincial economy. Neither has the article any discussion on transport workers particularly the boatmen like the *manjhis* and the *dandis*, their wages and their lifestyle. More recently Tilottama Mukherjee's work on the networks of transport and communication in eighteenth century Bengal has given a good account of the diverse varieties of Bengali boats, of the boatmen, of river transport and its impact upon the Province's economy.[6] Nevertheless there is still scope for further research on such a significant subject and this article makes a tentative attempt to do so.

II

There existed a wide variety of boats in Bengal [See also Glossary]. Depending upon the purpose for which they were used the Bengali boats could be divided into three broad categories : 1) Rudimentary crafts for short distance travelling 2) Luxury boats for long-distance travel by the wealthy and 3) Trading vessels or boats with large carrying capacities used primarily for commercial transactions.

Among the rudimentary water-crafts of Bengal was the 'plantain-stem catamaran' which is described by Hornell as follows:

> ... in Bengal where plantain (banana) stems are valueless as soon as the fruiting age is passed, it (the plantain-catamaran) consists of 5 or 6 of these stems roughly trimmed at the ends and fastened together raftwise by a skewer of wood or thin stake passed through the series from side to side at each end. Banana leaf-stalks, whereof these "stems" are really made up, are full of tiny cubical air spaces and these give quite a considerable flotation value to the structure. It is the expedient of the moment the simplest form of raft that will serve an emergency, thing to be cast aside almost as soon as used.[7]

Some boats were also in the nature of dug-outs 'hollowed out of the trunks of various species of trees' like the ektha or the donga and these were commonly employed by peasants to commute from one village to another or to the nearest market.[8] Generally these rudimentary river-crafts were useful only for commuting short distances over water.

In contrast to these more primitive river-crafts, there were long-distance luxury-travel boats like the pinnace or the *bajra*. The pinnace or yacht was used for travelling by wealthy Europeans from Calcutta to Benares, Lucknow etc. These boats were very commodious and each one was 'divided into two or three apartments, one for company, another for the beds, and a third as a cabinet, besides a place called *verandah* forwards for the servants'. The yacht also had several attendant boats that carried provisions and served for kitchen. A pinnace had 'in general as many conveniences as a small house.'[9] Pinnaces were owned privately by wealthy officials and merchants and they could also be hired in Calcutta for pleasure trips or short journeys but their rates of hire being very high they were not used for lengthy journeys except by the very wealthy. Governor-General Wellesley had, as the East India Company's state yacht, a pinnace, called the "Soonamooky". The vessel had 30 oars and was constructed

"of teak, sheathed with copper, and fitted up in a style suited to the dignity of a Viceroy"[10].

Another kind of luxury vessel was the bajra. The bajra like the pinnace was a commodious craft, a floating-house of sorts although it was less swift than the pinnace. A bajra like the pinnace was also usually accompanied by attendant boats serving as the kitchen.[11] Among the pleasure boats were also included the filcehra and the morpankhi but they belonged to a genre of long and narrow pleasure boats known generally as 'snake boats.'[12]

The next category of river crafts includes the vessels used for trading like the *bhauliya, pansway, pulwar, sloop, bhur* and the humble *dingi*. The *bhauliya* boats were noted for their speed. These boats were of light construction and very swift.[13] The *pansway* was a 'passage boat very convenient for inland navigation.'[14] Bishop Heber mentions that the crew of the *pansway* offered their services for 15 rupees to carry any passenger to Calcutta from Saugor, a distance of above 100 miles.[15] The *ulak* was a "bulky baggage boat of Bengal"[16]. The *pulwars* were cargo river boats of the Dacca region that were used for the purpose of commerce as they could carry very heavy loads at the lowest possible cost. The East India Company preferred to transport its precious goods like silver, muslins, opium, indigo etc. on *pulwars*.[17] The *sloop*s were 'used to carry goods to and from the merchant-ships which are laded or unladed.'[18] The East India Company had special need for them for purpose of commerce. The *bhur* was also a cargo-river boat.[19] The most humble variety of trading vessel was the small boat called *dingi. Dingi*s were 'half-decked, round-bottomed boats built of planks'[20] that were used 'to keep up the communication between the ships and the different ports and landing places'[21]. *Dingis* were used for short journeys on the river 'as in ferry-crossings from Calcutta to the opposite shore, for fishing, and in transport back and forth from ship to shore' carrying provisions and whatever other necessaries the ship's crew may need when anchored.[22] *Dingi*s were generally managed by a single rower although in some cases there may be two rowers.[23] The following table gives the rate of hire of some of these different varieties of boats.

Table: 1 Rate of hire of Boat

Boat	Rate of hire per month
Bajra	50 Rupees
Pansway	25 Rupees
Pulwar	15 Rupees

Source : WBSA, Proceedings of the Provincial Council of Revenue at Dacca, 7th June to 25 August 1774, 22nd August 1774.

Some boats like the *kosa* were peculiar to East-Bengal particularly Chittagong. The *kosas* were very much used by the Maghs.[24] The *kosas* could be used for fishing and ferrying and when fitted with a thatched covering (*chauni*) they could be used as cargo carriers.[25] Thomas Bowrey in his account of Bengal mentions *patellas*, large flat-bottomed boats which were used by Shaista Khan to carry his treasures from Bengal[26] and *gylyars* ('long and narrow boats apparently constructed principally with a view to swiftness…they cover long distances on the rivers…carry no sails, but they have as many as thirty-eight or forty oars'[27]) that were used by the Arakanese.[28]

III

It is clear from the foregoing section that a wide variety of boats existed in eighteenth century Bengal catering to the diverse needs of the population of the Province. But the question arises who were the superior craftsmen who made the multitudinous varieties of boats that sailed the Bengal rivers? Boat building in Bengal was in fact traditionally done by the *Sutradhar* or the *Chutar*- the carpenter caste of Bengal.[29] Claiming descent from Viswakarma – the mythological architect of the Gods, the *Sutradhar* caste traditionally engaged in the construction of boats and also 'in cutting conch shells into bracelets' making idols and even painting.[30] In Dacca, this carpenter caste made boats, household furniture, beams, wheels, and ploughs. The Kapalis, 'a cultivating and weaving caste of eastern Bengal', made the boat sails.[31] Boat-building was a major industry in the district of Bakarganj. At the two places - Debaikhali and Shyampur in the Mehendiganj *thana*, in the Bakarganj district, the best *kosa* boats were made; at Ghanteshwar, near Agarpur, also in Bakarganj, the best *pansways* were

made. *Dingis* of *sundari* wood were made all over the Bakarganj district, but especially at Jhalakati.[32]

The boats were made principally of timber from the *sal* (shorea robusta) & *sundari* (Heritiera minor) tree and the wooden planking was joined by iron. In some boats there was also a 'circular awning of bamboo-work, under which a person can sit…'[33] The sal timber was regarded by Holwell as 'a wood equal in quality to the best of our oak.'[34] Sal according to Holwell could be found in abundance in Bishnupur[35] but by and large timber required for boatbuilding must have come from the forests of Sunderbans in southern Bengal. Thus in 1776 we hear that because of *Magh* raids the woodcutters have deserted the *Sunderbans* and as a result the business of boatbuilding had completely stopped.[36] The *sundari* tree which grew in abundance in the Sunderbans and from which the forest derived its name was the only form of wood that 'resists the saltness of water'[37]. Hence, boats made of *sal* timber had 'the parts which are under water made of *sundari*.'[38] The *bils* and *chars* in Bengal also yielded large quantities of reeds (nal, hogla,) which were used for making the roofs of boats.[39] The fruit of the gab-tree (Diospyros embryopteris glutinifera)yielded a juice which was used for caulking boats.Gab was applied to boats four times a year and about 1000 gab fruits were required for the caulking of an ordinary-sized boat.The caulking of a *kosa* boat with gab cost approximately two to three rupees a year.[40]

IV

Besides the boat-builders, our sources repeatedly mention of the 'the boatmen' referring to the *majhis* and *dandies* or the rowers of the boats.According to Rennell inland navigation in Bengal gave constant employment to 30,000 boatmen.[41] The task of these 'boatmen' was laborious but their remuneration very low.

Table : 2 Wages of the boatmen – Majhis & Dandies

Majhis ……. Rs 3-4 per month
Dandies……..Rs. 2 per month

Source : WBSA (West Bengal State Archives, henceforth WBSA), Proceedings of the Provincial Council of Revenue, Dacca, 7th March to 27th May 1774 (Sectt. Series) vol. 2, April 12 th 1774 & Board of Trade- Commercial, Proceedings 3rd January – 31st March 1775, 31st January 1775.

The author of the *Sketches of India* gives a very vivid description of the day long toil of the *majhi* and their simple yet contended lifestyle:

> The constant labour and fatigue the *dandies* or rowers of a budgerow undergo excites, at first, pity and astonishment in the breast of a stranger. For hours together, when the wind happens to be unfavourable, they are plunged up to their necks in water, under a burning sun, dragging the boat along with ropes. On the shore, they pass, ten or twelve in a string, working like horses. For the whole day they remain thus, nor does their labour terminate until the anchor is given at sunset. With what glee do they then eat their simple meal. Everything is forgotten, and they rise, at daybreak, to a renewal of this slavery, with all the content possible. To a European, one of their days would be death. To sustain it, as these helpless creatures do, is scarcely credible.[42]

As a class the boatmen were very poor and in times of famines and scarcity which were quite frequent in the eighteenth century they were severely affected.[43]

There was another influential class of transport workers called the *ghat majhis*. At each *ghat* or landing place there was a *ghat-majhi* who kept a meticulous account of the names and places of residence of all *majhis*, *dandies* and owners of boats.[44] If one wished to obtain a boat, the *ghat-majhi* had to be approached.

While at the very bottom of the transport sector were the boatmen-the *majhis* and the *dandis* who barely made a living, there were nevertheless at the other end of the spectrum rich merchants and sloop contractors like the family of Akrur Dutta who made a fortune for themselves in doing business with the English East India Company.[45]

We may end this section on the boatmen with the curious case of the river gypsies of Bakarganj. These river gypsies used 'to live in boats' but had 'headmen at fixed headquarters…to whom all disputes are referred.' These river gypsies lived by woodcutting and fishing and were 'peaceful, industrious, orderly and honest.' They were known in Bakarganj by the name of Bebajias.[46]

V

From the foregoing sections we have had an estimate of how large and organized the sector of water-transport was in the eighteenth century. Water transport by means of boats was essential for trade & commerce within the Province and thereby sustained the economy. Some of the Bengali boats were in fact cargo boats designed to carry weight across water. These cargo boats were called *bhurs* which were 'used for the carriage of cotton and other bulky materials'[47]. According to Stavorinus some of the Bengali boats could 'load fifty thousand pounds weight of merchandize and more'[48]. The commodities transported by boats over water included grain, salt, cloth, salt-petre, timber, bricks, etc.

Table 3 : Account of the Cargo Carried & Capacity of Different Kinds of Bengali Boats

Name of Boat	Description of Cargo Carried	Capacity in *Maunds*
Malini	Grain	500-2500
Bhar	Grain	500-2500
Sarong	Grain	200-1000
Pansway	General Cargo	100-1000
Ulak	Grain	400-800
Palwar	Precious goods-silver, muslin, opium, indigo etc.	300-400
Pansway	Rice and provisions	500

Source: Robert L. Hardgrave, Jr. compiled *Boats of Bengal: Eighteenth Century Portraits by Balthazar Solvyns*, New Delhi, 2001, J.H.E Garett, *Bengal District Gazetteers:Nadia*, Calcutta, 1910; J.C. Jack, *Bengal District Gazetteers: Bakarganj*, Calcutta, 1918,

Grain

Grain was primarily transported by water in boats. In discussing the economic condition of eighteenth-century Bengal Rajat Datta has argued that a 'significant development of the eighteenth century was the emergence of an integrated provincial market in food grains.'[49]This

emergence of an integrated provincial market on food grains was a result of the easy communication provided by the rivers. This is evident from Sherwill's survey of the grain-marts in Dinajpur that were located near the banks of the navigable rivers which connected them with one another and with the main markets of Calcutta. Sherwill writes,

> Rice is exported largely from every part of the Dinajpur district. During the rains when the rivers are swollen, and admit of boats of all sizes ascending from the Ganges to the numerous *Golahs* or granaries situated in the most convenient spots, along the banks of the rivers, for making shipments, large quantities are then conveyed by these minor arteries of commerce to the great Ganges, whence the greater proportion finds its way to the Calcutta and Chandernagore markets.[50]

The large scale grain-trade in Bengal thus depended on efficient system of transport provided by the rivers. Bakarganj rice which was famous in Calcutta was in fact known as *balam* rice from the *balam* country boats which carried them to Calcutta.[51]

Salt & Cloth

Salt too was conveyed on boats across rivers. Salt *golahs* would ideally be placed near the water courses to make it easier for the salt to be loaded on boats. If the *golahs* were located in much interior parts additional expense of hiring coolies was incurred for the purpose of transporting the salt.[52] The cloth trade of the Company was also largely dependent on water transport. On 14th November 1774, 452 bales containing 49,400 pieces of cloths were dispatched from Luckypore to Calcutta on 9 boats under the charge of Thomas Gordon and a party of seapoys.[53] Further we find that the Company's aurungs[54] under Dacca were ideally placed beside rivers [as the following table would show] so that bales of cloth could be conveniently moved over rivers by means of boats.

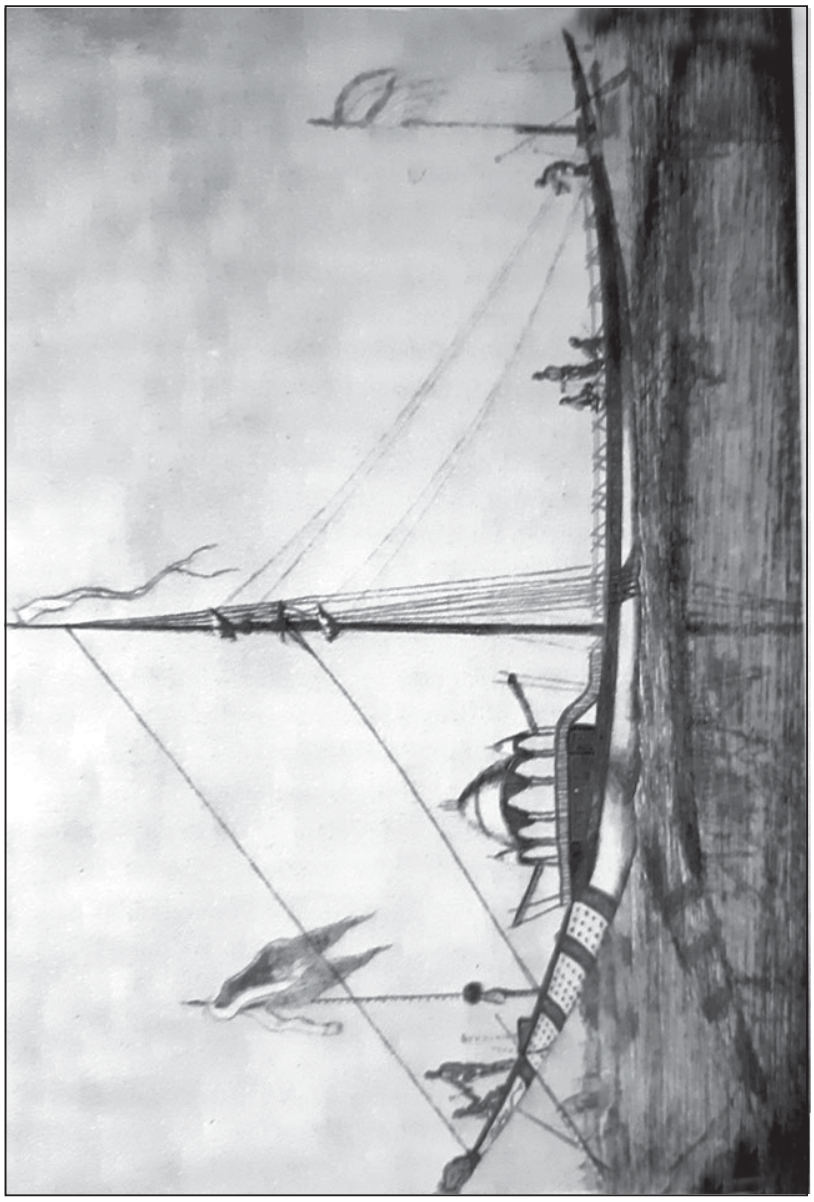

Illustration 1 : FĪLCHERĀ. Paris: III.1.3.

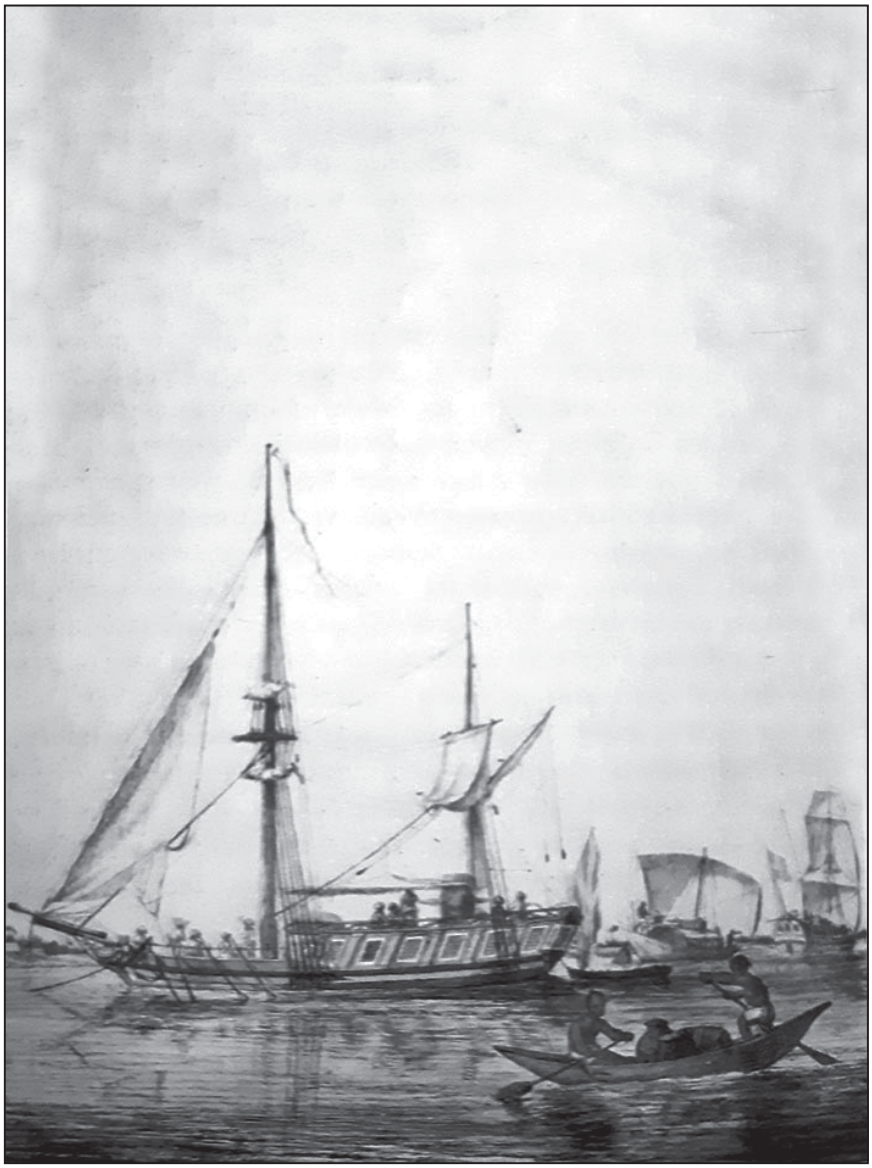

Illustration 2 : PINNACE. Paris: III.1.2.

Illustration 3 : SLOOP. Paris: III.6.2.

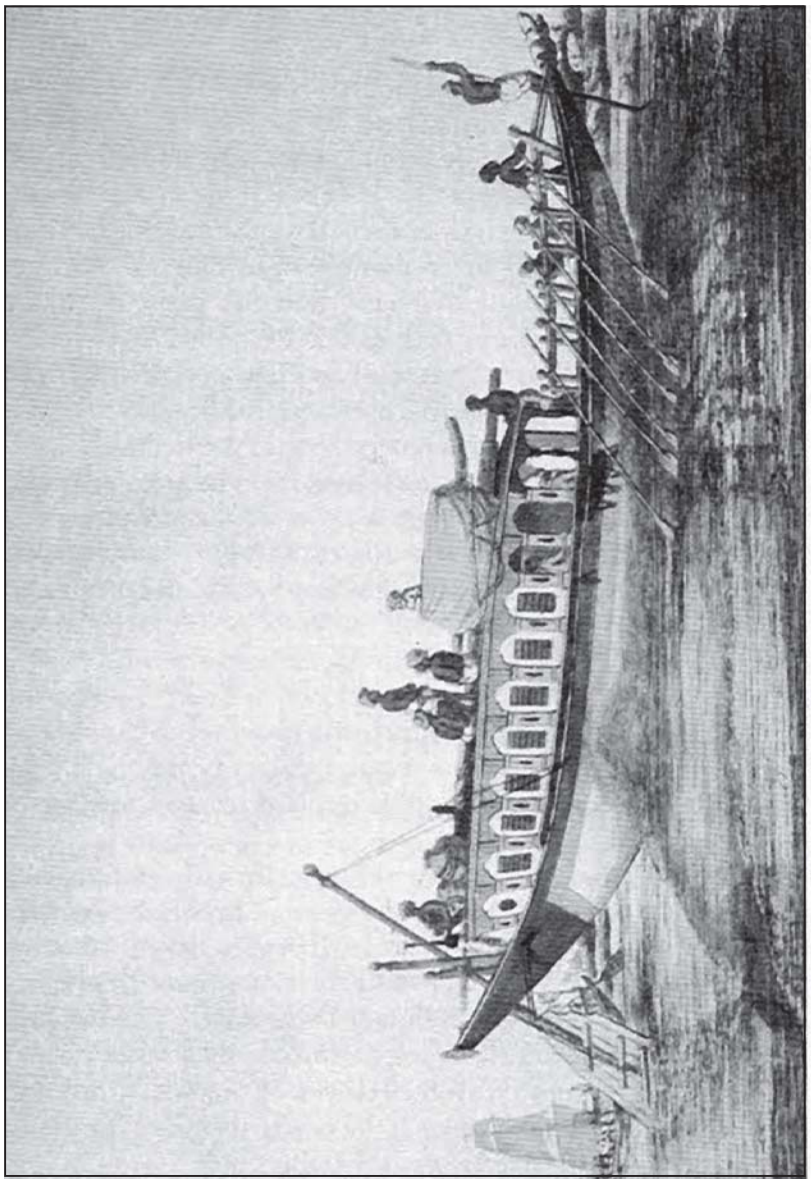

Illustration 4 : BĀJRĀ. Paris: III.1.5.

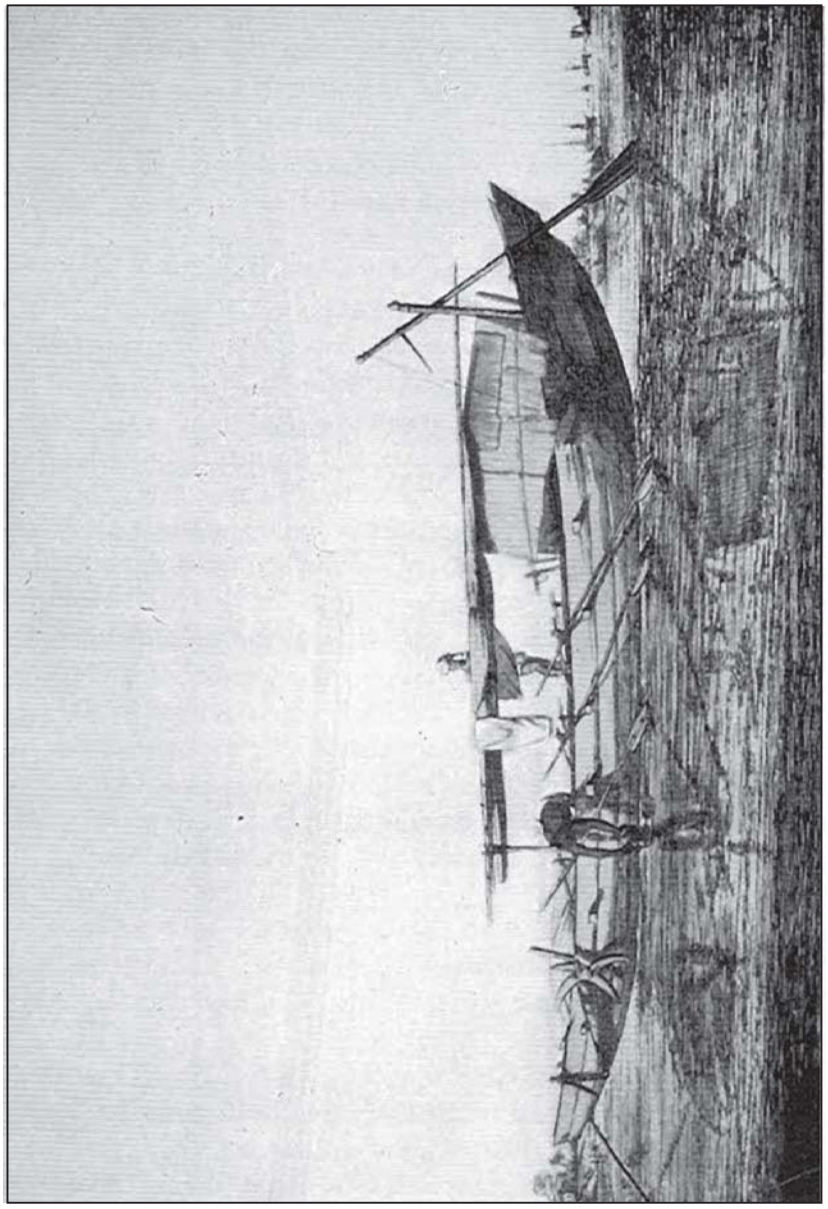

Illustration 5 : KOŚĀ. Paris: III.5.4.

Source of Illustrations 1, 2, 3, 4 & 5 : Robert L. Hardgrave, Jr. compiled *Boats of Bengal: Eighteenth Century Portraits by Balthazar Solvyns*, New Delhi, 2001.

Table 4: List of Aurungs under Dacca and their location beside Rivers

Names	Location
Dumroy	Bunse River
Soonargong	a creek of the Meghna River
Teetbaddy	Luckyah River
Junglebari	Hydoncally creek [sic]
Narainpore	A creek of the Meghna River
Chaundpore	Meghna River
Serrampore	Meghna River

Source: Board of Trade – Commercial Proceedings 4th July - 29th September 1775, 15th July 1775.

Other Goods

In the province of Sylhet revenue was collected in cowries and these cowries were transported by means of boats, sometimes inviting attacks from dacoits.[55] Salt-petre also was conveyed from Patna down to Hughli, Balasore & Pipli in country boats like *patellas* and *pulwars*.[56] Betelnuts were conveyed from Bakarganj to Chittagong and Calcutta in boats[57] and so was betel-leaf (*pan*). Beveridge writes that the *pan*-boatmen were long celebrated for 'their dexterity as oarsmen'[58], because *pan* had to arrive fresh in Dacca from Bakarganj. J. C. Jack points out that in Bakarganj agricultural produce was 'moved entirely by boat'[59] and there were generally '15 boats amongst every hundred families' but even more in Gaurnadi, Jhalakati and Patuakhali thanas with'as many as 33 in Swarupkati thana with its large area under marsh.'[60] Timber was transported on *bauli* boats[61] and bricks on the *ita dingi*.[62] Fishes were transported by fishermen on the *jaliya dingi*.[63] Even the small scale exchange of goods in Bengal by means of barter depended on river transport.[64] For instance, in cold weather, boats came from Dacca to Bakarganj laden with earthen pots. These were sold by the boatmen in exchange of paddy.[65] Boats filled with cocoanuts also arrived from Sondip, Noakhali, and Bakharganj, to the famous pottery

mart of Rai Bazar, in Dacca and went back from here with a return cargo of pots and *pans*.[66]

Although the rivers and the boats sustained inland trade within the Bengal province the system nevertheless was characterized by a degree of uncertainty. A change in river course meant that those located near the old course of the river lost the means of conveying their produce to the market. When markets declined urban centres connected to those markets too deteriorated. Bishop Heber mentions the great corn fairs of Bogwongola but also adds that, 'Bogwangola has been several times, within these few years, removed to different situations in consequence of the havoc made by the Ganges. It has therefore no ancient building, and neither pagoda nor mosque of any kind...it has the appearance rather of an encampment than a town...'[67]

VI

River transport therefore had its advantages and disadvantages. Transport costs on land were estimated to be 28 times more than that through the river.[68] Hence water transport and travelling by means of boats was more often opted. Even merchants preferred to store grain during the non-navigable seasons and transport it when the rivers became navigable again. Although this implied additional cost for storage the traders did not lose their profits as it was cheaper to transport goods through the water route than through the land route.[69] Direct river routes existed to the four cities of Calcutta, Dacca, Murshidabad and Patna.[70] The different towns and cities of the Province were also hierarchised based on the extent of their connectivity where places like Chittagong, Dinajpur, Lakshmipur, Rangpur, Kumarkhali and Sylhet 'occupied a higher rung as compared to the rest.'[71]

Nevertheless for the European travelling by boat in Bengal the prime concern was security. For instance Bishop Heber expresses his apprehension with regard to boat-travelling thus:

> A Bengalee boat is the simplest and rudest of all possible structures…Nothing can seem more clumsy and dangerous than these boats.[72]

Thomas Bacon, another European official, comments on his journey by water in a *bajra* thus:

> A budgerow, then, is an elegant, dangerous, uncomfortable-looking boat, something after the fashion of an inverted military cocked-hat...In fair weather, this sort of boating is tolerable enough, and may be pursued without danger or discomfort; but in a gale of wind, I would fifty times rather find myself in a snug little square-rigged vessel, upon the wide Atlantic, than in one of these crank, whizmagig craft, brought-to upon the banks of the Ganges. It is utterly impossible to induce the natives to build their boats after any improved system…Because their fathers, and their grandfathers, and their fathers before them, from time immemorial, have continued to build their boats so.[73]

Indeed travelling by boats was rather dangerous during seasons of inclement weather. From March to May navigation in the rivers of Bengal was rendered almost impossible because of the Nor'westers[74] also called by Bengalis the *kal baisaki*, or 'disasters of May.' Solvyns gives the following description of the Nor-westers:

> The phenomenon which I am going to describe borrows its name from the wind by which it is occasioned: it takes place in the gulf of Bengal and the rivers of Hindustan, more particularly in the south-east monsoon…In the morning a south wind, warmer than usual, reigns upon the river; from sunrise the sky is clear till about noon, when some clouds, which appear to come from the high mountains, meet on the horizon to the north, and soon accumulate so as to cover nearly the whole of the sky: the south wind ceases and a dead calm succeeds for a few minutes. On a sudden this momentary silence of nature is followed by a dreadful noise which seems to announce the confusion of all the elements. The clouds thicken, and are torn by continual flashes of lightning, the thunder roars, and torrents of rain often deluge the country: the atmosphere becomes a few degrees cooler. The river then assumes the appearance of a boisterous sea, and sometimes overwhelms the vessels which have not had the produce to fly for shelter to the

> creeks or canals. These disasters are but too frequent, and I myself have seen ships at anchor with their topmasts lowered veer round and disappear under the waves: these accidents are often too sudden to be prevented.[75]

Bishop Heber en route to Dacca in a 16 oared pinnace had to brave a north-wester around Chandernagore. He writes,

> About two o'clock this morning we had a north-wester, accompanied with violent thunder and lightning. It lasted about two hours, and was so severe… I have never heard louder thunder, or seen so vivid and formidable lightening…. Indeed there really ran something like a sea in the channel of the river where we now lay.[76]

River-Dacoities also made boat-travelling rather dangerous. The Magh pirates emerging from the neighbouring province of Arakan were a great scourge in southern and south-eastern Bengal. The Maghs carried out slave-raids in the villages of southern Bengal[77] and in the seventeenth century the Portuguese were in league with them. For their raids the Maghs used the *kosa* boats. These boats were as long as 20 feet and could 'even stand the sea.'[78] The Magh boats resembled the small votive vessel in Hindu temples called *kosa* and from it derived its name.[79] On 27th January 1779, Francis Forde in a letter to Richard Sumner Chief of Chittagong, proposed to build boats of the same construction as those used by Maghs in order to counter them[80].

Not just the *Maghs* but banditry was the livelihood of many of the inhabitants of lower Bengal. These bandits for the most part were 'Mangeys and Dandies of boats, which have been long used to the Sunderbuns and are acquainted with every creek and passage in the woods.'[81] These bandits used to build *pansways* in one of the many uninhabited islands near the mouth of the sea, arm these boats with matchlocks and at night carry on their raids. In most cases the Maghs were made responsible for these robberies. Boats that were used by the Bengal dacoits was called the *Saranga* or *Seringee*. According to

the Balthazar Solvyns the *Saranga* was also used 'by *banbuyties*, a sort of banditti':

> Who accost the vessels they meet in the evening, under pretext of asking to light their fire. Three or four only of their crew appear; the remainder are hid under the sails and mats. If they perceive that the vessel is too strongly manned to be attacked, they follow their course; if on the contrary they feel sufficiently strong, they board it and carry off all the cargo, and not unfrequently throw the passenger into the river![82]

Yet despite the dangers of inclement weather and robbery boat travelling was most readily resorted to in Bengal. Water transport was cheaper and speedier[83] than land transport and the fluvial landscape of Bengal made transport by boats over water essential.

Conclusion

'In this country there are two empires, one on water, the other on land.'[84]

According to Rennell, almost every part of Bengal had even in the dry season, a navigable stream within 25 miles.[85] As discussed in the preceding sections, movement over these perennial navigable channels was by means of myriad varieties of boats and the boats of Bengal therefore sustained an extraordinary movement of people & goods. Indeed the economic buoyancy of Bengal in the eighteenth century was a result of its most efficient transport network based on its rivers. It was to the credit of the Bengali craftsmen that they adapted themselves so well with the Bengal waterscape and produced a wonderful variety of vessels that aided commerce and sustained movement. The eighteenth century was a period of great mobility. While trade and commerce was the primary incentive for long distance journeys yet people travelled for many other reasons than trade and commerce. The exigencies of administration, pilgrimages and even social occasions like marriages induced large scale movement of people.[86] Balthazar Solvyns gives a representation of an entire wedding party with palanquins and musicians moving across a river in a Magarcehra boat.[87] The boats and

the rivers therefore were central to a Bengali's life because his movement and his livelihood depended upon them.

Glossary

Varieties of Boats in Bengal

Boats with their Anglo-Indian names	Name used in Bengali
1. Pansway	Pansi
2. Pinnace	Pinas
3. Budgerow	Bajra
4. Dingee	Dingi
5. Pulwar	Palwar
6. Sloop	Sulup
7. Glyars/Galeots	Jalia
8. Ektha	Ekgachee

Compiled from : Robert L. Hardgrave, Jr. compiled *Boats of Bengal: Eighteenth Century Portraits* by Balthazar Solvyns, New Delhi, 2001 & Henry Yule & A.C. Burnell, *Hobson-Jobson: A Glossary of Colloquial Anglo-Indian Words and Phrases*, New Delhi, 2012.

Notes

[1] Fernand Braudel, *The Structures of Everyday Life: The Limits of the Possible*, London, 1981 (reprint), vol. 1, p.421.

[2] James Rennell and Joseph Banks, 'An Account of the Ganges and Burrampooter Rivers', *Philosophical Transactions of the Royal Society of London*, Vol. 71, 1781, pp. 87-88.

[3] John Splinter Stavorinus, *Voyages to the East Indies*, vol. 1, tr. Samuel Hull Wilcocke, London, 1798.

[4] K.K. Datta, *Economic Condition of the Bengal Subah In Years of Transition 1740-1772*, Calcutta, 1984, pp. 183-203.

[5] Jean Deloche and S. N. Mitra, "Boats and Ships in Bengal Terracotta Art", *Bulletin de l'Īcole franśaise d'Extrme-Orient*, Vol. 78 (1991), pp. 1-49.

[6] Tilottama Mukherjee "Of Rivers and Roads: Transport Networks and Economy in Eighteenth-Century Bengal" in Yogesh Sharma ed. *Coastal Histories: Society and Ecology in pre-modern India*, Delhi, 2010 and *Political Culture and Economy in Eighteenth Century Bengal: Networks of Exchange, Consumption and Communication*, New Delhi, 2013.

[7] J. Hornell, 'The Origins and Ethnological Significance of Indian Boat Designs', *Memoirs of the Asiatic Society of Bengal*, vol. 7, Calcutta, 1923, p. 186.

[8] Jean Deloche, *Transport & Communications in India Prior to Steam Locomotion*,

Delhi, 1994, vol. 2, p. 158.

[9] Robert L. Hardgrave, Jr. compiled *Boats of Bengal: Eighteenth Century Portraits by Balthazar Solvyns*, New Delhi, 2001, p. 17.

[10] Ibid., p. 19.

[11] Ibid., p. 30.

[12] Ibid., p. 22.

[13] Ibid., p. 36.

[14] Ibid., p. 45.

[15] Ibid, p. 43

[16] Colesworthy Grant, *Rural Life in Bengal*, p. 25, cited in Robert L. Hardgrave Jr., compiled *Boats of Bengal,* p. 100.

[17] Robert L. Hardgrave, Jr. compiled *Boats of Bengal*, p. 108.

[18] Ibid., p. 113.

[19] Ibid., p. 118.

[20] Robert L. Hardgrave Jr. compiled *Boats of Bengal*, p. 51.

[21] Ibid.

[22] Ibid.

[23] Ibid.

[24] Robert L. Hardgrave, Jr. compiled *Boats of Bengal*, p. 103.

[25] Greenhill, *Boats and Boatmen of Pakistan*, p. 110 cited in Ibid, p. 105.

[26] Thomas Bowrey, *A Geographical Account of Countries Round the Bay of Bengal 1669-1679*, edited by R.C. Temple, New Delhi, 1993, p. 148.

[27] Schouten Gautier, cited in Ibid, p. 140.

[28] Bowrey, p. 140.

[29] H.H. Risley, *The Tribes and Castes of Bengal*, Calcutta, 1892, vol. 2, p. 287.

[30] Ibid, p. 290.

[31] H.H. Risley, *The Tribes and Castes of Bengal*, vol. 1, Calcutta, 1892, 422.

[32] J.C. Jack, *Bengal District Gazetteers: Bakarganj*, Calcutta, 1918, p. 80.

[33] Robert L. Hardgrave, Jr. compiled *Boats of Bengal*, p. 51.

[34] J.Z. Holwell, *Interesting Historical Events Relative to the Provinces of Bengal & the Empire of Indostan*, Part I, London, 1765, p. 200.

[35] Ibid.

[36] WBSA, *Proceedings of the Provincial Council of Revenue at Dacca, 7th October to 23rd December 1776* (Sectt. Series) vol. 13, 19th December 1776.

[37] H. Beveridge, *The District of Bakarganj:Its History and Statistics*, London, 1876, pp. 287-288.

[38] Ibid, p. 28

[39] Beveridge, *Bakarganj*, p. 288.

[40] Ibid, p. 291.

[41] James Rennell and Joseph Banks, "An Account of the Ganges", p. 87.

[42] Anonymous Author, *Sketches of India or Observations Descriptive of the Scenery &c. in Bengal: Written in India, in the years 1811,12,13,14, Together with notes on the Cape of Good-Hope, and St. Helena, written at those places in Feb, March and April 1815,* London 1816, p. 15.

[43] The Consultations of December 13th 1770 point out a letter from the Supervisor of Hooghly to Richard Becher mentioning that the loss of Dandies by the late famine 'has rendered every expedient for the transportation of the salt to the Bunder more or less ineffectual.'W.K. Firminger ed. *Proceedings of the Controlling Council of Revenue at Murshidabad*, Calcutta, 1920, vol. ii, pp. 55. Those who were most severely affected during the great famine of 1769-70 were 'the workmen, manufacturers and people employed in the river [boatmen]', because they 'were without the same means of laying by stores of grain as the husbandmen.' Memoir of Sir George Campbell, in J.C. Geddes, *Administrative Experience*, p. 18, cited in Rajat Datta *Society, Economy and the Market: Commercialization in Rural Bengal c. 1760-1800*,Manohar, 2000, p.252.

[44] Ibid., p. 153.

[45] A Sloop-contractor was essential for the Company's business. Ships could not ply through the narrow creeks and canals of Bengal and were anchored in deep water. The export goods from the inland marts and factories were brought to the ship by the sloops that could easily navigate in shallow water. Again, it was the sloops which transported the cargo from incoming ships to the ware-houses. Thus, with the increased volume of exports the sloop business became a profitable one and from the 1780s Akrur Dutta became the most important sloop contractor of Bengal. Shubhra Chakrabarti, "The English East India Company and the Indigenous Sloop Merchants of Bengal: Akrur Dutta and His Family, 1757-1857", *Studies in History*, 20, 1, New Delhi, 2004, pp. 131-157.

[46] J.C. Jack, *Bakarganj*, p. 33; Beveridge, *Bakarganj*, p. 256.

[47] Translator's notes in Stavorinus, *Voyages to the East Indies*, vol. 1, p. 465.

[48] Stavorinus, vol. 1, p. 465.

[49] Rajat Datta, *Society, Economy and the Market*, p. 28.

[50] J.L. Sherwill, *Geographical and Statistical Report of the Dinagepore District*, Calcutta, 1865. p. 16.

[51] J.C. Jack, *Bakarganj*, p. 51.

[52] WBSA, *Provincial Council of Revenue at Dacca, Proceedings 4 January to 24 April 1775, January the 4th 1775.*

[53] WBSA, *Board of Trade- Commercial, Proceedings 24th November to 30th December 1774, 9th December 1774.*

[54] *Aurang* refers to 'a place where goods are manufactured, a depot for such goods.' This term was applied to the Companies 'factories for the purchase, on advances, of native piece-goods.' Yule & Burnell, *Hobson-Jobson*, p. 40.

[55] For instance on 29th July, Robert Lindsay, reported that 'two Boats bringing to Sylhet 10,000 Cawns, the Revenues of Beejoorah, came to in the Dusk... at the Cutcherry of … pargana…of which Mahmud Rezah is also the Proprietor. A few minutes after their arrival he assembled the Ryotts, who plundered the Boats…' WBSA, *Proceedings of the Provincial Council of Revenue at Dacca 3rd August to 21st December 1779,* (sectt. series) vol. 25, 10th August

1779.

[56] Khondkar Mahbubul Karim, *The Provinces of Bihar & Bengal Under Shahjahan*, Dacca, 1974, p. 187.

[57] Beveridge, *Bakarganj*, p. 285.

[58] Ibid, p. 289.

[59] J.C. Jack, *Bakarganj*, p. 57.

[60] Ibid.

[61] Beveridge, *Bakarganj*, p. 288.

[62] Robert L. Hardgrave Jr. compiled, *Boats of Bengal*, p. 123

[63] Ibid, p. 63.

[64] Beveridge, *Bakarganj*, p. 283.

[65] Ibid. This was because the earth in Bakarganj had a quantity of salt in its composition and was consequently not suitable for pottery. The inhabitants therefore depended on other districts for their supply of pots to be used for domestic purposes.

[66] H.H. Risley, *The Tribes and Castes of Bengal*, vol. 1, p. 525.

[67] Bishop Heber, *Narrative of a journey through the Upper Provinces of India*, vol.1, p. 174.

[68] John Crawford cited in Tilottama Mukherjee, *Political Culture*, p. 173.

[69] Tilottama Mukherjee 'Of Rivers and Roads', p. 19.

[70] Ibid, p. 22.

[71] Ibid.

[72] Rev. Reginald Heber, *Narrative of a Journey through the Upper Provinces of India*, Philadelphia, 1828, vol. 1, pp. 100-101.

[73] Thomas Bacon, *First Impressions and Studies from Nature in Hindostan embracing an outline of the voyage to Calcutta and Five Years Residence in Bengal and the Doab from MDCCCXXXI to MDCCCXXXVI*, London, 1837, vol. 1, pp.229-233.

[74] A letter from Mr. Lindsay to John Shakespeare Chief &c. Provincial Council of Revenue at Dacca points out the following:
'…It was my intention to have accompanied these accounts with the balance of revenue now in the treasury... but finding great difficulty in procuring heavy boats to freight from Sylhet during months of March, April and May few merchants choosing to risk their property on the river at this tempestuous season, I have judged it prudent to decline making you any dispatch of cowries till the commencement of June…' WBSA, *Provincial Council of Revenue at Dacca, 1st April 1779 to 30th July 1779*, 3rd April 1779.Again, the records of the Committee of Circuit point out, 'That from the month of March till June no boats be required to attend the chunam works, the navigation then rendered very dangerous by the sudden and frequent North-Westers that happen. The remaining part of the year the chunam to be transported…at either three or four stated times.' WBSA, *Committee of Circuit Dacca, 3rd October to 28th November, 1772*, *November 3, 1772*.

[75] Balthazar Solvyns cited in Robert L. Hardgrave, Jr. compiled *Boats of Bengal*,

p.14

[76] Rev. Reginald Heber, *Narrative of a Journey through the Upper Provinces of India,* vol. 1, pp. 102-103.

[77] For a detailed account on the Magh raids in Bengal see, Jamini Mohan Ghosh, *Magh Raiders in Bengal*, Calcutta, 1960.

[78] Robert L. Hardgrave, Jr. compiled *Boats of Bengal*, p. 103.

[79] Ibid.

[80] WBSA, Chittagong Records: *Copies of Letters Received 9th March 1778 to 7 September 1779,* vol. no.6.

[81] National Archives of India (henceforth NAI), *Secret Proceedings,* 5 May to 30 June 1777, 12 June 1777.

[82] Robert L. Hargrave Jr. ed. *Boats of Bengal: Eighteenth Century Portraits by Balthazar Solvyns*, Manohar, 2001, p. 66.

[83] Deloche, vol. 2, p. 176.

[84] Fernand Braudel, *The Structures of Everyday Life*, vol. 1, p. 421.

[85] Ibid., p. 87.

[86] The necessity of making surveys and knowing the country imposed the need for extensive movement among the Company officials. Although European officials have highlighted the Bengalis aversion to making long journeys to distant lands, they have also pointed out that necessity might make the Bengali mobile. Mobility was very much induced by political turmoil or natural disasters. Desertion was a readily available means of coping with political turmoil and natural calamities. Thus, the *Maharashta Purana* very graphically recounts that during the Maratha invasions people deserted their habitations *en masse* with all their belongings to seek refuge elsewhere (The *Maharashta Purana: An Eighteenth Century Bengali Historical Text* translated, annotated, and with an Introduction by Edward C. Dimock Jr. and Pratul Chandra Gupta, Honolulu, 1965, pp. 26-28). Pilgrimage was another reason for long-distance travel and was undertaken by the elite as well as the common man. Pilgrims travelled not only within the province-to Gangasagar, Tarapur, Vakresvara, Burrampooter, and to the temples of Nadia and Birbhum but also to Puri in Orissa and Mathura, Vrindavan, Allahabad, Gaya, Banaras and Haridwar. (Tilottama Mukherjee, *Political Culture*, pp. 93-94). Marriages too induced mobility. The marriages of the elites like the zamindars were a grand affair and people from far and near came to attend the weddings.

[87] Robert L. Hargrave Jr. ed. *Boats of Bengal: Eighteenth Century Portraits by Balthazar Solvyns*, p. 55.

On the Chemical Examination of certain Indian Food Stuffs. Part I, Fats and Oils.—*By* P. C. RAY, D. Sc. *Communicated by* ALEX. PEDLER, F.R.S.

[Read February 7th.]

Of late years a belief has been gaining ground in Calcutta, Bombay and in many other important towns in India, not apparently without reason, that wholesale adulteration is practised in many of the common articles of diet, notably in ghee, butter, milk, mustard oil, &c. The present investigation was undertaken with a view to throw some light on these points, and it embodies the results of work carried on at intervals during the last four years.

PRELIMINARY.

As butter enters largely into the dietary of the people of Europe and America, abundant work has been done by Chemists on its analysis. It is, however, well-known that the composition of milk and of the butter made from it is, within certain limits, dependent on the breed, climate, method of feeding the cows, period of lactation, and so on. The standard for genuine butter as generally accepted in England, especially at Somerset House, cannot therefore be always accepted as a safe guide in this country.

The analysis of the fixed oil of mustard and the various other oils with which it is generally sophisticated also presents considerable difficulties. Not much work has been done in this field. The history of the substances which have been subjected to analysis is seldom given, and the experimental methods are not generally described in sufficient detail to enable the results to be compared. While the information available is meagre on the one hand, the results published from time to time are in themselves in some cases contradictory. It was thus found to be

necessary to work out in the first instance a series of *constants* for such Indian food-stuffs as mustard oil, butter, ghee, &c., which might be of some help in deciding cases of falsification.

Particular care was taken in procuring genuine samples of the substances. The oils were, in many cases, expressed under direct supervision from seeds carefully selected, so that the purity of the products was unquestionable. A sample of pure mustard oil was also obtained through the courtesy of the Superintendent, Alipur Jail, and another of cocoanut oil from the officer in charge of the "Copra" works, Viper Island, Port Blair, with a certificate from him, guaranteeing its purity, and stating it to be a standard sample.

The preliminary examination of the fats and oils is much helped by the determination of certain physical *constants*, *e. g.*, melting point, specific gravity, index of refraction, &c. The work in the present communication is confined solely to the chemical methods. The application of the physical tests, is reserved for a future occasion.

The fats and oils are simply combinations of certain acids, the so-called fatty acids, *e. g.*, butyric, stearic, oleic, palmitic, &c., with glycerin; hence they have been named the *glycerides*. By estimating the amount of both or either of these constituents of fatty substances, valuable information is obtained as to their nature. Now, if a fat be treated with an alkali, the fatty acids contained in it combine with the alkali, resulting in the formation of organic salts, commonly called a *soap*, and the separation of glycerin. It so happens, however, that the molecular weights of some of these fatty acids vary within wide limits. Thus, butyric acid, occurring in butter-fat has a molecular weight equivalent to 88, while erucic acid, a component of mustard oil, has a molecular weight of 338. A molecule of caustic potash weighing 56, will exactly neutralise 88 parts by weight of butyric acid or 338 parts by weight of erucic acid. Hence a given weight of butter-fat will require a far larger proportion of caustic potash to convert it into soap—to *saponify* it, as it is technically called—than the same weight of mustard oil. Koettstorfer has made use of this principle. It has in fact been found by actual experiments that while 100 grammes of butter-fat require very nearly 22 grammes of caustic potash for saponification, the same weight of mustard oil requires only 17 grammes of the alkali. The amount of glycerin in a fat or oil also will vary in a corresponding manner.

Again butyric, caproic and other volatile acids present in cocoa-nut oil, butter-fat, &c., may be easily separated from the non-volatile acids by distillation, and their amount ascertained by their potash neutralising power. Upon this principle is based the well-known Reichert's

test. The amount of iodine absorbed by different fats and oils also lies within wide ranges. The iodine absorption test has been employed with remarkable success by Baron Hübl in deciding cases of adulteration.

The following processes have been made use of:—

1. Direct titration of the fats and oils by alcoholic potash—Koettstorfer's test.
2. Estimation of the amount of glycerin.
3. Iodine absorption test of Hübl.
4. Estimation of the volatile fatty acids—Reichert's test.

The detailed results obtained by each of these methods as applied in the present inquiry will now be described.

KOETTSTORFER'S METHOD.

Most of the oils, when recently expressed, contain suspended impurities derived from the seeds, &c., in a very fine state of division. These settle down in course of time. The oils thus clarified by subsidence were filtered through bibulous paper to remove any traces of adherent moisture which might be present. The application of even a gentle heat cannot be resorted to for this purpose. Mustard oil, which is classed among the non-drying oils, was found to gain in weight continually when placed inside the chamber of a water-oven and weighed at intervals of 15 to 20 minutes.

Preparation of Alcoholic Potash.—The alcoholic solution of potash, approximately of semi-normal strength was prepared by dissolving sticks of potash in pure alcohol. The solution, filtered off the insoluble residue, is generally found to have a reddish-yellow color. It has therefore to be decolorised by shaking with pure animal charcoal.

Oil of Mustard.

Sinapis nigra, *S. alba* (Nat. order—Cruciferæ.)

Different samples of mustard seeds were found to yield a fixed oil varying from 32% to 36% of the air-dried seeds.

1. 2·534 gm. oil were weighed into a bottle of about 12 oz. capacity, and 20 c. c. of alcoholic potash solution were added. The mouth of the bottle was closed with an India-rubber cork, fastened by means of wire. The bottle was kept immersed in boiling water for 45 minutes. A blank experiment under exactly similar conditions was made side by side to determine the strength of the potash. The indicator used was phenolphthalein—

$$20 \text{ c. c. KOH} = 20{\cdot}7 \text{ c. c. } \frac{N}{2} \text{ HCl.}$$

4·95 c. c. $\frac{N}{2}$ HCl were required to neutralise the excess of alkali.

(20·7 – 4·95) c. c. or 15·75 c. c. $\frac{N}{2}$ HCl represent the amount of alkali required for the saponification of the oil.

$$1 \text{ c. c. } \frac{N}{2} \text{ HCl} = 0{\cdot}02805 \text{ gm. KOH}$$

Amount of potash consumed by 1,000 gm. oil (=*saponification. equivalent*), is therefore equal to $\frac{15{\cdot}75 \times 0{\cdot}02805 \times 1000}{2{\cdot}534}$ gm. = 174·5 gm.

2. 1·713 gm. oil were heated in a flask over a water-bath for ten minutes with 20 c. c. KOH solution, the mouth of the flask being covered by a watch-glass—

20 c c. KOH = 20·7 c. c. $\frac{N}{2}$ HCl (Blank experiment)

10·1 c. c. $\frac{N}{2}$ HCl were required by the excess of potash.

$$\text{Saponification equivalent} = \frac{10{\cdot}6 \times 0{\cdot}02805 \times 1000}{1{\cdot}713} = 173{\cdot}5$$

3. Mustard oil expressed from a different sample of seeds.

3·084 gm. oil were treated with 20 c. c. KOH solution in a bottle, which was immersed in boiling water for about 40 minutes; the mouth of the bottle being closed by an India-rubber cork tied down by means of wire—

20 c. c. KOH = 20·8 c. c. $\frac{N}{2}$ HCl (Blank titration)

1·5 c. c. $\frac{N}{2}$ HCl were required for the excess of potash.

or 19·3 c. c. $\frac{N}{2}$ HCl represented the amount of alkali used up.

$$\text{Saponification equivalent} = \frac{19{\cdot}3 \times 0{\cdot}02805 \times 1000}{3{\cdot}084} = 175{\cdot}5$$

4. 2·222 gm. oil were treated with 20 c. c. KOH solution and heated in a flask over a water-bath for 12 minutes; the mouth of the flask being covered with a watch-glass—

Excess of alkali required 7 c. c. $\frac{N}{2}$ HCl

20 c. c. KOH „ 20·8 „ „ (Blank titration).

$$\text{Saponification equivalent} = \frac{13{\cdot}8 \times 0{\cdot}02805 \times 100}{2{\cdot}222} = 174{\cdot}2$$

5. 1.8012 gm. oil were saponified under the same conditions as described above, with 40 c. c. KOH solution—

$$40 \text{ c. c. KOH} = 32{\cdot}0 \text{ c. c. } \frac{N}{2} \text{ HCl}$$

$$\text{Excess of alkali} = 21{\cdot}0 \text{ ,, ,,}$$

$$\text{Saponification equivalent} = \frac{0{\cdot}02805 \times 11 \times 10^3}{1{\cdot}8012} = 171{\cdot}3$$

6. Pure mustard oil from Alipur Jail.

3·493 gm. oil were mixed with 20 c. c. potash solution and the mixture kept immersed in boiling water for over half-an-hour. The mouth of the bottle being closed by a cork fastened by a wire—

$$20 \text{ c. c. KOH} = 30{\cdot}7 \text{ c. c. } \frac{N}{2} \text{ HCl}$$

$$\text{Excess of alkali} = 9{\cdot}2 \text{ ,, ,,}$$

$$\text{Saponification equivalent} = \frac{21{\cdot}5 \times 0{\cdot}02805 \times 10^3}{3{\cdot}493} = 172{\cdot}7$$

7. Duplicate analysis of the above. 2·195 gm. oil heated to boiling on a water-bath with 20 c. c. KOH solution for 15 minutes, the mouth of the flask being covered with a watch-glass.

$$20 \text{ c. c. KOH} = 30{\cdot}7 \text{ c. c. } \frac{N}{2} \text{ HCl (Blank experiment)}$$

$$\text{Excess of alkali} = 17{\cdot}2 \text{ ,, ,,}$$

$$\text{Saponification equivalent} = \frac{13{\cdot}5 \times 0{\cdot}02805 \times 10^3}{2{\cdot}195} = 172{\cdot}5$$

It would thus appear that mustard oil is very easily saponified by alcoholic potash, and that a large excess of the latter is not necessary.

The oil was in some cases found to have a pale yellow color, in others the tint was somewhat deeper. The soap solutions were tinged accordingly. The want of exact uniformity in the tint sometimes interfered with the exact determination of the conclusion of the reaction during the titrations. It may also be stated that the soap solutions were generally diluted with about 25 c. c. of hot water, from which all traces of carbonic acid gas had been driven off by boiling.

In the above experiments it will be seen that the saponification equivalent of the samples of mustard oil has varied between 175·5 and 171·3, the average of the seven determinations being 173·5.

Hence it would be safe probably to adopt the saponification equivalent of mustard oil as lying between 171—175.

SAPONIFICATION EQUIVALENT FOR NIGER-SEED OIL.

Guizotia abyssinica (Nat. ord.—Compositæ).

As this oil is one of the commonest adulterants of mustard oil, a genuine sample of it was procured for experiments.

1. 1.4605 gm. oil were weighed out into a flask, 20 c. c. of alcoholic potash were then added, the mixture covered with a watch-glass and treated to gentle boiling, with occasional agitation for 15 minutes.

20 c. c. KOH = 15.95 c. c. $\frac{N}{2}$ HCl (Blank experiment)

Excess of alkali = 6·1 „ „

Saponification equivalent = $\frac{9{\cdot}85 \times 0{\cdot}02805 \times 10^3}{1{\cdot}4605} = 189{\cdot}2$

2. 1·906 gm. oil were saponified as above with 40 c. c. alcoholic potash.

40 c. c. KOH = 31.9 c. c. $\frac{N}{2}$ HCl

Excess of alkali = 18·8 „ „

Saponification equivalent = $\frac{13{\cdot}1 \times 0{\cdot}02805 \times 10^3}{1{\cdot}906} = 192{\cdot}8$

3. 2·184 gm. oil were treated as above with 40 c. c. alcoholic potash solution.

40 c. c. KOH = 31·8 c. c. $\frac{N}{2}$ HCl (Blank experiment)

Excess of alkali = 17·0 „ „

Saponification equivalent = $\frac{14{\cdot}8 \times 0{\cdot}02805 \times 10^3}{2{\cdot}184} = 190{\cdot}0$

The determinations described above were made in November 1891, when the oil was fresh. It was preserved in a stoppered bottle and a year after (November 1892) the saponification equivalent was found to be 191·6.

The saponification number for niger-seed oil may be taken as 190.

SAPONIFICATION EQUIVALENT FOR COCOANUT OIL.

The sample was obtained from Viper Island, Port Blair, and was guaranteed to be a "standard sample."

1. 1·275 gm. oil were treated with 20 c. c. alcoholic solution and heated to boiling on the water-bath as in the previous cases.

20 c. c. KOH = 30·45 c. c. $\frac{N}{2}$ HCl (Blank experiment)

Excess of alkali = 18·75 „ „

Saponification equivalent = $\frac{11{\cdot}7 \times 0{\cdot}02805 \times 10^3}{1{\cdot}275} = 257{\cdot}4$

2. 1·24 gm. oil were treated with 20 c. c. alcoholic potash as above

20 c. c. KOH = 30·4 c. c. $\frac{N}{2}$ HCl (Blank experiment)

Excess of alkali = 19·0 „ „

Saponification equivalent $= \frac{11{\cdot}4 \times 0{\cdot}02805 + 10^3}{1{\cdot}24} = 257{\cdot}8$

3. 1·038 gm. oil with 20 c. c. alcoholic potash solution.

20 c. c. KOH = 20·4 c. c. $\frac{N}{2}$ HCl

Excess of alkali = 10·8 „ „

Saponification equivalent $= \frac{9{\cdot}6 \times 0{\cdot}2805 \times 10^3}{1{\cdot}038} = 259{\cdot}4$

The saponification equivalent for cocoanut oil is thus found to lie between 257—260.

SAPONIFICATION EQUIVALENT OF PURE FRESH GHEE (CLARIFIED BUTTER).

1. 13·525 gm. ghee were heated in a water-oven and then kept inside a desiccator for a week. The ghee was then found to weigh 13·5 gm. It would thus appear that ghee is not hygroscopic; nor does it contain any moisture.

1. 1·8196 gm. ghee were treated with 20 c. c. alcoholic potash solution. Details as in the previous cases.

20 c. c. KOH = 31·0 c. c. $\frac{N}{2}$ HCl (Blank titration)

Excess of alkali = 16·55 „ „

Saponification equivalent $= \frac{14{\cdot}45 \times 0{\cdot}02805 \times 10^3}{1{\cdot}8196} = 222{\cdot}7$

2. 2·0776 gm. ghee saponified with 20 c. c. alcoholic potash solution.

20 c. c. KOH = 30·8 c. c. $\frac{N}{2}$ HCl (Blank titration)

Excess of alkali = 14·5 „ „

Saponification equivalent $= \frac{16{\cdot}3 \times 0{\cdot}02805 \times 10^3}{2{\cdot}0776} = 220{\cdot}07$

3. The same ghee re-melted and filtered. There was no residue on the filter.

1·294 gm. saponified with 20 c. c. alcoholic potash.

20 c. c. KOH = 30.9 c. c. = $\frac{N}{2}$ HCl (Blank titration)

Excess of alkali = 21·45 „ „

Saponification equivalent $= \frac{9{\cdot}45 \times 0{\cdot}02805 \times 10^3}{1{\cdot}204} = 220{\cdot}1$

ANOTHER SAMPLE OF GHEE.

1. 1·547 gm. were treated with 20 c. c. alcoholic potash, the mouth of the flask was closed with a cork to which was attached a long glass tube, which acted as a reflex condenser.

20 c. c. KOH = 16·5 c. c. $\frac{N}{2}$ HCl (Blank tit.)

Excess of alkali = 4·5 „

Saponification equivalent $= \frac{12 \times 0{\cdot}02805 \times 10^3}{1{\cdot}547} = 217{\cdot}6$

2. 1·1512 gm. ghee treated with 30 c. c. potash.

30 c. c. KOH = 25 c. c. $\frac{N}{2}$ HCl (Blank tit.)

Excess of alkali = 16·0 „ „

Saponification equivalent $= \frac{9 \times 0{\cdot}02805 \times 10^3}{1{\cdot}1512} = 219{\cdot}2$

SAPONIFICATION EQUIVALENT FOR MOWA "BUTTER."

Oil of *Bassia latifolia*—(Nat. order—Sapotaceæ.)

This substance by its physical characters, *e. g.*, color, consistency, melting point, &c., much resembles ghee, and is therefore frequently used for its falsification.

1. 1·396 gm. oil were placed in a stout 12oz. bottle, together with 40 c. c. alcoholic potash solution. The mouth of the bottle was closed with a India-rubber cork, fastened by means of wire. It was then kept immersed in boiling water, with occasional shaking.

40 c. c. alcoholic potash were also heated under exactly the same conditions—

40 c. c. KOH = 31·6 c. c. $\frac{N}{2}$ HCl (Blank exp.)

Excess of alkali = 21·6 „ „

Saponification equivalent $= \frac{10 \times 0{\cdot}02805 \times 10^3}{1{\cdot}396} = 200{\cdot}9$

2. 2·086 gm. oil heated under pressure just as above—

20 c. c. KOH = 29·3 c. c. $\frac{N}{2}$ HCl (Blank.)

Excess of alkali = 14·6 „ „

Saponification equivalent $= \frac{14{\cdot}7 \times 0{\cdot}02805 \times 10^3}{2{\cdot}086} = 197{\cdot}6$

The soap solutions were perfectly clear and colourless.

To ensure complete saponification it is preferable to treat Mowa oil under pressure as above. If the oil be simply heated on a water-

bath, with a watch-glass at the mouth of the flask, the soap solution is sometimes found to have a turbid appearance, and the Saponification equivalent comes out rather low.

Saponification number for Mutton-fat.

The fat was melted over a water-bath and filtered to get rid of the shreds of membrane, &c.

1. 1·3906 gm. of fat were treated with 20 c. c. alcoholic potash and heated over a water-bath for 15 minutes.

20 c. c. KOH = 16·2 c. c. $\frac{N}{2}$ HCl (Blank.)

Excess of „ = 6·0 „ „

$$\text{Saponification equivalent} = \frac{0{\cdot}02805 \times 10{\cdot}2 \times 10^3}{1{\cdot}3906} = 205{\cdot}7$$

2. 0·9318 gm. of the same sample treated with 20 c. c. alcoholic potash, &c.

20 c. c. KOH = 16·15 c. c. $\frac{N}{2}$ HCl (Blank.)

Excess of „ = 9·3 „ „

$$\text{Saponification equivalent} = \frac{0{\cdot}02805 \times 6{\cdot}85 \times 10^3}{0{\cdot}9318} = 206{\cdot}2$$

Another sample of Mutton-fat.

0·8354 gm. was treated with 20 c. c. KOH.

20 c. c. KOH = 16·15 c. c. $\frac{N}{2}$ HCl (Blank.)

Excess of „ = 10·2 „ „

$$\text{Saponification equivalent} = \frac{5{\cdot}95 \times 0{\cdot}02805 \times 10^3}{0{\cdot}8354} = 199{\cdot}8$$

Duplicate analysis of the same sample gave the number as 199·2.

Saponification equivalent of oil of Sesame.*

Sesamum indicum (Nat. Order: Pedaliaceæ.)

1. 1·6835 gm. oil were heated over a water-bath with 20 c. c. alcoholic potash solution for 15 minutes.

2. 1·3145 gm. oil were heated as above with 30 c. c. alcoholic potash solution.

20 c. c. KOH = 16·2 c. c. $\frac{N}{2}$ HCl (Blank.)

∴ 30 c. c. „ = 24·3 „ „

* The oil was extracted by means of carbon bisulphide.

4·8 c. c. $\frac{N}{2}$ HCl were required by (1) for the excess of alkali.

15·4 „ „ „ „ (2) „ „ „

Saponification equivalent of (1) $= \frac{11{\cdot}4 \times 0{\cdot}02805 \times 10^3}{1{\cdot}6835} = 190{\cdot}0$

Do. do. (1) $= \frac{8{\cdot}9 \times 0{\cdot}02805 \times 10^3}{1{\cdot}3145} = 189{\cdot}9$

SAPONIFICATION EQUIVALENT OF LARD.*

1. 1·4245 gm. lard were heated over a water-bath with 20 c. c. alcoholic potash solution.

2. 1·432 gm. lard heated as above with 30 c. c. alcoholic potash solution—

20 c. c. KOH = 15·8 c. c. $\frac{N}{2}$ HCl

∴ 30 „ = 23·7 „ „

(1) Consumed 5·9 c. c. $\frac{N}{2}$ HCl for the excess of alkali.

(2) „ 13·7 „ „ „ „

Saponification equivalent for (1) $= \frac{9{\cdot}9 \times 0{\cdot}02805 \times 10^3}{1{\cdot}4245} = 194{\cdot}9$

„ „ „ (2) $= \frac{10 \times 0{\cdot}02805 \times 10^3}{1{\cdot}432} = 195{\cdot}9$

Mean of two = 195·4.

ESTIMATION OF GLYCERIN ACCORDING TO FOX AND WANKLYN'S METHOD, AS IMPROVED BY BENEDIKT AND ZSIGMONDY.

In view of the contradictory statements which have appeared from time to time as regards the applicability of this process, a few preliminary experiments were undertaken with the object of testing its trustworthiness :—

(*a*) A solution of pure oxalic acid was divided into two equal portions. The oxalic acid was thrown down by means of calcium acetate in presence of acetic acid. The oxalate precipitate was in one case dissolved in hot hydrochloric acid, the solution diluted with water and further acidified with sulphuric acid, warmed to about 60°, and titrated against accurately standardised permanganate solution. In another case the oxalate precipitate was converted by ignition into lime.

* The lard was a standard sample and was not taken off any particular part of the pig's carcass.

$\left(1 \text{ c. c. } \frac{N}{10} \text{ KMn } O_4 = 0{\cdot}0028 \text{ gm. CaO}\right)$. The two results were found to be thoroughly concordant.

(*b*) Oxidation of glycerin to oxalic acid :—

1. 5·62 gm. of glycerin were weighed into a flask and diluted to 500 c. c. with water. 25 c. c. of the solution were oxidised to oxalic acid.*

25 c. c. sol. $= \frac{5{\cdot}62}{20}$ gm. glycerin $= 0{\cdot}281$ gm. glycerin on the supposition that the sample contained cent. per cent. of glycerin.

The potassium oxalate solution was made up to 500 c. c. of which 100 c. c. gave 0·028 gm. CaO (by ignition)

or 500 c. c. KŌ Sol. $= 0{\cdot}028 \times 5$ gm. CaO $= 0{\cdot}02 \times 5$ Ca

But 0·002 gm. Ca $= 0{\cdot}0046$ gm. glycerin.

$\therefore$ 0·02 gm. Ca $= 0{\cdot}046$ gm. glycerin.

or $(0{\cdot}02 \times 5)$ gm. Ca $= 0{\cdot}046 \times 5$ gm. glycerin $= 0{\cdot}23$ gm. glycerin.

The Sample thus contained $100 \times \frac{0{\cdot}23}{0{\cdot}281}$ or 81·8 °/₀ of glycerin.

2. 5·895 gm. glycerin (the same sample) were dissolved in water and diluted to 500 c. c., of which 25 c. c. were oxidised to oxalic acid.

$$25 \text{ c. c. sol.} = \frac{5{\cdot}895}{20} \text{ gm.} = 0{\cdot}2947 \text{ gm. glycerin.}$$

The oxalate solution was made up to 500 c. c., of which 100 c. c. yielded 0·0285 gm. CaO $= 0{\cdot}02035$ gm. Ca.

But 1 c. c. $\frac{N}{10}$ $KMnO_4 = 0{\cdot}002$ Ca from CaC_2O_4

$= 0{\cdot}0046$ gm. glycerin.

$\therefore$ 0·02035 gm. Ca $= 0{\cdot}046805$ gm. glyc.

or 500 c. c. oxalate sol. $= (0{\cdot}046805 \times 5)$ gm. glyc.

$\therefore$ $= 0{\cdot}234$ gm. glyc.

The sample thus contained $100 \times \frac{0{\cdot}234}{0{\cdot}2947}$ or 79·75 °/₀ glycerin.

The mean of the above two determinations may be taken as 80 °/₀ approximately.

Saponification of Mustard Oil.

(Estimation of glycerin.)

1. 8·65 gm. oil were saponified according to Allen's method.† The soap solution was treated with dilute sulphuric acid, the beaker in

* An abstract of Benedikt and Zsigmondy's method will be found in *Jour. Soc. Chem. Ind.* IV, 610.

† The use of alcoholic potash is highly objectionable; "pure methyl alcohol" is difficult to procure. "Hence," as Allen remarks. "I have latterly aimed at

which it was contained was immersed in ice-cold water to completely solidify the separated fatty acids. The glycerin solution was then filtered off and made up to 250 c. c. of which 20 c. c. were each time oxidised to oxalic acid. The oxalic acid was thrown down by calcium acetate. The precipitate of $Ca\bar{O}$ was dissolved in HCl, further acidified with H_2SO_4, and titrated with N/10 $KMnO_4$. The strength of the permanganate solution was ascertained each time by titration against re-crystallised oxalic acid and sometimes against ferrous ammonic sulphate.

7·5 c. c. N/10 $KMnO_4$ were used up by the oxalic acid solution.

1 c. c. N/10 $KMnO_4$ = 0·0063 gm. $\bar{O}$ = 0·0046 gm. glycerin; hence amount of glycerin in 20 c. c. sol.

$$= 0{\cdot}0046 \times 7{\cdot}5 \text{ gm.}$$

$\therefore$ Total glycerin in 250 c. c.

$$= (0{\cdot}0046 \times 7{\cdot}5) \times \frac{250}{20} \text{ gm.}$$

$$= 0{\cdot}431 \text{ gm.}$$

Per cent. of glycerin in the oil = 4·98.

But the N/10 $KMnO_4$ = 0·0061 gm. $\bar{O}$ instead of 0·0063 gm. $\bar{O}$.

Per cent. of glycerin in the oil = 4·82.

2. 8·48 gm. oil were saponified just as above. The glycerin solution made up to 250 c. c., of which 50 c. c. were oxidised to oxalic acid.

The oxalate solution was divided into two equal portions, one-half (*a*) (=25 c. c. glyc. sol.) was acidified with H_2SO_4, heated to boiling and titrated, the other half (*b*) was treated with Ca $\bar{A}c$, and the precipitated $Ca\bar{O}$ dissolved in dilute H_2SO_4 and then titrated with $\frac{N}{10}$ $KMnO_4$.

(*a*) Required 17·0 c. c. $\frac{N}{10}$ $KMnO_4$

(*b*) „ 15·0 „ „

1 c. c. $\frac{N}{10}$ $KMnO_4$ = 0·0046 gm. glyc.

15 c. c. $\frac{N}{10}$ „ = 0·0046 × 15 gm. glyc. = 0·069 gm. glyc.

$\therefore$ 250 c. c. glyc. solution contains 0·69 gm. glycerin.

Per cent. of glycerin in the oil = 8·14.

Experience has shewn that the oxalate solution if titrated direct, after addition of H_2SO_4, gives the result too high. Precipitation of the

effecting saponification by aqueous alkali, and thus completely avoiding the source of error in question." *Jour. Soc. Chem. Ind.* V. 70; also Sutton's Volumetric Analysis, 6th ed. p. 345.

oxalate as CaŌ cannot be dispensed with. These experiences are in conformity with those of Allen and Belcher. Two more saponifications carried on as above yielded the percentage of glycerin as 5·3 and 6·0 respectively.

An Improved Method of Saponification.

It is thus evident that the saponification was by no means complete, as the percentage of glycerin ranged between 8·14 and 4·8. Allen's method had thus to be abandoned. It was, in fact, noticed that the oily layer invariably floated over the solution of caustic potash and that shaking simply brought about a momentary incorporation of the oil and alkali. The two layers separated as soon as the bottle was placed in the boiling water. This difficulty was obviated by the introduction into the bottle of asbestos wool, thoroughly ignited previously to get rid of accidental organic impurities. This absorbing medium brought the oil and the alkali into intimate contact with each other and thus complete saponification was ensured. The heating was done just as in the previous cases, *i. e.*, by immersion in boiling water.

1. 1·573 gm. oil were treated as above, the fatty acids liberated by means of dilute H_2SO_4 and filtered off. The mass of asbestos, which had become slimy by the absorption of the fatty acids was then thrown on the filter-paper and repeatedly exhausted with hot water. Scarcely a trace of the fatty acids was found to pass through the filter-paper.* The filtration was carried on with the aid of a Bunsen's pump.

The glycerin solution was made up to 250 c. c., of which 100 c. c. were oxidised to oxalic acid. The latter thrown down as CaŌ. The CaŌ dissolved in dilute H_2SO_4 and the solution made up to 250 c. c., of which

100 c.c. reqd. 4·7 c. c. $\frac{N}{10}$ $KMnO_4$

or 250 „ „ 11·75 „ „ (=100 c. c. glycerin sol.)

∴ 250 c. c. glycerin solution = 29·37 c. c. $\frac{N}{10}$ $KMnO_4$

and 1 c. c. $\frac{N}{10}$ $KMnO_4$ = 0·0046 gm. glyc.

∴ 29·37 „ „ = 0·135102 gm. glyc.

or 1·573 gm. oil yielded 0·135102 gm. glyc.

whence glycerin $^0/_0$ = 8·6

2. 2·167 gram. oil were saponified as above.

The glycerin solution made up to 250 c. c. of which 100 c. c.

* The filtered solution of glycerin was sometimes perfectly clear, sometimes slightly opalescent.

oxidised to $\bar{O}$, precipitated as $Ca\bar{O}$, &c., and titrated = 16·0 c. c. $\frac{N}{10}KMnO_4$

whence percentage of glycerin = 8·45

3. 1·99 gm. oil saponified as above. Details exactly the same as in the preceding.

250 c. c. glycerin solution = 35 c. c. $\frac{N}{10}$ $KMnO_4$

glycerin $^0/_0$ = 8·1

4. 1·3165 gm. oil saponified according to the improved method. Details the same as in the previous cases—

250 c. c. glycerin sol. = 25·0 c. c. $\frac{N}{10}$ $KMnO_4$

= 0·115 gm. glycerin

glycerin $^0/_0$ = 8·7.

The permanganate solution on direct titration against ferrous ammonium sulphate gave

1 c. c. = 5·6 (1 − 0·02) mgs. Fe.

Whence glycerin per cent. (corrected) = 8·7 (1 − 0·02)

= 8·53

5. 2·0365 gm. oil saponified: details the same—

250 c. c. glyc. sol. = 37·5 $\frac{N}{10}$ $KMnO_4$

Glycerin per cent. = 8·33 (corrected).

6. 1·264 gm. oil saponified as above

250 c. c. glycerin solution = 23·75 c. c. $\frac{N}{10}$ $KMnO_4$

Whence glycerin per cent. = 8·64.

It would thus be safe to take the percentage of glycerin in mustard oil as 8·5. The oil used was not in every case identical, but from different samples, in fact, the same as used in the determination of the saponification equivalent.

DETERMINATION OF GLYCERIN IN MUTTON-FAT BY THE ASBESTOS METHOD.

1. 1·0425 gm. fat were saponified under pressure as in the case of mustard oil.

The glycerin solution was made up to 500 c. c. of which 100 c. c. were oxidised to $\bar{O}$. The $Ca\bar{O}$ was dissolved in dilute H_2SO_4 and made up to 250 c. c.; 50 c. c. of the latter were equivalent to 1 c. c. $\frac{N}{10}$ $KMnO_4$

or 250 $Ca\bar{O}$ sol. = 100 c. c. glyc. sol. = 5 c. c. $\frac{N}{10}$ $KMnO_4$

or 250 c. c. glycerin solution = 25 c. c. $\frac{N}{10}$ $KMnO_4$

and 1 c. c. $\frac{N}{10}$ $KMnO_4$ = 0·0046 gm. glycerin

Total amount of glycerin = 0·0046 × 25 gm. = 0·115 gm.

whence percentage = 11·03.

But, 1 c.c. $\frac{N}{10}$ $KMnO_4$ when titrated against pure oxalic acid was found to be equal to, 1 c. c. $\frac{N}{10}$ $KMnO_4$ (1 − 0·02)

∴ per cent. of glycerin (corrected) = 11·03 (1 − 0·02)

= 10·81.

2. 1·8877 gm. fat were saponified as above; the heating was continued for 6 days on an average of 3½ hours each day.

The filtrate* (= glycerin solution) was made up to 500 c. c. of which 50 c. c. were oxidised to $K\bar{O}$, &c.

The $Ca\bar{O}$ sol. was made up to 250 c. c. of which 100 c. c. required

1·7 c. c. $\frac{N}{10}$ $KMnO_4$

∴ 250 c. c. $Ca\bar{O}$ sol. = $(1{\cdot}7 \times \frac{5}{2})$ c. c. $\frac{N}{10}$ $KMnO_4$

or 50 c. c. glyc. sol. = 4·25 c. c. $\frac{N}{10}$ $KMnO_4$

or 500 „ „ „ = 42·5 „ „ „

whence percentage of glycerin = 10·36

per cent. corrected = 10·36 (1 − 0·02) = 10·16

Theoretical percentage of glycerin in mutton-fat, calculated as tri-stearin = 10·33.

Determination of Glycerin in Niger-Seed Oil.

1. 3·165 gm. oil were treated with potash solution and asbestos, &c., as in the case of mustard oil.

The glycerin solution was made up to 250 c. c. of which 50 c. c. were oxidised to $\bar{O}$, and the $Ca\bar{O}$ sol. also made up to 250 c. c—

50 c. c. $Ca\bar{O}$ sol. = 3 c. c. $\frac{N}{10}$ $KMnO_4$

* The filtrate in the above cases was very faintly milky. It was therefore surrounded by ice-cold water to solidify, if possible, minute traces of fatty acids which might have remained in suspension. The opalescence, however, could not be got rid of. On standing for 3 to 4 days the solution kept in a stoppered flask became clear, but was at the same time the *nidus* of a kind of fungoid growth, resembling flakes of cotton-wool.

$\therefore$ 250 c. c. CaŌ sol. $= 15$ c. c. $\frac{N}{10}KMnO_4$

or 50 glycerin solution $= 15$ „ „ „

or 250 „ „ $= 75$ „ „ „

But 1 c. c. $\frac{N}{10}$ $KMnO_4$ $= 0{\cdot}0046$ gm. glycerin.

$$\text{Percentage of glycerin} = \frac{75 \times 0{\cdot}0046 \times 10^2}{3{\cdot}165} = 10{\cdot}9.$$

2. 1·704 gm. oil were treated exactly as above, the glycerin solution made up to 500 c. c. of which 100 c. c. were oxidised to oxalic acid. The CaŌ dissolved in dilute H_2SO_4 was made up to 250 c. c.

50 c. c. CaŌ sol. $= 1{\cdot}6$ c. c. $\frac{N}{10}$ $KMnO_4$

$\therefore$ 250 c. c. „ „ $= 8{\cdot}0$ „ „ „

or 100 c. c. glycerin sol. $= 8{\cdot}0$ „ „ „

$\therefore$ 500 „ „ „ $= 40{\cdot}0$ „ „ „

$$\text{Percentage of glycerin} = \frac{40 \times 0{\cdot}0046 \times 10^2}{1{\cdot}704} = 10{\cdot}8.$$

The percentage of glycerin in niger-seed oil is thus practically the same as in mutton-fat.

Estimation of Glycerin in Butter-fat.

The oxidation of glycerin by the alkaline permanganate is not applicable in the case of butter-fat, as the soluble fatty acids, *e. g.*, butyric, caproic, &c., it contains yield notable quantities of oxalic acid under the same treatment. The same remarks apply to the case of cocoanut oil (See *Chem. News*, Vol. LXIII, p. 251).

NOTE ON THE FOX AND WANKLYN METHOD OF ESTIMATING GLYCERIN.

This method, although it yields accurate results, can scarcely be made use of by the ordinary commercial analysist on account of its tedious and troublesome nature. Moreover, the manganese precipitate, sometimes bulky, cannot be properly washed without the aid of a Bunsen's filter-pump. The details recorded above will show that each determination of glycerin involves steady work of several hours. If ordinary alcohol be used as a solvent for the fats and oils, saponification is easily effected, but there is considerable risk of the loss of glycerin during the evaporation of alcohol.

ON THE LOSS OF GLYCERIN BY VOLATILISATION.

2·165 gm. glycerin were diluted with water to 250 c. c.; 50 c. c. were each time mixed with 25 c. c. pure alcohol, the latter evaporated off on a water-bath in—

(1) A platinum basin of 3 in. diameter.
(2) A porcelain basin of 5 in. diameter.
(3) Do. do. of about 3 in. diameter.

In (1) and (2) the percentage of glycerin was found to be 74·0; in (3) the percentage was 77·8. The percentage as found before (see p. 69) should have been 80.

It is thus evident that during the evaporation of alcohol considerable quantities of glycerin are carried off.

IODINE ABSORPTION FOR FATS AND OILS.†

COCOANUT OIL.

The sample was the same as used for the determination of the saponification equivalent.

1. 1·3585 gm. oil were digested for 24 hours with 10 c. c. chloroform and 20 c. c. iodine solution. In this as well as in the subsequent analyses a blank experiment was each time made side by side, and under exactly similar conditions, to determine the strength of the iodine solution. The time allowed for digestion was from 18 to 24 hours.

20 c. c. iod. sol. + 10 c. c. $CHCl_3$ = 35·0 c. c. $Na_2S_2O_3$ (Blank exp.)
Excess of iodine = 27·5 „ „
Diff. = 7·5 „ „

7·5 c. c. $Na_2S_2O_3$ represent the amount of iodine absorbed by the oil.
But 1 c. c. $Na_2S_2O_3$ = 0·01265 gm. iodine.
Hence amount of iodine consumed by 100 gm. oil, "iodine degree,"

$$= \frac{0{\cdot}01265 \times 7{\cdot}5 \times 100}{1{\cdot}3585} = 6{\cdot}99.$$

But the actual strength of the thiosulphate solution, as checked by titration against pure iodine, was found to be equal to 0·01265 (1 − 0·03) gm. per 1 c. c.

Corrected iodine number = 6·99 (1 − 0·03) = 6·78.

2. 1·459 gm. oil were digested as before.

26·5 cc $Na_2S_2O_3$ sol. were taken up by the excess of iodine, and
20 c. c. iod. sol. = 35·0 c. c. $Na_2S_2O_3$.

$$\text{Iodine degree} = \frac{0{\cdot}01265 \times 8{\cdot}5 \times 100}{1{\cdot}459} = 7{\cdot}37$$

Corrected number = 7·37 (1 − 0·03) = 7·15

† For details of Hübl's method, see *Journ. Soc., Chem. Ind.* iii, 642 also Allen's *Org. Analysis.*

3. 1·016 gm. oil were digested for 24 hours with 20 c. c. 1 and 10 c. c. $CHCl_3$

20 c. c. 1 + 10 c. c. $CHCl_3$ = 16·0 c. c. $Na_2S_2O_3$ (Blank exp.)

Excess of iodine = 10·4 ,, ,,

Dif. 5·6 ,, ,,

$$\text{Iodine degree} = \frac{0{\cdot}01265 \times 5{\cdot}6 \times 100}{1{\cdot}016} = 6{\cdot}97$$

Corrected number = 6·97 (1 − 0·03) = 6·76.

4. 1·984 gm. oil were digested with 30 c. c. iod. sol. and 10 c. c. $CHCl_3$. Excess of iodine = 13 c. c. $Na_2S_2O_3$.

30 c. c. iod. sol. + 10 c. c. $CHCl_3$ = 24 c. c. $Na_2S_2O_3$ (Blank exp.)

$$\text{Iodine degree} = \frac{0{\cdot}01265 \times 11 = 100}{1{\cdot}984} = 7{\cdot}01$$

Corrected number = 7·01 (1 − 0·03) = 6·81.

Ghee (Clarified Butter.)

1. 0·955 gm. ghee was digested for 24 hours with 10 c. c. $CHCl_3$ and 20 c. c. iod. sol.

10 c. c. $CHCl_3$ + 20 c. c. iod. sol. = 32·8 c. c. $Na_2S_2O_3$

Excess of iodine = 6·3 ,, ,,

Dif. = 26·5

$$\text{Iodine degree} = \frac{0{\cdot}01265 \times 100 \times 26{\cdot}5}{0{\cdot}955} = 35{\cdot}1$$

2. 0·216 gm. ghee was digested as above

27·0 c. c. $Na_2S_2O_3$ was taken up by the excess of iodine.

$$\text{Iodine degree} = \frac{0{\cdot}1265 \times 5{\cdot}8 \times 100}{0{\cdot}216} = 33{\cdot}9$$

Mean of the two determinations = 34·5

Corrected number = 34·5 (1 − 0·03) = 33·5

The saponification equivalent of this sample of ghee was found to be 221 (See p. 65).

Another Sample of Ghee.

1. 0·355 gm. was digested with 20 c. c. iod. sol. and 10 c. c. $CHCl_3$. 10·3 c. c. $Na_2S_2O_3$ were required for the excess of iodine.

20 c. c. iod. sol. + 10 c. c. $CHCl_3$ = 22·6 c. c. $Na_2S_2O_3$

$$\text{Iodine degree} = \frac{12{\cdot}3 \times 0{\cdot}01265 \times 100}{0{\cdot}355} = 43{\cdot}8$$

2. 0·303 gm. substance was treated with 20 c. c. iod. sol. and 10 c. c. $CHCl_3$; 12·1 c c $Na_2S_2O_3$ sol. were taken up by the excess of iodine.

$$\text{Iodine degree} = \frac{10{\cdot}5 \times 0{\cdot}01265 \times 100}{0{\cdot}303} = 43{\cdot}8$$

Mean of the above two determinations = 43·8

But 1 c. c. $N_2S_2O_3$ was equal to (1 − 0·1) gm. iodine.

Corrected number = 39·4

The saponification equivalent for this sample of ghee was 218 *(p. 66)*.

Iodine Degree for Mustard Oil.

(1) 0·140 gm. oil was digested for about 24 hours with 20 c. c. iod sol. and 10 c. c. chloroform.

(2) 0·202 gm. oil was digested for the same length of time with 30 c. c. iod. sol. and 10 c. c. $CHCl_3$

20 c. c. iod. sol. + 10 c. c. $CHCl_3$ = 27·5 c c. $Na_2S_2O_3$ (Blank exp.)

30 „ „ „ = 41·25 c. c. „

(1) required 16·6 c. c. $Na_2S_2O_3$ for the excess of iodine.

(2) „ 25·4 „ „ „ „ „ „

Amount of iodine consumed by (1) is equivalent to 10·9 c. c. $Na_2S_2O_3$

„ „ „ (2) „ „ „ 15·85 c. c. „

$$\text{Iodine degree for (1)} = \frac{0{\cdot}01265 \times 10{\cdot}9 \times 100}{{\cdot}14} = 98{\cdot}5$$

$$\text{„ „ „ (2)} = \frac{0{\cdot}01265 \times 15{\cdot}85 \times 100}{0{\cdot}202} = 98{\cdot}5$$

But 1 c. c. $Na_2S_2O_3$ = 1 c. c. $I \times \frac{10}{10{\cdot}2}$ (as found by actual titration with pure iodine).

Iodine degree (corrected) = 96·9 or 97·0

Iodine Degree for Niger-seed Oil.

(1) 0·137 gm. oil was digested with 30 c.c. iod. sol. and 10 c.c. chloroform.

(2) 0·171 „ „ „ 40 „ „ „ „

(3) 0·098 „ „ „ 30 „ „ „ „

30 c. c. I + 10 c. c. $CHCl_3$ = 45·2 c. c. $Na_2S_2O_3$ (Blank exp.)

Whence also

40 „ „ „ = 60·26 „ „

(1) Required 32·0 c. c. $Na_2S_2O_3$ for the excess of iodine.

(2) „ 43·4 „ „ „ „ „

(3) „ 35·6 „ „ „ „ „

$$\text{Iodine degree for (1)} = \frac{0{\cdot}01265 \times 13{\cdot}2 \times 100}{0{\cdot}137} = 121{\cdot}8$$

$$\text{„ „ (2)} = \frac{0{\cdot}01265 \times 16{\cdot}86 \times 100}{{\cdot}171} = 124{\cdot}7$$

$$\text{„ „ (3)} = \frac{0{\cdot}01265 \times 9{\cdot}6 \times 100}{0{\cdot}098} = 123{\cdot}9$$

The *mean* of the three numbers is 123·5

But 1 c. c. $Na_2S_2O_3$ = 1 c. c. $\frac{N}{10}I \times \frac{10}{10·3}$

Hence the iodine degree (corrected) = 120

IODINE DEGREE FOR EARTH-NUT OIL.*

(1) 0·181 gm. oil was digested with 20 c. c. iod. sol. and 10 c. c. $CHCl_3$.

20 c. c. I + 10 c. c. $CHCl_3$ = 20·8 c. c. $Na_2S_2O_3$ (Blank titration)

4·7 c. c. $Na_2S_2O_3$ were required for the excess of iodine.

Iodine degree $= \frac{16·1 \times 0·01265 \times 100}{0·181} = 112·5$

But 1 c. c. $Na_2S_2O_3$ = 1 c. c. $\frac{N}{10}I \times \frac{10}{11·5}$

Corrected number $= 112·0 \times \frac{10}{11·5} = 97·5$

(2) 0·1645 gm. oil was treated with 30 c. c. iod. sol. and 10 c. c. chloroform.

(3) 0·1535 „ „ „ 30 „ „ „ „

(2) Required 15·0 c. c. $Na_2S_2O_3$ for the excess of iodine.

(3) „ 16·0 „ „ „ „ „

The iodine degree for (1) = 103·8

„ „ „ (2) = 103·0

Mean of two determinations = 103·4

But 1 c.c. $Na_2S_2O_3$ = 1 c. c. $\frac{N}{10}I \times \frac{10}{10·5}$

Hence corrected number $= 103·4 \times \frac{10}{10·5} = 98·5$

MOWA FAT.

(1) 0·1815 gm. oil was treated with 10 c.c. $CHCl_3$ and 20 c.c. iod. sol.

(2) 0·186 „ „ „ and 30 c.c. „ „

11·5 c. c. $Na_2S_2O_3$ were reqd. for the excess of iod. by (1)

21·5 „ „ „ „ „ „ (2)

20·0 c. c. iod. sol. + 10 c. c. $CHCl_3$ = 20·6 c. c. $Na_2S_2O_3$

30·0 „ „ „ „ = 30·9 „ „

From which we get the iodine degree for

(1) as 63·42, and that for (2) as 63·88

Mean of two = 63·7

But 1 c. c. $Na_2S_2O_3$ = 1 c. c. $\frac{N}{10}I \times \frac{10}{10·3}$

Corrected number $= 63·7 \times \frac{10}{10·3} = 61·8$

* The saponification equivalent of this sample was found to be 195·0.

Iodine Degree for Sesame' Oil.*

(November 29, 1893.)

(1) 0·2806 gm. oil was digested with 20 c. c. iod. sol. and 10 c. c. $CHCl_3$.

5·9 c. c. $Na_2S_2O_3$ were required for the excess of iodine.

20 c. c. I = 29·8 c. c. $Na_2S_2O_3$ (Blank exp.)

$$\text{Iodine degree} = \frac{23{\cdot}9 \times 0{\cdot}01265 \times 100}{0{\cdot}2806} = 107{\cdot}7$$

But 1 c. c. $Na_2S_2O_3$ had the actual strength 1 c. c. $\times (1 - 0{\cdot}02) \frac{N}{10}$ I

Corrected number $= 107{\cdot}7\ (1 - 0{\cdot}02) = 105{\cdot}5$

(December 5, 1893.)

(2) 0·1721 gm. oil was digested with 20 c. c. I sol. and 10 c. c. $CHCl_3$

(3) 0·2065 „ „ „ „ „ „

(4) 0·227 „ „ „ „ „ „

20 c. c. I sol. + 10 c. c. $CHCl_3$ = 25·5 c. c. $\frac{N}{10}$ $Na_2S_2O_3$ (Blank titration)

No. (2) required 10·9 c. c. $Na_2S_2O_3$ for the excess of iodine.

No. (3) „ 8·2 „ „ „ „ „

No. (4) „ 6·4 „ „ „ „ „

From which we get the iodine degree for

(2) = 10·73
(3) = 106·0 } mean = 106·6
(4) = 106·4

But 1 c. c. $Na_2S_2O_3$ = 1 c.c. I $(1 - 0{\cdot}02)$

Corrected number = 106·6 $(1 - 0{\cdot}02) = 104{\cdot}5$.

Iodine Degree for Lard.

(1) 0·2215 gm. lard was digested with 20 c. c. I and 10 c. c. $CHCl_3$

(2) 0·1995 „ „ „ „

15·1 c. c. $Na_2S_2O_3$ were required by (1) for the excess of iodine

16·1 „ „ „ „ (2) „ „ „

20 c. c. I + 10 c. c. $CHCl_3$ = 24·1 c. c. $Na_2S_2O_3$ (Blank exp.)

$$\text{Iodine degree for (1)} = \frac{9 \times 0{\cdot}01265 \times 10^2}{0{\cdot}2215} = 51{\cdot}4$$

$$\text{„ „ (2)} = \frac{8 \times 0{\cdot}01265 \times 10^2}{0{\cdot}1995} = 50{\cdot}7$$

Mean of the two determinations = 51·0

But 1 c. c. $Na_2S_2O_3$ = 1 c. c. $\frac{N}{10}$ I $\times (1 - 0{\cdot}02)$

Whence corrected number = 50·0

* The oil was extracted from the seeds by means of carbon bisulphide, and it was the same as used for determining the saponification equivalent.

NOTE ON HÜBL'S IODINE ABSORPTION METHOD.

There is some difference of opinion as regards the excess of iodine, which should be present after its absorption. Thompson and Ballantyne, who have carefully revised the *constants* required in the analysis of some fats and oils, are of opinion that "at least double the amount of iodine absorbed should be present." Care was taken to fulfil this condition in most of the analyses as recorded above. On reference to sesamé and earth-nut oils, it would appear, however, that it is not always necessary that the iodine should be in large excess. Thus in one case the excess of iodine corresponds to only 5·9 c. c. N/10 $Na_2S_2O_3$ solution, and in another to only 4·7 c. c. $Na_2S_2O_3$, solution without the results being discordant.

For convenience of reference the results obtained above are presented below in a tabulated form:—

Table of constants in the analysis of fats and oils.

Nature of Fat or Oil.	Saponification equivalent.	Glycerin per cent.	Iodine absorption.
Mustard oil	172–176	8·5	97·0
Niger-seed oil	190·0	10·8	120
Cocoanut oil	258·0	...	6·9
Ghee	218–222	...	33·5–39·4
Mowa fat	199·3	...	61·8
Mutton tallow	199·5–206	10·5	.....
Sesamé	189·9	...	104·5
Lard	195·4	...	50·0
Earth-nut oil	196·0	...	98·0

SUMMARY AND CONCLUSION.

It would thus appear that as the saponification equivalents of niger-seed oil, mowa fat, mutton tallow, sesamé oil, lard and earth-nut oil are very close to one another, their admixtures in considerable proportions cannot be detected by Koettstorfer's test. Even the saponification equivalent of ghee is not far removed from that of lard or tallow. The saponification equivalents of mustard oil and cocoanut oil are, however, highly characteristic. The iodine degrees, on the other hand, afford us valuable hints as to the nature of adulteration, the most remarkable feature being the exceedingly low numbers for cocoanut oil and ghee. The results of the application of Reichert's test will be communicated later on.

Addressing Adulteration

Sabyasachi Chatterjee

Prafulla Chandra Ray, who believed that science should address the social issues, initiated his research on a subject which was very much a social problem. In 1890s when the problem of adulteration became a major one in Kolkata he tried to face it through the application of science. We may quote his own words to get the priority of his research in the initial phase of his academic career which begins with the teaching assignment in the Presidency College, Calcutta:

> After having acquired some experience as a teacher and a facility in delivering lectures illustrated with experiments, I began gradually to devote my spare time to research work. The adulteration of food-stuffs – a concomitant of modern "civilised life" – was becoming a growing evil. Ghee (clarified butter) and mustard oil are practically the only sources of fat which enter largely into the dietary of the people of Bengal. Articles in the ordinary markets which are sold as ghee and mustard oil are far from being pure. It is however by no means an easy task to detect by chemical analysis the adulterants used and their percentage. I undertook a searching examination of the food-stuffs of this description. I procured samples of these articles from most reliable sources and also had them prepared under my personal supervision. For instance, I had cows and buffaloes milked before my eye and from the milk thereof I prepared butter. I got mustard oil pressed from the seeds as also the various other oils used as adulterants. The composition of butter fat derived from the Indian cows differs somewhat from that of the British cows and hence the analysis of

the latter as published in English works on Foods could not be relied upon. The various samples of oils had also to be subjected to a searching investigation. The work undertaken thus involved stupendous labour and I was busy with it for nearly three years and the results obtained were published in the Journal of the Asiatic Society of Bengal for 1894, entitled- Chemical Examination of certain Indian Foodstuffs; Part I -The Fats and Oils.[1]

The problem of adulteration in food was not unnoticed in the United Kingdom in the nineteenth century. Basically, the writings of Frederic Accum[2] in the said century indicate the gravity of the problem of adulteration in Britain. He wrote that it would be difficult to mention a single article of food which was not in an adulterated state and there were some substances which were scarcely procured in genuine state. Along with this, the Report of the Lancet Sanitary Commission established by Wakley, the editor of the Cancerto review the types of fraud practice on the sale of food stuffs was largely responsible for the review of the problem of adulteration by the Government. The enquiry by the Commission was based on scientific tests. Consequent to the publication of this Report, a Select Committee on the Adulteration of food was appointed in 1855 but the Committee was not in a position to take any effective measure due to the heavy pressure from the business community. But an incident of 1858 was an eye-opener to the people of the country. It was the Bradford tragedy, whereby two hundred people were affected by the consumption of adulterated candies (lozenges) out of which seventeen persons were in fatal state. That incident compelled the British parliament to look after the issue. The Parliament enacted Adulteration of Food and Drink Act in 1860. The Act was not an effective one and as a result instead of pacifying the feelings of the people it mounted the general dissatisfaction of them. Thus ultimately the 1860 Act was amended in 1872 and 1875. After these amendments the purchasers got the right to submit food to an analyst appointed under the Act or to a skilled person nominated by the justice to whom complaint were to be made.

Here lies the importance of detection of adulterants in foodstuffs by competent analyst.

Let's move on to British India from Britain. In British India the problem of adulteration was evident, as pointed out by Acharya Prafulla Chandra Ray. He opined that the identification of adulterants would be different in India with that of Britain as he said in his autobiography that "The composition of butter fat derived from the Indian cows differs somewhat from that of the British cows and hence the analysis of the latter as published in English works on Foods could not be relied upon."[3] Thus he initiated his research which 'involved stupendous labour' and he was busy with it for nearly three years.

Probably the first historian, who drew our attention to the issue of food adulteration in Bengal is Kabita Roy. In her book *Food for Thought: Food Adulteration in Bengal, 1836–1947*[4] she dealt with the issue in a detailed manner. In a recent work, Saurabh Mishra addressed the issue in the chapter titled 'Food adulteration, public health, and middle-class anxieties' within his monograph *Beastly encounters of the Raj: Livelihoods, livestock and veterinary health in India, 1790-1920*.[5]We find the presence of milk and ghee (clarified butter) in the discussion of these works in terms of adulteration-prone foodstuff. Saurabh Mishra's work looks at the consumption pattern of dairy products such as milk and ghee (clarified butter), which were the staple food products in middle class homes. He commented that during the twentieth century we come across increasing instances of middle class anxiety over adulteration of these dairy items, leading to several legislations about purity standards.But we see Prafulla Chandra Ray was a pioneer in this field, who felt the necessity to do research on adulteration in these products even before the coming of the twentieth century. In fact he began his work in 1890. He observed that "Ghee (clarified butter) and mustard oil are practically the only sources of fat which enter largely into the dietary of the people of Bengal."[6] Thus it was essential to him to detect the purity of these products through chemical analysis which he had done for long three years with 'stupendous labour'.

In this respect we may trace the enactment of law related to the prevention of adulteration in India. During British rule in India the first attempt was made to deal with poisonous or noxious food under the Indian Penal Code. This move was directed to safeguard public health by making provisions under the Penal Law to deal with contingencies that affects the health of the community.

The Code distinguished such acts into four categories. viz. (i) spreading of infections (Sec.269 to 271); (ii) Adulteration of Food, drink and drugs (Sec.272 to 276)[7] (iii) Fouling of water (Sec.277) and (iv) making atmosphere noxious to health (Sec.273). The limited scope under the Code relating to penalty was confined to sale or intended sale of noxious food and drink only. It also dealt with acts of adulteration of food, drink and drugs under the Code. Provisions were there in the Code do deal with the problem in the form of public nuisance being injurious to a private person and also detrimental to the public.

These prohibitions cause hurt or conducive to the injury, destruction, danger or annoyance of a person or persons collectively. The provisions deal only with such nuisance that affects the public and not only some of its members.

In order to meet the instances of adulteration that was being done in many ways other than noxious viz, sub-standard, addition of extraneous matters, subtraction of constituent parts, etc. a number of State Governments finding the provisions under the Penal Code inadequate have enacted special legislations to prevent and check the menace of adulteration rampant on a large scale in the country.[8]

In Bengal a specific act regarding the food adulteration was made in 1919. It was the Bengal Food Adulteration Act, 1919.[9]

After independence, 'The Prevention of Food Adulteration Act, 1954'was enacted by the Parliament of India.[10] The act aims to prevent adulteration in food, which reminds us to the state's responsibility of providing the basic amenities to its citizens; pure air, water and food; though the environment protection act was enacted in a later period,

in 1986[11], after the incidence of Bhopal gas tragedy in 1984[12]. But the importance of serving unadulterated food was felt in the first decade after independence by the legislators of the country.

It is clearly stated in the Act, (unless the context otherwise requires), 'adulterant' means any material which is or could be employed for the purposes of adulteration. The act has clarified the term 'adulterated'. It was stated that an article of food shall be deemed to be adulterated, if the article sold by a vendor is a not of the nature, substance or quality demanded by the purchaser and is to his prejudice, or is not of the nature, substance or quality which it purports or is represented to be; if the article contains any other substance which affects, or if the article is so processed as to affect injuriously the nature, substance or quality thereof; if any inferior or cheaper substance has been substituted wholly or in part for the article so as to affect injuriously the nature, substance or quality thereof; if any constituent of the article has been wholly or in part abstracted so as to affect injuriously the nature, substance or quality thereof; if the article had been prepared, packed or kept under insanitary conditions whereby it has become contaminated or injurious to health; if the article consists wholly or in part of any filthy, putrid rotten, decomposed or diseased animal or vegetable substance or is insect-infested or is otherwise unfit for human consumption; if the article is obtained from a diseased animal; if the article contains any poisonous or other ingredient which renders it injurious to health; if the container of the article is composed, whether wholly or in part, of any poisonous or deleterious substance which renders its contents injurious to health.

In the enactment of this act, we notice the concern of the Indian legislators for the health of the fellow-people. They rightfully thought it is the duty of the state to protect its people from anything that are injurious to health. In a way, it was a kind gesture on the part of the lawmakers of India to unbind its people from the injurious food, which may be detrimental to their good health.

The lawmakers had tried to protect the Indian citizens from adulterated food, which may be injurious to health in two ways. First

was through unbinding the import of such food. It was stated in the act that no person shall import into India any adulterated food; any misbranded food; any article of food for the import of which a licence is prescribed, except in accordance with the conditions of the licence; and any article of food in contravention of any other provision of this Act or of any rule made there under. Secondly, manufacturing of such food was prohibited in unequivocal terms. It was stated in the act likewise that no person shall himself or by any person on his behalf manufacture for sale, or store, sell or distribute any adulterated food; any misbranded food; any article of food for the sale of which a licence is prescribed, except in accordance with the conditions of the licence; any article of food the sale of which is for the time being prohibited by the Food (Health) Authority. All this was done in the interest of public health.

The punishment for adulterating food was clearly mentioned in the act. It was said that if any person whether by himself or by any other person on his behalf, imports into India or manufactures for sale, or stores, sells or distributes any article of food which is adulterated or misbranded or the sale of which is prohibited under any provision of this Act or any rule made there under or by an order of the Food (Health) Authority; whether by himself or by any other person on his behalf, imports into India or manufactures for sale, or stores, sells or distributes any adulterant which is not injurious to health; or prevents a food inspector from taking a sample as authorised by this Act; or prevents a food inspector from exercising any other power conferred on him by or under this Act; or being a manufacturer of an article of food, has in his possession, or in any of the premises occupied by him, any adulterant which is not injurious to health; or uses any report or certificate of a test or analysis made by the Director of the Central Food Laboratory or by a public analyst or any extract there of for the purpose of advertising any article of food; or whether by himself or by any other person on his behalf, gives to the vendor a false warranty in writing in respect of any article of food sold by

him. He shall, in addition to the penalty to which he may be liable, be punishable with imprisonment for a term which shall not be less than six months but which may extend to three years, and with fine which shall not be less than one thousand rupees.

In the present age, one may think that this kind of penalty or punishment is insufficient to combat the offences related to food security. But it should be kept in mind that the said act was passed in 1954. After that a number of amendments of the act were made. Nowadays food security is one of the prime concerns of the welfare state. But, what is laudable is that our lawmakers did think of such an important issue within the first decade of our independence. They righteously felt that unbinding from various detrimental subjects is the duty of the legislators.

It can be said the first step towards the direction of having food security was the step taken by Acharya Ray long before. And it is our pleasure to note that the research finding of Prafulla Chandra Ray was published in none other than in the pages of this journal.

Notes

[1] Prafulla Chandra Ray, *Life and Experiences of a Bengali Chemist*, Calcutta: Chuckervertty, Chatterjee & Co. Ltd & London : Kegan Paul, Trench, Trubner & Co. Ltd., 1932, pp-84-85.

[2] Frederic Accum, *A Treatise on Adulteration of Food and Poison*, London: Longman, 1820, p-14. Cited in a thesis available in Shodhganga.https://shodhganga.inflibnet.ac.in/bitstream/10603/50306/8/08_chapter%201.pdf (Consulted on 22.07.2020).

[3] Prafulla Chandra Ray, Op.Cit.

[4] Kabita Roy, *Food for Thought : Food Adulteration in Bengal, 1836-1947,* Calcutta: Papyrus, 2003.

[5] Saurabh Mishra, 'Food adulteration, public health, and middle-class anxieties' in *Beastly encounters of the Raj: Livelihoods, livestock and veterinary health in India, 1790-1920*, Manchester: University Press, 2015, Manchester Scholarship Online, January 2016.

[6] Prafulla Chandra Ray, Op.Cit.

[7] Indian Penal Code.https://www.indiacode.nic.in/show-data?actid=AC_CEN_ 5_23_00037_186045_1523266765688&sectionId=46033 &sectionno=272&orderno= 306(Consulted on 27.07.2020).

[8] https://shodhganga.inflibnet.ac.in/bitstream/10603/118729/9/09_chapter%202.pdf(Consulted on 24.07.2020).

[9] A.P. Muddiman, "British India", Journal of Comparative Legislation and International Law, 1921, Third Series, Vol. 3, No. 3 (1921), Cambridge University Press on behalf of British Institute of International and Comparative Law, http:// www. Jstor.com/stable/ 752876, p-132. (Consulted on 27.07.2020).

[10] http://www.archive.india.gov.in/sectors/health_family/food_prevention.php (Consulted on 24.07.2020).

[11] http://www.envfor.nic.in/legis/env/eprotect_act_1986.pdf(Consulted on 26.07.2020).

[12] https://www.downtoearth.org.in/coverage/environment/30-years-of-bhopal-gas-tragedy-a-continuing-disaster-47634 (Consulted on 26.07.2020).

Samaresh Bandyopadhyay, ed., *Śikṣādarśa.*
Presentations at the Two-day International Seminar on Early Indian Education and Man-making in Present Times organized for marking the Ceremonial Release of Bhārata-Saṁskṛti, Murfreesboro (North American Institute for Oriental and Classical Studies), 2019.

The contents of this timely volume are based on the international seminar held in 2015 celebrating the release of *Bhārata-Saṁskṛti* (which I have reviewed in *Sthāpatyam* March-May 2019, pp. 46-47). It is a welcome addition to the series of indological collections published by the North American Institute for Oriental and Classical Studies. With the close involvement of its Secretary-General, Professor Huber H. Robinson, these volumes, usually based on the proceedings of seminars associated with ceremonial occasions, present the fruits of research by prominent indologists. Dr Ravi P. Singh, President of the N.I.O.S., contributes a Foreword to the present volume. His organization's mission is 'to take the best from the past to use in the present to build a better future'.

The Principal Advisor of the N.I.O.S., Professor Dr Samaresh Bandyopadhyay, has been particularly closely associated with these Indological publications, and is the editor of the present volume. It bears the marks of his characteristic thoroughness and eye for detail. Great care has been taken to maintain the standard of accuracy and to supply appropriate editorial annotations. The index has been prepared by Sri Amal kumar Mandal, a former Station Director, All India Radio.

There are two parts; the first, recording the Inaugural Session, reproduces the addresses from the platform, including among others the Inaugural Address, the Keynote Address, the Chief Guest's Address, and the Presidential Address. Part II contains the papers delivered during the Academic Session devoted to the theme announced by the title of the seminar.

It is notable that Part I contains addresses from the platform which go beyond the appropriate formalities to offer thoughtful and scholarly essays on the theme of the seminar. This theme was inspired by the prayer of Swami Vivekananda to the Almighty Mother to make him

a man – *'Mā āmāy mānuṣ karo'*, as Professor Dr Samaresh Bandyopadhyay records (p.42).

In his Address of Welcome, Professor Huber H. Robinson expresses regret at the modern tendency for education to focus more on the training of technicians than on the traditional ideal, which was 'awaking the living being to the process of reasoning'; this at its highest promotes the nurture of *dhyāna*. Professor Dr Samaresh Bandyopadhyay offers a summary of the contents of the volume *Bhārata-Saṁskṛti*. Hon'ble Justice Dr Mukundakam Sharma, in the Inaugural Address, emphasizes the importance of the Vedic ideals of education as enshrined in the *gurukula* tradition, which evince elements of continuity with the best in education in all civilizations and in modern times.

In the Key-note Address, Professor Dr Sibesh Bhattacharya gives particular attention to the advice to departing students set out in the *Taittirīya Upaniṣad*. He contrasts this with the somewhat impersonal and mechanical injunctions offered officially at graduations in modern times. The older tradition nurtured conduct and character in close contact with one's guru. Professor Bhattacharya also comments on common modern criticisms of the old *gurukula* tradition as overblown; at its best it was by no means repetitive or hidebound but offered a wide range of studies in practical subjects.

In the Chief Guest's Address, Dr Kalyan Kumar Chakravarty laments the modern loss of touch with nature, spirit and the transcendent, arguing that education needs to restore harmony with nature. Traditional education, he asserts, was conducive to spiritual liberation and the transformation of human nature.

In the Presidential Address, Professor Dr Samaresh Bandyopadhyay refers to Swami Vivekananda's prayer and discovers the human qualities celebrated by it in three texts especially, the *Bhagavadgītā*, the *Rāmāyaṇa*, and the *Manusmṛti*. Surveying the stages of classical education, he stresses the moral and practical virtues nurtured by living with one's guru and sharing his alms-round; like Dr Sibesh Bhattacharya, he also draws attention to the teacher's valediction in the *Taittirīya Upaniṣad*.

Part I concludes with a report by Shatakshi Goyal on the proceedings of the two-day international seminar, and a vote of thanks moved by Professor Dr Sudhir Goyal.

Part II occupies the second half of the book, and contains six scholarly papers. Space does not permit a fuller account of them, but I would like to comment briefly on the contribution that each makes to our understanding of early Indian education.

Deena Bandhu Pandey contributes an account of the Vedāṅga tradition of Śikṣā, translating verses from the *Pāṇinīya Śikṣā* and emphasizing the importance originally attached to the correct pronunciation of mantras in Vedic chanting, often neglected nowadays.

Dr Sm Durga Basu dwells on the importance of the *Lotus Sutra* as a key text for moral and spiritual education, with its value in promoting happiness and freedom from fear and delusion, the essential goals of education.

Shatakshi Goyal, a reputed dance-artist, explores the spiritual significance of the *Nāṭya* tradition, linked as it is to yogic methods; its *mudrās* and other methods promote mental, physical and spiritual health as well as promoting powerful emotional and moral interaction with audiences.

Dr Sm Piyali Palit, like other contributors to the seminar, contrasts modern educational values and methods unfavourably with the best of the traditional ideals, and gives special attention to the teachings of Śrī Caitanya Mahāprabhu, whose doctrine of *prema* requires devotion to the task of pleasing the deity. His text *Śikṣāṣṭakam* explains the moral values of chanting as it inculcates *prema*.

Professor Dr Sm Didhiti Biswas emphasizes the importance of Swami Vivekananda and Rabindranath Tagore in setting the standards needed for the remodelling of Indian education after the colonial period, dwelling particularly on the value of the *gurukula* tradition in contributing to physical, moral and spiritual development.

Professor Amalendu Chakraborty details the benefits of traditional styles of education as evidenced by a survey of sources from different periods, with particular attention to the Upaniṣads, epics and smṛtis, as well as what we know of ancient centres of learning such as

Nālandā. Coming closer to the present, he specially lauds the values and principles upheld by Swami Vivekananda, who held up education as a sacred vocation.

Two other contributors, Mr Paul O'Sullivan and Dr Shyamalkanti Chakravarti, also presented papers at the seminar, but copies of these could not be obtained for publication in the present volume. However, summaries of them appear in Shatakshi Goyal's report, on pages 54f.

In summary, indologists everywhere will recognize in this exceedingly interesting work a most welcome focus on the practical and current implications, especially for educational policy in any modern country, of Vivekananda's prayer for the edification of mankind. We can hope that the North American Institute for Oriental and Classical Studies will long maintain the tradition it has established.

I. W. Mabbett

Tilak Devasher, *Pakistan: The Balochistan Conundrum*, Harper Collins Publishers India, Kindle Edition, 2019, pp. 392, Price Rs. 479/-

The very title of Tilak Devasher's well researched study, *Pakistan Balochistan conundrum* suggests that Balochistan is at once a riddle and a hard, unresolved question for Pakistan right from its birth as a Muslim state- the promised home land of the Muslims of undivided India. The book has five sections, the first two provide a comprehensive account of complex history of this ancient, vast land of diverse people till 1947, its unique land scape an extension of the Iranian plateau and desert, arid plains and mountains separating Indus valley and Afghanistan. The next two parts contain an in-depth analysis of the roots of Baloch alienation resulting in what Devasher calls "enduring insurrection"; and finally his conclusion why no resolution of the Baloch Pakistan conflict could be possible within the present Punjabi dominated Pakistani power structure determined to perpetuate a military dominated system in Balochistan with the sole of exploitation of Balochistan's vast and untapped strategic minerals - coal, gold, oil and gas to benefit mainly Punjab. The author viewed China Pakistan Economic Corridor - CPEC as manifestation of this exploitative Pakistani approach to Balochistan and no resolution of the conflict, he thinks would be possible. The author cited irrefutable evidence to support the contention of the Baloch separatists that Punjabi Fascism dominating Pakistan would allow no scope for peaceful resolution of the Baloch aspirations.

The author has reiterated the perception that the Baloch tribes despite their diverse ethnic and linguistic characteristics constitute "a land bridge between the Indian and Mesopotamian civilisations" and are in all respects distinct from the settled groups of Indus and Indo Gangetic valley. Geographically, Balochistan has more in common with the Iranian plateau, high lands of Afghanistan or deserts of middle East which explains the fact that Baloch tribes appear to be an ethnic mix of races found in these regions. Geography also restricted

trade and cultural contact with the Societies of the Indo Gangetic or the Indus valley. The author thus concluded in the very first part that Balochistan was not a natural part of India nor integral to any India based Central authority till the British in the early to Mid 19 th century established their authority in Delhi and later Punjab following the Treaty of Amritsar in 1848.This vastly enhanced the strategic importance of Balochistan as the gateway to Afghanistan became pronounced when the " Great game" began with the Tsarist Russia's bid to gain a foot hold in Afghanistan as the first step to gain access to the Persian Gulf. The British considered the Russian moves as serious threat to their power in India. This made control over the passes to Afghanistan in the North West Frontier which included parts of Baloch inhabited lands critical for securing British strategic interests especially after the British victory in the Second Anglo-Afghan war (1878-80) . Earlier under the terms of the 1876 Treaty with the - the Khanates and Sardars (Baloch tribal chiefs) the British recognized the independent political identity of the Baloch people while securing under lease agreement the authority to set military infrastructure at Quetta and other locations including construction of the strategic Rail- Road links which made large parts of Balochistan integral to the British North Western Frontier defense structure. This was a turning point in the history of the Baloch people as it created several administrative entities viz the British Balochistan, a Khanate of Kalat and areas under Baloch tribal chiefs functioning under the overall British hegemony. Earlier in 1829, the British "gifted"to Iran as the author put it roughly one fourth of Baloch inhabited areas to win Iran's support in the " Great game"and some other Baloch areas to Afghanistan when the boundaries between the British India and Afghanistan were laid down in 1894 under what came to be known as the Durrand Line. All these made the Baloch "a scattered people" in three countries even when the largest segment and the territory remained in British India. It was indeed a " Buffer State" and therefore

the "independent" character of the Khanates and self-rule of the tribal Sardars were compulsions for the British, Devasher explained to operationalize the concept of the "frontier of separation" propounded by the British for "exercise of power within the boundaries of Administration and within boundaries of influence". This transformed British Balochistan into a "Garrison State"and together with the areas under the Khanates and the Sardars formed 44% of territory of Pakistan and 760 km two thirds of its sea coast, 90% of its minerals - coal, gold, oil and gas with only about 6% of estimated 207.687million population of Pakistan. (2017).

The author organised this backdrop with meticulous details to prepare the reader to note the strange approach of the Congress leadership during 1946-47 to Khan of Kalat and Baloch tribes' demand for restoration of their Independence and reversion of British Balochistan including the "leased lands" after the British withdrawal. The Congress stand was totally cool and unhelpful to the Baloch demand as Pandit Nehru ruled out the "independent status of Kalat" ignoring the fact that it was implicit in the Treaty relationships with the Crown; and Maulana Azad found Balochistan's Independence unpracticable even when he conceded that their demands were "genuine". This gives credence to the view of Congress "complicity" in Partition and hence staunch opposition to the Baloch demand as that would negate the very basis of Pakistan. The Baloch leaders' offer to join India was spurned even when there was clear sea link with India. Was East Pakistan contiguous to west Pakistan? Was the question the Baloch leaders asked the Congress leadership to which obviously there was no answer? This opportunistic stand of Congress leadership allowed the British to gift both British Balochistan and North West Frontier Province to Pakistan through sham Referendum and also Sylhet in Assam by the same means. The Premier of NWFP Dr. Khan Sahib's well documented work "Facts are facts" would give the reader an idea of how the British played their cards so well to create Pakistan. All these, the author concludes facilitated

the "British masterminding role" that enabled Pakistan to swiftly move its Army to occupy Kalat, the main Khanate on 27 March 1949 despite the fact that Pakistan had a "Stand still" Agreement with Kalat like the one it had with Kashmir and violated also in the same manner. The Khan of Kalat surrendered and signed the instrument of accession on March 30, 1948 ending "227 day Independence of the Kalat Confederacy" formed almost 300 years ago.

The author has rendered a great service to us by giving a blow by blow account how Baloch people lost their Independence mainly due to the British perfidy designed to create a pliable Pakistan ready to serve the western strategic interest in the region close to the Soviet Union. These facts are not known to very many Indians obsessed as they were always with Kashmir. If Balochistan remained independent it would have crippled Pakistan at birth by denying it it's strategic depth, minerals and more importantly buried the idea of Pakistan. This development would have also produced soon enough an independent Pashtunistan.

It was however not a smooth transition for Pakistan as Baloch insurgency began in 1948 itself and is continuing till date for reasons which are not hard to see — a basic ethno lingual and cultural difference between the Punjabi dominated Pakistani State especially after secession of Bangladesh and the Baloch identity as a separate Nation and a State of their own which they had long before the idea of Pakistan was formulated. The author has detailed five post Accession insurgencies in 1948, 1958, 1962 and 1973-77 and the circumstances which led to the same with such regularity and held the authoritarian Pakistani State — which for most of these periods were under military rule solely responsible for alienating the Baloch people and their high handed actions.

In part 3 Devasher examined the roots of Baloch alienation and established with irrefutable evidence that systematic marginalisation of the Baloch people in all spheres of Administration and system of

governance especially in the armed forces management of the economy, plunder of natural resources have turned Balochistan into a Garrison state with features of the "colonial extractive state" designed to benefit Punjab mainly. Continuing gross violation of human rights facilitated by a pliable judiciary and a military dominated Civil administration reduced the Baloch to subjects of what Baloch leaders call a Punjabi Fascist state.

Chapters 9 and 10 on Economic exploitation and socio economic deprivation contain telling evidence how the wealth of Balochistan from oil, gas, coal, gold and copper was " drained" to enrich mainly Punjab and other parts of Pakistan without any real benefit to the Baloch people. This is continuing and yet another case of Pak "criminal governance" that allowed as in pre- Bangladesh period "sustained transfer of income to West Pakistan."

The stakes are indeed high for Pakistan in resource rich Balochistan and this explains "relentless persecution" of the Baloch people the author detailed in later sections. There is one factor the author could have mentioned as a major cause of anarchy in Pakistan, that is, the substitution of the institution of the District officer that the British left behind in Pakistan as in India by District Management Group (DMG)caused subversion of the system of administration of criminal justice and maintenance of public order and thereby enabled the military dominated executive to persecute the Baloch resistance at will . This in practice crippled the civil Police and also the judiciary in the absence of the District Magistrate responsible for governance of the District.

To an Indian reader section 4 covering the Chinese role in Pakistan and especially the CPEC- China Pakistan Economic Corridor would be of special interest as it contains an analysis of the convergence of Chinese and Pakistani geopolitical and economic interests . What is evident is that the CPEC is China's trump card in Pakistan to gain

access to the Persian Gulf through Gawadar Port in Balochistan and a permanent strategic foothold in Pakistan along the Kashgar-Gawadar stretch through the Pak occupied Kashmir (POK). And for Pakistan it serves two objects, first to maintain its occupation of Balochistan and POK and assurance of Chinese support on Kashmir and Afghanistan issues. However, the author's analysis of the slow progress, high security risks due to continuing Baloch insurgency and low return on investment might as well upset these calculations. China it seems has put all her eggs in one basket, Pakistan, considered the "World's most dangerous place" in recent past by the London based Economist newsmagazine.

In the last section, the author carried out an in-depth analysis of the Baloch Separatists cause, their moves and capabilities and the response of the Pakistani or rather as he puts it the "Punjabi State". His conclusion that as of now and given the disposition of the Pak Army in Balochistan "the conflict is unlikely to threaten the integrity of the state" seems reasonable. Equally valid is the point made by the International Crisis Group (ICG) that the "insurgency is not likely to recede, nor will Islamabad manage to dampen the Baloch" as quoted by the author despite the movement's weakness in some respects.

The author has exposed the autocratic and " extractive" character of the Pakistani state which from its very beginning has been necessarily fragile. However unpalatable the fact is that Pakistan has a larger than life image in India despite its fragility nor its "failing state" character which is so apparent. This is mainly because of Kashmir and nuclear power when in reality Pakistan is a backward, demographically challenged state and is among the most backward in the SAARC and ASEAN groups of nations. With a huge population of 207.685 millions and that too growing alarmingly @ 2.4% annually, 38% of the population below the poverty line when 91% of low income families don't have regular source of income and only 58.92% Adult literacy, Pakistan is a development economist's nightmare.

Ahmed Rashid in his" Pakistan on the brink" has bluntly put it in the following words:

"Pakistan's new global identity was not as a model of innovation or modernity but as a refuge for multiple extremist groups". (page 46).

The hard reality is that none of its units other than Punjab such as Sind or Khyber Pakhtuniya had ever a real stake in Pakistan as everything came under Punjabi control since the Military take over in 1958. Worse still is the fate of the "Muhajirs"- Muslim migrants from India who are treated as second class citizens and who have been struggling for a space in the state. Even then the actions of the Punjabi State in Balochistan and Sind suggest that Punjab also suffers from a deep sense of insecurity of being "landlocked"; because geopolitics and history remind us that power based in a land locked region usually have adversarial relations with Coastal Region. Therefore statesmanship demands amicable relationships between the regions. Pakistan is doing just the opposite of what is prudent to sustain the state by suppressing the legitimate aspirations of the Baloch and the Sindhi people of the coastal region.

The author's conclusion that a just solution to the Balochistan conundrum is "a solution that puts the Baloch in the center rather than the resources of the province"; and that "failure to do so will slowly but inexorably exacerbate the crisis in Balochistan till it explodes with dire consequences for Pakistan" is prescient.

There is an unstated message here for India also. Baloch insurgency and the secession of East Pakistan earlier demonstrate that religion as a force unifying diverse groups has its limitations as beyond a point facts like gross regional imbalance in development, perceived economic exploitation and political marginalisation create separate national identities founded on the rejection of the idea that created the nation state in the first place. Insurgency is the violent expression of such a break away identity assertion. Geography is not just the "economic

destiny of a nation" (2006 Strategy Report of the World Bank on NE India), it also shapes formation of political identities especially in countries which have a long coast line as we see in Scotland now which was unthinkable only some years ago.

In the end one must note the remarkable objectivity of the author, his facile pen ; and despite the fact that he had first hand knowledge of Pakistan he abstained from making anecdotal references — so distressingly common in the writings of retired officials and especially diplomats. The references cited in the Notes section of 54 pages bear testimony of the author's painstaking research and hard work. This is indeed a must read book for any one keen to know about Balochistan and Afghanistan- Pakistan Region.

Rangan Dutta

Syamaprasad Mookerjee, the Hindu Dissent and the Partition of Bengal, 1932-1947, by Chhanda Chatterjee, Manohar, New Delhi, 2020, Price Rs.2095/-

The history of freedom movement of India as taught from the school textbooks to undergraduate courses traditionally deals with the successive movements led by Mahatma Gandhi and his associates along with some heroic acts of armed revolutionaries. But the contributions of Dr.Syamaprasad Mookerjee, one of the most remarkable and charismatic public figures in the penultimate phase of Indian struggle for independence has been almost completely neglected or blackened out. A dynamic personality, Syamaprasad's career was multifaceted – son of the legendary Sir Asutosh, the youngest Vice Chancellor of Calcutta University, a provincial Minister of undivided Bengal, the most popular leader of Hindu Mahasabha in Bengal, a Minister in the first cabinet of independent India and above all, a nationalist and patriot to the core of his heart.

Surprisingly, Syamaprasad's service to his motherland has not been given its due recognition by the so called progressive and liberal section of historians who have branded him as a "communal" leader and held him responsible for the partition of Bengal. They even allege with Syamaprasad's entry into the Hindu Mahasabha, the politics of Bengal became surcharged with communalism. But this was far from truth. The emergence of Muslim League had distinctively galvanized Bengal politics with communalism. It is true that it was Syamaprasad who had the courage and conviction to stand steadfastly by the side of the hapless victims of communal violence, genocide and brutality in Bengal and demanded a separate homeland for them where they could live with dignity and security. Partition of Bengal was a necessity, a question of survival for the non-Muslim population of Bengal and not a "choice".

Besides Balraj Madhok's *Dr. S. P.Mookerjee: A Biography* (New Delhi, 1954) and Tathagata Roy's *The Life and Times of Dr.Syamaprasad Mookerjee : A complete Biography* (New Delhi, 2008) both of whom were basically erudite party politicians, we have three in-house

publications from Asutosh Mookerjee Memorial Institute : *A Phase in the Life of Dr.Syamaprasad Mookerjee, 1937 – 1946* by Dr.Anil Chandra Banerjee (Calcutta, 2000); *Dr. Syamaprasad Mookerjee in the Eyes of His Contemporaries* by Nikhiles Guha (Kolkata, 2016) and three volumes of *Selected Political Documents of Dr. Syamaprasad Mookerjee* by Debdutta Chakraborty (Kolkata, 2017-18). But these are basically documentations and not researched works as such. So far we have three well researched works on Syamaprasad, two by young researchers Rita Basu – *Dr. Syama Prasad Mookerjee and An Alternate Politics in Bengal* (Calcutta, 2002) and Dr. Nabakumar Adak – *Syama Prasad Mookerjee: A study of His Role in Bengal Politics, 1929 – 1953* (New Delhi, 2013) and the other one by a senior historian Dr.Prashanto Kumar Chatterjee – *Dr. Symaprasad Mookerjee and Indian Politics, 1938-1953 : An Account of an outstanding Political Leader (*Cambridge University Press, 2010). Chhanda Chatterjee's present work is the latest addition to his historiography. Dr. Chatterjee has dealt the subject in a superbly professional and impartial way but also tapped large number of primary sources so long not used by other writers such as documents preserved in India Office Section, British Library, London and Centre for South Asian Studies Archives, Cambridge.

Chhanda Chatterjee's story starts with the Macdonald Award (1932) known as the communal award. The divisive tactics of the government awakened the Bengali Hindus for the first time to the necessity of having an organization of their own. The Award further inflicted a blow on the Hindus by treating the Scheduled Castes as a separate category. Gandhi could avert this attempt at splitting up the Hindus by making Poona Pact with the representatives of the Depressed Classes but this made further inroads into the constituency of the Bengali *bhadraloks*. The Bengali upper caste Hindus had no one to help them out in these dark days of despondency. As a prelude to the Award, Chatterjee briefly outlines the long drawn story since the Lucknow Pact (1916) , Mont-Ford Reforms (1918), reservation of seats in the legislatives on a communal basis, the issue of separate electorate vs. joint electorate, Bengal Pact (1923) made by C.R Das and the three abortive Round Table Conferences held in London in the early 1930's.

Chapter 2 shows how the Act of 1935 set a seal on the system of communal representation, the main contours of which had been defined by Communal Award. The elections in 1937 took place in accordance with the Provisions of this Act. The new Act, although substantially increased the electoral base, was still based on extremely limited franchise. The chapter unfolds in detail not only the tripartite conflict between the Congress, the Krishak Praja Party(KPP) and the Muslim League, but also the intra party and intra-faction clashes within all these segments. The Congress refusal to cooperate with Fazlul Huq, the leader of the Krishak Praja Party(KPP), the upholder of the interest of the peasants mostly Muslim left him with no alternative but to align with Muslim League. Its result was disastrous. The original KPP programme was trounced and Huq had to play second fiddle to the Muslim League. Dissent within the KPP came to the fore.

The Secondary Education Bill which proposed to create a Secondary Education board freeing it from Calcutta University and placing it under the thumb of the government with the introduction of a number of official nominees in the Board expected to be more representative of the Muslim interests and taking measures to alleviate the backwardness of the Muslims in education. But to the Hindus, it appeared to be a sinister attempt to whittle down their erstwhile predominance in education and deprive them of their legitimate share in educational opportunities at a time when educational and white collar employment was the only avenue open to them.

More obnoxious was the Calcutta Municipal Amendment Bill which tried to introduce separate electorate in the Calcutta Municipal Corporation. It was a direct challenge to the Hindu predominance in the corporation being the largest taxpayers in the city with a voting strength of 85 per cent. The debate over the bill also revealed a sharp differentiation between the Bengal Muslim peasant nationalists and the big upcountry business interest who wanted to dominate Calcutta Corporation for their own interest.

Communal ratio in services continued to be a bone of contention between the two communities. The coming into force of certain new

legislations like Bengal Tenancy Act (1938), the Agricultural Debtor's Act (1940) and the Bengal Moneylender's Bill (which was finally passed in 1944) gave rise to considerable bad blood Hindus (mostly zamindars and moneylenders) and the Muslim (mostly peasants). All these ultimately produced a sense of animosity and antagonism in the two communities which snowballed into the Dacca riots of 1941. By this time, the World War II had already started.

Chapter 3 unfolds the mounting of communal tension between 1937 and 1941, spread of Muslim League organization to the remotest corner of rural Bengal, numerous communal frictions and skirmishes topping the Dacca riots (March l- May 1941) which spread even to villages and neighbouring districts and the failure of the Bengal government to tackle the situation.

Chapter 4 is on The Hindu Mahasabha and its works in Bengal, 1939 – 41. As a reaction to Muslim "atrocities" and highhandedness, Hindu Mahasabha was reorganized in Bengal in 1939. Congress was often hesitant to come up with a full blooded scheme in the defence of Hindu interests as the Congress High Command had to keep the interests of their minority wing in mind and also to maintain its 'secular' image as against the image of a Hindu party. Moreover, the Bengal Congress was extremely faction-ridden and with the exit of Subhas Bose from Congress, it had become almost a signboard. Thus, the Hindus of Bengal had no one to turn to. At this crucial junction, the Hindu Mahasabha, to fill up the vacuum stepped into the province. Syamaprasad, who had been passing through a crisis of conscience at this time, could see a light at the end of the tunnel and placed his services at the disposal of the Hindu Mahasabha. Both the Hindu Mahasabha and Syamaprasad needed each other. He began an extensive tour of East Bengal districts, made vigorous speeches particularly against the Pakistan Resolution made by the Muslim League at Lahore (1940) and even faced challenges from the supporters of Subhas Bose.

Chapter 5 is on The Progressive Coalition Ministry of Bengal (1941-1943) which Dr.Chatterjee described as non-Communal Alternative. By July, 1941, cracks began to appear in Muslim solidarity. A cabinet

crisis evolved. A new progressive Coalition Party came into power with Fazlul Huq as Chief Minister and Congress (Bose Group), Hindu Mahasabha and some independents as partners with the official Congress supporting it from outside. It was called as 'Syama-Huq' Ministry by the Muslim League. Chatterjee writes "The new dawn of the Province's history was ushered by the working out of a programme of constructive cooperation between two sister communities." But from the beginning, the Ministry had to face a number of challenges – such as continuous opposition from the Muslim League and even from the British bureaucracy, scorched earth and denial policy as part of defence against apprehended Japanese War attack, the Congress-led Quit India Movement in August 1942. Eventually, protesting against the policy of undue interference by the British governor, Syamaprasad resigned in November 1942. Fazlul Huq was tactfully faced by the Governor to tender his resignation and New Ministry with Nazimuddin of Muslim League Chief Minister was formed in April 1943.

Chapter 6 entitled 'Communalism, Famine and Steps towards Decolonization' discusses various alternatives for transfer of power being debated between the British, the Indian National Congress and the Muslim League. The devastating famine of 1943 and its attendant consequences on Bengal politics are also analysed.

Chapter 7 gives a graphic day to day description of the impact of the Direct Action day (16 August, 1946) called by Muslim League on Calcutta for days and the responsibility of the Ministry of the province. The failure and helplessness of the Congress Ministers of the Interim Government in the Centre are also pointed out. Side by side, all India negotiations for power sharing between the Congress and the League are described in details. The gruesome Noakhali Riots starting from October, 1946 came in the midst of all these.

Chapter 8 is entitled "The Best of a Bad Bargain : Dr. Mookerjee's Formula for peace". Ripples of Noakhali were felt in Bihar and U.P followed by gruesome Punjab riots. The eventual failure of Gandhi's travail in Noakhali for a historic march cannot be denied by anybody. The communal atmosphere was rapidly deteriorating. Once it became

clear that the Cabinet Mission proposals had failed to make much headway and Pakistan could not be resisted for long. The Bengal Provincial Hindu Mahasabha started organizing public opinion for a separate province of West Bengal outside the proposed Pakistan. The Bengal Premier Suhrawardy, whose power base was in Calcutta took great alarm at the proposal of Hindu Mahasabha to take the Hindu majority districts of Bengal out of Pakistan. In the last minute, he took initiative for an undivided independent sovereign Bengal outside the Unions of India and Pakistan. Only K.S Roy and Sarat Bose, two veteran Congress leaders from the Hindu side came to his support. But without any support from the all India leadership of Congress or Muslim League, the proposal had a natural death after sometime. The demand for West Bengal was gaining momentum and partition of Bengal seemed to be fait accompli.

Joya Chatterjee in her book 'Bengal Divided : Hindu Communalism and Partition 1932- 1947' categorically blamed Hindu 'Bhadraloks' (middle class upper caste English educated section) owing allegiance overwhelmingly to the Congress as the election results of provincial and central legislatures showed in 1946, but coming curiously under the leadership of Syamaprasad Mookerjee the Hindu Mahasabha leader, for partition of Bengal and argued that if the idea of united sovereign Bengal as proposed by Suhrawardy, Sarat Bose and K.S Roy materialized, would have benefitted the Bengalis. On the contrary, Chhanda Chatterjee's conclusion is "Dr.Syamaprasad Mookerjee appeared to the people of Bengal as the man of the hour and a new messiah". It was a Muslim intransigence rather than "Bhadralok culpability" (a term used by Joya Chatterjee) which had cast the dye. Syamaprasad at that point of changed atmosphere became the spokesperson of not any particular political party but of the Bengali Hindu society but not the creator of Bengal out of blue.

However, we find certain gaps in Chhanda Chatterjee's writing.

Firstly like Joya Chatterjee, Chhandaa Chatterjee also starts her story from the year 1932, the year of Communal Award. But the story should have started much earlier because the complexities of the Hindu-Muslim divide in Bengal unlike other parts of North India

cannot be understood without reference to the large scale proselytization from the so called lower castes of the rural Bengali society which did not start abruptly from 1932.

Secondly, the name of present work is somewhat a misnomer. Throughout the chapters (excepting the last one) the author narrates the Hindu reaction to the rising Muslim challenge to their well-entrenched position in the socio-political life of Bengal, but the role of Syamaprasad was not specifically outlined. Two specific questions naturally arise : why did Syamaprasad who was initially engaged in the development and expansion of education turn his attention to politics? And what were the socio, economic and political factors which led to Symaprasad's emergence as the political leader at a particular moment?

Thirdly, what did Symaprasad (and the Hindu Mahasabha) think of the millions of Hindus who remained in East Bengal (later Pakistan) after the partition of the Province? How would they save these Hindus who became only about 30 per cent of the Muslim majority area? Did they have any plan of total population exchange? Otherwise what was the meaning or significance of the proposal 'Hindu homeland'?

Fourthly, did Symaprasad (or Hindu Mahasabha) have any concrete plan to bring the subalterns, particularly huge body of depressed castes in its orbit to make itself a strong force to contend with or were they satisfied with being a coteries of upper caste *bhadraloks* only?

Chatterjee's answers and observations on these questions are essential for a better understanding of Symaprasad's role in the partition of Bengal.

In the otherwise superbly composed monograph, a few avoidable errors have somehow crept in e.g. during 1946-47, Sarat Bose was in no way connected with Forward Bloc. After coming out of jail, he joined the official Congress and not the Forward Bloc (p. 372). A.M.A Zaman was never connected with the Krishak Praja Party. In 1937 he was elected to the Bengal Assembly from Hooghly Factory Labour seat on the Trade Union Congress ticket and later joined the Congress Parliamentary Party and in 1946, he was elected from the same constituency on the Congress ticket (pp. 205-6). Above all, it was not

the fact that Syamaprasad who had come to the Bengal Legislative Assembly from the university constituency surrendered his seat when Congress decided to withdraw from all offices in protest against the arbitrary action of the Viceroy in involving the country into the World War II without caring to consult the elected representatives of the people and then decided to join the Hindu Mahasabha to be able to serve the country better. But actually Syamaprasad was elected to the Bengal Legislature for the first time in 1929 from the Calcutta University Constituency on a Congressticket but soon after the withdrawal of the Congress from the Council, he resigned the seat but was reelected (March 1930). In the 1937 election to the Bengal Legislature, he was elected from the same Constituency as an independent member (March 1930). In the 1937 election to the Bengal Legislature, he was elected from the same constituency as an independent member unopposed, but later joined the Hindu Mahasabha.

Taken as a whole the facts and information provided by Chhanda Chatterjee are mostly known but the way she interpreted the entire scenario is refreshingly new, impartial and logical. This work is no apologia for Syamaprasad or Hindu Mahasabha but a very balanced narrative.

Nirban Basu

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Articles in Books :
H.V. Trivedi, "The Geography of Kautilya", *Indian Culture,* Vol. 1, 202ff.

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P. Gaeffke, "Alexander and the Bengal Sufis", in Alan W. Entwistle and Francoise Mallison, eds, *Studies in South Asian Devotional Literature, Research Papers, 1988-1991,* New Delhi/Paris, 1994, 278-84.

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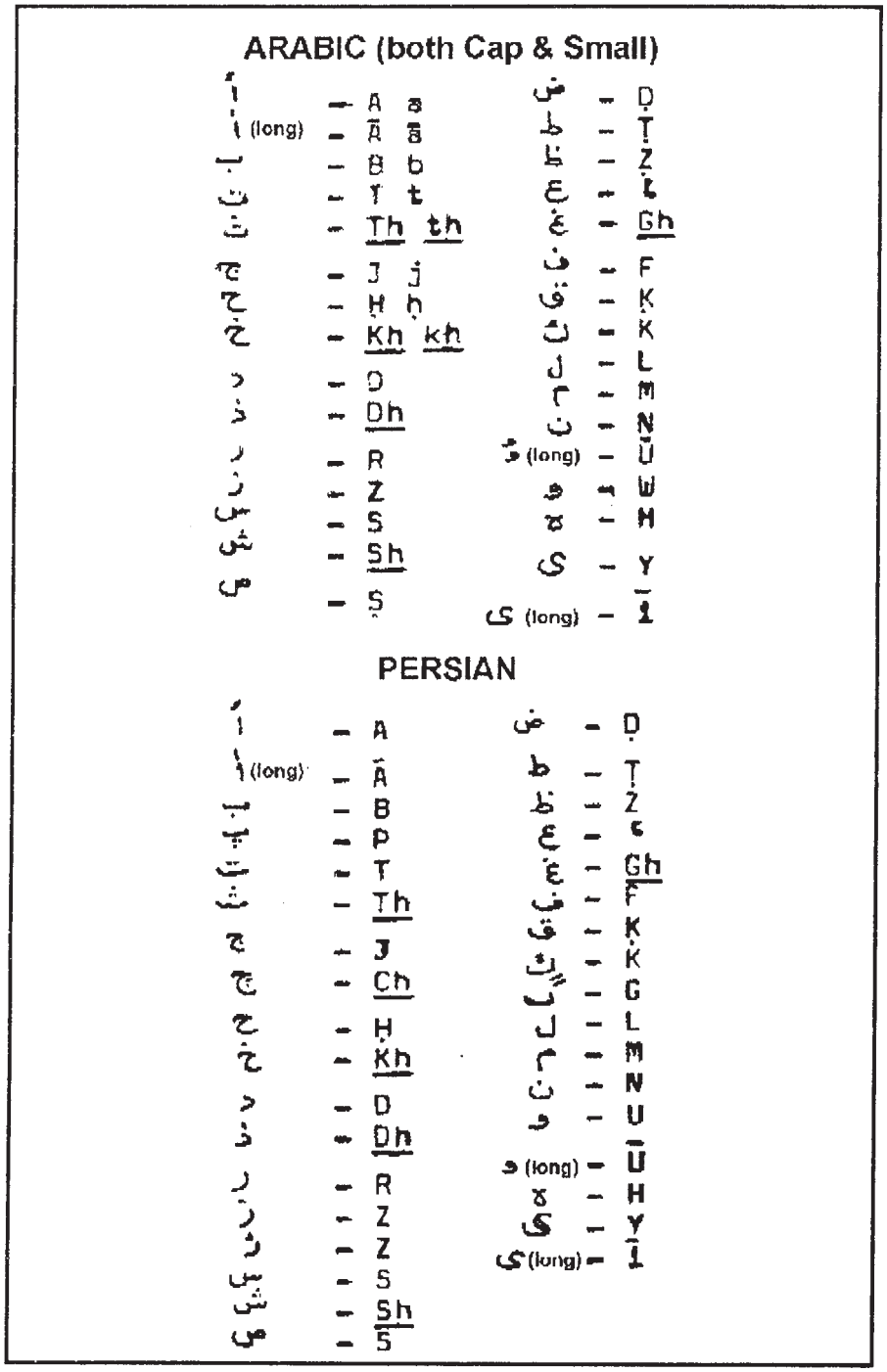
आ = ā		ई = ī	
ऊ = ū		ऋ = ṛ	
ङ = ṅa		च = ca	
छ = cha		ञ = ña	
ट = ṭa		ठ = ṭha	
ड = ḍa		ढ = ḍha	
ण = ṇa		श = śa	
ष = ṣa		ं = ṁ	

TIBETAN

ཀ = ka	ཁ = kha	ག = ga	ང = ṅa/nga
ཅ = ca	ཆ = cha	ཇ = ja	ཉ = ña/nya
ཏ = ta	ཐ = tha	ད = da	ན = na
པ = pa	ཕ = pha	བ = ba	མ = ma
ཙ = tsa	ཚ = tsha	ཛ = dza	ཝ = wa
ཞ = zha	ཟ = za	འ = 'a	ཡ = ya
ར = ra	ལ = la	ཤ = śa/sha	ས = sa
ཧ = ha	ཨ = a		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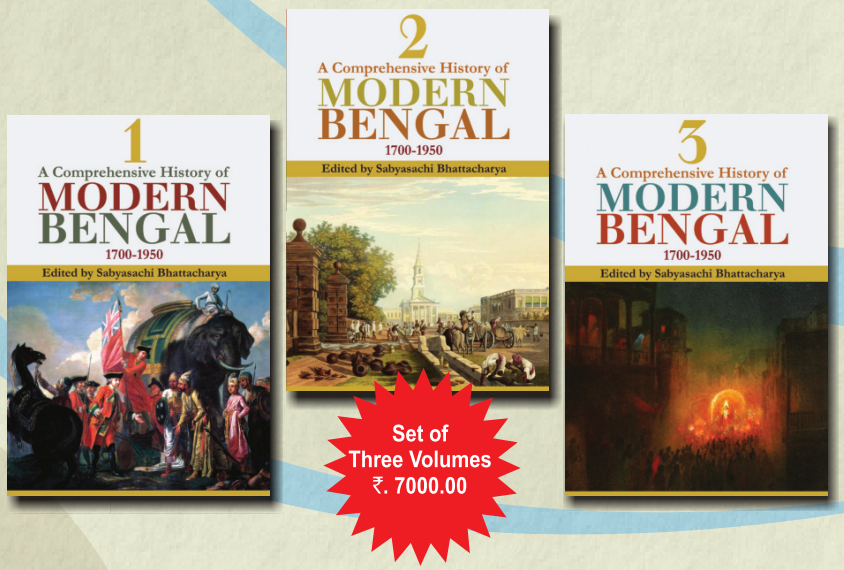

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Sir William Jones
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