ISSN : 0368-3308

A Peer-Reviewed International Quarterly

Journal of The Asiatic Society

Vol. LXVIII No. 1 2026

Journal of The Asiatic Society ● Vol. LXVIII No. 1, 2026

THE ASIATIC SOCIETY
1 PARK STREET ● KOLKATA 700 016

IMPORTANT

All communications relating to publication should be addressed to the Publication Officer, THE ASIATIC SOCIETY, 1 Park Street, Kolkata-700016,

e-mail : asiaticsocietypublications1788@gmail.com

Visit our website : https://asiaticsociety.culture.gov.in

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JOURNAL
OF
THE ASIATIC SOCIETY

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1 PARK STREET ❐ KOLKATA

Journal of The Asiatic Society Vol. LXVIII, No. 1

ISSN 0368-3308

Published by
Lieutenant Colonel Anant Sinha
Administrator
The Asiatic Society
1 Park Street
Kolkata 700 016
Contact: director-ask@asiaticsocietykolkata.nic.in

Published in May 2026

Printed at
Desktop Printers
3A, Garstin Place, 4th Floor
Kolkata 700 001

Price : ₹400 (Complete vol. of four nos.)

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JOURNAL OF THE ASIATIC SOCIETY

Vol. LXVIII No. 1, 2026

*Religious Pluralism and Interreligious Dialogue**

Dilipkumar Mohanta

I am grateful to the authorities of The Asiatic Society for inviting me to deliver the prestigious Swami Pranavananda Memorial Lecture (2022). I express my gratitude to Bharat Sevashram Sangha for instituting this lecture in the Asiatic Society through donation. As this year the area of the lecture is mentioned as Philosophy and Religion, I consider it as a great honour for me and an opportunity to share some of my thoughts on interreligious understanding and dialogue. First I shall argue for religious pluralism and for inter-religious understanding through dialogue and then I shall argue for the thesis that we should not allow any blind obedience to Scriptures.[1] For peace and sustainable development we are to be open-ended to welcome the development of science, philosophy and culture and liberate ourselves from one-sided dominance of the 'old creeds and dogmas'.

We know, people have different considerations regarding matters concerning religion. Common and majority of ordinary people uncritically believe that religious claims are true, though these claims are based on mere speculations. But many reflective thinkers, philosophers and scientists raise doubt about these claims or find these as false. "An unexamined life is not worth living" is said by Socrates. Buddha warns us about the fatal consequences of uncritical belief. Buddha instructed his disciples not to accept anything, even his own teachings, out of sheer reverence to him, if these are proved

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* Swami Pranavananda Memorial Lecture for the year 2022 delivered on 27 December 2023 at The Asiatic Society.

unacceptable when judged by the standard of reason. "To judge the purity of gold, it is burnt, cut and rubbed by the goldsmith. In the same way, carefully examine the teachings I gave you. If you find truth in them, follow them zealously, do not have hatred for others, simply because it is not ours ... Oh Bhiksu! Examine what is said by me through critical reason before admitting it. Please do not admit it just out of blind reverence to or faith upon me."[2] There is also another similar version of such teaching. In his meeting with the Kālāmā's of Kesaputta, Buddha said: "It is proper for you, Oh! Kālāmā's, to doubt, to be uncertain, do not be led by reports, or tradition, or hearsay. Do not be led by the authority of religious texts, nor by mere logic or inference, nor by considering appearances, or by delight in speculative opinions, nor by seeming possibilities, nor by the idea that 'this ascetic is our teacher'. But rather, when you yourselves know [that] certain things are unwholesome and wrong, [that such] things are censured by the wise, and when undertaken, such things lead to harm, [then] abandon them."[3] There is no fear of losing one's faith by coming into contact with the faith of others. This philosophical teaching made Buddhist religion a new way of understanding life and the world. Critical attitude and the simple moral codes of conduct constitute a distinguishing feature of Buddha's *Saddhamma* that gave the whole philosophy of life a pragmatic colour long before the pragmatism of the West. It is to be noted here that the great Emperor Ashoka's (3rd century B.C.) Rock Edict, XII declared, "One should not honour only one's own religion and condemn the religions of others, but one should honour others' religions for this or that reason. In doing so, one helps one's own religion to grow and renders service to the religions of others, too."[4] It is undeniable that religious 'tolerance and acceptance' of 'others' faith as an alternative in principle is another necessary condition for peace today. Buddha's *Saddharma* means a 'good way of livelihood', conducive to both mundane and spiritual. It aims to make all sentient beings happy. Humans are integrated to other animate beings to live and survive. This view is also substantiated by Bio-Ecology.

It is indeed true that in the beginning of the twentieth century efforts for interreligious understanding had been initiated with *Śloka-Saṁgraha* by Brāhma Samāj in India.[5] When we see that my neighbour and I, in fact, using the same path with a difference in names, in different languages we do not feel to quarrel. When Jālāl-ud-Dīn Rumi says, 'lamps are many, light is the same'[6] l do not see any fundamental difference with the teaching of Ramakrishna as 'many views, many paths' or with 'Truth is One, wise people describe it in many ways' as said in the *Ṛgveda*. Even in *Tantra* literature speaking ills of other religious way of life is strongly condemned and considered other religion as *one among many* ways of realising the ultimate Divine Reality.[7]

But everything is not the same and simple as it is sometimes paused to describe. Every religion has its distinctive social history and philosophy and without the recognition of this difference no interreligious understanding or harmony is possible. For a spiritual person, a religion is 'like a ferry through which other people also cross the watery body of this world. At a certain point everybody is to leave the ferry and take a leap alone to arrive at the end of the watery body'.[8] Unless one takes the leap one cannot realise that other co-passengers also reach the same place: Each religious tradition has its own individuality and uniqueness. For peace and prosperity, we also need to be cooperative, constructive and positive in our interaction with the people of other religions, and simultaneously we need to be educated how we can work for a 'meeting' and 'commonly sharable' ground through dialogue in spite of differences.

So an academic approach to religion is very important. Religious Studies is essential as an academic discipline for development of future citizen to learn how to live peacefully for sustainable development in a multi-religious country like India. Considering this aspect of our sociocultural fibre as dominantly pluralistic, the academic study of Religion has a great prospect. But it has challenges too. From different sides challenges may come: Theology based way of life with blind followers of Scriptures is one of such cause of challenge. The other source of challenge may come from the politicians.

However, politicians find religion 'beneficial' for achieving power and they consider it as one of the most powerful means of retaining that power. We cannot ignore that religious factors are 'major actors in social, cultural and political life' today in many countries including India'. But the idea of removing all differences and making all people alike is neither compatible with human nature nor conducive to human progress. This has been an historically established fact. Today we should neither try to club people of different cultures or religions with diverse sets of values under the same homogeneity, nor should we ignore their potential contributions to the common good. For peace and progress through sustainable development we are to cultivate values like cooperation and distributive justice where our knowledge must be constantly 'updated, enriched, and modernised'. Human beings are to recreate the past with a sense of 'distancing nearness' (*a la* Heidegger) and avoid 'orthodoxy' (*a la* Vivekananda). 'Orthodoxy' allows no change and modification. The dignity of human life is to be upheld as *an end* and *not as a means*. Therefore, the future of humanity cannot lie in returning to the past as it is impossible to reverse the flow of time. Rather, it lies with moving ahead, like a flowing river with various tributaries, by connecting the freshness of the present materialistic achievements and the gift of science with our ancient moral and spiritual values. Understanding of the past only by the orthodox way is deadly for the human race. Though we inherit the past, we must claim freedom from the bondage in the past.

We cannot deny that the entire humanity has been facing the devastating problem arising out of communal riots and killing of human beings and destruction of human civilization on account of political misuse of institutional religion. Religious fundamentalists are growing stronger. The fundamentalists, who are using religion, do not believe in values like equality, tolerance or diversity. On the contrary, they seek to organise social life on the strength of religious dogmas. The fundamentalists misuse politics and institutional religion as a means of capturing power. When politics over-shadows or dominates over true spirituality in the domain of religion, we see a

reign of terror everywhere. Neither the fundamentalists nor the power mongering political institutions believe in true spirit of democracy which is based on values like freedom and open-mindedness. True democratic culture rests on 'debate, discussion and dissent'. The fundamentalists or the power mongering political institutions do not believe in true spirituality. True spirituality teaches us to see 'others' as good as 'ourselves'. A spiritual person cannot desire his own happiness at the cost of others; rather he is ready to sacrifice his own happiness to eradicate the suffering of others. He is full of compassion; he finds empathetic joy at the happiness of others. Terrorists, who use religion, do not believe in true spirituality and they are religiously exclusivist. They are trained as blind believers of 'closed dogma'. Blind faith in religious exclusivism is a necessary condition for cultivating aggressiveness, fundamentalism and fanaticism. An out and out exclusivist cannot join any dialogue. Today, incited by the politicians and the media, the increasing manifestation of violence, very often in the name of religion, as it were, has exceeded all limits. This is really one of the greatest dangers for mankind. Open war through military power is a consequence of this attitude.

Now the questions arise: What are the preconditions of dialogue and how does it work in the context of plurality of religion? How do philosophical reflections help today in understanding a religiously plural society? Can we deny the fact that we are living in an interdependent world? Our answer is 'No'. Then the question arises: how to live peacefully with the fact of multiplicity of religions today? These are some of the important questions that everybody is concerned with in a pluralistic society.

As we know, a dialogue, unlike a debate, works reflecting on understanding others concern, creates an atmosphere of harmony and peace. It is the way to keep our communication active. Dialogue is primarily concerned with a desire from the heart of people apparently having differences in view and faith for a 'meeting and sharing' ground. Naturally the attitude of disrespect and defeating is absent in a dialogue. Interreligious dialogue requires a commitment

to our personal "ism" that is strong enough to allow us to suspend belief and step beyond the "ism" to meet "is". These are prerequisites for a genuine dialogue. As interreligious dialogue is primarily co-operative, constructive and positive interaction among the faith people, it is imperative to admit the logic of religious pluralism. Humility, empathy, recognition of common and sharable grounds in spite of admitting differences are some of the conditions admitted for any meaningful dialogue. It is always imperative for interreligious understanding and peace in a multi-religious society that the followers of each religion should have the opportunity to know fundamentals of other religions. Plurality of religion would then be rendered as a thing of beauty on the basis of common sharable grounds in spite of differences. There is no question of dominance by any particular religion and differences are to be over come through constant discussion with mutual respect. We are to work for collective good and we are to give up the belief that our faith is more genuine and true than that of others. In other words, we are to cultivate the belief today that my religion is *only one* among *many*.

Why should we follow pluralism in our 'living' and 'working'? The answer is: for the sake of distributive justice and goodness of all. And unless we admit the logic of pluralism and educate ourselves in pluralistic values, there is no hope for getting rid of dogmatism, communalism, fanaticism concerning religion and interreligious conflicts that arise out of misusing religious sentiments as means in today's world. On the contrary, philosophical approach of religious pluralism is a prerequisite for interreligious dialogue. It is to be noted here that if there is a determined fanatic community of the followers of any institutional religion who does not wish to participate, we will never have an interreligious dialogue.

Pluralism presupposes 'others' as having different alternative identity without any sense of exclusivity. 'One-dimensional identity' begets violence *(a la* Amarya Sen). In the context of religion pluralism gives an individual an opportunity to travel spiritually towards the value world of another tradition which can enrich each other with

new insight and wisdom. A notion of Universal Religion *(a la* Vivekananda) founded on the ontological unity of humankind gives the logical foundation of interreligious dialogue. This notion of dialogue is based on the Self as universal. Amidst the multiplicity of existent religion seriously looking for a room for universal religion is important in present time's world scenario. Historically speaking, who can deny today that religion is used to provoke 'bitterest denunciation'? It is also true that religion can be used to inspire 'the noblest work of peace'. What is that universal religion? It is different from ethnic religion where one's membership is determined by birth in a particular race or institutional religion. On the other hand, in case of universal religion any person can have a choice for any religion by way of following any particular religion. It means that each religious tradition is representing *only one among many* possible approaches to the Ultimate Divine Reality; each religious tradition is *only one among many* expressions of religious experience.[9] The great religious traditions have important lessons to learn from each other and much to share, because each religion represents man's response to natural and social environment in a historical context and as such various religions are to be treated as varieties of responses to different natural environments and no religion has the monopoly of 'holiness, purity and charity' as emphasised by Dara Shikuh. 'The practice of passive tolerance of others' faith is not enough for interreligious understanding and obviously, for initiating interreligious dialogue. Unless various faiths admit their counterparts at par with their own, no mutual respect will generate. It is not just a fact of mere theoretical admission of the difference or multiplicity of religion but of 'engagement, involvement and participation'. This model of religious pluralism encourages us to cultivate values like power of self-criticism, self-determination and imagination. It prepares a strong ground for a genuine form of dialogue.

A dialogue is integrally connected with the plurality of human existence in terms of identities, cultures and religions with different set of moral values. In this pluralistic philosophic approach for

understanding world religions, it is not only wrong but also incompatible with truly religious spirit to accept one's own religion as the *only* true and to denounce religions other than one's own, as being *untrue.*

Even when we speak of 'unity' in the context of religion, we do not mean 'uniformity'. The unity is something which lies in a common orientation to diversity and not in its abolition. Our thorough reading of India's cultural history will certainly enable us to decipher the cultural semiosis to realize the always open, free and potentially creative pluralistic Indian mind. Each religious tradition contains within itself a special 'evolutionary pattern' (as said by Swami Vivekananda).[10]

This means that religious tradition as a way of life is shaped by socio-cultural context and as such, "the do-s' and 'the don'ts" of each religion, when we consider, we are to admit 'the openness to the possibility of change and growth'. If any religious way of living resists change, follows rigidity and exclusivity, and refuses to modify it through assimilation it becomes dangerous. Openness towards the possibility of change, modification and growth has been emphasized in the Ṛgvedic teaching 'let noble thoughts come to us from various directions'.[11] It has been reiterated by Vivekananda and many thinkers. Unless this minimal condition of openness and receptivity is fulfilled no interreligious dialogue can be initiated for the reason that interreligious dialogue must allow us to question and disagree with sincerity and respect. It surely does not stop with the practice of tolerance of others 'faiths but goes beyond to accept others' religions as true as one's own. My view is not the final view and I am open to admit new possibility of knowing that 'Truth' dominates cultural development of India. The role of opposition is very important in philosophical dialogues and debate of India since the days of *Ṛgveda.*

The interpretation of religious experience is a historically and culturally determined phenomenon, which differs from culture to culture in accordance with the prevalent concepts, symbols and doctrines and mode of thinking that have gradually emerged within

these cultural surroundings. As cultural traditions are having diverse geographical, climatic and economic circumstances, so also in different forms the Divine Reality is worshipped in different parts of the world. This is expressed in the Ṛgvedic *mantra, ekaṁ sat viprāḥ bahudhā vadanti.*[12] but all these different interpretations as different ways convey that there is a genuine realisation of the Truth *(ekaṁ sat).* It is a fact that there is plurality of religion. But there is neither justification of conflict of one religion/sect of religion with other nor for reducing all other religions to one's own or for exclusion of other religions as untrue and 'not genuine'. On the contrary, it defends the view that in all forms of religion people are approaching the same ultimate Divine Reality - One Truth in different names and forms. Our approach to the fact of plurality of religion may be taken as a ground for both a commitment to truth and as a possibility for different interpretations about the same Truth in order to suit the various socio-cultural and historical contexts. It contains enough scope for acceptance of plurality of religion in simultaneity along with the rejection of any exclusivistic or inclusivistic claims and for highlighting the commitment to truth. A world with uniformity of thought is a dead one. "Unity in variety is the plan of the universe.''[13] This kind of religious pluralism indicates a direct experience of 'otherness', which is difficult to ignore in today's world.

The survey of another religious tradition would improve the understanding of one's own religion (i.e. the 12th Inscription of the Emperor Ashoka). It, in the context of religion, provides us an opportunity for the study of other religions not merely from the outside but as it were from inside. It tells us to internalize our religious position by considering the context of other positions as our own and it asks us to transform our approach from 'self-centredness' to 'truth-centredness' or God centredness.[14] In today's world-context, in a religiously pluralistic society each religious tradition should make efforts to absorb the spirit of 'others' while reserving its own uniqueness and individuality. Uniqueness will be richer by openness. As said by Swami Vivekananda, "The Christian is not to become a

Hindu or a Buddhist, not a Hindu or Buddhist to become a Christian. But each must assimilate the spirit of the others and yet preserve individuality and grow according to his law of growth."[15]

Since all religions are claimed to be path ways to God, they are equally valid; there is no question of superiority or inferiority among them. In the light of the pluralistic account of religion the conflicting truth-claims of different religions may be explained as a corollary of substantial ignorance about other similar responses outside one's own religious tradition. As it is contained in the Gita 'whatever be the way of worshipping, it will lead to God realization'.[16] This is an admission that faiths alien to the Indian mind are also bearers of Divine light, at par with our own. Again, the Gita also speaks of the incarnation of the Divine at every epoch transcending the barriers of nations, particular religions and cultures. In other words, the scope of incarnation is universal/global, not restricted to one 'chosen race' or religion.[17]

From this it appears that, for us, religious disagreement is due to narrow, selfish, dogmatic motive to accept nothing outside, and to negate any existing view. Vivekananda has condemned the religious fanaticism, 'sectarianism and bigotry' in strong words. "They are very sincere, these fanatics, the most sincere of human beings; but they are quite as irresponsible as other lunatics in the world. This disease of fanaticism is one of the most dangerous of all diseases. All the wickedness of human nature is roused by it."[18] Religious fanatics cannot recognise God if He appears before him/her with a dress unfamiliar to the description of his own religious Scripture. But a lower animal like a dog never fails to recognise its master even if he appears before it with an unusual dress. Is religion as true spirituality responsible for all devilry or persecution of human beings? Vivekananda says, "No". It is politics and not religion as true spirituality.[19]

This understanding of religion is unique about religious diversity. It is not necessary to impose one's viewpoint upon other. Our attempt is not to construct the structure of a universal religion by putting

together the essential elements from all the different religions, rather to emphasize that truth is not confined to any particular faith nor the truth of each religion lies in a certain philosophy, but in a certain mode of experiencing the Reality who is only one. It is meant for all humanity without any distinctions of religion, race or gender. It represents an integral view of life and Reality. Here we understand religion as "man's struggle to transcend his limitations, to find ultimate meaning in life, and to attain total freedom and everlasting fulfilment."[20] A. N. Whitehead also emphasised on this aspect of religion when he says, "Religion is what a man does with his solitariness."[21]

This pluralistic interpretation of religion has also the implication of transcending various commonly known 'world views' in the context of religion and culture. It strengthens the application of the principle of "live and let live." It does not 'regard the existence of other religions as a hindrance to worldly progress and peace'.[22] This type of pluralistic understanding would initiate, may be slowly, a common spiritual journey on a deep spiritual level of our being-hood. We cannot deny that inquisitiveness, catholicity of mind and "the implicit conviction that 'truth' has ulterior expressions in form of alternative discourses."[23] It is, however, indicative and not exhaustive. It is always imperative for interreligious understanding and peace in a multireligious society that the followers of each religion should have the opportunity to know fundamentals of other religions. Plurality of religion would then be rendered as a thing of beauty on the basis of common sharable grounds in spite of differences. In a multireligious society, as of India, religious pluralism is not a hindrance to our worldly 'progress and peace'.

This allows us to question and express our disagreement with respect and sincerity. This way of learning is implicative and also a positive step to interreligious understanding for today's world. If we are to move creatively into the world what we need is to learn the oneness of mankind; we need to realize the meaning of oneness in our selfhood. We need to utilize our power of knowledge in harmony

for the service of humanity. A pluralistic understanding, which entertains questions, and which has the background of spiritual wisdom, seems to be an earnest priority in present time. Any movement for peace will be 'confidence-inspiring' and 'influential' if we can show some commonly sharable ground where there is no element of suspicion and fear.

This pluralistic model of understanding of religious diversity through initiating dialogue indicates a new way of looking at the phenomenon of religion in the history of mankind.[24] In fact, it implies the essential aspect of all religions, that is to say, spirituality is not the business exclusively for any particular religion. The clear indication is that religious pluralism has made room for the people of other faiths. It deepens our understanding of other's view as good as an alternative and equal to 'our' view. Because there is an essential aspect that is unity of all religions and that is their belief in an absolute and infinite existence. However, there is also the non-essential aspects of every religion for which each religion differs from each other. This attitude is guided by a practical plan which "does not destroy the individuality of any man in religion and at the same time shows him a point of union with all others."[25] In other words, it does not mean that "all the religions of the world would fuse together to form an alloy. It is more like a garden of different flowers; each religion retains its own unique features, while all of them together constitute one whole."[26]

This is another reason why we although recognise different sects of religion, but we condemn sectarianism. The concluding paragraph of his opening address by Vivekananda on September 11, 1893 at Chicago's the World Parliament of Religions, makes it crystal clear when he says, "Sectarianism, bigotry, and its horrible descendant fanaticism, have long possessed this beautiful earth. They have filled the earth with violence, drenched it often with human blood, destroyed civilizations, and sent whole nations, human society would be far more advanced than it is now."[27]

Nevertheless, counter-violence, such as war, cannot abolish violence. Wars cannot be the solution to our problems today. We

should resolve our problems by recognising the value of freedom and cooperation. We need to speak not about others, but with others. War is opposed to all three virtues of human being, e.g. spirituality, freedom and culture. In today's world it is reasonable to recommend patience and interfaith understanding through dialogue. Our one dimensional identity such as Hindu or Muslim or Christian creates a solitarist-illusion which "can be invoked for the purpose of dividing people into uniquely hardened categories"... The denial of plurality as well as the rejection of choice in matters of identity can produce an astonishing narrow and misdirected view."[28] It is historically true that peaceful co-existence of different views and religious ways of life is possible on the basis of the logic of alternation. Today we are to look for a philosophy of 'active co-existence'. When religious exclusivism expresses itself aggressively in society it takes the form of fundamentalism.

The role of interreligious understanding through dialogue is significant when religion becomes a powerful force for 'disruption, division and destruction'. Only a fool can think of the exclusive survival of his own religion at the cost of destruction of the religions of others. The thesis of religious exclusivism has been miserably failed as an experiment, be it either Christian or Mahammedan. We need to "acquire intellectual insights into the *raison d'etre* of other persuasions which would help us to adopt an attitude of honest understanding towards members of other communities."[29] This very attitude of pluralistic understanding of religion emphasizes on 'acceptance' instead of confining to mere 'tolerance' of other religions, 'assimilation' instead of 'destruction' and 'harmony and peace' instead of 'dissension'.[30] Today the choice before us is between 'living together in peace' or 'dying together in conflicts. Let us free ourselves from dogmatism, fanaticism, sectarianism, intolerance and terrorism associated with religion. Let us read Prince Muhammad Dārā Shikūh who has tried to show the essential points of agreement between Hinduism and Islam "without exalting or undermining either." ... 'Truth is not the monopoly of any religion' ... 'but it can be found in

all religions and at all times", Dārā Shikūh asserted.[31] Unfortunately, the spirit of interreligious dialogue and understanding for societal harmony and peace founded in the Vedas, in the Gita in the teachings of Buddha, Mahavira, Mediaveal Saints, and once initiated by Dārā Shikuh, preached by Ramakrishna-Vivekananda movement, has not been properly continued in our Indian subcontinent, perhaps, because of the activities of the 'politic-priest-craft-combined' force. We cannot bring peace by money or force. 'Peace begins with not hurting others. Peace begins with honesty and trust. Peace begins with showing cooperation and respect. World peace begins with me.'

Let me stop with John Keats (1795-1821) who loudly proclaims, "Love is my religion ... I could die for it" or "Beauty is truth, truth beauty' - that is all ye know on earth, and all ye need to know".

Notes

[1] This point has been emphasised by K. C. Bhattacharyya in his *Reflections on the Bhagavadgītā (Bhagavadgītā Vicāra),* Eng. Trans. Dilipkumar Mohanta, *Dissemination of Knowledge Series,* no. 9, Indian Council of Philosophical Research, New Delhi, 2023, p. 39.

[2] "tāpācchedācca nikaṣāt suvarṇamiva paṇḍitaiḥ/ parīkṣya madvaco grāhyaṁ, bhikṣave! na tu gauravāi", *Tattva-saṁgraha,* 3587.

[3] *Digha Nikāya,* 1.4, (ed.) in 3 Vols. and trans. T. W. Rhys David, *Dialogues of the Buddha,* Pali Text Society, 1899-1921.

[4] *See,* Walpola Rahula, *What the Buddha Taught?* The Gordon Fraser Gallery, London, 1959, p. 87.

[5] *Śloka-Saṁgraha* (Compilation of Theistic Texts from Hindus, Buddhist, Jaina, Sikh, Jewish, Christian, Mahommedan, Parsee and Chinese Scriptures with Hindi, Bengali and English Versions), Navavidhan Publication Committee of Brāhma Samāj, Kolkata, Reprint 2003 (1866).

[6] *See for details*, Jālāl-ud-Dīn Rumī, *Masnabī,* Eng. trans. Afzal Iqbal, Pakistan National Council of Arts, Karachi, 1999.

[7] *See*, *Varadātantra,* 5th kāṇḍa, 6th pāriccheda where it is said as "nānyanindā prakartavyā kadācidapi sādhakaip, ekaṁ brahmaivādvitiyaṁ sarvatra kathitaṁ mayā upādhibhāvabhedena nānāivaṁ bhajate sati. Ekaṁ pūjayate yastu sarvānarccayatisma sab".

[8] Rami Mark Shapiro, 'Moving the Fence: One Rabbi's View of Interreligious Dialogue' included in *Interreligious Dialogue,* (ed.) M. D. Bryantt and F. Flinn, New Era Book Paragon House, New York, 1989, p. 32.

[9] Joachim Wach, *The Comparative Study of Religions,* Columbia University Press, 1958, p. 30.

[10] *The Complete Works of Swami Vivekananda 2 (CW),* Advaita Ashrama, Calcutta, 1997, p. 500.

[11] "ā no bhadrā kratavo viśvatap"– *Ṛgveda*, 1.89.10.

[12] "ekaṁ sadviprā vahudhā vadanti"– *Ṛgveda*, 1.89.10.

[13] *CW 2*, 1992, p. 384; *also see,* Swami Vivekananda, *A Study of Religion,* (11th edn.) Advaita Ashrama, Kolkata, 1995, p. 67; *also see, CW,* 1989, pp. 1, 4.

[14] J. Hick, *God Has Many Names,* Macmillan, 1982, p. 83.

[15] *CW 1,* 1989, p. 24.

[16] "ye yathā māṁ prapadyante staṁ tataiva bhajāmyaham" — *The Bhagavadgītā,* 4.2.

[17] Ibid., 4. 7.

[18] Swami Vivekananda, *A Study of Religion,* (11th edition) Advaita Ashrama, Kolkata, 1995, p. 62; *also see*, Because of organised religions' political and economic interests a long history of bloodshed has been experienced by the human race. Political and economic interests of power-elites are properly served in the guise of religion.

[19] "That for all devilry that religion is blamed with, religion is not at all in fault: no religion ever persecuted men, no religion ever burnt witches, no religion ever did any of these things. What then incited people to do these things? Politics, but never religion; and if such politics takes the name of religion whose fault is that?" — *CW 4,* Ibid., p. 125.

[20] *The Complete Works of Swami Vivekananda 1,* 1992, pp. 329-332.

[21] According to Whitehead, "The great rational religions are the outcome of the emergence of a religious consciousness which is universal, as distinguished from tribal or even social. Because it is universal, it introduces the note of solitariness. Religion is what individual does with his solitariness." — *Religion in the Making,* Vol. 2, Cambridge University Press, Cambridge, 1926, p. 367.

[22] This point has been emphasised by Vivekananda when he puts the spirit of Vedantic religion popularly called 'Hinduism' in the following words: "I am proud to belong to a religion which has taught the world both tolerance and universal acceptance. We believe not only in universal toleration, but we accept all religions as true." — 'Address at the Parliament of Religions: Response to welcome', 11th September, 1893; *see, The Complete Works of Swami Vivekananda,* Advaita Ashrama, Kolkata, *CW*, 1989, 1:3.

[23] Importance of this way of approach is important and this has been beautifully expressed by Swami Vivekananda at the end of the Parliament of Religions in 1893. In his own words, "If the World's Parliament of Religions has shown anything to the world, it is this: It has proved to the world that holiness, purity, and charity are not exclusive possessions of any church in the world, and that every system has produced men and women of the most exalted character." — *The World's Parliament of Religions,* 2, Chicago, Parliament Publishing Company, 1893, p. 1582.

[24] A. K. Mohanty, *Comparative Religion,* SAP publication, Utkal University, Bhuvaneswar, 2006, p. 296; *also see,* Ki-Young Rhi, 'A Korean Buddhist View on Interreligious Dialogue — Won-Hyo's Ideal on Peace and Union' included in *Interreligious Dialogue: Voices From a New Frontier,* (ed.) M. Darrol Bryant and Frank Flinn, A New ERA Book, Paragon House, New York, 1989, pp. 119-126.

[25] *See, The World's Parliament of Religions,* 2, Chicago, Parliament Publishing Company, 1893, p. 1582.

[26] Swami Bhajananda, *Harmony of Religions,* Calcutta, Ramakrishna Mission Institute of Culture, 2008, p. 40.

[27] *CW,* 1, 1989, p. 4.

[28] For details one may *see,* Amartya Sen, *Identity and Violence: The Illusion of Destiny,* London, Penguin Group, 2006, p. 67.

[29] A. Niyogi Balslev, *Religious Tolerance or Acceptance?,* The Ramakrishna Mission Institute of Culture, Kolkata, 1987, p. 32.

[30] *See,* the address by Swami Vivekananda at the final session of the parliament of religions, 27th September 1893; *Selections from the CW of Swami Vivekananda,* Advaita Ashrama, 1998, p. 18.

[31] It was Dārā Shikūh who for the first time translated at least 50 Upaniṣads into Persian with the title *Śir-e-Ākbar* and from this Persian translation a French scholar Anquetil Duperron translated Upaniṣads into French and Latin in 1801-1802. From that Latin translation Schopenhauer and Schelling, two German philosophers came to know about Upaniṣads and influenced by its thought. *See*, Prince Muhammad Dārā Shikūh, *Majma' Ul Baḥarain,* Calcutta, The Asiatic Society of Bengal, 1929, p. 27.

The Contested Land: Adivasis, Developmentalists and the Conservationalists

Andria John and Laxmi

Abstract

The conflict between Adivasis, conservationalists and development propagandists has been occurring for a long time, and it became more pronounced during the colonial period in India. The Adivasis depend on the land, which forms a significant part of their life; when land is alienated, their culture, belief, tradition and chiefly their way of living is lost, which in turn makes them highly vulnerable to the increasing perils of the modern world.

Based on secondary resources, the study analyses the inter-conflict of three nature-human relationships, through the two cases of displacement and resettlement dispute of Scheduled Tribes from their habitat, the Niyamgiri and the Nagarahole, and how nature-human relationships are shaping the future in India. The findings suggest that there should be a consensus between the three pillars, and it could be achieved only through the agreement of relations between humans and non-humans. This study argues that the Adivasis should be given a first position in the conservation and development initiatives, especially when they are on the verge of expulsion from the habitat along with culture, tradition and sacred knowledge of living along with nature.

Keywords: Displacement, Scheduled Tribes, Anthropocentrism, Biocentrism

Note: Adivasis — Indigenous people of Scheduled tribes in India

Introduction

The nature-human relationship is the root which holds humans and the environment from extinction (Garver and Brown, 2009).

Concerning land ethic, land ownership is right when it preserves the integrity, stability and beauty of the biotic community, and its right is otherwise (Leopold, 1940). Often the conflicting worldviews of the indigenous community based on deep ecology and that of the conservationalists and development propagandists ecocentric and anthropocentric is noticeable. The conflict between Adivasis (deep ecology) and conservationalists (ecocentric), and development propagandists (anthropocentric) has been occurring for a long time. It became more pronounced during the colonial period in India. There is always a contest between them for the natural resources to cater to three different needs: sustenance, capitalist growth and wildlife protection.

India has a history of non-violent resistance against the destruction of nature. The Mahabharata also hints that essential elements of nature constitute mountains, earth, sea, sky, air and fire (Thiyagarajan, (n. d.). Chipko movement and Appiko movement, the non-violent movements carried out in the states of Uttar Pradesh and Karnataka and spread across the country to stop cutting trees, embraced the Gandhian philosophy of peaceful resistance to achieve the goals (Eco India, 2008). Narmada Bachao Andolan (NBA) started when people of the Narmada river valley began to be forcefully displaced during 1985-1986 as resistance against the proposal of 30 big dams, 135 medium dams and 3000 small dams in the river Narmada, which would doom the river Narmada (Narmada, 2010).

The indigenous community depends on the land they are part of throughout life. When land is lost, or they are relocated to another place, their culture, belief, tradition, and chiefly their way of living is lost, making them highly vulnerable. The monumental Forest Rights Act 2006, which ensures the rights of forest-dwelling tribals in India, in practice, has not seen its full impact due to systemic issues, lack of political will, and implementation barriers (Oxfam, 2018).

Despite the existence of special constitutional and legal provisions for safeguarding the rights of tribals to land and also special affirmative action provisions for the STs, they continue to remain the most

displaced, most vulnerable and most impoverished of all groups in India.

This study focuses on the contest between the ideologies behind the three actors in the tug of war through a systematic review of the literature.

The study results show that the Adivasis should be given a first position in the decision-making related to conservation and development initiatives, especially when they are on the verge of expulsion from the habitat along with their culture, tradition and sacred knowledge of living connected with nature.

Objectives

To understand the development-induced displacement in the context of anthropocentrism in Niyamgiri hills.

To understand the conservation-induced displacement in the context of biocentrism and ecocentrism in Nagarahole National Park.

To review the Adivasi-nature relationship in the context of Niyamgiri and Nagarahole displacement.

Methodology

The study followed a comparative qualitative case study approach by examining secondary sources on development-induced and conservation-induced displacement among Adivasi communities in India. Since the study required two distinct modes of environmental governance, extractive developmentalism and fortress conservation which affected Adivasi ecological relationships, land rights, resource access, and livelihood, the cases of Niyamgiri and Nagarahole were selected for analysis.

The study used secondary sources including books, peer-reviewed journal articles, policy documents, legal documents, committee reports, and other institutional publications related to displacement studies, forest governance, and environmental ethics. Sources published in English and accessible through databases such as Google Scholar, Academia.edu, and ResearchGate were considered. Literature focusing on development-induced and conservation-induced displacement in

India, particularly in relation to Adivasi communities, environmental ethics, ecological justice, land rights, and indigenous ecological relationships, was included in the study. Sources lacking relevance to the objectives of the study, duplicated or inaccessible materials, unsupported opinion pieces, and literature focusing solely on technical ecological assessments without socio-cultural, displacement, or governance dimensions were excluded.

The study comparatively interprets how anthropocentric and biocentric conservation-development frameworks shape the experiences of displacement, exclusion, and resistance among Adivasi communities. Rather than statistically comparing the cases, the study analytically interprets the socio-ecological tensions, governance structures, and competing ecological worldviews embedded within Niyamgiri and Nagarahole. The study further examines how indigenous ecological epistemologies interact with state-led developmental and conservation interventions, and how such interactions produce distinct forms of marginalisation and dispossession.

Discussions

The basic principles of deep ecology include intrinsic and inherent value for all human and non-human life, the richness of diversity is essential, and humans have no right to reduce this except for vital needs. Human interference with the non-human world is excessive, and the situation worsens; appreciate life quality rather than the standard of life. However, deep ecology inadequately view roles of social hierarchy and power structures in environmental crises. Human-centred nature or Anthropocentrism states that humans are the only significant entities in the universe while disregarding non-human beings (MacKinnon, 2007). Anthropocentric perception is responsible for severe environmental crises ranging from global to deforestation and water scarcity. Moreover, the value of natural resources is ignored, and only monetary gains are focused. This is evident in the development craze of humans, building large dams, mining, quarrying,

and road development. Biocentrism and ecocentrism oppose anthropocentrism.

Ecocentrism, a term coined by Leopold (1949), finds value in all organisms, whether it is useful to humans. Extreme biocentrism can be noticed in the fortress conservation introduced by colonialists, where individual animals are given prime importance. This is also visible among environmentalists, where communities inhabiting the forest patch are considered a threat to the ecosystem and conservation. Ecocentrism opposes human groups and sometimes even threatens democracy (Arsene, n. d.).

Nature and society are interlinked into first and second nature, biotic and human. However, environmental changes brought by humans are different from non-humans. Culture is rich in knowledge, experience, cooperation and abstract intellectuality but divided among humans because of the conflict between groups, classes, nation-states, and cities. As the human's biological factors, such as lineage, gender and age, became institutionalised, it slowly became oppressive, hierarchical and attained an exploitative class form. In this sense, social ecology emphasizes moral regeneration and social reconstruction along ecological lines (Bookchin, 1964).

The conflict between three pillars-Adivasis understanding of nature

The close association of the Indigenous community with the nature they are part of helps them to lead a relatively secluded and isolated life without depending on modernity. The environment is social and natural and is interdependent. The collapse of the natural environment also affects the social environment; this collapse leads to the exclusion of certain people and is made worse for the poorer Indigenous community (Murmu, n. d.).

For Adivasis, a human soul displaces temporarily while sleeping and moves out of the body permanently when dead. Similarly, they believed trees, rivers and mountains go through massive expansion and decay as places where the soul is present Taylor (as cited in Sociology Guide, n. d.). The *Maori* people of New Zealand are deeply

connected with nature. Nature and humans are equal, interdependent, and families (UNEP, 2019). For the *Kond* Adivasis, Niyamgiri hills are their deity (Sahu, 2008), *Bhil*s, a tribal group in central India, their gods are animals and ancestors, *Toda* worship cows, and *Maran Buru* is worshipped as the great mountains of *Santal*s (Hays, 2008). There is much diversity in the worship of nature practised by the tribal communities. Tribes in an earlier period could not differentiate between animate and inanimate objects; they believed all living or non-living things have a spirit (Tylor, 2016).

In India, Adivasis depended entirely on hunting and gathering in the early century. However, the initiation of state reservation of forests affected the community affected their way of life. The irony was that small hunting of Adivasis was restricted, and *Shikhar* expeditions of the British continued in the colonial period.

How Adivasis view themselves as part of an extended family, which shares the exact origin and ancestry, is called 'kincentric ecology'. The scheduled tribe's relationship with the land is evident in how they manage natural resources (Salmon, 2000). Additionally, the characteristics of deep ecology can be seen while analysing the relationship of the indigenous community with the natural environment.

Displacement

The forced movement of people from their locality, environment and occupational activities is termed displacement. It is a form of social change caused by numerous factors like armed conflict, natural disasters, famine, development and economic changes (UNESCO, 2017). Internally displaced individuals have been forced to leave their habitual residence and remain in their country but do not cross the boundaries. Backward communities and vulnerable tribes have been most affected by displacement compared to others; they live mostly in mineral-rich areas (Mohanty, 2005). However, there are many reasons for the dejection of the resettlement. The community which is being displaced for the developmental projects are often not compensated

reasonably. The powerlessness of the weaker section continues without any benefits from the development. The displacement risk includes landlessness, joblessness, homelessness, marginalisation, food insecurity, increased morbidity, community disarticulation, and loss of access to common property resources (Cernea, 2004). Concerning population displacement, there are two types of displacement. Direct displacement leads to the actual displacement of people from their locations, whereas indirect displacement leads to the loss of livelihood.

Development-induced Displacement

Development-induced displacement is a global phenomenon. The displacement of people due to development projects, policies and processes, therefore, constitutes a social cost for development. Adivasis, like *Santal*s, were affected by this, which has disrupted their social networks, social support system, socio-cultural fabric, living patterns, social continuity, cultural identity and the ecosystem with which they have long been associated. Moreover, development-induced displacement affects the tribal ethos (Murmu, n. d.).

Every year more than ten million individuals are displaced across the globe due to further development and economic projects such as mining, dam, road, defence and alike (Kumar and Mishra, 2018). Post-independence, India focused on nation-building and economic development in the shape of dams, mega-dams, mining, factories and irrigation projects. It increased the GDP but simultaneously created involuntary displacement (Mohanty, 2005; Kumar and Mishra, 2018).

Fernandes (as cited in Kumar and Mishra, 2018) shows the estimate of Adivasis and other people displaced by a development project in India from 1951 to 1990. During that period, the construction of dams and mining were the top two causes of the displacement of the Adivasis. Additionally, only a meagre number of displaced individuals were rehabilitated. Among the displaced, majority of the families belong to the marginalised sections. The characteristics of anthropocentrism can be understood through the relationship shared by developmentalists with the natural environment.

Conservation-induced displacement

"I see no future for parks unless they address the needs of the communities as equal partners in their development"- Nelson Mandela

The number of protected areas in the world has risen by 500% in the last thirty years Wittemeyer et al. (as cited in Awuh, 2015). When there is an increase in protected areas, there will be an increase in the number of people displaced. Another notable factor about displacement from protected areas is that the affected groups are most marginalised. Examples are the *Adivasi* of India, *Ogiek* of Kenya, *Baka* of Cameroon and *San* of Botswana (Awuh, 2015).

In India, the first protected area was Hailey National Park, created by British nationalists in 1936, and at present, India has six hundred and fifty-seven protected areas, including five percent of the total forest land. The first relocation was noted in Kaziranga National Park, Assam, in 1908 (Lasgorceix and Kothari, 2009).

In Karnataka, the *Soliga* tribes and *Jenukurub*as, among other tribes, were displaced because of the *Kabini* project and Rajiv Gandhi National Park (Anindy and Mishra, 2018). Gujjar community from Rajaji National Park (Joshi and Singh, 2017), Baka tribes of Cameroon Dja reserve, falsely stating they increase the poaching and pressure on the reserve (Awuh, 2015). In India, once forest land is declared a protected area, individuals who were earlier accessing the resources are denied access and provided with a relocation package. However, denial of access takes a toll on the livelihood of relocated people as they are accustomed to the forest resources for all needs. The relocation also scatters the family, and, in turn, affects the community's social fabric.

Case of Nagarahole in the Context of Biocentrism and Ecocentrism

Nagarahole, also known as Rajiv Gandhi National Park, was established in 2000, with an area of 643.39 square km (Karnataka Forest Department, (n. d.). In 1955 Nagarahole was declared a wildlife sanctuary; until then, it was the hunting zone of *Mysore raja*s. In 1972 Wildlife Protection Act was passed, and land areas were increased to

643.39 sq. km in 1975. Nearly three thousand four hundred families were relocated by promising fertile agricultural land outside the Nagarahole. In 1999, Nagarahole was declared a project tiger reserve. One thousand seven hundred and three families were living in the fringe areas of the tiger reserve; among them, six hundred and thirty families voluntarily moved out of the reserve. In 2013, during the fieldwork period, few tribal families were still resisting and staying inside the Nagarahole with many restrictions. One hundred five more tribal families are to be relocated, and they are still residing inside the protected areas (Lasgorceix and Kothari, 2009). The displaced tribal families were moved to Nagpur and some other places. The relocation process reflects how conservation governance often constructs Indigenous habitation as incompatible with ecological protection. The studies show that the economic status of the Adivasis after moving outside the Nagarahole has reduced. However, plantation owners who are encroaching and cultivating within the boundaries of the reserve forest have not faced any relocation issues so far (Kuthar and Ullal, 2019).

Risk of food insecurity, loss of access to common property, loss of income and means of subsistence were mentioned in different studies regarding the issues faced by Adivasis in Nagarahole after displacement. Prabhu (2014, August 11) collected information on displaced Adivasis from the Rajiv Gandhi National Park. By 2014, only 24.54 percent of the Adivasis owned land. The Adivasis living inside the core areas which were most affected include *Jenu Kuruba, Soliga, Yerawa, Betta Kuruba* and *Paniya;* families that depended on agriculture did not get formal credit and fell into the vicious cycle of money lenders. The 2014 report by *Deccan Herald* states the plight of displaced tribes; houses constructed for tribes were in dilapidated condition, as tribes were hunter-gatherers, they did not have any training on agriculture, there was an acute shortage of water supply, and the land was not fertile enough for agriculture (Mohammed, 2014).

Four decades ago, three thousand four hundred tribal families in Nagarahole were relocated, promising agricultural land and other

facilities. They were settled in Mathigodu, Begur, Kanthuru and a few in coffee estates of Kodagu, Virajpet and Brahmagiripura. However, under the FRA 2006, they have demanded ten acres of land and other benefits, which are not yet provided (Lakshmikantha, 2019).

"Conservation has become a number one threat to the indigenous territories" (UNDRIP, 2004). The creation of protected areas is valuable for the public. However, the cost for it is entirely paid by the local communities living within those spaces, who lose access to land, forest resources and other development opportunities (Krueger, 2009). The eight significant risks due to the displacement for biodiversity conservation were put forth by Cernea (2000) the risk of landlessness, the risk of joblessness (loss of income and means of subsistence), risk of homelessness, marginalisation, food insecurity, increased morbidity and mortality, loss of access to common property resources and social disarticulation.

In the case of Nagarahole displacement, it is clear from the newspaper articles and various other reports that the displaced Adivasis had a risk of landlessness, homelessness, food insecurity, loss of access to common property resources, loss of income and means of subsistence, which are the significant risk due to displacement from fortress conservation. Even after twenty years, the rehabilitation progress is still going on for the vulnerable tribal community, the *Jenu Kuruba*s. The Crop Compensation, ashram schools, and allotment of land are still pending ("Two decades later", 2017).

In 2014, Muzaffar Asadi committee was set by the high court to study the issues of displaced Adivasis of Nagarahole. Three thousand four hundred eighteen families were affected by the declaration of Nagarahole National Park. Adivasis in H D Kote were severely affected, and the committee gave about thirty-three recommendations. In January 2017, the National Commission of Schedule Tribals recommended that no Adivasi should be relocated until alternate land is provided. There were also voices raised for acknowledging the Forest Rights Act - 2006 of Adivasis relocated from the Nagarahole (Kumar, 2017; Kukreti, 2018).

The state of Adivasis once lived inside the Nagarahole, now termed Nagarahole National Park. The construction of protected areas for wildlife species is a conservationalist approach focusing on the conservation of crucial and endangered species. All living beings are important and should be protected, especially those threatened and endangered. However, the fortress conservation of relocating the community customarily living, knowledgeable of the forested landscapes and excluding them from the planning and decisionmaking for conservation of the species may not always be successful; this is exceptionally biocentric. Forest-dwelling Adivasis are the ears and eyes of the forest and are well-known than outsiders on landscape and wildlife. The traditional wisdom of Adivasis is an asset for policy formulations, and it is essential to ensure participation (Mohanty, 2019).

Biocentrism, conceptually, means all living beings, humans and non-humans have equal value; however, this kind of fortress conservation takes this to an extremist sense considering only the non-human animals. Exclusionary biocentrism also devalues the importance and right to customarily live in the ancestral land of humans living in and around the habitat of such non-human animals (Sarkar, 2012). Ecocentrism and deep ecology are the worldviews of the indigenous community worldwide. Adivasis believe dependence and kinship with nature and its occupants do not mean total constrain from managing or depending on nature. However, it shows a balanced dependence on nature and its occupants.

Fanari (2019) terms relocation as a violent act which does not recognise the forest rights of the community and as a lack of support from the forest department. For instance, what happened in Nagarahole and in many protected areas in India and worldwide is fortress based. It is highly contrary to anthropocentrism. The central pillar of biocentrism is that humans and all living beings are part of the earth, everything is interdependent, and human beings are equal to other species. In the case of biocentrists and vital conservationalists, wildlife can be conserved only by isolating them from humans and

avoiding any interaction with humans, which is the core concept of protected areas (Alexander, 1999; Lim and Yuzhe, 2018).

Case of Niyamgiri in the context of Anthropocentrism

A census official asked Kondh what his religion was, and Kondh replied, 'mountains'. Neither the census form could inculcate the answer of Kondh nor the person who asked it (Padel and Das, 2010). Niyamgiri hills are culturally and ecologically intertwined with the life of Dongria Kondhs (Sahu, 2008). '*Dongria*' derives from '*dongar*', which means 'farming on hill slopes', and believes they are the descendants of the deity '*Niyam Raja*'. Pockets like Niyamgiri hills still exist today because of the adamant symbiotic relationship and animistic beliefs of *Kondh*s towards their hills, culture and pride of identity linked with it. *Kondh*s are a tribal community with sub-groups like *Dongria*, *Kutia* and *Desia*. Niyamgiri range is a connected geographical territory embracing the cultural, social, religious and livelihood needs of the *Dongria Kondh*. The settlement of *Dongria Kondh*s is not permanent; they abandon their old settlements in search of new ones inside their habitat itself.

In the case of implementation of the Forest Rights Act 2006 — the concept deep-rooted in the lives of *Kondh*s is that the entire *Niyamgiri* is for the community and not to be divided. Community rights are usually entitled to the whole village; in the case of *Niyamgiri*, it is an entire community (Nayak, 2015).

After the continuous legal fight between the state government and the Vedanta corporation, the Supreme court ordered the government of Odisha to conduct gram sabha meetings and obtain consent from the community. All twelve gram sabhas rejected the bauxite mining project. *Kondh*s consider the onset of tarred roads as a symbol of outsider intrusion into their hills. Inappropriate government schemes and assistance to the bauxite extracting corporations are slowly killing the Niyamraja hills and the associated identity and culture. In 2013, Vedanta project was stopped by the government and the supreme court (Barik, 2019).

Anthropocentrism stands for a human worldview and gives value to only human beings, whereas biocentrism views all living beings as equal (Sarkar, 2012). However, inside this view, there is a tug of war between the power and the powerless, modern and primitive, mining companies and tribal beliefs (Hayward, 1997). The case of the Niyamgiri hills shows how the rigid anthropocentric view functions, which marginalises the rights and voices of the vulnerable and minority community as that of *Kondh* tribes in the Niyamgiri hills for the mining and economic development of a nation.

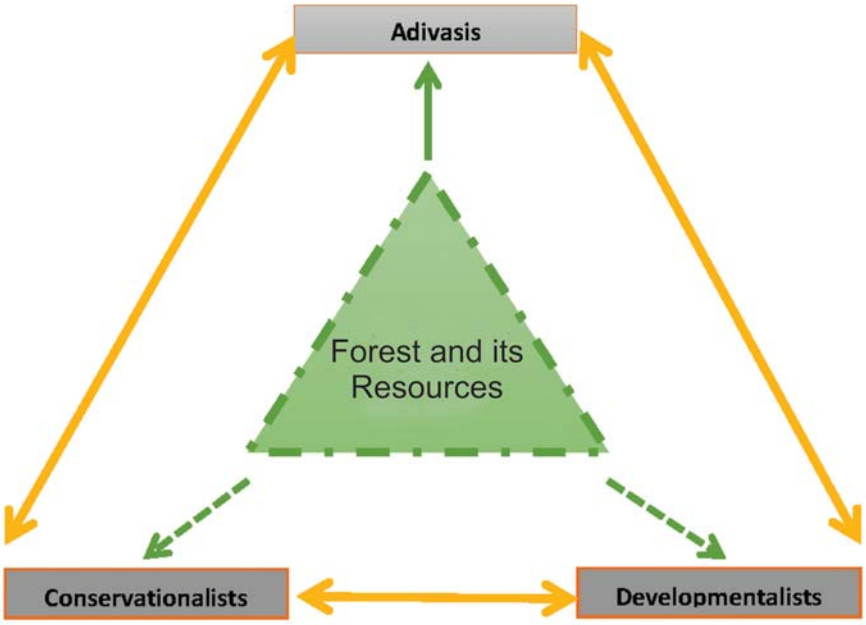
Conclusion

The study aimed to understand the *Niyamgiri-Kondh* tribe issue through anthropocentrism and Nagarahole National Park- Jenu Kuruba relocation through biocentrism. Human-centred nature or anthropocentrism states that humans are the only significant entities in the universe while disregarding non-human beings (Norton, 1991). Developmentalists, like Niyamgiri hills and Odisha Mining Corporation Vedanta, are human-centred in the name of growth and development conceptualised by the civilised world.

Ecocentrism, a term coined by Leopold (1949), finds value in all organisms, whether or not it is useful to humans. Ecocentrism opposes human groups and even sometimes threatens democracy (Arsene, n.d.). In the case Nagarahole forest and Adivasis living in the forest department following the pre-colonial notion of fortress conservation, the conservationalist considers humans living inside the forest as a threat to wildlife conservation without considering the centuries of the sustainable relationship of Adivasis living there with the wildlife and flora.

Naess (1972) coined the term Deep Ecology. The Deep Ecology Movement dislikes the human-centred value system of western culture. It considers the ecosystem a living whole in which humanity is just a part. Similarly, among Adivasis, deep respect and a sense of belongingness to the land are very much evident. They do not have unsustainable use of land for greed. *Khond*s consider themselves as

children of Niyamraja, their relationship with the hills and everything that originates from them. Similar is the case of *Jenu Kuruba*s, the ancestral forest land they lived in is intertwined with the culture, tradition, livelihood, food and life of *Jenu Kuruba*s and other Adivasis lived.



Nature is a contested space. There is always a tug of war between the developmentalists - nature - Adivasis, conservationalists - nature - Adivasis and the conservationalists - Adivasis - developmentalists over nature. It is essential to reflect on what is significant and sustainable. The developmentalism and fortress conservation that is capable of marginalising the tribal ecological epistemologies, functions in the community, although in a opposing nature. Although anthropocentrism, ecocentrism, and deep ecology emerge from distinct philosophical traditions, these shapes the competing claims over land, resources, and legitimacy in environmental governance. The conflict with regard to the Adivasi displacement in India cannot therefore be understood merely as a developmental issue, but as a contest between

divergent ecological worldviews. The study demonstrates that both developmental extraction and exclusionary conservation can produce parallel forms of dispossession when Indigenous ecological knowledge systems are excluded from governance structures. The repeated marginalisation of Adivasi communities within both developmental and conservation paradigms raises questions concerning equity, representation, and ecological democracy. The study points out that the Adivasi displacement conflict is not merely between humans and nature, but between competing understandings of nature itself.

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Creolization of the Diaspora: A Critical Reading of Peter Jailall's Poetry

Sireesha Telugu

Abstract

Migration entails physical and psychological displacement as individuals leave their homeland to pursue a better life elsewhere. This often involves severing ties with their former land while endeavouring to forge a new identity in their adopted home. Peter Jailall, a notable figure in Indian diasporic literature and poetry, exemplifies how his ancestors preserved their linguistic and cultural identities, thereby creolizing the diasporic experience. Consequently, this essay examines the linguistic and cultural complexities embedded in Jailall's works, aiming to contribute to the scholarly discourse surrounding diasporic literature through the lens of linguistic and cultural hybridity. By scrutinizing Jailall's language usage and his negotiation of cultural identity in his poetry, the paper illuminates the intricate dynamics of diasporic experience as articulated through literature.

Keywords: Diaspora; Indentured; Coolie; Creole; Culture; Hybridity

Introduction

Diaspora, as stated by many theorists, is a concept that refers to individuals, groups and communities undergoing diverse movements away from their places of origin. These movements are propelled by the need for a better life, education, employment opportunities, quest for settlement, and even forcibly displaced from one's homeland. This phenomenon extends beyond the mere physical relocations across nations, countries, or continents to encompass the traversing of imagined spaces, incorporating notions of home and family. The displaced, unable to connect to these spaces, create an in-between space. The intricacies

of diaspora involve the intricate interplay between physical displacement across geographical boundaries and the profound impact on the interconnected realms of identity, belonging, and cultural continuity. Stuart Hall in his seminal work, 'Cultural Identity and Diaspora,' considers this position of diaspora through the idea of alterity and hybridity. He says that the diasporic identity is constantly producing and reproducing themselves. This conception of identity alters the earlier ideas of migration and celebrates heterogeneity (diversity). Literature originating from the diaspora serves as a primary conduit for comprehending the creolization inherent in diasporic experiences.

The writers of the Indian diaspora, through their literary endeavours, have significantly enriched the landscape of English literature. Notably, the historical trajectory of Indian diasporic writing parallels the very inception of the diaspora. It is intriguing to recognize that the roots of Indian diasporic literature extend beyond establishing diasporic communities. The early writings of Sake Dean Mahomet are regarded as significant contributions to the literary canon, as Mahomet's migration to Ireland led to the meticulous documentation of his travels in his book, *The Travels of Dean Mahomet.* Subsequently, a rich tradition of diasporic literature emerged, spanning diverse voices and experiences. Indian diasporic literature initially evolved through oral narratives and songs within the context of the indentured system, gradually transitioning to written forms. These narratives often encapsulated the firsthand experiences of the diaspora community. The migrant experience does not end with the first part of the settlement. It is handed over to the later generations, consciously or unconsciously. Residing in a diaspora entails navigating a cross-cultural milieu where change, fusions, and diverse experiences are unavoidable. Individuals attuned to the intricacies of this cultural shift acknowledge the imperative to reaffirm their identity while simultaneously seeking avenues to express their evolving journey. This attempt has produced several voices in recent years that echoed through the medium of

literature. The essay investigates Indian diasporic literature exploring themes like adaptation, nostalgia, displacement, and un-belonging, including the tapestry of cultural and linguistic creolization with specific reference to Peter Jailall's book of poems, *Sacrifice*, using the framework of postcolonial and cultural studies as proposed by Edward Kamau Brathwaite, Homi K. Bhabha, and Stuart Hall. These theorists have worked on the complexities of creolization and its role in shaping the cultural, linguistic, and social identity of the diaspora.

Sacrifice guides readers through the journey of the indentured labourers upon their arrival in Guyana. The poems vividly depict the historical narrative of the Indian community in Guyana, capturing their experiences of displacement, adaptation, survival, and eventual transformation. They deliberate on the indentured labour system, Caribbean history, and the history of Guyanese diaspora, including the Guyanese creole subdialect. The creole language in the Caribbean, as many studies indicate, is influenced by various linguistic sources, including languages from India. According to Fabienne Viala, "the Barbadian Edward Kamau Brathwaite coined the term Creolization—from the Spanish word 'criollo' 1 to analyze the intercultural transformations of post-plantation Jamaican society (The Post-Columbus 41)." Edward Kamau Brathwaite theorizes in his works that the diverse populations of the Caribbean basin, comprised of Europeans, Africans, indigenous peoples, and indentured labourers, have engaged in profound interactions that have significantly influenced the region's cultures and languages. He contends that these exchanges have catalyzed a dynamic process of creolization, shaping the unique cultural and linguistic landscape of the Caribbean. As a result, many countries in the region boast distinct creole languages, including French Creole, Dutch Creole, English Creole, and Spanish Creole. For instance, Guyanese Creole, as noted by Devonish and Thompson, serves as the primary language for the majority of the population in the Republic of Guyana.

Peter Jailall's poems are richly infused with Guyanese English Creole, as they explore the questions of belonging, unfolding the inherent challenges of navigating to foreign land and unfamiliar surroundings. The poems poignantly depict the experience of alienation and underscore how the language, deeply rooted within the poet, undergoes alterations yet remains a steadfast companion throughout the journey as an Indian poet in the diaspora. The poems are juxtaposed with photographs of indentured dwelling places, the fields that they worked, transmitting the frankness and innocence of these women caught in the lens of the camera in the colonial era. The poems represent the arrival of Jailall's ancestors from India to Guyana and the difficult journey they endured to create a new life. They illuminate the sacrifices made as they toiled in the cane-fields, struggling to secure a better future for the generations to come.

Migration to Guyana

'Migration' is an act of displacement or dislocation that can be experienced depending on political, economic, cultural factors. The mobility of people or community to a different place, country or sub-continent is not only a physical act, but also holds a psychological alignment too. It is an orientation of belonging, and the place one is migrating from is the origin of that belonging. But the place of destination can behold several factors as well. To rationalize the idea of migration, Everett S. Lee, in his 'A Theory of Migration', has elucidated some features of migration, as the push and pull factors depending on various other sub-factors like age, economic condition, access to resources, source of livelihood, etc. These factors at origin and destination would either neutrally, positively, or negatively affect the decision to migrate and can promise to provide a better life and belongingness to the people who urge to move.

The end of British slave system gave birth to indentured labour system. Indians were recruited under this structure and transported to

different British colonies to serve on the sugar and rubber plantations. As part of this system, a few of them were transported to British Guiana (Guyana) from Calcutta, popularly known as the 'Gladstone Coolies', which roughly translates to manual labourers. This marked the beginning of the indentured system that continued to the first quarter of the 20th century. Several reasons compelled people to migrate, including famine, poverty, and unemployment in their homeland. Peter Jailall illustrates how his ancestors migrated to Guyana with determination and ambition, seeking a life free from poverty and the challenges of floods and droughts. They aspired to enhance their living conditions and were drawn to the perceived opportunities in Guyana, influenced by stories or rumours of a better life.

However, upon embarking on the ships, their hopes were ruined. The experiences were harrowing, marked by a scarcity of food and water, overcrowded conditions, unsanitary environments, and the prevalence of diseases like dysentery and cholera on board, resulting in a mortality rate of 20 to 30 percent. Upon arrival in the new land, they faced harsh treatment, enduring long working hours, inadequate facilities, and meagre wages. Punishments for disobedience were severe, often resulting in contract extensions. According to the study, approximately 240,000 East Indian indentured workers were brought to British Guyana during this period. While some could return to India at the end of their contracts, many settled in their adopted land, British Guyana. Their narratives serve as a poignant backdrop to Jailall's poetry.

Critical Reading of the Poems

The poems illustrate the plight of indentured enslaved people as they laboured tirelessly on plantations, grappling with the challenge of preserving their ethnic identities. While contributing to the development of the countries they migrated to, they also endeavoured to cultivate their cultural heritage in unfamiliar territory. The first poem of the collection, 'My Forebearers', recounts the determination of the initial

wave of migrant coolies to Guyana. The poem says that the forebearers chose to migrate to escape "floods and droughts/Trickery and poverty (13)" serving as compelling reasons from their place of origin. These factors were significant enough to force them to encounter numerous intervening obstacles, both external and internal. These included steering through harsh weather conditions in Demerara and tolerating the harrowing journey across the 'kala pani' (the middle passage). In addition, the extreme conditions aboard the ships crossing the middle passage tested their physical and mental resilience, resulting in the loss of many lives even before reaching the shore.

The "determination/ and ambition (13)" of a bright future was so great among the migrants that they overlooked all the hardships and overestimated the positive factors in Guyana, and arrived "barefoot, empty-handed (13)," "full of hope/ without suitcase or passport (13)"—without any belonging, or national identity—by knowing that they must fight it out to reconstruct their identities in the destination. However, the harsh working conditions and the "sting/ of massive whip (13)" portray a tragic, circular notion of history of pain, as their decision of migration has taken them back to the life of suffering back home, perhaps in worse situations as now they exist devoid of any identity, hope or belonging.

The poem suggests that the forebearers were deemed sinful for crossing rivers and oceans, a journey often called the 'kala pani'. "Historically, the term 'kala pani' meant dark or black waters and referred to a religious restriction prohibiting high-caste Hindus from crossing the waters. Since then, 'kala pani' has become a vital metaphor for the diasporic writers. The moment of crossing 'kala pani', according to Elizabeth DeLoughrey, the narrative space of transoceanic ships, is where Indian labourers "reconfigure their relations to the domestic, imagined broadly in terms of nation, culture, caste, and gender On Kala Pani" ('On Kala Pani' 73).

Thus, the poem indicates the bravery of their forebearers crossing the forbidden spaces to create a home away from home. They had to endure the terrible and traumatic conditions on the ships, living in the confined spaces with people from different cultural backgrounds, speaking different languages, different dialects, people from different castes and religions and terrible long voyages.

For the diaspora, immutable poetics of labour exalted even the abject 'poi bhajee (13)' to a superior status. The poi seeds, stitched into pouches for transatlantic transport, tenderly cultivating them alongside the cane fields, rolling out chapatis, singing songs, feature prominently in Jailall's poetry. These trials attempt to illuminate everyday life, preserving the cultures they have carried from their home.

Poems such as 'Our Legacy', 'The Sacrifice', and 'Working with Devotion' recounts the journey of the Gladstone coolies who departed from the ports of Calcutta to settle in British Guyana. Motivated by the search for employment and relief from poverty, they encountered adversities on their voyage. The unsanitary conditions aboard the ships exacerbated their hardships, yet Jailall portrays his ancestors as arriving in Guyana with eyes brimming with innocence and hope. Despite lacking suitcases or passports and being barefoot, they harboured ambitions for a better life. However, they encountered further challenges instead of improvement, including poor living conditions, identity crisis, and additional hardships.

Their decision to leave their homeland was driven by a desire to escape poverty, disease, and unrest, yet their pain persisted even after migration. Their cultural identity was distilled down to language, food, and seeds carried during their journey. Homi Bhabha advanced his concept of hybridity while developing his theory of cultural difference. He does so by claiming that every cultural artefact or system is constructed in an interstitial space where the rigid boundaries blur. He calls this space the 'third space'. This space not only restricts the exoticism of certain cultures but also makes the colonisers' claims of

ethnic, religious, and cultural purity untenable. This disrupts their efforts at creating and maintaining a singleness of identity by using a certain culture as a homogenising and unifying force. In its place, Bhabha transposes a process of creation of various hybrid cultures and identities in the liminal third space where various elements from the cultures of both the coloniser and colonised interact with and affect each other. Therefore, we observe that despite displacement, the indentured labourers retained their Indianness as a fundamental aspect of their identity in the migrant land. They clung to seeds and Indian cuisine, symbols of their individuality and cultural heritage, to preserve their identity amidst upheaval.

'Baan Fu Wuk', a poem portraying the experiences of a migrant worker, reaffirms his identity as a labourer. "I man Coolie man/baan fu wuk (17)', he asserts. Within the small narratives of everyday life, the sacredness of privileged memory is subtly woven in. He declares, I am born for work; I am a labourer; I am a coolie. Over the years, the term 'coolie' has evolved into an offensive label for unskilled, hardworking labourers. The poem transitions its meaning to a powerful connotation. It resonates the life of a labourer who had toiled in the fields to construct a formidable nation. For many, the term is not derogatory but carries a profound cultural heritage.

Similar experiences were recounted by African American poets such as Langston Hughes. In his poem, 'I too, America', Hughes contemplates on the anguish of an African American identity. The poet expresses confidence that a day will arrive when African Americans will assert their rightful place in the mainstream society. He acknowledges the current segregation and isolation faced by the Black community but remains hopeful for a future where they will be viewed with fresh understanding. The poem evokes historical injustices, highlighting a time when darker-skinned individuals were not considered equal citizens in America and were segregated even from native Americans. The African American protagonist in the poem experiences the pain of

alienation but anticipates a future where he will enjoy equal rights and opportunities to express his patriotism.

'Ban Fu Wuk' also delves into the notion of identity, portraying the experiences of a coolie who takes pride in embracing their ancestral heritage. The poet vividly portrays the inhumane physical conditions endured by indentured labourers. The title, 'Ban Fu Wuk', itself alludes to the construction of the labourers' identity upon their migration to the plantations from their homelands. There was an internalization of the notion that 'girmityas' or 'jahajis', referring to Indians migrating as indentured labourers to foreign countries, were obligated to toil strenuously in the fields for colonial planters and recruiters. Consequently, the poet describes how the labourers' deplorable working conditions became normalized on the fields. It was not uncommon for them to endure humiliation from white overseers, who would spit "white saliva (17)" at them or be drenched in "mud wata (17)" and with "sali wata (17)" during fieldwork inspections. The acceptance of identity is vividly portrayed here reflecting the linguistic and cultural marginalization faced by the indentured labourers in the new land. The poet's attempt in creolizing the language depicts the struggle for survival among the indentured. Lawrence A. Briener says:

> the process of creolization occurs at all levels of culture, and although its effects are large scale and highly visible, its actual operations are often very localized and unconscious. To a considerable extent, creolization is a matter of individuals making routine adjustments to a multicultural setting (Creole Language 29).

Human predicament and identity crisis in the 'alien' land is vividly portrayed through the character of Meena in 'Meena's Treasures'. The word 'treasure' seems symbolic, referring to something beyond material worthiness. Therefore, among her "precious pieces of gold (54)", Meena was careful to hide her handful of "poi bhajee seeds/ To transplant her agriculture/On cold Canadian soil (54)", in the safest corner of the suitcase. The treasures that Meena brings with her, especially the seeds

of poi-bhajee, represent the materiality of memory as a mnemonic device that would not let her feel alienated from her identity owing to the dislocation from her home. Pnina Werbner says:

> culture is never merely individual, a portable piece of baggage carried by migrants on their transnational voyages along with their other belongings ('Migration and Culture' 215-216).

The etymological meaning of the word 'culture' also denotes 'cultivation', hence her act of cultivating the poi bhajee seeds in the balcony may also metaphorically suggest her transplanting of her own native culture "on cold Canadian soil (54)". It is because, according to Werbner:

> As transnational migrants settle in a new country, they transplant and naturalize cultural categories, not simply because this is their tradition or culture, but because as active agents they have a stake in particular aspects of their culture. Culture as a medium of social interaction confers agency within a field of sociality and power relations ('Migration and Culture' 215).

The thick green leaves sprung out of the seeds symbolise the homeland to her, as if she conceives the culture inside her. Jailall mentions that the leaves grow "from Meena's green thumb (54)" symbolising the women as mother— an embodiment of nourishment and as diasporic selves, reservoir of native cultures. Although the roots of the poi bhajee seeds were metaphorically dislocated from the native land, with Meena's help, they get relocated on Canadian soil—creating a hyphenated existence. Therefore, in the new culture, in an apartment in Canada, where she is being relocated, Meena wants to avoid being haunted by the emotional trauma of displacement that the physical distance from her homeland would remind her of.

'Khatun from Skeldon' narrates the history of indentured women in Guyana by recollecting the story of an aged woman. The poem can be contrasted with the poem 'My Forebearears' where the legacy of the

forefathers and their toils are celebrated and commemorated in glorious terms. In this poem, however, the aged woman in her 80s is seen sitting alone "on the dung heap of estate life, looking on, brushing flies/ abandoned by Guyanese,/ by friends, and family (35)." These images point to women's dehumanising effect and objectification as indentured labourers in the imperialist economy. Although, once she was the "fastest weeder, cleanest (35)" in Booker Bros. and Company, she is considered worthless in her old age as she cannot contribute anything to the capitalist economy. The same patriarchal atrocities are repeated in the family as well. As long as she was able to perform her gender roles (fixed by the society) of earning, marriage, rearing children, repairing house she was supported by everyone, but in her old age, her response is muted, she leads a lonely life "ready fu dead (35)." Therefore, Jailall seems to suggest that the hope of a better future that once convinced her to overcome the traumas of dislocation and relocating in a foreign land seems to have thwarted as the same patriarchal atrocities are continued in the host-land as well— both in the family, the society and in the workplace.

'The Beauty of the Coolie' talks about the challenges the indentured labourers faced while living in the faraway land. The Postmodern ideal of challenging the 'grand narrative' has opened new arenas for academic explorations, that value the previously 'obscure' marginal voices and micronarratives around the world. One of the major thrust areas among these disciplines is the spatial turn in Humanities and Social Sciences, that tries to unearth the suppressed voices of the diasporic selves and communities living in a foreign land, while constantly being haunted by the nostalgic vision of their homeland. This poem attempts to grapple with the ideas of home and belonging, nation and racial identity from the perspective of Indian indentured servants. He says how the labourers were put up "in a logie/Without privacy/Mek nuff pickinie/Drink silane pani/Die of dysentery (29)." They had to lead a distressed life with no facilities, leading to several diseases, being punished severely

and imprisoned sometimes, however, they survived and beheld the identity of labourers within them. Jailall's representation of coolie reflects the marginal condition of the indentured labourers. The marginalization, challenges, acculturation, identity crisis existed in the realm of old diaspora but the acceptance of their individuality and identity as Indians forced them to survive through the obstacles. Positioned at the 'in-between' spaces of nations and identities, Jailall constructs diaspora as an unstable and uniquely ambivalent space, and narrates the inner schizophrenia and anxiety of these diasporic selves.

Conclusion

Jailall's collection of poems explore Homi K Bhabha's concept of hybridity related to the formation of a diasporic identity. Bhabha argues that hybridity opens a space, figuratively speaking, where the construction of a political object that is new, neither the one nor the other, properly alienates our political expectations, and changes, as if must, the very forms of our recognition of the moment of politics (The Location 25). This idea can be extended to the diasporic identity, which occupies an in-between space and is different from the two linguistic identities it connects.

In the post-colonial globalised world, instances of hybridity can be seen in almost every sphere of human activity. Broadly however, they are classified into various categories like racial/ethnic hybridity, linguistic and literary hybridity, and the all-encompassing cultural hybridity which includes areas ranging from religion to food. As we have seen through Peter Jailall, English not only influenced the regional languages of the colonized areas, but also itself borrowed a plethora of words from a multitude of languages from those colonised regions. The interactions between these languages in the liminal third space further resulted in the creation of various creole and pidgin languages which were quite distinct from the languages it borrowed words from. The linguistic and cultural creolization implicates that hybridity plays

a very important role in the post-colonial literature, both in terms of form and content, and writers in the diaspora took it up without any prejudices. The diasporic literature not only became a great vehicle to create one's cultural and national identity, but quite soon, it also found an audience in the West as well. As Rushdie points out in his article 'The Empire Writes Back with a Vengeance', we can consider various results of literary hybridity created within the third space as the previously colonized people responding to and tearing down the Western canon of English literature.

Bhabha, in his essay, 'Dissemi Nation: Time, Narrative, and the Margins of the Modern Nation' argues that the intermediary space embraced by the diaspora brims with creative possibilities, serving as a fertile ground for artistic expression. And this is where diasporic literature has occupied the literary realm. Jailall's poetry carries the history of the Indians in Guyana with stories of migration, indentured slavery, suppression, exploitation, and an attempt to hybridize linguistic and cultural identities. Diasporic literature, therefore, serves as an orbit to break the cultural barriers and help in the growth and development of new literatures that are produced from the previously colonized lands.

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On Early Asiatic Fire Weapons.—By MAJOR-GENERAL R. MACLAGAN, R. E.

The use of fire in some form or other in war, must have suggested itself to fighting people at a very early period in all countries, and has probably been practised in all ages, both for attack and for defence. To carry fire and sword into an enemy's territory is the common representation of active and desolating aggression. And from the simple and direct application of fire to the destruction of dwellings and other property, it was a natural step to devise ways of applying it from a distance by means of burning matter attached to missiles.

In our day the term *fire-arms* is applied to weapons which, by means of explosive matter, project heavy bodies to a distance, though no fire may be carried by the missile itself. Early fire weapons in all countries sent the fire with the missile, discharging it by the mechanical appliances in ordinary use for throwing missiles of other kinds.

When the use of igneous projectiles of any kind came to be commonly practised, endeavour was then made to devise means of projecting them with force that they might reach to a greater distance; and, at the same time, of making them as tenacious as possible of the fire they carried, and as violent as possible in their combustion. Success in the first of these objects would, with the more ordinary inflammable materials, defeat the second,* and a great advantage was gained by the use, for this purpose, of combustibles of some more powerful kind.

The earliest kinds of fire-missiles appear to have been much the same everywhere—arrows tipped with oiled flax, or wrapped with some soft matter soaked in oil, and discharged in the ordinary way from bows. Such was the simple contrivance which, nearly five centuries before our era, the Persians who had occupied Mars Hill, made use of to fire the palisades of the defenders of the Acropolis.† And such, probably with little variation, were the fire-arrows‡ that were used in all countries for some hundreds of years. After a time, the improvement was introduced of putting the fire in a small perforated case, or hollow enlargement of the shaft, a little behind the point, which was roughly barbed to make it hold hard in the object assailed and keep the fire applied so long as it lasted. This was the *malleolus*, as

* So with one of the early forms of fire-arrow,—Et si emissa lentius arcu invalido (ictu enim rapidiore exstinguitur) haeserit usquam, tenaciter cremat, &c. Ammian. Marcell., XXIII, 4, 15 and XXIII, 6, 37.

† Herod., VIII. 52.

‡ Alluded to generally in Eph. vi. 16 as *βέλη πεπυρωμένα*, and more or less specifically by various authors as *πυρφόροι ὀιστοί, πυρφόρα τοξεύματα, τὰ πυροβόλα*, &c.

it was made in the fourth century ;* a missile which seems to have been familiar for a long time under that name,† and which was no doubt originally made hammer-headed in some sense, and afterwards had the fire case put into this more effective shape. It is of this improved missile that Ammianus says it had to be projected with only moderate force, as otherwise the fire was apt to go out in the course of its flight. The fire-bearing javelin (called *falarica*), which was thrown by hand or with greater force by a tormentum or twisted cord apparatus, either had the ignited matter wrapped round the point‡ or, like the malleolus, carried the fire in a metal case or cage.§ And from the war engines were also thrown vessels of combustibles by themselves.‖

Each of these kinds of burning missiles acquired increased efficiency by the employment of materials giving a more effective and persistent flame ; and petroleum or naphtha, when obtainable, or other bituminous products, came to be used in place of the vegetable oils.¶ In countries in which these mineral oils are found, in some form or other, the effective character of the fire used in this way in war may be generally ascribed to the use of materials of this class. Naphtha appears to have been the first and chief of the materials used for producing the Greek Fire,** which was the most distinctive and destructive of the war-missiles of the middle ages in the East. Other inflammable substances, combined with naphtha or petroleum in the Greek Fire compositions, came next to be used in similar manner without the oil. And these dry compounds, of various proportions, used at first only in this way, reached their highest power and application when, in the form of gunpowder, the explosive material was employed not merely for the purpose of

* Amm. Marcell., XXIII, 4, 14.

† —plena omnia malleolorum ad urbis incendia comparatorum (Cic., Pro Mil., XXIV).

‡ As used by the defenders of Saguntum against Hannibal :—ad extremum unde ferrum exstabat. Id sicut in pilo quadratum stuppa circumligabant liniebantque pice. (Liv. XXI, 8.) And the flame, it is stated, instead of being extinguished, gained increased force in its passage through the air.

§ Vegetius, De Re Militari, IV. XVIII.

‖ ἄγγεια πυρφόρα. *Polyb., XXI,* 5, 1. *Arrian, Exp. Alex. I,* 21, 22, 23 ; *II,* 19. *Diod. Sic., XX.* 4. *Tac., Hist., II.* 21. *Virg., Æn., X.* 130. 1. *Maccab., VI,* 51. *Ockley, Hist. of the Saracens,* 427).

¶ Bitumen, sulphur, picem liquidam, oleum quod incendiarium vocant ad exurendas hostium machinas, convenit praeparare. *Vegetius, De Re Militari, IV,* 8, *and V,* 14. ἄγγεια δὲ θείου καὶ ἀσφάλτου ἐμπλησάμενοι καὶ φαρμάκου ὅπερ Μῆδοι μὲν νάφθαν καλοῦσιν, Ἕλληνες δὲ Μηδείας ἔλαιον. (*Procopius, de Bell. Goth.*, quoted in Lalanne's *Recherches sur le Feu Grégeois, p.* 48).

** "It would seem that the principal ingredient of the Greek Fire was naphtha or liquid bitumen." *Gibbon, Chap. LI.*

feeding the fire in the projectile, but as the agent for discharging it. This last is the great step from medieval to modern artillery.

The advance from one kind of fire-missile and fire material to others more effective has not, there is reason to believe, been made by immediate invention or discovery. Local conditions have originated, and practical experience has extended and modified, the use of various preparations and contrivances for this purpose. M. Reinaud, in the work* issued jointly by him and Colonel Favé in 1845, has brought together a number of extracts from Arabic works giving receipts for the preparation of war-fire of sorts, showing that the compositions which it has been the custom to call *Greek Fire* were various, and that many of them contained one or two or all of the ingredients of gunpowder, before the times to which the invention of gunpowder is ordinarily ascribed. From these early receipts for fire-works and fire-missiles, and from the various accounts of Greek Fire and its effects, it would appear that modifications of these compositions, introduced from time to time, led up to the preparation of gunpowder; which yet was not what we understand by *gun-powder* till it came to be prepared in a form adapting it for use as the propelling agent in guns, and to be so used.

From very simple and rude arrangements for using the aid of fire in fighting, gradual progress in various ways had been generally made before gunpowder times; yet simple and rude arrangements continued to be used, even after better devices were known, when these were not available, or when the others were sufficient and suitable for the occasion. Sufficiently primitive was the method adopted by Timur, of carrying fire into the ranks of an enemy, when, in his battle before Dihlí in A. D. 1399, he caused a number of camels to be laden with dry grass and driven towards the opposing force with the grass set on fire, on sight of which the enemy's elephants fled.† This was a resort to a very rude contrivance at a time when modes of projecting fire to a distance were well known, and when fire was employed

* Historie de l'Artillerie, 1re partie. Du Feu Grégeois, &c., pp. 25 et seq. Some notices of the early use, among the Arabs, of the ingredients of gunpowder, are given in a "History of the Art of War and Organisation of Armies in Europe" by Dr. Hermann Meynert; a book I have not seen and only know of from a newspaper notice.

† This is one of the incidents of the Indian expedition related to Clavijo when he was residing at the court of Timur at Samarqand. (*Embassy of Ruy Gonzalez de Clavijo to the Court of Timour, A. D.* 1403-6, p. 153.) According to other accounts, they were buffaloes that he used, tied together in pairs with burning bushes between them (*Maurice's Modern History of Hindostan, II*, 20). Somewhat similar, but with a different purpose, was Hannibal's device when in camp before Q. Fabius Maximus, B. C. 200. Obductâ nocte, sarmenta in cornibus juvencorum deligata incendit, ejusque generis multitudinem magnam dispalatam immisit. (*Corn. Nep., Hann. V.*)

of more effective kinds for creating the alarm that was desired. Such fire-missiles were familiar to Timur himself and his predecessors. At the siege of Otrár by Chingiz Khán, A. D. 1219, the defenders made good use of burning darts, to the injury of the besiegers' engines. The following year, in besieging the citadel of Bukhárá after gaining the town, he threw in pots of burning naphtha. He used Greek Fire in his attack on Khívá, the same year, and it was used by and against him on other occasions.* Timur eight years before his invasion of India, had made use of Greek Fire discharged from his boats in his attack on a small town on the shores of the Caspian.† In India he encountered fire missiles of other kinds at his attack on Bhatnír, when "the besieged cast down in showers arrows and stones and fireworks upon the heads of the assailants."‡ Timur himself relates that Sulṭán Mahmúd, when he attacked him at Dihlí, had elephants covered with armour, most of them carrying howdas "in which were throwers of grenades *(ra'd-andáz)*, fireworks *(átash-báz)*, and rockets *(takhsh-andáz)*."§ Timur, in his engagement with Báyazíd I., before Angora, three years after the Dihlí battle, had a special body of men for throwing Greek Fire.‖ What was the nature of the various fireworks used by Sulṭán Mahmúd at Dihlí, and by the defenders of Bhatnír, is not indicated. In the regions where Greek Fire was used by Chingiz and Timur, naphtha abounded or was readily obtainable, and it is, in some of the instances, named as the material used. There does not seem to be reason to believe that Timur was acquainted with gunpowder, as General Cunningham has supposed.¶ The use of Greek Fire, or of missiles answering to the descriptions of the fire generally so designated, was practised chiefly in countries where naphtha, petroleum, or bitumen, is produced, and more rarely elsewhere. It is stated that Edward I., when besieging Stirling Castle in 1304, after calling for large supplies of balistæ, quarrells, bows, and arrows, from York, Lincoln, and London, "gave orders for the employment of a new and dreadful instrument of destruction, the Greek Fire, with which he had probably become acquainted in the East."** There is nothing to show what the composition was, but it is most probable that this, as well as the fireworks which Timur encountered at Dihlí and at Bhatnír, was composed of some of the *dry* materials used elsewhere combined with naphtha,—the ingredients of the future gunpowder.

* *Petis de la Croix, History of Genghiscan*, pp. 166, &c., and 190, &c., from Mírkhwánd and others.

† Life of Timour Beg, prefixed to Markham's translation of Clavijo.

‡ *Malfúzát i Tímúrí*, in Sir H. Elliot's Historians of India, by Prof. Dowson, III, 424.

§ The same, III, 439.

‖ Langlès, Vie de Timour, p. 88, (quoting Sharafuddín).

¶ Essay on the Arian Order of Architecture, J. A. S. B., XVII, 1848, ii., 244.

** For this statement Tytler refers to the *Liber Garderobae*, or Wardrobe Book, of Edward I, p. 52 (Hist. of Scotland, I, 181).

From the account above referred to of the defence of Bhatnír, it would appear that the fire was not projected to a distance, but thrown down from above on the attacking party when they came near. The direct delivery of hot matter on the heads of assailants, and of fire upon their engines, when they approached close to the walls, is a means of offensive defence which must have occurred to most people, and for which special arrangements were often made in the construction of defensible places :—

> Where upon tower and turret head
> The seething pitch and molten lead
> Reck'd like a witch's cauldron red.*

The kind of defence is one which was by no means superseded by the possession of means of projecting the fire or scalding matter to a distance ; but it was an arrangement of more prominent importance, and which received very special care and attention, in times when there was both more hand-to-hand work in fighting, and closer operations in the attack and defence of fortified positions. Sir Richard Maitland's defence of his castle of Lander in 1296 is commemorated in the ballad which tells us how he cast down combustibles upon the roofed machine called the *sow* (a British version of *testudo* or *musculus*) when it was brought close up :—

> They laid their sowies to the wall
> Wi' mony a heavy peal,
> But he threw ower to them agen
> Baith pitch and tar barrel.†

a plan which was followed also, not without much art and skilfully prepared appliances, by the Flemish engineer, John Crab, in the defence of Berwick when besieged by Edward II. in 1319. Barbour relates how to "throw Crabys cunsaill" they rigged up a *crain* "rynnand on quheills", that it might be readily brought to any part of the walls when required :

> And pyk, and ter, als haiff thai tane,
> And lynt, and herds,‡ and brymstane,
> And dry treyis that wele wald brin.

of which they made "gret fagalds" to be lifted over by the machine and dropped, burning, on the assailants' engines, which were at the same time laid hold of with grappling hooks and chains to prevent their removal.

* *Lay of the Last Minstrel.*
Hi jaculis, illi certant defendere saxis,
Molirique ignem, nervoque aptare sagittas. (*Æn. X*, 130.)

† *Auld Maitland.* (Minstrelsy of the Scottish Border.)
It was an exact repetition of an old proceeding. "Cupas tædâ ac pice refertas incendunt, easque de muro in musculum devolvunt." (Cæsar, de Bell. Civ., II. 11.) This is what the defenders of Marseilles did, B. C. 49.

‡ Refuse of flax.

And giff the sow come to the wall,
To lat it brynand on her fall,
And with stark chenyeis hald it thar,
Quhill all were brynt up that thar war.*

For exposure to any such direct and plentiful application of fire at close quarters some roof covering of a not very inflammable kind was needed. The *musculus* which came under the fire of the Massilian tar-barrels,† was prepared for it, sheltered by tiled roofing covered with earth and hides. Protection, also, against fire missiles discharged from a distance needed, in order to answer its purpose, to be adapted to the character of the burning matter which it had to resist; and shelter which was sufficient against the more innocent combustibles was not fitted to encounter burning naphtha or Greek Fire. Against the more primitive fire-arrows, leathern mantlets served for the protection of the soldiers and workmen, and for the defensive covering of the towers and engines. At the attack on Bámián by Chingiz Khán, A. D. 1221, an order was given to kill as many horses and cows as would provide hides to cover the besieging engines, by which it is said they were effectually protected. The fire thrown by the defenders did them no harm. But at Khojand, two years before, when the besieged threw burning naphtha, additional shelter was used, made of sheets of felt covered with clay, and moistened with vinegar.‡ By many writers vinegar is mentioned as the best or only means of quenching Greek Fire.§ Against the fire arrows and

* Barbour, The Bruce, Book XVII.

† Thucyd., II, 75. Arrian., Exp. Alex., II, 18. When we are told of a stouter protection being insufficient against a phalarica,—

Sed magnum stridens contorta phalarica venit
Fulminis acta modo; quam nec duo taurea terga
Nec duplici squamâ lorica fidelis et auro
Sustinuit. (Virg. Æn. IX, 705.)

we may infer that this had nothing to do with the kind of fire with which the javelin was charged, but is meant to indicate, in poetical fashion, the force with which it was launched by the hand of a hero.

‡ Petis de la Croix, Hist. of Genghiscan, 307, 190. In the First Crusade an engine is said to have been made to Godfrey's order by

"a cunning architect,
William, of all the Genoas lord and guide."
"whereof he clothed the sides
Against the balls of fire with raw bull's hides."
Tasso, Jer. Del. (Fairfax's translation), XVIII, 41, 43.

But this protection was not effectual. It could not withstand the Greek Fire (XVIII, 84).

§ So in two Latin Chroniclers quoted by Lalanne in his *Recherches sur le Feu Grégeois*, p. 30;—"Inextinguibilem ab omni re præter acetum" *(Ditmar)*.—"Græcum ignem qui nullo præter aceti liquore exstinguitur." *(Luitprand.)* A very old writer on military affairs, Æneas Poliorceticus, (about 360, B. C.) says (ch. 34) that the fire

fire *Páo* of the Tartars, the Chinese (A. D. 1273) constructed defensive covering for their horses of rice straw ropes covered with clay.*

It is when Greek Fire comes to be employed that the *noise* is specially noticed; which has given occasion to the surmise that it was in reality gunpowder. A French writer who has made researches on the subject (M. Lalanne), endeavours to show that it was nothing else than gunpowder, used as such, and that the tubes from which it was sometimes discharged, were cannon. But it may be observed that the noise mentioned in connection with Greek Fire was the noise accompanying the flight and combustion or explosion of the burning missile itself, as it came among the people against whom it was launched. Noises of a kind that would be alarming to those unused to this instrument of warfare, may accompany the combustion of naphtha or petroleum, which appears generally to have been the chief ingredient of this fire composition. And *any* noise would contribute to the terror occasioned by encountering a hostile fire so formidable on other accounts, and would be magnified by the apprehensions of those exposed to it. And their accounts of it constantly exhibit the perturbation it caused.

> They come not,—while his fierce beleaguerers pour
> Engines of havoc in, unknown before
> And horrible as new; javelins that fly
> Enwreath'd with smoky flames through the dark sky,
> And red hot globes that, opening as they mount,
> Discharge, as from a kindled naphtha fount,
> Showers of consuming fire o'er all below.†

The most graphic accounts of the Greek Fire, "horrible as new," and of the wonder and alarm which it created, are given in the pleasant pages

thrown by the enemy is to be put out with vinegar. He goes on to mention (ch. 35) a certain πῦρ ἰσχυρόν, which he says can by no means be extinguished; and Casaubon, in his comment, thinks from the terms used that though certain materials are named (pitch, sulphur, &c.), something more is possibly intended, of the nature of Greek Fire. *(Isaaci Casauboni in Æneam Notæ*, 587.)

* Reinaud and Favé, Feu Grégeois, p. 196. Yule's Marco Polo, 2nd Ed., II, 154.

† *Lalla Rookh. The Veiled Prophet.* Moore's note, along with other references, notices Gibbon's account of the Greek Fire—"It was either launched in red-hot balls of stone and iron, or darted in arrows or javelins twisted round with flax and tow which had deeply imbibed the inflammable oil." Fire missiles of the same general character, and formidable quite as much on account of their novelty to those against whom they were used as on account of their real power or destructiveness, were in use long before anything of the kind bore the name of Greek Fire. "The Rhodians had engines on board their ships, by means of which they threw fire upon those of the enemy This probably resembled the substance which in later times was called Grecian fire: to judge of it from the manner in which the Greek historians speak of it, it was not thrown with rockets, and was certainly something inextinguishable and not generally known." *(Niebuhr's Lectures on the History of Rome, by Schmidt, II*, 184.)

of the Sire de Joinville's History of St. Louis. "La manière du feu grégois estoit tele que il venoit bien devant aussi gros comme un tonnel de verjus, et la queue du feu qui partoit de li, estoit bien aussi grant comme un grant glaive. Il faisoit tele noise au venir, que il sembloit que ce feust la foudre du ciel; il sembloit un dragon qui volast par l'air. Tant getoit grant clarté que l'on véoit parmi l'ost comme se il feust jour, pour la grant foison du feu qui getoit la grant clarté."* This was in Egypt, in 1249. It was discharged from the engines called *perriere* (pierrière) upon the crusaders' *chas-chastiaus*, or towers, and against their stockades. Again it is described as having been thrown by hand, in what we may suppose to have been something like grenades. "Au darrien il amenèrent un vilain à pié, qui leur geta troiz foiz feu grégois. L'une des foiz requeilli Guillaume de Boon le pot de feu grégois à sa roelle; car se il se feust pris à riens sur li, il eust esté ars."† And again attached to arrows, "—— si grant foison de pylés à tout le feu grégois, que il sembloit que les estoiles du ciel chéissent."‡

Hallam, in noticing Joinville's account of the Greek Fire, calls it "an instrument of warfare almost as surprising and terrible as gunpowder."§ And in another place he refers to a frequently-quoted passage of an Arabic work,‖ written just about the time of Joinville's first-mentioned experience of Greek Fire, and which mentions, Hallam says, the use of gunpowder in engines of war, "though they may seem to have been rather like our fireworks than artillery." Quoting from Casiri's Latin translation, "serpunt susurrantque scorpiones circumligati ac pulvere nitrato incensi, unde explosi fulgurant ac incendunt," he says "one would be glad to know whether *pulvis nitratus* is a fair translation." If Mr. Hallam had had the advantage of seeing the results of the researches of M.M. Reinaud and Favé, he would (although the translation is shown to be open to objection) have had no occasion to question the literal *pulvis nitratus*, without coming to the conclusion, as he does, that "there can on the whole be no doubt that gunpowder is meant."¶ The description which follows the passage quoted above is not very different from other accounts of Greek Fire, which indicate

* *L'Histôrie de Saint Louis*, Ch. XLIII.

† *Ibidem*, Ch. XLIX.

‡ *Ibidem*, Ch. LXIII.

§ *Middle Ages*, I, i., p. 41 (ed. 1860).

‖ In *Casiri, Bibl. Arab. Hispan.*, t. ii, p. 7. (Reference in Hallam.)

¶ *Middle Ages*, I, 479. M. Reinaud notices that the word *bárúd*, used in the original of the passage referred to, is applied both to nitre and to gunpowder. He gives the passage in the Arabic, and a corrected translation in French, and adds, "On voit que Casiri, qui traduisait *bároud* par *pulvere nitrato*, et qui ne connaissait pas d'autre propriété de la poudre que l'explosion, en a introduit l'idée dans sa traduction. Voulant donner un sens à ce passage, il était naturellement amené à y voir l'emploi que nous faisons maintenant de la poudre." *(Reinaud and Favé, Feu Grég.*, 67.)

some material like petroleum, persistent in burning, and readily laying hold of, and setting fire to, objects with which it came in contact.

In a history of the early Muhammadan occupation of Egypt, called the *Maurid al-laṭáfat*, where mention is made of the use of naphtha for fiery missiles, in A. H. 532 (A. D. 1138), the English translator says in his note, "Utrum auctor noster per vocabulum Naptham significare velit compositionem illam quam plurimi antiqui scriptores nomine *Ignis Græci* commemorârunt, an nostrum *Pulverem tormentorium*, nescio."* As the author says the missiles were fed with naphtha (بالنفط), there need be no doubt. As elsewhere, other materials may have been added, but there is nothing to indicate this. The translator, however, thinks the supposition that possibly gunpowder was used, is supported both by the passage from Casiri referred to by Hallam, and by another account of a still earlier date. "Et quidem apud Arabas vetustissimum pulveris nitrati usum esse liquet; refert Elmacinus, Lib. I. Hist. Sar., 'Eodem hocce anno (*scil.* A. H. 71, [A. D. 690]), Hajaz arctâ premens obsidione Meccam, manganis et mortariis, ope napthæ et ignis in Cabam jactis, illius tecta diruit, combussit et in cineram redegit.'" The names applied to the engines might raise some question, but the naphtha is there. And in many other instances naphtha is distinctly mentioned, by oriental and other writers, as thus used in medieval fire missiles. To which, in the West, people have been accustomed to give the name of Greek Fire.†

But, on other grounds besides the mention of *pulvis nitratus* in some of the Greek Fire compositions, it has been inferred that gunpowder was known, as a source of power for propulsion as well as a pyrotechnic composition, and that cannon were used, in times long anterior to those of the really known and certain application of gunpowder to the purposes of modern artillery. In particular, the frequent use of *tubes* for the discharge of the

* *Maured Allatafet*, ed. J. D. Carlyle, A. M.

† Advenit etiam legatus Kaliphæ juvenis illustris, secum vehens naphtæ duo onera, multitudinemque naphtariorum artificum in ignibus jaculandis. (*Bahá ud-dín*, transl. by *Schultens*, quoted by *Lalanne*, *Recherches sur le Feu Grégeois*, p. 41, note.) Tasso (La Gerus., Lib. XII, 17) makes the magician Ismeno prepare a composition for burning the war engines of the enemy, of which composition a note by one of his editors, Signor Pietro Fraticelli, says, "Dal miscuglio di qui parla Ismeno, dover risultarne il cosi detto *fuoco greco*, &c." "Questo fuoco," he goes on to say, quoting the Military Dictionary of Giuseppe Grassi, "e invenzione antichissima de' Persiani, i quali adoperavono il nafta come principale ingrediente di esso." And he adds "I Saraceni lo componevano in quel tempo col nafta o petrolio, che si raccoglie nelle vicinanze di Bagdad." And the poet, further on (XVIII, 47), when

Ismen prepara
Copia di fochi inusitata e rara,

says that the asphalt of the Dead Sea was used in the composition.

Greek Fire, and the fact of a *report* of some kind being often mentioned in connection with it, have helped to give occasion to this belief.

Gibbon, in his account of the siege of Constantinople, A. D. 717, after observing that the principal ingredient of Greek Fire seems to have been naphtha or liquid bitumen, says that, when employed at sea, it was "most commonly blown through long tubes of copper, which were planted on the prow of a galley, and fancifully shaped into the mouths of savage monsters, that seemed to vomit a stream of liquid and consuming fire."* A little earlier than the occasion to which Gibbon's account relates, a similar mode of discharging naphtha fire on land appears to have been practised by the Arab invaders of Sind (A. H. 93, A. D. 712). Their employment of naphtha in their battles with the Hindu inhabitants is noticed repeatedly in the *Chachnámah*, in passages of which extracts are given in Vol. I, of Prof. Dowson's edition of Sir H. Elliot's Muhammadan Historians of India.† When the enemy's elephants approached, Muhammad Ḳásim ordered his naphtha-throwers to attack them. Burnes, quoting from another part of the *Chachnámah*, not included in Sir H. Elliot's extracts, or from another version, says the Muhammadans, in the battle at Alor, when the elephants were brought against them, had to assail them with combustibles. They "filled their pipes, and returned with them to dart fire at the elephants." Burnes, in his foot-note, supposes pipes for smoking to be meant, and remarks that it must have been bhang or hemp which they smoked in those days, as tobacco was not known.‡ But apparently the word should have been *tubes*. They were probably like what were called in the West χειροσίφωνα, or hand-tubes, employed for the same purpose,§ in which either naphtha or special fire compositions might be used, and through which the fire was discharged, or *in* which it was thrown. One of the meanings given by Golius to the word *nafáṭ* or *naffáṭ* is "instrumentum æneum quod exploditur naphthæ seu pulveris pyrii ope, *scil.* tormentum bellicum."‖ He seems to intimate that a name originally connected with naphtha may have continued to be used to designate the weapon, even after gunpowder or other

* "We got into a boat like a fire ship," Ibn Baṭúṭa says, in telling of a trip on a canal in China. A. D. 1345 (Yule's *Cathay*, II, 499.) He seems to allude to some particular kind or form of ship which used to be thus fitted with fire-throwing apparatus. (The passage is one of those omitted in Lee's abridgment translation of Ibn Baṭúṭa.)

† Pp. 170, 172, 174.

‡ Travels into Bokhara, I, 67.

§ Extracts from the Emperor Leo's *Tactica* given by Lalanne (*Feu Grégeois*, p. 21). From Leo's description it would appear that the tubes themselves, when filled with the fire composition, were to be thrown in the face of the enemy.

‖ *Lexicon Arabico-latinum*, نفّاط and نفّاط, p. 2425.

combustible had come to be used in it in place of naphtha.* Beckmann, in his "History of Inventions and Discoveries," quotes an account of the Greek Fire at the capture of Thessalonica by the Saracens in A. D. 904, which says that it was blown into the wooden works of the besieged by means of tubes.† A number of passages mentioning this use of tubes for discharging Greek Fire, in the same century and after, are given by M. Lalanne in his *Recherches sur le Feu Grégeois.*‡ And he surmises that certain tubes which Chateaubriand mentions having seen in a collection of old arms shown to him at Jerusalem, may have been specimens of the implements used for Greek Fire.§ But the idea seems to be of much older date than any of the middle age instances referred to.‖

There is nothing to show or suggest that in any of the instances in which tubes were used for Greek Fire, the combustible matter they contained was employed to furnish the motive force, or otherwise than as the material for the fire to be thrown. It is certain that this fire material was frequently or generally liquid, and that this liquid was naphtha or petroleum. It appears also that other inflammable ingredients were sometimes added; and that frequently the dry materials, including one or more of the ingredients of gunpowder, were used alone.

Of reports or noises accompanying fire missiles, which have induced the supposition that something of the nature of cannon was used, or shells exploding by means of gunpowder, the most familiar illustration in India is that given in the account by Firishtah of Mahmúd's battle with Anandpál near Pasháwar, in A. D. 1008, when the elephant on which the Hindu prince rode was alarmed by the sudden noise and fled. The notice of this passage in Firishtah gave occasion to the interesting Note by Sir Henry Elliot, in the original first volume of his "Index to the Muhammadan His-

* As we continue to call a thing a *chandelier* when the lights it carries are no longer candles; and a *volume*, when it has ceased to be a *volumen*, &c., &c. The very word *tormentum*, which Golius here uses, is another illustration.

† *Hist. of Inv. and Disc.*, II, 249. The quotation is from *Leo Allatius*, cir. 1650.

‡ In the times of the Emperor Leo, about A. D. 900; of Const. Porphyr., A. D. 950; Alexius, A. D. 1100, &c., περὶ τοῦ ὑγροῦ πυρὸς τοῦ διὰ τῶν σιφώνων ἐκφερομένου, &c., &c., pp. 17,24, &c. Lalanne quotes also a Russian Chronicle of the tenth century, which speaks of "une espèce de feu ailé" which was discharged "au moyen d'un certain tuyau," p. 29.

§ *Lalanne*, p. 59. "Je remarquai encore des tubes de fer de la longueur et de la grosseur d'un canon de fusil, dont j'ignore l'usage." *Chat.*, *Itinéraire*, II, 313.

‖ Casaubon, in his Notes on Æneas Poliorceticus, after noticing various ancient fire missiles, says "Observo etiam, ad liquida injicienda, quæ Philo appellat ὑγρὰ τεθερμασμένα, prælongis interdum usos fistulis, quas idem nominat ἐνετῆρας." This Philo wrote in the third century B. C.

torians of India," on the early use of gunpowder in India.* General Briggs had observed, in his translation of Firishtah, that in some manuscripts the words *tóp* (cannon) and *tufang* (musket) have been written, in place of the *naft* (naphtha) and *khadang* (arrow) of other copies. A confirmation of the reading *tóp* and *tufang*, Sir H. Elliot says, is given by Wilken, who found this in two copies he had consulted, in which the roar of the cannon also is mentioned. "He considers it not improbable that Greek Fire was used by Mahmúd. Dow boldly translates the word as *guns.*"† Sir H. Elliot observes, with reference to Firishtah's account generally, that it does not appear on what authority he rests his statement, as the earlier historians who notice this important engagement do not mention either *naft* or *tóp.*‡ But he adds that from the mention of the use of naphtha ten years later, in an action near Multán, and from the circumstance of naphtha being found in abundance in the country near the scene of the first engagement in question, it is probable that if any combustibles were used on that occasion, they were composed of naphtha. The fact that the fire missile alarmed the elephant, would give no indication that it was of any remarkable or unusual kind. And the noise (*çadá*) is mentioned in those versions of Firishtah which speak of naphtha and arrows, as well as in those which use the words *tóp* and *tufang.*§ It seems to have proceeded from the missile itself, not from the discharge of it. There need not be difficulty in supposing that the noise was of the nature of an explosion, if naphtha alone was used, or naphtha with other combustibles, thrown in shells, cases, or tubes, as elsewhere.

* P. 340.

† The ordinary form of the passage in Firishtah is—

ناگاه فیلے که انندپال برو سوار بود از صداي نفط و خدنگ سراسیمه گشته روي بگریز نهاد *

Dow's version is—"On a sudden the elephant upon which the prince of Lahore, who commanded the Indians in chief, rode, took fright at the report of a gun, and turned his face to flight." And he says in a foot-note, "According to our accounts there were no guns at this time, but many eastern authors mention them, ascribing the invention to one Lockman." (Dow's *History of Hindostan*, I, 46.) He gives no references to any of these eastern authors.

‡ It may be noticed, however, that the *Kitáb-i-Yamini*, one of the histories referred to by Sir H. Elliot in this passage, speaks in another place (not relating to this engagement) of the use of *átash-dídah bán*, or fire-eyed rockets, which, an English translator remarks, "may have encouraged the idea that artillery was known in Mahmúd's age." (*Kitáb-i-Yamini*, translated by the Rev. J. Reynolds, page 279.)

§ Maurice, writing of this battle, says, "A species of fire weapon seems to have been in use at that time in Asiatick battles; and the sudden explosion of one of those instruments of destruction, close by the elephant on which the prince of Lahore, the generalissimo of the army, rode, &c., &c." Which seems to be Dow repeated, with a slight variation, and evading his "bold" use of the word *gun.* (*Modern History of Hindostan, I,* 253.) Dow's translation was recent at the time Maurice's book was written.

Numerous modern petroleum explosions* have made us familiar with the reports it is capable of producing. Such big demonstrations, of course, can hardly be taken to illustrate what happens with a naphtha shell, but those who have had an opportunity of seeing and hearing a Kerosine lamp explode in their room can understand what it means. The naphtha vapour, like other gases of the same class, when combined with atmospheric air, explodes with a report which, even on a moderate scale, is sufficient, with fiery accompaniment, to alarm an elephant. Explosions are produced, as illustrated by frequent experiences, when the gas, issuing from the ground, or accumulating over the petroleum in wells, is suddenly ignited.† The use of tubes for the discharge of fire missiles, and the accompanying report, might, taken together, easily give occasion, in after times, to the idea that guns and gunpowder were used, though the combustible material was really naphtha or Greek Fire. There is, however, not much to indicate that the noises mentioned were of the nature of what we call a report, and nothing to support the idea that in Mahmúd's time, the beginning of the eleventh century, guns and gunpowder were known.

The use of hollow canes for giving a direction to darts and other missiles is, no doubt, a practice of great antiquity, followed in the present day also by inhabitants of uncivilised islands, and others, and represented among ourselves by our juvenile pea-shooters. In India, bamboos have been used

* The dangerous nature of which called for the English Petroleum Act of 1862, and the Ordonnance du Préfet de Police (relative à l'emploi des huiles de Pétrole) in July, 1864.

† Thus, for instance, at the great abode of naphtha on the Caspian :—"Outside the temple at Baku is a well. I tasted the water, which is strongly impregnated with naphtha. A pilgrim covered this well over with two or three *numnuds* for five minutes. He then warned every one to go to a distance, and threw in a lighted straw; immediately a large flame issued forth, the noise and appearance of which resembled the explosion of a tumbril." (Captain the Hon. G. Keppel's *Journey from India to England*, II, 221.) The French missionary Imbert, quoted by Huc (*Chinese Empire*, Ch. VII), describes an occurrence of the same kind at the mouth of one of the Chinese *fire-wells*. "As soon as the fire touched the surface of the well, there arose a terrific explosion, and a shock as of an earthquake; and at the same moment the whole surface of the court appeared in flames." "I believe", he says, "that it is a gas or spirit of bitumen." To pass to an illustration on a very small scale, probably many people who have visited the fire temple of *Jwála Mukhí* in the Kángrá District, of the Panjáb, will remember the smart pop with which one of the tiny jets of gas issuing from the rock is re-lighted, when it has been accidentally blown out (as they are sometimes by sparrows flying quickly past them). It is the too well-known property of one of the most familiar of the hydrocarbons, the *grison* or fire-damp, to explode with serious results. "Il brûle tranquillement avec une flamme jaunâtre, tant qu'il n'est pas mêlé avec l'air atmospherique; mais dans le cas contraire, il détone avec violence". "Quelquefois il se dégage seul, mais souvent il est mélangé de pétrole plus ou moins épais et de bitume." (*Beudant, Minéralogie*, 232).

for this purpose, in very early times, with fire-arrows.* And in connection with the use of naphtha tubes in war, it is not uninteresting to notice the employment of canes for naphtha and inflammable gas for economic purposes. Humboldt, in his account of the *Ho-tsing* or fire-wells of China,† and of the *rope-boring* for water, salt, and combustible gas, which is practised "from the south-west provinces of Yun-nan, Kuang-si, and Szu-tchuan on the borders of Tibet to the northern province of Shan-si", says "the gas burns with a reddish flame, and often diffuses a bituminous smell; it is conveyed to a distance, sometimes through pipes of bamboo, sometimes in portable tubes, also of bamboo, to be used in salt works, in warming houses, or in lighting streets."‡ Also for cooking food, as mentioned in an old account by a Chinese writer,§ and for other purposes.‖ Huc, describing these fire wells, says "a little tube of bamboo closes the opening of the well, and conducts the inflammable air to where it is required; it is then kindled with a taper, and burns continuously."¶ In an old review article in the *Athenæum* mention is made of an account in the *Lettres Edifiantes* of oil

* Halhed's *Gentoo Laws*. Introduction, p. 50. See also Moor's Hindu Pantheon, p. 299, and As. Researches, I, 264.

† *Asie Centrale*, II, 519-540. *Cosmos* (Sabine's transl.), IV, 216.

‡ Here, perhaps, we have the original νάρθηξ of Prometheus,

The secret fount of fire
I sought, and found, and in a reed concealed it,
Whence arts have sprung to men, and life hath drawn
Rich store of comforts. (*Prom. Vinct.* 107. Prof. Blackie's translation).

Sore ills to man devised the heavenly sire,
And hid the shining element of fire.
Prometheus then, benevolent of soul,
In hollow reed the spark recovering stole.
* * * *
The far seen splendour in a hollow reed
He stole of inexhaustible flame.
(*Hesiod* by *Elton*. *Ancient Classics for English Readers*, pp. 24-92).

§ "In all parts of this Province (Shan-si) are found fiery wells which very conveniently serve for the boiling of their victuals." (Description of China, by *Dionysius Kao*, appended to *Ysbrants Ides'* Travels, A. D. 1692, p. 125).

‖ "On utilise ces feux naturels pour la cuisson de la chaux, des briques, &c." Beudant, *Minéralogie*, p. 233.

¶ *Chinese Empire*, Chap. VII. The practice is mentioned also by Sir John Davis. (*The Chinese*, p. 336). And at some of the American oil wells the same method is followed at the present day. "Some of the pumping engines generate steam by the aid of the combustible gas that is so commonly associated with the petroleum, it being only necessary to conduct it by a pipe from the tanks in which the oil accumulates to the furnace of the engine." (*Prof. H. Draper of New York. Quarterly Journal of Science, London*, 1865, *II*, 49.)

that rose from the earth, (at places in China) turned in hollow bamboos in any direction, which burned with a clear flame.* The naphtha gas of Baku is said to be carried about in bottles,† as that of China is in bamboo tubes. It is not improbable that naphtha tubes for hostile purposes may have been suggested by the use of bamboos for the oil and for the gas in the modes above noticed.

Not alone on account of similarity of form, then, but with reference also, it may be supposed, to previous uses of tubes for Greek Fire, and of bamboos for discharging fire arrows, and for carrying petroleum and gas, has the name *canna* been carried forward and applied to modern artillery. The connection of *bomb* and *bombarda* with *bamboo*, however, is not one which illustrates the derivation of the artillery terms from the name of the cane. Βόμβος, *bombus*, a hum or noise, is no doubt the origin of *bomba* and *bombarda*. And *bamboo*, (which is not a name it bears in its own countries) is supposed to be derived from the same origin (viâ *bomba*), and to have been applied to it by the Portuguese, with reference to the noisy explosion of the air chambers of the cane when burning.‡ This is possible, though the experience which occasioned the application of the name must be supposed to have been very exceptional.

For indication of the knowledge of fire-arms in India at a very early period, reference has frequently been made to certain passages in ancient books noticed by Halhed in his *Code of Gentoo Laws*. "It will no doubt," Halhed says,§ "strike the reader with wonder to find a prohibition of fire-arms in records of such unfathomable antiquity, and he will probably from hence renew the suspicion which has long been deemed absurd, that Alexander the Great did absolutely meet with some weapons of that kind in India, as a passage in Quintus Curtius seems to ascertain. Gunpowder has been known in China as well as in Hindostan, far beyond all periods of investigation. The word fire-arms is literally in Sanscrit *Agni-aster*, a weapon of fire; they describe the first species of it to have been a kind of dart or arrow tipt with fire and discharged upon the enemy from a bamboo. Among several extraordinary properties of this weapon one was that after it had taken its flight, it divided into several separate darts or streams of flame, each of which took effect, and which when once kindled could not be extinguished;" (on which Halhed says in a foot note—"It seems exactly to agree with the Feu Grégeois of the Crusades") "but this kind of Agni-aster is now lost. Cannon in the Sanscrit idiom is called Shĕt-Aghni, or the weapon that kills a hundred men at once, from (shĕte) a hundred, and (ghĕneh) to kill."

* Aug. 16, 1862. The reference to the *Lettres Edif.* is not specific.

† Beudant, p. 233.

‡ Elliot, orig. ed., I, 345.

§ Preface, pp. l, li.

The compilation which Halhed published under the above title, *Code of Gentoo Laws*, in 1781, was made from twenty Sanskrit works. It was compiled by eleven Brahmans whom he calls a set of the most experienced lawyers. They were selected, under the orders of Warren Hastings, from all parts of Bengal for the purpose. The compilation, when complete, was translated into Persian, under the supervision of one of these Brahmans, and from the Persian was translated into English by Mr. Halhed. In the compilation itself no indication is given of the particular book (out of the twenty mentioned collectively at the beginning) from which each passage is taken. And in the translator's Preface no references are given to the authorities for his own comments; but he speaks of "the number of enquiries necessary for the elucidation of almost every sentence," which "give him in some measure a right to claim the conviction of the world upon many dubious points, which have long eluded the nicest investigation."* This is all we get from him. The passage relating to fire-arms is in the second section of the preface to the Code, or "the qualities requisite for a magistrate", and it says "the magistrate shall not make war with any deceitful machine, or with poisoned weapons, or with cannon and guns, or any other kind of fire-arms."† This is clearly from the Institutes of Manu. And what Manu says about it is this, "Let no man engaged in combat smite his foe with sharp weapons concealed in wood, nor with arrows mischievously barbed, nor with poisoned arrows, nor with darts blazing with fire."‡ This appears to be the original passage which in the hands of the Bengal Paṇḍits took the form given by Halhed. And it can be assigned approximately to the ninth century B. C. There is nothing here to indicate anything else than primitive fire darts of the kind used in other countries. Mr. Talboys Wheeler, in a note relating to a description in the Mahábhárata of a variety of arms, says that, in the original, mention is made, among other weapons, of "arrows, producing fire", and he says "The Brahmans in the present day point to the fire-producing arrows as proofs that the ancient Hindus were possessed of fire-arms."§ There are other ancient notices of war missiles or engines which (with more reason than this specific mention of *arrows*) have given occasion to this belief, but there is nothing to indicate what they were. "From the frequent mention of the *Agni-astra*, or fire-arms", Bábu Rájendralála Mitra has observed, "it is to be inferred that the Hindus had some instruments for hurling shells or balls of burning matter against their enemies; but no description of any such has yet been met with."‖ The *Mahâyantra*, or great engine, and the *Sataghni*, or centicide,

* Introduction, p. xi.

† P. cxiii.

‡ Institutes of Manu, translated by Sir W. Jones, VII, 90.

§ *History of India*, I, 88.

‖ *Antiquities of Orissa*, I, 121.

he refers to as being mentioned in the ancient books but not described. Bohlen* alludes to the mention in the Puránas of a kind of cannon; but he does not give the name, or any definite reference.

Colonel Tod says, "We have, in the Poems of Chand, frequent indistinct notices of fire-arms, especially the "nal-gola", or *tube*-ball; but whether discharged by percussion or the expansive force of gunpowder is dubious. The poet also repeatedly speaks of "the volcano of the field", giving to understand great guns; but these may be interpolations, though I would not check a full investigation of so curious a subject by raising a doubt."† It can scarcely be questioned now, however, that the doubt was justly raised. The interpolation (if this is the right mode of explaining the passage) has a sort of parallel in a picture, described by M. Lalanne, inserted in 'Le Livre de la Vie et Miracles de Monseigneur S. Loys', in which picture "les sarrasins, d'un côté, se défendent avec des espèces de mousquets à mèche, et, de l'autre, le navire royal porte une rangée de canons."‡

Some kind of fire missile is believed by Prof. H. H. Wilson to be intended in a passage in the *Mahá-nátak* or *Hanumán-nátak*, to which he thus refers in his outline of the play. "In the opening of the thirteenth Act, *Rávana* levels a shaft at *Lakshmana*, given him by *Brahma*, and charged with the fate of one hero: it should seem to be something of the nature of fire-arms, a shell or a rocket, as *Hanumán* snatches it away, after it has struck *Lakshmana*, before it does mischief. *Rávana* reproaches *Brahma*, and he sends *Náreda* to procure the dart again, and keep *Hanumán* out of the way."§ There is not much here to show the kind of missile, except that it does *not* seem to have been anything like a shell or rocket. The play belongs to the tenth or eleventh century. Of the nature of "the Agneya weapon, one of the celestial armoury, or the weapon of fire", mentioned in another Hindu drama, the *Uttara Ráma Charitra*, there is only the indication given in the "fiery blaze" attributed to it; by which, as in the other case, some kind of burning arrow is probably meant.‖

While there is no very distinct indication of the nature of the machines or missiles thus referred to in ancient Hindu books, the idea of fire-carrying arrows seems to have been familiar in India, as elsewhere, from early times; and the use of such fire-arrows, discharged from a bow or by other means, is seen to range over a long period. In the *Ayodhyá Máhátmya*, of which a translation has lately been published in the Journal of the Asiatic Society of Bengal,¶ it is related that on a certain occasion the Rájá *Kúsha*, getting

* *Das Alte Indien*, II, 63, 64.

† *Annals of Rajasthan*, *I*, 310. *Note.*

‡ *Recherches sur le Feu Grégeois*, 55.

§ *Hindu Theatre*, *Vol. III. Appendix*, 58.

‖ Id., Vol. II, *Uttar. Ram. Char.* 92.

¶ J. A. S. B., Part I. 1875, pp. 137, 138.

enraged, "put an arrow of fire on his bow, to dry up the water of the Sarayú."* The notice in *Manu* appears to be the earliest. And nearly two thousand years after his time, arrows of this kind were in use in Kashmír; towards the end of the century in the beginning of which Mahmúd had been launching naphtha balls against his opponents in the neighbouring plains of the Panjáb. This is M. Troyer's translation of the passage in the *Rájá Tarangini* in which they are mentioned. "Quand il ne restait que trois heures du jour, les ennemis, encore une fois ralliés, exaspérés par la défaite, marchèrent pour combattre Kandarpa. Alors il lança dans le conflit des flêches de fer, lesquelles étaient ointes d'huile d'herbes, et mettaient en feu les espaces qu'elles traversaient."† This Kandarpa was the minister of two kings of Kashmír, Utkarcha, who had a short reign in A. D. 1090, according to M. Troyer's chronology,‡ and Harcha, who came to the throne the same year and reigned twelve years.

Besides the specific notices of arrows, and more indefinite references to the undescribed weapons called by the names abovementioned, there are other passages in the ancient Hindu books relating to the use of combustibles in war. "In the *Udyoga Parva* of the Mahábhárata", Rájendralála Mitra writes, "Yudhisthira is described as collecting large quantities of rosin, tow, and other inflammable articles for his great fratricidal war; but nothing is there said of any engine with which they could be hurled against his enemies."§ Another part of the Mahábhárata mentions the use of igneous appliances in aid of defensive arrangements, and here also without any indication of the way in which they were used. It is in connection with the account of the *Aswamedha* or horse sacrifice. The horse had entered the country of *Manipura*, and approached the city of *Babhru-vahana*. "On the outside of the city were a number of waggons bound together with chains, and in them were placed fireworks and fire-weapons, and men were always stationed there to keep guard."‖

* This *Máhátmya* is ascribed to *Ikshvaku*, son of Manu and king of Ayodhyá, (*Muir's Sanscrit Texts*, I, 115).

† Troyer's *Radja Tarangini*, Ch. XII, 983, 984.

Was any such simple application of inflammable matter to pointed weapons ever practised in Britain? "Go, thou first of my bards, says Oscar, take the spear of Fingal. Fix a flame on its point. Shake it to the winds of heaven." (*Ossian, The war of Caros.*) Whether this fire at the spear's point (which must be meant for a signal in this instance) may be meant to indicate also a familiarity with its application to other uses, is doubtful.

‡ Prof. H. H. Wilson assigns dates 23 years later. (Preface to *Ratnavali*, Hindu Theatre, Vol. III.)

§ *Antiquities of Orissa*, I, 121.

‖ *Talboys Wheeler, History of India*, I, 405.

Mr. Fergusson has observed, with reference to siege scenes represented in the sculptures of one of the Sánchi gateways (supposed to have been erected about the beginning of the Christian era), that no engines of war are shown, or indications of any attempt to set fire to the place. "In these respects", he says, "the Hindus seem to have been very much behind the stage we know from the Nineveh sculptures that the Assyrians reached at a much earlier age."* And Bábu Rájendralála Mitra, who makes reference, in the work before quoted, to the siege scenes in the Sánchi basreliefs, and to the absence of any indication of engines for casting fire to a distance, or for battering, adds that the martial processions and battle scenes at Bhuvaneswara are also devoid of such representations.† These, however, are only pieces of negative evidence, and do not, by themselves, go far. There are European mediæval pictures of siege operations in which no engines of war are represented, or indications of the use of fire, but only such means of attack and defence as are shown in these Indian sculptures.‡ It may be, and it seems probable, that the Hindus were behind Western nations in the knowledge of the mechanical appliances for such purposes, (as the Chinese were, so late as the thirteenth century of our era§) but they did use fire, and the accounts in books give us what the sculptures omit. Yet we may conclude that nothing more advanced in the way of fire weapons was known in India in ancient times, than was in use in other countries;‖ and that the application to these old Indian weapons, of terms belonging to weapons of our own time, is an illustration of the inadvertent (or at least in some way erroneous) transference of familiar ideas to times and places to which they do not belong. Shakspeare brings in cannon in the time of King John.

The prohibition in Manu is probably the earliest notice on record of fire arrows, unless, as has been supposed, they are referred to in Psalm

* *Tree and Serpent Worship*, p. 141.

† *Antiquities of Orissa*, I. 121.

‡ Wilkinson says, "We may suppose" that the Ancient Egyptians used fire missiles in sieges (I, 363), but there is nothing in the pictures or sculptures to countenance this supposition, and he mentions nothing in support of it.

§ See Yule's *Marco Polo*, 2nd Ed., II, 152. The accounts of the employment of the Polos in the construction of the engines to aid Kublai in the siege of Siangyang are confused; but it appears at all events that Western engineers were employed, and from some accounts, that they were specially sent for. Not that the Chinese and their enemies were altogether unacquainted with war machines, but the people of the West were ahead of them.

‖ Nothing of much value is obtained from the statement in the *Dionysiaca* of Nonnus that the followers of Bacchus, in his invasion of India and battle with Deriades, fought with brands and bolts of fire. (*As. Res.*, *XVII*, 617.) The question whether the materials for the Indian part of the poem were derived from an Indian source is discussed in the paper here referred to, by Prof. H. H. Wilson.

lxxvi. 3. "The arrows of the bow" might be translated "the glowing fires", or "the glittering or flashing (arrows) of the bow", "or rather perhaps", says Parkhurst, "the *βέλη πεπυρωμένα*, fiery or fire-bearing arrows, such as it is certain were used in after times. So Montanus, *jacula ignita.*"* The Psalm belongs to the century before Manu, or a little more than ten centuries B. C., if the Asaph with whose name it is connected was the contemporary of David. And to a time about three centuries later, the end of the eighth century B. C., if he was Asaph, "the recorder" of King Hezekiah's time. But it seems most probable, notwithstanding Parkhurst's suggestion, that in this instance no reference to fire arrows is intended. Though the literal rendering may be as above, it may be only a poetical figure of a not uncommon kind.† A more probable reference to fire-bearing

* Parkhurst, Heb. Lex. s. v. רשף, the meanings of which, as a noun he gives as "red hot coal", "glowing fire", "flashes of lightning". Gesenius translates it *flame*, and refers to its use in Psalm lxxviii. 48. The same word in Arabic, رشق *rishq*, is interpreted by Golius, "Jactus rapidior vel vibramen teli. Certus jaculandi seu petendi modus." The LXX render the words referred to, in Ps. lxxvi. 3, *τὰ κράτη τῶν τόξων*, followed by the Vulgate, *potentias arcuum.*

† Thus in other Psalms we have, by a sort of reverse simile, *arrows* used for *lightning* (Ps. xviii. 14; cxliv. 6. Also Hab. iii. 11; Zech. ix. 14). In the *Táríkh i Yamíní*, "arrows ascending towards them like flaming sparks of fire." (*Dowson's Elliot*, II, 34.) The idea of flame or lightning is attached to bright and quick-moving weapons of various kinds. Thus in Nahum iii. 3. A similar figure probably is intended in Gen. iii. 24, so also Virgil's

vaginâque eripit ensem
Fulmineum ——— (Æn. IV. 580).

"The sword is in your hands. Let Jessulmer be illumined by its blows upon the foe." (*Tod's Rajasthan, II*, 251). The epithet *blazing* is mentioned by Rájendralála Mitra as applied in a passage of the *Rig Veda* (IV, 93) to swords, lances, and other weapons. (*Antiquities of Orissa, I*, 119.) Khwándmír, in a description of a battle, speaks of the "flame-exciting spears." (*Habíb us-siyar. Dowson's Elliot, IV*, 172). And 'Unsurí of Balkh, in one of his odes, "Hadst thou seen his spears gleaming like tongues of flame through black smoke, &c." (Elliot, IV, 516). And Homer Il. X, 153, thus rendered by Chapman, in prosaic fashion telling us it was a reflection—

His spear fixed by him as he slept, the great end in the ground,
The point that bristled the dark earth cast a reflection round,
Like pallid lightnings thrown from Jove ———.

Pope, more happily,

Far flashed their brazen points
Like Jove's own lightning.

"In that arrow the terrible god hurled forth the fire of wrath, &c." (*Mahádeva's Equipment for Battle, Muir's Sanscrit Texts, IV*, 225.) This too is probably figurative fire, though it is added that he discharged it against the castle of the Asuras, and the Asuras were burnt up, p. 226.

Krishna and Arjun are sent by Mahádeva to a lake where he had deposited his bow and arrows. They see two serpents, one vomiting flames. The serpents change their form and become bow and arrows, p. 186.

arrows is in Psalm cxx. 4. The word there used "coals of juniper" (more properly *broom*) seems to refer to actual burning matter.

Between the ancient Hindu writings which mention fire-arrows in early days in India, and the Muhammadan historians who tell of naphtha-throwing, in the time of the first Arab invasions of Sind, we get some indications, from a different source, of the use for similar purposes of the petroleum of the north-west districts of the Panjáb, about fourteen hundred years before it was used in Mahmúd's battles in that quarter. The oil mentioned by Ctesias as used in the attack of cities, which was launched against the gates in earthen vessels, and set fire to everything around, with a flame which could not be extinguished by any ordinary means, is obviously petroleum, though his story is that it was obtained from a large animal found in the Indus. And the animal described, though called a worm (σκώληξ), is as obviously (in spite of errors and exaggerations with regard to it as well as to the oil) a crocodile.* It was seven cubits in length, and had a skin two fingers thick, and remarkable teeth. It used to come up on the land at night, seize any animals it could find, and drag them into the water to satisfy its hunger.† Philostratus repeats the story, noticing also, as Ctesias does, that the oil was prepared only for the king.‡ He transfers the animal to the Hyphasis; but from the nature of the materials for his work some inaccuracies may be expected. The story is essentially the same and is probably taken from Ctesias. It is not difficult to see in these accounts a confusion of separate facts. The petroleum obtained in the districts on both sides of the Indus below Aṭak is for the most part gathered from the surface of water. Ctesias refers in another passage to the oil which floats on certain lakes or ponds in India, and springs discharging oil.§ Again, the highly inflammable mineral oils and other products of the same class have been very generally believed to be of animal origin.‖ In discussing

* That it should be called a worm, is perhaps not very surprising. Long after that time, people did not know exactly what kind of animal it ought to be reckoned. Thomas Herbert, (A. D. 1638) writing of the "hatefull crocodyle" of Sumatra, calls it "this detested beast, fish, or serpent, by seamen improperly cald Alligator." (*Some Yeares Travels*, p. 323.)

† *Ctesiæ Ind. Historiæ Excerptæ, Gronovius*, p. 664.

‡ *Vit. Apollon. Tyan. III*, 1. The petroleum collected from a spring in the south of Persia, we are told by Dr. Fryer, who travelled in that country in 1674, used to be carefully guarded, and taken for the king's use only. (*Nine Years' Travels. J. Fryer, M. D. Cant., p.* 318.) The story of its discovery, on one of king Farídún's hunting parties, and of its being reserved for the king's use, is given in Honigberger's *Thirty-five years in the East*, s. v. *Asphaltum Persicum*, p. 238. Also in the *Makhzan i Adwiyah* by Muhammad Husain of Dihlí, A. H. 1180.

§ *Ctes. by Gronov.*, 666.

‖ Modern researches on the nature of some of the great deposits of petroleum in the United States and Canada, and elsewhere, have led to the conclusion that they are

the apparent description by Ctesias of the crocodile, and with reference to the question whether oil *is* obtained from that animal, Sir Henry Elliot, in the note before referred to, mentions the result of an investigation on the subject in which Prof. H. H. Wilson took part. But there is no mistake about Crocodile oil. Not only, as Sir H. Elliot observed, is it mentioned in native works on Materia Medica, but at the present day it is one of the recognised commercial products of this country, and will be found duly recorded No. 8282 in Dr. Forbes Watson's comprehensive list, prepared in connection with the scheme for an Industrial Survey of India. If we accept the crocodile, the story takes a tolerably compact form and admits of easy and plausible explanation. Here was an inflammable oil, of remarkable properties, believed to be of animal origin, and obtained from the surface of waters on both sides of the Indus. Here was a big water animal, of frightsome appearance and character, residing in the Indus, and from which oil was obtained. It is a very natural supposition that Ctesias, having some version of these facts before him, put this and that together, and like Mr. Pickwick's friend who wrote on Chinese Metaphysics, "combined his information."*

in great part the product of animal decomposition. (*Prof. Archer, in Art Journal of August*, 1864. *Prof. Draper of New York*, in *Quarterly Journal of Science*, (London) *Vol. II*, 1865, p. 49. *Prof. Ansted, Qu. Journal of Science, II.* 755). The substances of this class which, according to popular belief, are most directly of animal origin, are *ambergris*, and the dark bitumen known as *múmiáí*, highly esteemed in India and Persia as a medicine. With regard to ambergris, believed to be a kind of petroleum issuing from rocks and hardened in the sea, modern opinion is coming round to the belief that whether or not it comes into the sea in this way, and is then swallowed by the monsters of the deep, it is actually obtained from the whale. (*Bennett's Whaling Voyage round the Globe*, quoted in Yule's *Marco Polo, II*, 400. The animal is the *Physater macrocephalus*, according to *Linnæus* (*Gmelin, XIV*, 495). See also Sindbad's Fifth Voyage, Lane's *Thousand and One Nights*, III, 66, and note, p. 108. *Le Gentil, Voyages dans les Mers de l'Inde*, II, 84. *D'Herbelot, Bibl. Or., s. v. Ghiavambar. Al-Mas'údí*, Meadows of Gold, ch. XVI. *Renandot's Ancient Accounts of India and China* by two Muhammadan Travellers, p. 94. The precious *múmiáí* is understood a little more exactly. But at the present day it is popularly believed to be obtained from land animals (*sotto voce* human) by a process exactly similar to that described by Ctesias for extracting from the big beast of the waters the inflammable oil used in sieges in India. (See *Vigne's Ghuzni*, p. 61,—"the asphaltum so well known in India by the name of negro's fat".) Two years ago there was much alarm among the native servants and others at some of our hill stations in the Panjáb, occasioned by a rumour that a demon who practised the horrible manufacture was prowling about nightly, seizing unwary and unprotected people, to furnish material for the preparation of the first-class *múmiáí*.

* It is only by a poetical coincidence, and not with any reference to the combustible product supposed to be obtained from it, that the crocodile itself is described in the book of Job as breathing fire. "Out of his mouth go burning lamps [or *blazing torches*,

The account given by Philostratus of the defence of forts in India by thunderings and lightnings which the defenders had power to discharge on their assailants,* refers, no doubt,—if any real thing is referred to,—to some description of petroleum missile or Greek Fire. But it is most likely only a reference to the mythical celestial weapons and command over the elements.† Whenever petroleum or naphtha was obtained, its use for hostile purposes has been appreciated, and the forms of its application have been various. One of the devices of Iskandar Zul-Ḳarnain, in preparing for encounters with the Hindus, as related by Mír Khwánd‡ was to make a number of hollow images in the form of soldiers, filled with dry wood and naphtha, to be set fire to in the midst of the battle. The great junks of the Chinese in the middle ages carried arms and naphtha to defend themselves against the pirates of India.§ The material used for fire-missiles in China in the beginning of the tenth century was known by the name of the "oil of the cruel fire."‖ A recent investigator on the subject of Chinese oils states that the petroleum of Shansi, Leehuen, and Formosa, is said to have been formerly employed by the Chinese in Greek Fire compositions.¶ For use in fire-rafts for destroying other vessels and wooden structures, petroleum is of course very suitable, and has been frequently so used.** And thrown upon ships from a distance, or directly applied in other ways, it well serves the same purpose.†† Bituminous fire shells are noticed by Tasso as used in the First Crusade (A. D. 1099).‡‡ In a descriptive Catalogue of

as in a translation published in the Calcutta Christian Intelligencer, Feb. 1862] and sparks of fire leap out. Out of his nostrils goeth smoke, as out of a seething pot or caldron. His breath kindleth coals, and a flame goeth out of his mouth." Ch. xli. 19-21.

* *Vit. Apollon. Tyan. II*, 14.

† See *Uttara Ráma Charitra* (in Wilson's Hindu Theatre), pp. 14, 92, 96, &c.

‡ *Rauzat-uṣ-ṣafá, Shea's translation*, p. 400.

§ *Reinaud, Mémoires sur l'Inde*, p. 300.

‖ *Grose's Military Antiquities, II*, 309.

¶ *Dr. F. Porter Smith, on the oils of Chinese Pharmacy and Commerce. Journal of the Pharm. Soc.* 1874. (The reference is taken from a newspaper review.)

** *Lalanne, Feu Grégeois*, p. 45, &c., &c.

†† "At Dely there is a fountain of oil which is said to be unextinguishable when once it is set on fire; and with which the king of Achen burnt two Portuguese Galleons near Malacca about 8 or 10 years ago." *M. Beaulieu's Voyage to the East Indies*, A. D. 1619 *(in Harris's Collection*, p. 250). The irresistible rapidity with which timber touched with petroleum is consumed by fire is illustrated in the recent destruction of the *Goliath* training ship.

‡‡ Jer. Del. XII, 42 (Fairfax's version)

Two balls he gave them, made of hollow brass,
Wherein enclosed, fire, pitch, and brimstone was.

misses the *bitumi* of the original.

Arabic Military books,* mention is made of a peculiar mode of carrying fire into a fight, on the face of shields furnished with large hollow bosses which were filled with naphtha and had matches applied at one or more little apertures. The device seems rather stupid and impractical, but these shields are said to have been used in the battle before Mecca, at the attack on that place by Hajjáj-bin-Yúsuf, before referred to, in A. H. 73 (A. D. 692.) Another form of combination of offensive with defensive arms has been devised in more modern times, which is not much better. The Yárkandís, as we learn from Sir D. Forsyth's account of his embassy, have "large circular shields gaudily painted with dragons and other hideous monsters on one side, and concealing, on the other, a gun-barrel set in a socket of wood, and serving also as a handle whereby to carry the shield."†

It has been a question whether the *scorpions*, often mentioned as offensive missiles, are to be taken in their literal meaning, or as representing some kind of actively inflammable preparation, called by this name on account of the sharp style of its attack and painful nature of its effects; just as some of the engines used in war bear the names of familiar animals with reference either to their form and appearance or to their mode of application.‡ One of these engines was called a scorpion.§ This question has been discussed by Sir Henry Elliot in the volume before referred to,‖ in connection with the account in the *Tárikh-i-Alfí* of the capture of the city of Násibín, in the time of the Khalífah 'Omar, in the seventh year after the death of Muhammad, when large black scorpions are said to have been made use of in the attack. In support of the supposition that "a combustible composition formed of some bituminous substances" may have been meant, he observes that the ancient Indian weapon or rocket called *satagni*, the hundred-slayer, also signifies a scorpion. And the fireworks mentioned in the book translated by Casiri, which gives occasion to Hallam's query about the *pulvis nitratus*, are described as being "in the form of scorpions". But though the name has been applied to fireworks and fire missiles as well as to a mechanical engine of war, yet seeing the distinct mention of these animals in many instances, (and of other offensive animal missiles thrown into besieged places) there need be no difficulty in accepting the literal interpretation. If the situation of the city of Nisibis (with reference to the capture of which place with the aid of scorpions the matter has been

* *Fihrist al-kutub fi 'ilm il-harb*, p. 64.

† *Report of a Mission to Yarkand, in* 1873, p. 13.

‡ Testudo, Musculus, Aries, Onager, Scorpio, *Chat*, Sow, &c., and, ironically, the *Bride* ('arús), as tender an instrument, in its way, as the *maiden* in our own country.

§ Said to have been invented by the Cretans. *Plin. N. H., VII*, 57.

‖ Bibl. Index to the Moh. Hist. of India, Calcutta, 1849, 146, 163. Dowson's Edition, V, 152, 550.

discussed) in a country supplying bituminous material, which actually was used for fire missiles in that neighbourhood, favours the former idea, at the same time it is a place noted for real scorpions, in modern as well as ancient days.*

Among the preparations for the great war on the plain of *Kurukshetra*, it is related that Duryodhana, having fortified his trench with towers, supplied the defenders of the towers with "pots full of snakes and scorpions, and pans of burning sand and boiling oil."† And there are numerous instances since that time of the similar use of the living animals.‡ The Emperor Leo gives instructions, in his *Tactica*, for this employment in war of serpents and scorpions.§ Larger creatures, dead and living, less directly hurtful but unpleasant, have often been thrown into besieged places for the annoyance of the defenders. Human beings have occasionally been projected in this way from the military machines;‖ and it is related that on a certain occasion an unlucky engineer was accidentally hurled into a fortress by one of his own great engines.¶

The introduction of improved devices for war missiles, and particularly of gunpowder artillery, was, from various causes, slower in some countries than in others. Some nations from their position and opportunities, or by

* *Rev. J. P. Fletcher, Notes from Nineveh, I*, 164. The work published under the name of Ibn Haukal also mentions both serpents and scorpions in the neighbourhood of Nisibis; (*Ouseley's Geography of Ibn Haukal*, 56) and, it may be observed, also mentions another place noted both for naphtha springs and for a species of scorpion more destructive than serpents (p. 77).

† *History of India. J. Talboys Wheeler, I*, 275.

‡ Imperavit quam plurimas venenatas serpentes vivas colligi, easque in vasa fictilia conjici. * * Pergamenae naves quum adversarios premerent acrius, repente in eas vasa fictilia, de quibus supra mentionem fecimus, conjici cœpta sunt. (*Corn. Nep. Hannibal, X. XI.*) Frontinus notices this incident among his devices of war, but seems to make a mistaken reference to the occasion. "Hannibal regi Antiocho monstravit ut in hostium classem vascula jacularentur viperis plena, quarum metu &c." (*Frontini Stratagemata IV*, 10). Other instances in the East. "And Khalaf cast at them pots full of serpents and scorpions from slinging machines." (*Kitáb-i-Yamíní, Memoir of Sabaktagín. Reynold's Transl.*, 54). "Et præterea habebant et ignem Græcum abundanter in phialis et ducentos serpentes perniciosissimos." (*Itinerarium Regis Richardi, XI*, 42, quoted by *Lalanne*, p. 44.

§ *Lalanne, Feu Grégeois*, p. 27.

‖ *Yule's Marco Polo, II*, 124. Ibn Baṭúṭa relates an occurrence of this kind at Dihlí in 1325. (*Travels of Ibn Batuta*, by *Lee*, 145.)

¶ A modern artist has improved upon this by a voluntary performance of the same kind, according to a story which has appeared in recent English newspapers (Dec. 1875). The story is that a Parisian acrobat gets himself flung up to the high *trapeze* by being shot from a mortar; and that, on a late occasion, an overcharge of powder, or some other small error in the adjustments, sent him a little further than he intended, and landed him in the front row of the spectators.

reason of their aims and requirements, have been more receptive than others of such improvements in military matters. And some, pursuing careers of conquest or of enterprise, have been the chief means of communicating the knowledge of these improvements and inventions, which they themselves had acquired and brought into use. The Arabs early used the resources of the countries in their possession for the preparation of fire compositions for use in war, and, among others, (as we have seen) of gunpowder applied to fireworks; but their knowledge of the application of gunpowder to artillery there is every reason to believe was derived from Europe. Their active and extensive inroads into other countries, East and West, were long anterior to the days of gunpowder artillery.* The Spaniards, Prescott says, deriving the knowledge of artillery from the Arabs, had become familiar with it before the other nations of Christendom.† This is perhaps not well established. But the Spaniards and Portuguese, whether or not the knowledge was thus received and thus familiar, were the means of conveying it to eastern and other countries with which they traded and fought, or in which they settled; and sometimes they found themselves forestalled. If some people were specially apt in adopting the new weapon, in other countries there were hindrances of different kinds in the way of its introduction or general use. Sometimes of course the reason for artillery not being used was that it was not wanted. Then the cannon in early days were very cumbrous and very troublesome. The first field-pieces were so clumsy and so difficult to manage, that (as Prescott mentions) Machiavelli, in his *Arte della Guerra*, recommends dispensing with artillery.† Hume believes the French had cannon at the time Creci was fought, but left them behind as an encumbrance. It is not surprising, then, that some Asiatic nations, and others, were slow, as we find, in bringing gunpowder artillery into use. Few of those who had the means, failed, it may well be believed, to adopt this new instrument of war from under-rating its power and importance.‡

* "What an exalted idea must we not form of the energy and rapidity of such conquests when we find the arms of Islam at once on the Ganges and the Ebro, and two regal dynasties simultaneously cut off, that of Roderic, the last of the Goths, of Andaloos, and Dahir Despati in the valley of the Indus." (A.H. 99., A.D. 718). *Tod's Annals of Rajasthan*, I, 243.

† *Ferdinand and Isabella, I*, 277.

‡ And more probably from the feeling that they were happier days when it was not known: as good George Herbert sings,—

Decrat adhuc vitiis nostris dignissima mundo
Machina, quam nullum satis execrabitur ævum.
* * * *
Exoritur tubus, atque instar Cyclopis Homeri
Luscum prodigium, medioque foramine gaudens!
* * * *

The number of guns that could be brought into use was for a long time very moderate, and they therefore did not at once supersede the previous contrivances. The English were among the first, after the properties of gunpowder had become known, to employ big guns. It was in the early part of the fourteenth century that this mode of applying gunpowder was first practised in Europe; and from that time it slowly advanced.* The *Ballistarius*, once an important official in our English fortresses, made way, perhaps more rapidly in Britain than elsewhere, but not all at once, for the *Master Gunner*. In the East, the *Naft-andáz*, or naphtha-thrower, was the co-adjutor of the *Manjaníḳí* who worked the engines; and these have in due course been succeeded by the familiar *Gol-andáz* of the Indian native armies.†

Guns were brought into the field by the English at Creci in 1346. It is said by Tytler and others that Froissart makes no mention of the guns

Accedit pyrius pulvis—&c., &c.
* * * *
Dicite vos, Furiae, qua gaudet origine monstrum?
Inventa Bellica.

Milton, with the same feeling, ascribes the invention of both cannon and powder to infernal agency. *Par. Lost, B. VI.*

* Chaucer, in a poem written probably about the end of the third quarter of the fourteenth century,—the transition period of artillery in Britain,—borrows illustrations from both the old and the new descriptions of military engines. It is in a didactic passage in "*The House of Fame*", in which he discourses on the nature of sound.

Soun is nought but air y-broken
And every speeche that is spoken,
Whe'r loud or privy, foule or fair,
In his substance ne is but air.

After this, in noticing various descriptions of sound, he says,

And the noise which that I heard,
For all the world right so it fered,
As doth the routing of the stone
That fro the engine is letten gone.

And again,

Throughout every region
Y-went this foule trompes soun,
As swift as pellet out of gonne
When fire is in the powder ronne.*

† It is by a fine oriental figure of speech, and with no reference, now, to pyrotechnic functions of any kind, that another familiar Indian official, of humble rank, is styled a *Barq-andáz*, or 'darter of lightning'.

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* One of the early kinds of cannon "was fired by applying a metal bar made red hot in the furnace to the powder contained in the chamber." *Viollet le Duc, Mil. Arch. of Mid. Ages*, 172.

at Creci. But a recent reviewer has indicated two manuscripts of Froissart in which they are distinctly mentioned as used by the English on that occasion. And he gives some quotations.* Froissart had spoken of guns employed at an earlier date,—at the siege of Stirling by the Scots in 1341. Tytler (*Hist. of Scotland, Vol. II.*, p. 60) says this is not corroborated by contemporary historians. But at a still earlier date they had been used in Britain, if, as is generally understood, guns are meant by the *war-crakes* (*crakys of weir*), mentioned by Barbour as having been first seen by the Scots in their skirmishes with Edward III's forces in Northumberland in 1327.†

But long after those days, in Britain and other countries where gunpowder and its modern application were well known, the employment of cannon had not made great progress. In India they were used by Bábar, as largely, it would seem, as the means and skill available would permit; and he was not much behind other countries in this respect. In 1528, when he had the aid of artillery in forcing the passage of the Ganges near Kanauj, he says, "For several days, while the bridge was constructing, Ustád 'Alí Ḳulí played his gun remarkably well. The first day he discharged it eight times; the second day sixteen times; and for three or four days he continued firing at the same rate."‡ This was just fifteen years after Flodden, when artillery practice was at much the same stage in Britain.

> Their marshall'd lines stretched east and west,
> And fronted north and south,
> And distant salutation pass'd
> From the loud cannon mouth;
> Not in the close successive rattle

* "Li Englès—descliquierènt aucuns kanons qu'il avoient en le bataille pour esbahir les Genevois."

"Les Englès avoient entre eulx deulx des bombardieaulx, et en firent deulx ou trois descliquier sur ces Genevois." And from another chronicle (St. Denis) the reviewer quotes, "Lesquels Anglois giettèrent trois canons: dont il advint que les Génevois arbalestiers qui estoient au premier front tournèrent les dos et laissièrent à traire; si ne scet l'en sé ce fu par traïson, mais Dieu le scet." *Saturday Review, July 24th*, 1875. Review of *Edward III.* by *Rev. W. Warburton, M. A.* The reviewer makes these notes with reference to an observation of the author that Villani is the only historian who mentions the employment of cannon at Creci.

† *Tytler, Hist. of Scotland, IV*, 150. *Note.* Sir Walter Scott also gives a note in the Minstrelsy of the Scottish Border on this mention of guns by Barbour. Some early notices of powder and cannon are referred to by a writer in *Notes and Queries*, May 15th, 1869. The earliest date mentioned is *circ.* 1326.

‡ *Memoirs of Babur, tr. by Leyden and Erskine, p.* 379; *Erskine, Hist. of India under the first two sovereigns of the House of Taimur, Babur, and Humayun*, I. 486. *Dowson's Elliot, IV*, 279.

That breathes the voice of modern battle,
But slow, and far between.*

It was not till after many improvements and much further experience, during a long course of years, that things came to be done after this other manner.

The walls grew weak; and fast and hot
Against them pour'd the ceaseless shot,
With unabating fury sent
From battery to battlement;
And thunder-like the pealing din
Rose from each heated culverin.†

Bábar gives a name to the gun which his engineer and master-gunner, 'Alí Ḳulí, managed in the way above mentioned:—("the gun which he fired was that called *Deg Ghází*, the victorious gun"—) from which it is seen that he had others, besides one which was put *hors de combat* at an early period in the engagement ("Another gun, longer than this, had been planted, but it burst at the first fire"). But it is not likely that the many other carriages (*'arába*), mentioned in other accounts of his war equipment,‡ mean *guns*, but rather, (as supposed by M. Pavet de Courteille, the latest translation of Bábar's Memoirs, and by Prof. Dowson) carts of some kind, used for transport of ordnance stores and for other purposes in connection with the guns. Leyden (or Erskine) translates the word as *guns*, even when mentioning so large a number as seven hundred. This is out of the question. It appears indeed from other notices of Bábar's artillery that on some occasions, a single piece was all he had, though at other times he had several.§ "About noon-day prayers, a person came from Ustád with notice that the bullet was ready to be discharged, and that he waited for instructions. I sent orders to discharge it, and to have another loaded before I came up."‖ A deal of work has often been done with a single gun. But the possession of the new weapon did not confer a very formidable superiority when this was the whole of the artillery.¶

* Marmion, VI, 23.

In the early days of artillery in Europe "it was usual for a field-piece not to be discharged more than twice in the course of an action." *Prescott, Ferdinand and Isabella*, I, 87.

† *Byron, Siege of Corinth.*

‡ *Dowson's Elliot, Tuzak-i-Bábarí, IV*, 268, *and Note.*

§ James's ordnance, at Flodden, as given by Pitscottie, consisted of "seven cannons that he had forth of the Castle of Edinburgh, which were called the Seven Sisters, casten by Robert Borthwick, the master-gunner, with other small artillery, bullet, powder, and all manner of order, as the master-gunner could devise." *Marmion, Note* 3 *D.*

‖ *Tuzak-i-Bábarí, Dowson, IV*, 285.

¶ Reminding one of Hood's account of the arrangements for quelling an election riot, as supposed to be described in the letter of a country cousin at the scene of action.

India seems to have freely adopted the new instrument of war, while Persia was slow to use it, even after experience of its powers, and even after beginning to make use of it, did not take to it very kindly. The brass ordnance which contented the Indian commanders in Bábar's time, and after, was doubtless of a somewhat rough construction, as we read of Sher Sháh Súr, in 1543, issuing an order to his people to "bring all the brass in camp and make mortars (*degha*) of it", to bombard the fort of Ráisín; and they brought their "pots, dishes, and pans," and made them into mortars.* This shows at all events a ready appreciation of the value of artillery. Something more pretentious than these extempore mortars, and more cumbersome, were the guns which, very soon after this, (in 1551) we hear of Islám Sháh (Sulṭán Salím) taking with him from Dihlí to Láhor, after Mírzá Kámrán's flight from the court of Humáyún, to take refuge with him. Starting in haste he could not get a sufficient number of oxen in the villages near Dihlí, and "each gun was pulled by 2000 men on foot."†

At this time, and for long after, Persia was not so far advanced. One of the Jesuit missionaries, writing from Ormus in 1549, says of the *Soldanus Babylonicus*, the ruler of the territories adjoining, "qui modo *Catheamas* appellatur", (that is *Sháh Ṭahmásp*) "Hic bona ex parte Persis imperat, et in Regibus potentissimis jure optimo censetur. Eius robur omne ac vis copiarum equitatu constat, et peritissimis sagittariis. Nullis bombardis nec aliis huius generis tormentis utuntur. Sæpe cum Turcis, et quidem felici Marte belligerant."‡ They were not unacquainted with guns, and had suffered from the Turkish artillery in the time of this king's predecessor, Ismá'íl Safí. And Herbert relates that when the Turks under Sulaimán invaded Persia, this same "Tamas, affrighted with their great ordnance, hyres 5000 Portugalls from Ormus and Indya, who brought 20 cannon along with them, and by whose helps the Turks were vanquish'ed."§ The Turks were early noted for their attention to gunpowder artillery, and the armament of their forts seems to have been on a par with that which they brought into the field against the Persians and others. At the time when Father Gaspar wrote the above account of the defect of artillery in Persia, a French traveller and naturalist, M. Bellon, says of the fortifications of Sestos, which he saw in 1548, "Validis tormentis bellicis egregie muniti sunt, quæ explodantur (si necesse sit) in eas naves quæ sine licentiâ effugere, vel in Helles-

One passage runs somewhat in this fashion. "3 P. M. Riot increases. The military has been called out. He is at present standing opposite our door!"

* *Táríkh-i-Sher Sháhí. Dowson's Elliot, IV*, 401.

† *Táríkh-i-Dáúdí. Dowson's Elliot, IV*, 499. See also notices of artillery at this period in the *Táríkh-i-Rashidí, V*, 131, and *Táríkh-i-Alfí*, V, 172.

‡ *Epistolæ Indicæ*, p. 38 *(Ep. M. Gaspari Belgæ)*.

§ *Tho. Herbert. Some Yeares Travels*, p. 289.

pontum vi perrumpere vellent."* It was from the Portuguese that Persia had to obtain the assistance of guns. And twenty years before this, the Spaniards were using artillery in Mexico, and cast guns there for themselves.†

When, in the next century, Ormus was taken from the Portuguese by the Persians under Sháh 'Abbás the Great, with English assistance (1627), the armament of the defenders was something considerable, according to Herbert's account of it. "The brass Ordnance in the Castle and Rampires were divided; some say they were three hundred, others as many more: Howbeit, our men say there were only fifty-three great brasse peeces mounted, foure brasse cannon, six brasse demicannon, sixteen cannon pedroes of brasse, and one of iron, 9 culverin of brasse, two demiculverin of brasse, three of iron, ten brasse bases, seven brasse bastels, some basilisks of 22 foot long, and nintie two brasse peeces unmounted; which I the rather name, in that the Portugalls bragge they had small defence, and few Ordnance."‡ At this time guns, both large and small, were in use in Abyssinia, having been introduced by the Turks and Arabs in occupation of various parts of the east coast of Africa.§ On the west coast of India also, at the same time, some skill in the use of artillery had been acquired by people not otherwise highly advanced. "*Mallabar*", says Herbert, "is subdevided into many Toparchyes, all obeying the Samoreen, a naked Negro, but as proud as Lucifer." "By long warres, they are growne expert and orderly: yea know how to play with Cannons, have as great store of Harquebuzes, and are as well acquainted with the force of powder, as we or any other nation."‖ A special ordnance department was instituted in India in Humáyún's time (when, as we have seen, artillery had come to play an important part),¶ preparing the way for the more complete arrangements under Akbar, who paid much attention to this part of his war equipment, and who was, himself, according to Abul Fazl, an improver and inventor of matters connected with this department.**

Persia continued to be backward in its artillery. In 1635, when Herbert was in that country, Sháh Safí, grandson of 'Abbás the Great, being king, the traveller writes, "In a common muster the Persian king can easily advance (as appeares by roll and pension) three hundred thousand

* *Bellonii Observationes*, 186.

† *Prescott, Conquest of Mexico*, II, 266.

‡ *Herbert's Travels*, p. 118.

§ *Lettera Annua di Ethiopia, Gasparo Païs*, 1624.

‖ *Herbert*, 300, 302. This disregard of clothing, by even the king, was in the preceding century (1443) remarked upon by 'Abd-ur-Razzáḳ, author of the *Maṭla' us-sa'dain*, and afterwards by other European travellers. *Dowson's Elliot, IV*, 101, *and Note.*

¶ *Humáyún-námah. Dowson's Elliot V*, 123. *Táríkh-i-Rashídi V*, 133.

** *Blochmann's Á'in-i-Akbarí, Á'ín* 36, I, p. 112.

horse, and seventy thousand good musquetoons." "Their harquebuz is longer than ours, but thinner and not so good for service. They can use that very well, but detest the trouble of the Cannon, and such field peeces as require carriage."* When Kaempfer was in Persia more than fifty years after (in 1692), they seem to have got no further. "Arma illis sunt lancea, sclopeta, arcus, et acinaces; tormentorum et mortariorum nullus illis in campo usus est."† India was much ahead, as we learn from Bernier's account of Aurangzíb's artillery thirty years before this time.‡

After seeing the kind of progress that was being made in India and Persia in the sixteenth and seventeenth centuries, one may be surprised to read, in the papers on the History of the Burma race, compiled by Sir A. Phayre from native sources, published in the J. A. S. B., that in the beginning of the fifteenth century, more than a hundred years before Bábar appeared with his guns on the bank of the Ganges, the king of Pegu, advancing up the Iráwadi against king Meng Khoung, did not dare to land and attack Prome, "as it was defended with cannons and muskets."§ The editor of the Journal has observed that this mention of guns and muskets in Burma in 1404 is rather remarkable. It is, if they were what we understand by cannons and muskets. But it suggests a question. This was a region abounding in petroleum. Is it not possible that these fire-arms may be explained in the same way as Mahmúd's *tóp* and *tufang?* (above, page 41). It is true that a traveller who was in India about that time (Nicolo Conti) says "the natives of central India" (by which he seems to mean a part he had not visited) "make use of balistae and those machines which we call

* P. 232. The objection to field guns is one that can be readily understood, from the similar experience of other countries, above referred to. Of a different kind was the dislike which a traveller in the previous century says the people of North Africa had to the smaller fire-arms. "All the Arabians that live towards the west, where the kingdoms of Fez and Morocco lie, do commonly carry spears about twenty-five hands long. They use no Musquets or Pistols, neither do they love 'em." *(Description of Africa. From John Leo and Marmol. Harris's Collection, I,* 311.*)* Tod says the same of the Rájpúts of the same and later times. Writing of A. D. 1535 he says, "The use of artillery was now becoming general, and the Moslems soon perceived the necessity of foot for their protection; but prejudice operated longer upon the Rajpoot, who still curses "those vile guns" which render of comparatively little value the lance of many a gallant soldier." *(Rajasthan I,* 310.*)* See a parallel to this idea cited by Colonel Yule, *Marco Polo, II,* 127.

† *Amœnitates Exoticæ,* 75.

‡ Cinquante ou soixante petites pièces de campagne, toutes de bronze; soixante et dix pièces de canon, la plupart de fonte, sans compter deux à trois cens chameaux legers qui portaient chacun une petite pièce de campagne de la grosseur d'un bon double mousquet. *Bernier, Voyages I,* 296.

§ *J. A. S. B., Vol. XXXVIII, Part I,* 1869, p. 40.

bombardas, also other warlike implements adapted for besieging cities;"* but this does not appear to receive support from the Indian historians. Tavernier refers to a tradition of the early knowledge of powder and cannon in Pegu, believed to have been obtained from Asám. Writing of the attack at Asám by the "Grand Capitaine *Mirgimola* (Mír Jumlah) under the orders of Aurangzíb, in 1652, (to which, the traveller observes, little resistance was expected, the country having enjoyed peace for five or six centuries, and the people having no experience of war), he says, "On tient que c'est ce mème peuple qui a trouvé anciennement l'invention de la poudre et du canon, laquelle a passé d' Asem au Pegu et du Pegu à la Chine, ce qui est cause que d'ordinaire on l'attribue aux Chinois."† We have seen that, in China, the petroleum of some of its western provinces is said to have been used in old time for a kind of Greek Fire.‡ Asám also, it may be observed, is a petroleum country. Perhaps this may confirm, in some measure, the above suggested explanation of the guns and muskets in Burma. Colonel Symes, in his account of the Embassy to Ava in 1795, considers that the Burmese learned the application of gunpowder from Europeans, though the substance may have been known before. "The musket," he says, "was first introduced into the Pegue and Ava countries by the Portuguese."§ Now-a-days Ava receives English muskets.‖ In the Note on the intercourse of the Burmese countries with Western nations, in Chapter viii of Colonel Yule's Narrative of the Mission to the Court of Ava in 1855, Portuguese muskets in Burma are noticed in the early part of the 16th century. There is no mention of artillery till 1658, when the guns on the ramparts of Ava, directed against the Chinese invaders, were said to have been served by a party of native Christians, under a foreigner who is, with some probability, supposed to have been an Englishman.¶ But the brief notices, in the chapter referred to, of the narratives of old travellers, were not made with a view to any special enquiry on this subject.

To the Chinese has been attributed, in a more or less indefinite way, a very early knowledge of gunpowder artillery. Gleig, in his "Sketch of the Military History of Great Britain", says that "Robert Norton, the author of a treatise called *The Gunner*, which was published in 1664, * * * quotes Uffano, an Italian traveller in the East, as proving that not only gunpowder but cannon were used so early as the year 83 of our era by the

* *India in the 15th Century by R. H. Major. (Hakluyt Soc.) Travels of Nicolo Conti*, p. 31.

† *Voyages de J. B. Tavernier, II*, 427.

‡ *D. F. Porter Smith, on the Oils of Chinese Pharmacy* (quoted above).

§ *Embassy to the Kingdom of Ava in* 1795, *II*, 60.

‖ *Yule's Mission to the Court of Ava in* 1855, p. 75.

¶ *Id.*, p. 215.

Chinese, and that the alarm created by them was one great cause of the defeat at that time of a Tartar invasion."* Few other writers, however, go so far back. The nature of the proof of this early use of cannon is not mentioned. Gibbon says that in China, in the thirteenth century, "in the attack and defence of places the engines of antiquity and the Greek Fire were alternately employed, and the use of gunpowder in cannons and bombs appears as a familiar practice."† But the absence of all mention by Marco Polo of any such practice, while, in his account of the siege of Siang Yang in 1268 by Kublai, he records the manufacture and employment of mangonels and trebuchets, a short experience of which induced the Chinese garrison to surrender,‡ may throw some doubt on the Chinese knowledge of cannon at that time.

The exclusive and self-isolating practice of China through many ages, and the absence of authentic information regarding its early history, occasion possible errors in two opposite directions,—perhaps crediting the people of that country in early times with a state of advancement in arts and knowledge which they had not attained, perhaps again wrongly imagining them to have continued in primitive backwardness down to recent times. "There must have been a series of ages", Sir Henry Maine has observed, with reference to matters of a different kind, "during which this progress of China was very steadily maintained; and doubtless our assumption of the absolute immobility of the Chinese and other societies is in part the expression of our ignorance."§ This is very true; but, on the other hand, this same ignorance sometimes expresses itself in errors of an opposite kind. *Omne ignotum* has, in all ages, been apt to suggest something uncommon or wonderful; and of this kind seems to have been the idea that the Chinese were acquainted, before European nations, with gunpowder and cannon. MM. Reinaud and Favé, who have gone into the matter pretty fully in the work before quoted, thus conclude their statement of the result of the investigation, which leaves little ground for the Chinese claim to stand upon, "Ainsi tombe l'opinion exagérée que s'étaient faite plusieurs savants sur l'art des artifices de guerre chez les Chinois."‖

In the Note by Sir Henry Elliot on the Early use of Gunpowder in India¶ he quotes the opinion expressed by General Cunningham in his Essay on the Arian Order of Architecture (*J. A. S. B., Vol. XVII, Sept.* 1848, p. 244) with reference to the condition of the ruins of some of the old

* *Sketch of Mil. Hist. of Great Britain*, p. 100.
† *Decline and Fall, Ch. LXIV.*
‡ *Yule's Marco Polo, 2nd ed., II*, 152.
§ *Lectures on the Early History of Institutions*, p. 227.
‖ *Feu Grégeois, p.* 201.
¶ Original Vol. I. Note H, p. 340.

Hindu buildings in Kashmír, particularly those of the temples at Avantipura, that no agency but that of gunpowder could have reduced them to the state of entire destruction and confusion in which the materials of the structures are now found. And this destruction, if it was, as is supposed, the work of Sikandar, designated *But-shikan*, who was reigning at the time of Timur's invasion of India, occurred about the beginning of the fifteenth century. (Otherwise, gunpowder being used, General Cunningham supposes Aurangzíb may have been the destroyer.) But other agencies appear sufficient to account for the condition of these buildings. During the interval,—a little more than quarter of a century,—since General Cunningham expressed this opinion, the fingers of Time, and moderate movements of the earth, have been making openings in some of the other old Hindu buildings in Kashmír; and from their appearance it may be believed that these same agencies, together with undermining work applied for wilful destruction, could do what has been done. The little temple of *Páyach*, so complete at the time of General Cunningham's visit on the occasion referred to, has now not only lost the pinnacle he describes,—which is a small matter,—but has its roof-stone, which is a single block, further dislodged than at that time, some of the other stones out of their places, and gaps as wide as two inches in the masonry of the basement, through which can be seen the interior filling of small boulders. At the splendid temple of Martand, the two side buildings which General Cunningham described are now seriously out of the perpendicular, and parts of the lower courses of masonry of the north-east angle of the main building have fallen out, painfully suggesting the probability that, unless measures are taken to re-support it (which it is hoped is now to be done) that corner of the building may ere long come down, and, with it, great part of the walls. If some such work of destruction were done purposely, perhaps suggested by,—partial injury of this kind from natural causes, the ruin might be as complete as that of the buildings at Avantipura. The whole of that country has long been noted for the frequency of earthquakes.* In the present century they have occasionally been severe. The earthquakes of June and July, 1828, which were repeated almost daily for weeks together, caused much destruction of house property in Srínagar, and large masses of rock are said to have been detached from the hill sides and thrown down. Gunpowder does not seem necessary to account for the ruin of these Kashmír temples.

While there appears to be no good evidence in support of the idea that

* "Je croirois," says Bernier, speaking of the legends regarding the opening of the Baramula pass by which the Jhelam issues from the placid level of the valley, "Je croirois plutôt que quelque grand tremblement de terre, comme ces lieux y sont assez sujets, auroit fait ouvrir, &c. &c." (*Voyages, II,* 269.) Abul Fazl notices the frequency of earthquakes in Kashmír. (Gladwin's *Ayeen Akbary, II,* 153).

Asia had a knowledge of gunpowder, and used fire-arms, before Europe, there are plain indications that the knowledge of the most improved weapons of war, both before and since the introduction of gunpowder, and the skill to make and to use them, came from Europe to India and other Asiatic countries.

It has been seen above how Kublai Khán employed *Western* engineers to construct and direct the machines he used in the siege of Siang-yang in 1268. The engines used by Sulṭán Jalál-ud-dín in his attack of the fort of Rantanbhor, A. D. 1290, are called *maghribíhá*, or *Western* (engines).* In the history of part of the reign of 'Alá-ud-dín Khiljí, from 1296 to 1310 (A. H. 695 to 710), called *Táríkh-i-'Aláí*, the author, to illustrate the great strength of the fort of Arangal, says, "if a ball from a western catapult were to strike against it, it would rebound like a nut."† Again, on one face of the fort, it is said the "western engines" succeeded in making several breaches.‡ The account of the same transaction given by Ziá-ud-dín uses this same term *maghribí* for the manjaníḳs used on both sides.§

This indefinite term *Western*, as applied to the mechanical war engines of those days, is narrowed to *Firingíhá* as the designation of gunpowder artillery in Bábar's time. This is the term used in this account of the battle of Pánípat, April, 1526.‖ Colonel Tod, in his account of the attack by Bahádur, Sulṭán of Gujarát, on the fort of Chíṭor, defended by Ráná Bikramájít, A. D. 1535, (S. 1591) says, "This was the most powerful effort hitherto made by the Sultans of Central India, and European artillerists are recorded in these annals as brought to the subjugation of Cheetore. The engineer is styled '*Labri Khan, of Frengán*', and to his skill Bahadur was indebted for the successful storm which ensued."¶ It would appear that the employment of Europeans in a similar capacity at a much earlier period with the mechanical war engines is what is meant, in certain old narratives referred to by the same author, though their employment is not distinctly mentioned. He quotes from the "Sooraj Prakás" an account of the preparations of the king of Kanauj for opposing an invasion from beyond the Indus, in the 12th century, when "the king of Gor and Irak crossed the Attok", in which it is said that the invading army had

* *Táríkh-i-Fíróz-Sháhí, of Ziá-ud-dín Barní, Dowson's Elliot, III*, 146.

† *Táríkh-i-'Aláí. Dowson, III*, 80.

‡ *Id., III*, 82.

§ *Táríkh-i-Fíróz-Sháhí (Ziá-ud-dín). Id. II*, 202.

‖ *Erskine and Leyden's Memoirs of Babar*, 306. *Tuzak-i-Bábarí*, Dowson, IV, 255.

¶ *Tod's Annals of Rajasthan, I*, 310.

the aid of "the skilful Frank, learned in all the arts."* In a footnote Tod adds, "It is singular that Chand likewise mentions the Frank as being in the army of Shabudin in the conquest of his sovereign Pirthiraj."

The note in Erskine and Leyden's translation of Bábar's Memoirs, on the passage above referred to, about artillery at the battle of Pánípat, says of the term '*Feringiha*', "the word is now used in the Dekkan for a swivel."† I am informed by Mr. Shaw, lately our representative in Yárkand, that in a book which he obtained during his residence in Turkistán, relating to events in Yárkand in the beginning of last century, guns are designated *Firingí miltik*. (*Miltik* is the word given for *musket*, in the Vocabulary appended to Sir D. Forsyth's Report of the Mission to Yárkand in 1873.‡ It is perhaps used in a more general way also for fire-arms, like our *gun.*) The same term, *Firingí Miltik*, Mr. Shaw mentions, is *now* applied to Rifles. It may be inferred that it was for a similar reason that in the other instances above referred to, in earlier times, corresponding terms were used with reference to the engines and engineers, and then to the first gunpowder artillery used in India.

Alike in Asia and in Europe the earlier weapons of war continued, of necessity, to be used long after the introduction of gunpowder artillery, and along with it. The guns, few in number, were at first merely a small but startling addition to the ordinary implements of battle. At Pánípat, when Bábar's *Firingí* field-pieces were causing a new sensation, the smaller fire-arms were not yet in use, and throughout the account of the fight he relates how his troops poured in discharges of arrows on the enemy. When the Zamorin's subjects had become familiar with powder and modern fire-arms, as noticed above, still "in all fights", as Herbert goes on to say, "they also use bow and arrow, darts and targets, granads and variety of fire-works."§ So of course did English bows, long after Creci, play the chief part in fights in which cannons also were brought into play.‖

In Europe the fire missiles of the earlier days were both used along with modern guns and discharged by means of them. And the Greek Fire, having its composition and effects modified by gunpowder led the way to the later *balles ardentes* or *pots de feu*, and shells. Fire *arrows* even were among the kinds of missiles thrown from the early small-bore guns.¶

* *Tod's Rajasthan, II*, 8.

† *P.* 306. Also *Dowson's Elliot, IV*, 255.

‡ P. 548.

§ *Some Yeares Travels, p.* 302.

‖ Mr. Grant Duff, in his Notes of his recent journey in India, mentions that an officer who accompanied him on his visit to the fort of Láhor (Jan. 1st, 1875) informed him he had had an arrow shot at him during the siege of Multán in 1848. (*Contemp. Rev., July* 1875.)

¶ *Nap. Louis Bonaparte. Etudes sur le passé et l'avenir de l'Artillerie*, p. 43.

Froissart mentions Greek Fire used with modern artillery by the English at the siege of the castle of Romorantin in 1356. "Si ordonnèrent à apporter canons avant et à traire carreaux et feu grégeois dedans la basse cour.' "Adonc fut le feu apporté avant, et trait par bombardes et par canons en la basse cour."* In their contests with the Moors in Granada, in 1485, the Spaniards threw from their engines large globular masses composed of certain inflammable ingredients mixed with gunpowder, which, "scattering long trains of light", caused much dismay.† The earlier cannon, M. Viollet le Duc says, in his work on the Military Architecture of the Middle Ages, "appear to have been often used, not only for hurling round stones as bombs, like the engines which worked by counterpoise, but likewise for throwing small barrels containing an inflammable and detonating composition such as the Greek Fire described by Joinville, and known to the Arabs from the twelfth century."‡ This application of Greek Fire, or some of these other compositions, is the device which the experienced campaigner, Rittmaster Dugald Dalgetty, brought to the notice of Sir Duncan Campbell of Ardenvohr—"Still however the Captain insisted, notwithstanding the triumphant air with which Sir Duncan pointed out his defences, that a sconce should be erected on Drumsnab, the round eminence to the east of the castle, in respect the house might be annoyed from thence by burning bullets full of fire, shot out of cannon, according to the curious invention of Stephen Bathian, king of Poland, whereby that Prince utterly ruined the great Muscovite city of Moscow. This invention, Captain Dalgetty owned, he had not yet witnessed, but observed that it would give him particular delectation to witness the same put to the proof against Ardenvohr, or any other castle of similar strength; observing that so curious an experiment could not but afford the greatest delight to all admirers of the military art."§ The event which the Captain referred to belongs to the latter half of the sixteenth century. In 1582, this Stephen Bathian or Bathony, king of Poland, made peace with Russia under Ivan II.

We are generally accustomed, now-a-days, to look upon the practical application of any kind of Greek Fire to hostile or incendiary purposes as a thing of the past and only of historical interest. But the extraordinary abundance of the petroleum with which the world is now supplied has fur-

* *Froissart, I,* 2, 26, *quoted by Reinaud and Favé,* 223; and *Lalanne, Feu Grégeois,* 61.

† *Prescott, Ferdinand and Isabella, I,* 277. The Catalogue of Arabic Military Works before referred to speaks of the use of cotton dipped in oil, with *daqq-al-harrâqat,* which may mean fire-powder; the burning power of fire arrows being strengthened by the addition of some gunpowder composition of the earlier kind used for fire-works. *Fihrist &c.,* p. 64.

‡ *Translation by M. Macdermott,* p. 170.

§ *Legend of Montrose, Chap. X.*

nished the means, as well as suggested the idea, of its use for this purpose. With all the resources of modern skill and appliances, Greek Fire was brought into use at the siege of Charleston in 1863,—not without some expressions of public disapproval.* The secret manufacture of Greek Fire in Dublin, for Fenian use, in 1867 received a check by the arrest of the artist. It is not forgotten how burning petroleum was brought into use, in a not very edifying manner, by the communists in Paris in 1870; and since that time by more than one party in Spain.

The occasional revivals of disused weapons and practices of war make but little mark on the line of continuous progress in the art of preparing war fire material. It is likely that the advances from one kind of fire weapon and fire composition to another have all been gradual, and that to no definite time or single individual can be attributed the invention or discovery of either Greek Fire or gunpowder. The usual account of Greek Fire, which implies that it was one distinct and specific composition, is that it was invented by Callinicus, an architect of Heliopolis (Ba'lbek), who deserted from the service of the Caliph to that of the Emperor Constantine *Pogonatus* (the bearded) in the latter half of the seventh century, that its composition was a secret, and the art was preserved at Constantinople, that the secret afterwards passed in some way to the Muhammadans, that the use of the Greek, or, as it may now be called, says Gibbon, the Saracen fire was continued to the time of the invention or discovery of gunpowder, and that the secret has since been lost.† Grose adds another supposition, that it was the invention of Arabian chymists, and the researches made since his time show this to be at least equally likely.

The various preparations for which receipts are given in the Arabic books quoted by MM. Reinaud and Favé have probably all been recognised as forms of the fire compositions which, under whatever name at the time, caused much terror to those against whom they were used, and were afterwards known by the common name of Greek Fire; though the fire so called which was most alarming and destructive was liquid, that is, apparently,

* A feeling which had been strongly expressed in a less advanced age. MM. Reinaud and Favé quote from a manuscript treatise on the Art of War by Christian of Pisa, in the reign of Charles VI, of France (beginning of the fifteenth century), "Mais comme telles choses à faire ne enseigner pour les maulx qui s'en pourroient ensuivre soient deffendues et excommeniées, n'est bon d'en mettre en livres ne plus plainement en réciter, pour ce qu'à crestien n'appartient user de telles inhumanités qui mecsmement sont contre tout droit de guerre." On which the modern authors observe—"Remarquons que l'auteur ne parle pas du feu grec comme d'une chose inconnue, mais comme d'un moyen de guerre déloyal." *Feu Grégeois*, p. 220.

† *Gibbon, A. D.* 668—675.
Beckmann's Hist. of Inventions and Discoveries, IV, 84.
Grose's Military Antiquities, II, 309.

was prepared with petroleum. It was not one single mixture compounded after the prescription of Callinicus. Nor does there appear to have been any secret in the matter, nor does the art appear to have been at any time lost.* Only all people had not command of the most essential materials of the composition, and in particular, of the petroleum or naphtha, which is frequently named as the chief or only combustible thus used.†

With still less certainty can the invention or discovery of gunpowder be assigned to any particular time or person. When it is claimed for Roger Bacon or Berthold Schwartz, it comes to little more than this, that they were attentive students of the chemistry of their time and acquainted with compositions of the nature of gunpowder, and that they recorded what they knew and had seen. It was, however, apparently without knowing or noting the capabilities of gunpowder for application to military purposes.‡ From the various combinations of the ingredients for use in fire-works, the advance was great which resulted in the application of the compound to explosive and projectile purposes, and its preparation in a form suitable for those uses. The discovery of its expansive power would, it might be sup-

* *See Reinaud and Favé, Chap. VIII,* p. 219, &c.

† A question arises whether a mistake is not made in the use of the term *Greek* Fire; not merely the question suggested by its uncertain history, whether or not it was in any sense of Greek origin, but whether the *word* "Greek" is the right representation of the term from which it is taken. Is the term "*Greek* Fire" or any exact equivalent, used before the time of the Crusade Chronicles in which it appears in the form *Feu Grégeois?* And are the names since used, *Ignis Græcus, Greek Fire,* &c., taken from this? Then what is *Grégeois?* The word is almost, if not entirely, limited to this particular application of it. The Dictionary of the French Academy says "*Grégeois.* Il n'est usité que dans cette locution, *feu grégeois,* espèce d'artifice dont on se servait anciennement à la guerre," &c. It is not used as a synonym of *Grec.* Can it be connected with any other word? The old French verb *grégier* is thus interpreted in the *Complément* of the French Academy's Dictionary. "*Grégier,* v. a. et n. (V. lang.), Gréver, Accabler, Faire tort." And gréver is from gravis; (gréve = grief). (*Diez, Etymological Dictionary of the Romance Languages, by T. C. Donkin.*) A derivation of *grégeois* from *grégier* does not appear impossible or fanciful. May it not have been a descriptive epithet of the fire, *grievous* or *terrible?* Just as in China the material is said to have been known in the tenth century by the name of "oil of the cruel fire." (*Grose, II,* 309). The suggestion is perhaps not worth much. But the title of the fire to the name *Greek* does not appear clear.

‡ Not that this would have been set aside as being of no concern to men of their profession. Sir Walter Scott's picture of an energetic monk, technically familiar with the construction and working of the mechanical war engines of his time, while professing that they did not come within the range of his studies, (The Betrothed, Chap. VIII) is probably not a mere personal portrait. Inmates of monasteries, as well as other ecclesiastics, of the Middle Ages, while they were the conservators of learning, and the cultivators of the ornamental arts, did not neglect to keep an eye on the arts that pertained to war.

posed, be readily followed by the invention of cannon. Yet though this property of gunpowder was known to Roger Bacon, no form of instrument for applying it to the purpose of propelling missiles of any kind seems to have been known till long after. And the invention of cannon does not appear to be assignable now, any more than that of gunpowder, to any particular individual.*

The compositions above referred to, for which the Arabs had receipts in times preceding the knowledge of gunpowder artillery in Europe, appear distinctly to have been applied as combustibles,—in fire-works and fiery missiles. They were forms of fire-powder, not gunpowder. And they may have been the first to make them. Colonel Favé, in his *Etudes sur le passé et l'avenir de l'Artillerie*, goes further, however, and says "Les Arabes paraissent avoir été les premiers à lancer les projectiles par la force explosive de la poudre à canon."† It may be so, but there does not appear to be good evidence of it. They led the way to gunpowder, through Greek Fire and fire-works, and made it, but did not apparently find out, before European nations, its most important form and application.

It has been noticed that the use of modern artillery made very unequal progress in different countries. The use of gunpowder, like that of Greek Fire, was, in its early days, largely dependent on the facilities for procuring the materials and manufacturing the powder, or on the facilities for obtaining the powder ready-made from other countries. With communications imperfect and tedious, supplies of gunpowder would be uncertain. An Eastern traveller in the beginning of the seventeenth century says that at that time a place in the neighbourhood of Achín "supplies in a manner all the Indies with sulphur to make powder of."‡ This was rather a wide general statement. In Scotland, a few years after the time of which this traveller writes, it is recorded, under date July 19th, 1626, that "amongst the preparations for war at this time, the Privy Council, reflecting on the inconveniences of being wholly dependent on foreign countries for gunpowder, empowered Sir James Baillie of Lochend, Knight, to see if he could induce some Englishmen to come and settle in Scotland for the manufacture of that article."

* History says nothing in support of the pretensions of Butler's claimant "Magnano, great in martial fame",

> Of warlike engines he was author,
> Devised for quick dispatch of slaughter.
> The cannon, blunderbus, and saker,
> He was th' inventor of, and maker.
>
> *Hudibras, Part I, Canto* 2.

† Quoted in *Quarterly Review, July* 1868. Art. IV. "Gunpowder."

‡ *M. Beaulieu's Voyage to the East Indies, A. D.* 1619. *Harris's Collection, II*, 250.

The arts pertaining to weapons and munitions of war spread now over a wide field. In the line on which they were started by the introduction of gunpowder they have made great advances in the hands of different nations of Europe. With no essential change, of the kind which took place when gunpowder artillery came into use, the minute improvements in execution, and careful attention to accuracy, in modern times, and particularly in the present century, have made changes nearly as important. Great as the difference between the old and the new war engines, in the days when they worked together, as great probably are the differences of another kind between Bábar's *firingí* field-pieces at Pánípat and the Armstrongs of the present day.

Fire, Combustion, and the Evolution of Warfare: A Military-Scientific Reappraisal of R. Maclagan's 'On Early Asiatic Fire Weapons'

Anant Sinha

The evolution of warfare has historically been driven by the convergence of military necessity, scientific experimentation, and technological adaptation. Among the most decisive transitions in military history was the emergence of incendiary and pyrotechnic weapon systems, which fundamentally altered the strategic, operational, and psychological dimensions of conflict. In this regard, R. Maclagan's seminal 1876 article, 'On Early Asiatic Fire Weapons', published in the *Journal of the Asiatic Society of Bengal* constitutes an important contribution to the study of military technology, pre-modern applied chemistry, and the diffusion of scientific knowledge across Asia. Although written within the intellectual framework of nineteenth-century colonial scholarship, the article remains remarkably significant for its comparative examination of fire-based weapon systems employed across India, Persia, China, the Arab world, and Byzantium.

Maclagan's work is particularly valuable because it transcends the conventional chronicle of dynasties and battles and instead investigates the technological infrastructure of warfare. The article addresses incendiary compounds, naphtha projection systems, sulphur mixtures, fire arrows, primitive rockets, combustible oils, and flame-based siege devices, thereby revealing that Asian civilisations possessed advanced traditions of military engineering long before the widespread

introduction of modern gunpowder artillery. From a contemporary perspective, the article can be interpreted as an early investigation into the militarisation of chemical energy and the operationalisation of combustion science in pre-modern warfare.

One of the most striking aspects of Maclagan's analysis is its implicit challenge to Eurocentric narratives of technological superiority. Nineteenth-century military historiography frequently portrayed Asia as technologically passive and strategically derivative. However, Maclagan assembled textual and historical evidence suggesting that Asian polities had independently developed sophisticated incendiary systems capable of influencing battlefield outcomes. His references to petroleum-based compounds, volatile hydrocarbons, resinous accelerants, sulphur mixtures, and pyrotechnic projectiles indicate the existence of organised scientific experimentation in relation to thermal energy, ignition mechanisms, and destructive force projection.

From the standpoint of military history, the article documents a critical transitional phase between kinetic warfare and thermo-chemical warfare. Earlier military systems depended largely upon edged weapons, cavalry man oeuvre, massed archery, and mechanical siege apparatus. Fire weapons introduced an entirely different battle-space dynamic. Unlike conventional projectiles, incendiary systems possessed the capacity to penetrate fortifications indirectly, ignite supply depots, compromise defensive infrastructure, and induce panic among combatants and civilian populations alike. Fire became both a tactical weapon and a strategic instrument of coercion.

This transition carried immense operational implications. In siege warfare, for example, flaming projectiles and combustible compounds could neutralise defensive positions without requiring direct breach operations. The deployment of incendiary agents against wooden fortifications, siege towers, naval vessels, and logistical depots represented an early form of asymmetric force multiplication. Such methods enabled comparatively smaller forces to impose

disproportionate damage upon fortified adversaries. Maclagan's descriptions therefore illuminate the emergence of proto-modern concepts of area denial, infrastructure disruption, and psychological attrition.

Scientifically, the article is equally compelling because it reveals an empirical understanding of combustion chemistry among ancient and medieval military engineers. Although premodern societies lacked formal thermodynamic theory, they nevertheless demonstrated substantial practical knowledge concerning ignition thresholds, fuel volatility, oxidising agents, and sustained combustion. Substances such as sulphur, saltpetre, petroleum derivatives, bitumen, charcoal, and resin functioned as primitive energetic materials whose military applications required systematic experimentation and controlled deployment.

In contemporary scientific terminology, these compounds may be understood as early energetic composites involving hydrocarbon fuels and oxidising elements. Their use necessitated expertise in storage stability, ignition sequencing, flame propagation, and delivery mechanisms. Consequently, the article indirectly documents an early form of applied military chemistry and materials science. Ancient armourers and military artificers effectively served as proto-chemical engineers operating within the strategic requirements of the state.

Particularly noteworthy is Maclagan's discussion of Greek Fire and analogous Asiatic incendiary technologies. Greek Fire, historically associated with Byzantine naval supremacy, has long fascinated military historians because of its ability to sustain combustion even upon aquatic surfaces. Maclagan's comparative analysis suggests that related incendiary systems may have existed within Asian military traditions through the use of petroleum-based compounds and pressure-projected flames. Such technologies indicate a highly sophisticated level of military specialisation involving fuel preparation, projection apparatus, containment vessels, and trained incendiary operators.

From a naval warfare perspective, these systems represented revolutionary force multipliers. Maritime fire projection systems possessed the capacity to neutralise enemy fleets, destroy wooden hulls, and dominate littoral environments. In strategic terms, they altered the balance between defensive fortification and offensive man oeuvre by introducing a weapon capable of inflicting catastrophic thermal destruction beyond conventional projectile range.

The article's treatment of rockets and propelled incendiary projectiles is equally important. Maclagan's references to bamboo rockets, fire arrows, and pyrotechnic propulsion systems demonstrate that Asian military engineers were experimenting with reaction-based propulsion, centuries before the emergence of modern rocketry. These systems, although technologically rudimentary by contemporary standards, embodied foundational principles of thrust generation and directed projectile propulsion.

The significance of these developments becomes particularly evident in the Indian military context. The evolution of indigenous rocket systems eventually culminated in the iron-cased Mysorean rockets deployed under Tipu Sultan and Hyder Ali during the Anglo-Mysore conflicts. These rockets profoundly influenced European military engineering and contributed directly to the development of Congreve rockets in Britain. Thus, the technological lineage extending from ancient fire arrows to modern missile systems demonstrates the cumulative and transnational nature of military innovation.

Modern aerospace science allows us to reinterpret these early systems through the lens of propulsion physics, ballistic trajectory analysis, and aerodynamic stability. Primitive rockets represented not merely weapons of terror but early experiments in combustion-driven propulsion. Their battlefield deployment reveals a practical understanding of directional energy transfer and projectile momentum-concepts foundational to modern missile engineering.

Another critical dimension highlighted by Maclagan's article is the psychological effect of incendiary warfare. Fire weapons functioned

not only as instruments of physical destruction but also as mechanisms of cognitive and emotional destabilisation. The spectacle of flaming projectiles, explosive compounds, and uncontrollable combustion generated fear, confusion, and disorientation among opposing forces. Cavalry formations could panic, defensive cohesion could collapse, and civilian populations could experience mass psychological shock.

In modern strategic terminology, such methods constituted early forms of psychological operations and shock warfare. The deliberate exploitation of fear as a force multiplier demonstrates that ancient military planners understood warfare as both a physical and cognitive contest. Fire, with its unpredictable and visually terrifying nature, amplified the psychological asymmetry between attacker and defender.

Maclagan's analysis also indirectly reveals the existence of organised military-industrial ecosystems within pre-modern Asian states. The manufacture and deployment of incendiary systems required logistical coordination, resource procurement, technical expertise, and specialised production facilities. Petroleum, sulphur, charcoal, resin, and saltpetre had to be extracted, refined, transported, and stored under controlled conditions. This implies the presence of state-supported arsenals, technical guilds, and military supply networks are capable of sustaining technologically sophisticated warfare.

From the perspective of defence economics, such systems indicate that military innovation was deeply integrated with trade networks, mineral extraction, and industrial craftsmanship. Fire weapons were not isolated inventions but components of broader technological and administrative infrastructures. This challenges simplistic assumptions regarding the technological capabilities of pre-modern Asian polities.

The article acquires even greater relevance when examined through the lens of twenty-first-century science and technology. Contemporary developments in archaeometry, materials characterisation, computational simulation, and artificial intelligence provide unprecedented opportunities to reassess historical military technologies.

Residue analysis using spectroscopy and chromatography could identify the chemical composition of ancient incendiary compounds. Thermodynamic modelling and combustion simulation could reconstruct flame temperatures, burn duration, and explosive yield.

Similarly, computational fluid dynamics and ballistic modelling could analyse the aerodynamic efficiency and stability of early rocket systems. Experimental archaeology could replicate ancient incendiary devices under controlled laboratory conditions to evaluate their operational effectiveness. Such interdisciplinary approaches transform the study of historical weapons from descriptive historiography into evidence-based scientific investigation.

Artificial intelligence further revolutionises this field by enabling large-scale analysis of multilingual historical corpora. Ancient Sanskrit, Persian, Arabic, Tibetan, Chinese, and Bengali manuscripts containing references to military technologies can now be digitised, indexed, translated, and semantically linked using AI-assisted manuscript intelligence systems. Optical Character Recognition for ancient Indic scripts, Natural Language Processing for classical languages, and machine-learning-based semantic clustering can identify technical terminology associated with combustion, metallurgy, pyrotechnics, siege engineering, and military logistics across vast manuscript collections.

For institutions such as The Asiatic Society and initiatives such as Vidhvanika, these developments possess extraordinary significance. AI-enabled manuscript research can recover lost scientific traditions, reconstruct technological lineages, and illuminate the global circulation of military knowledge across civilisations. The study of ancient fire weapons therefore intersects not only with military history but also with digital humanities, computational philology, heritage informatics, and strategic technology studies.

In the Indian intellectual context, Maclagan's article contributes to a broader reassessment of indigenous scientific traditions. The

historical development of pyrotechnics, metallurgy, rocketry, and combustion engineering demonstrates that scientific inquiry in Asia was often deeply connected with statecraft, defence, and applied technology. Knowledge system have evolved through iterative experimentation, practical adaptation, and intercultural exchange rather than through isolated civilisational development.

This insight remains strategically relevant in the modern era. Contemporary defence technologies – ranging from hypersonic missiles and drone swarms to directed-energy systems and AI-enabled warfare platforms-continue to rely upon the integration of scientific research with military doctrine. The historical trajectory traced by Maclagan reveals that innovation has always emerged from the intersection of strategic necessity and technological experimentation.

Nevertheless, the article must also be critically evaluated within its historiographical context. Certain interpretations reflect the limitations of nineteenth-century scholarship, including reliance upon fragmented translations and uneven source criticism. Modern historical methodology would require stronger archaeological corroboration, philological precision, and scientific validation. However, these limitations do not diminish the article's intellectual value. Rather, they underscore the need for interdisciplinary re-examination using contemporary analytical tools.

Ultimately, *On Early Asiatic Fire Weapons* should be regarded not merely as a historical essay but as an early investigation into the relationship between science, technology, and warfare in Asian civilisations. The article demonstrates that pre-modern Asian societies possessed complex traditions of military experimentation involving combustion chemistry, incendiary engineering, projectile propulsion, and strategic pyrotechnics. These traditions formed part of a broader scientific culture in which military necessity accelerated technological innovation.

In the twenty-first century, as scholars increasingly seek to decolonise the history of science and recognise the multidirectional

flow of technological knowledge, Maclagan's work acquires renewed significance. It reminds us that the foundations of military science were not monopolised by any single civilisation. Rather, they emerged through centuries of experimentation, adaptation, and intercultural transmission across Asia, the Middle East, and Europe.

The article, therefore, stands as an important contribution to military historiography, the history of science, and strategic studies. More importantly, it demonstrates that the scientific and technological traditions of Asia were dynamic, empirical, and operationally sophisticated – qualities that continue to define military innovation in the contemporary world.

A New Testament: Scandinavian Missionaries and Santal Chiefs from Company and British Crown Rule to Independence by Tone Bleie. 2023. Published by Solum Bokvennen, ISBN : 978-82-560-2873-3, 523 pages.

The author of the book is Tone Bleie, Ph. D. Professor of Public Policy and Cultural Understanding at the University of Tromso (UiT), the Arctic University of Norway. She is founder and leader of the Scandinavian-Santal Heritage Initiative (SSInherit). The book is outcome of her hardwork among the Santals of Eastern India. Elsa Stamatopoulou, former Chief of the Secretariat of the UN Permanent Forum on the Indigenous Issues (UNPFII); Professor of the Institute for the study of Human Rights, Columbia University, NY; stated,

> A New Testament uncovers the entanglement over centuries of the colonial history of major European powers and missions, shedding light on an ignored settler story that began in the jungle in the late 1860s in Eastern British India (Back cover of the book under review).

Major focus of the book is on the Santals of Santal Parganas. The Parganas was formed by the British colonials in late 1860s. Professor Bleie started her research with Santals and extended her work to Boro and Bengalis of lower Assam and places of West Bengal and Bangladesh.

Christian missionaries were considered as messengers of the 'Gospel' who travelled through the world spreading messages of Jesus Christ. In Eastern India the Missionaries travelled through the tiger- infested forests preaching gospels. Christianity was professed by the evangelists as 'progressive'. They also spread the ideas of "private property, bounded territory or enclosure". The idea emerged in Britain and was tested 'brutally' on Irish peasants in the seventeenth century. The British eventually entered prosperous Bengal after the battle of Plassey in 1757. The Santal 'Hul', the revolt, took place in 1855-1856. The event created anger and mistrust between the Santals and the White colonials. As an endeavour to bring them into the fold, the colonials took certain strategies. The Christian missions and the ethnographers were set to work. The oral traditions were put into writing. There came handwritten manuscripts, publications, artifacts and standardised grammar for the

local language. In the newly formed Santal Parganas, the Santals and Norwegian missionaries upheld the egalitarian values. The author has referred to the book *Ancestor's Tale* by Guru Kolean and the *Sacred Epic*, compiled by Norwegian Missionary L.O. Skrefsrud and Chief Jugia Haram in 1871-1872. Professor Bleie mentioned that she has taken her data out of historical archives from three continents and has herself undertaken intensive and extensive fieldwork from 1982 to 2005 by living among the 'custodians of orality' of the tribes, namely, "gurus, healers, oracles and ordinary villagers" in East India, Northern Bangladesh and Eastern Nepal. Besides archival studies, she followed participant observation and interview methods in her fieldwork. She learned Santali language and is fluent in communication with the Santals.

The book is divided into thirteen chapters. These chapters are clustered into four sections. Each section in its subsequent chapters gives history of development of Scandinavian-Santal legacy from its beginning to the present day. In the sections the process of development of Santal-Scandinavian legacy is chronologically arranged. The content of the book gives gist of the materials written in each chapter.

Chapters 1 to 4 are in section 1. This section is titled as 'Contexts of Scandinavian South Asian legacy'. The first chapter is titled as 'Legacy context, issues and landscapes'. It begins with the history of advent of Scandinavians in India, especially in the forested lands. They preached the gospels of Christ. Some of the tribals were converted to Christianity and became "pastors, evangelists and churchwomen". There emerged indomitable preachers from Santal, Oraon, Munda, Boro, Garo, Khasi and Naga tribes. The author considered the propagation of Christianity was a political move to 'civilize' the tribes and bring them under the fold of the foreign rulers. The first move for spreading protestant ideology was in the Sixteenth Century by the monarchies of Denmark-Norway. The second took place in 1860s, when the global and imperial conditions were congenial to make the evangelists from Norway, Denmark, Ireland, Scotland, England, America and Prussia to cross the Atlantic Ocean and discover the uncivilised and uninitiated souls in

the forests of Eastern India. Chapter 2 is entitled as 'Archives and public blind spots'. In this chapter the author, a historical Anthropologist, described her endeavour at getting information from the archives of the three continents about the Danish-Norwegian monarchy and influence of Protestan Christian Missionaries on the tribals at subsequent times. The author has given details about search for data from various historical sources. The Narratives and records kept by the Santals, became like folklores and people remembered the deeds of the evangelist like Skrefsrud, locally called as 'Kerap Sir', the first missionary to settle at Benagaria, Mahulpahari, Dumka. There was resistance at the beginning but later they gained respect; so that after the demise of Kerap Sir and others, their bodies were buried in the sacred grounds of the Santals. Chapter 2 in fact gives detail about historical data and how those were collected by the author. Chapter 3 is entitled as 'Missions, missionaries, and merchants: global and the regional contexts'. In this chapter the author has given an account of the gradual infiltration of the missionaries and merchants with modern gadgets in the form of machineries, in South Asia. They came in search for valuable silk, lac, wild life, slaves and other precious things. These became objects of trade. At the same time with an administrative strategy of the British, the foreigners entered into forested land of Bengal, known as 'Jungle Mahals'. Discussion is made of the religions that existed in India at that time. British colonialism started with company rule, which slowly turned into Crown rule in 1858 and continued upto 1947. The Santal Mission started a decade after the end of British Company rule. Mention is made of Danish- Norwegian's Tranquebar Mission in Peninsular India. From there the Danish-Norwegian Company moved into the Bay of Bengal in 1698 and was mainly engaged in piracy and slave-trade until they were forced to leave by the Mughal emperor. For sometimes they retreated to Tranquebar but in 1755 they returned to Bengal to trade in silk, cotton, spices, indigo dye and saltpeter. The last item was needed for preparation of gunpowder. The Tranquebar episode led King Frederic IV to dispatch Chaplains to Dano-Norwegian colonies. Printing presses were important for translating Bible as well as native literature. William

Carey, the founder of the British Baptist Mission Society (1761 – 1834) spearheaded the movement of saving the souls of the non believers, though the British did not allow him to cross the River Hoogly but was asked to stay in the Dano-Norwegian Colony, the town of Serampore. Carey followed a "ground breaking capitalist trading company model." The chapter ends by saying that "Imperial expansionism through mercantilist coastal enclaves had morphed into full scale colonialism." This sentence explains the title of the book, *A New Testament*. Chapter 4 is titled as 'Missionaries and chiefs as actors' intellectual meetings. This chapter covers the meeting and experiences of the missionaries and those of the tribal chiefs. She has discussed the enthusiasm of Christian world to salvage the souls of the uninitiated mass in South Asia. This chapter also shows how the original world of the Santals was gradually lost because of enthusiasm of the utopian egalitarian evangelists. In the background of Santal 'hul' and entry of the missionaries, one after the other, is discussed. She has given the background information of the missionaries and their activities in historical order. The chapter is rich with photographs.

Section 2 is titled as 'Mission Station Christianity's universalization'. It contains chapters 5 to 7. The three chapters are titled as 'Faith entrepreneurship and its foundation'; 'Christianity, mother tongues, and ethno-nationalism'; and 'Rights, moral, and social reforms', respectively. Chapter 5 describes how the Scandinavian evangelists and the Santal chiefs interacted with each other in the form of faith entrepreneurs. The humanitarian approach of the missionaries is pointed out. There were godmen, legal advisers, reformist mediators, missionaries, benevolent landlords, tea scheme in Assam, which raised hope among the Santals for return of social order and justice. This situation resulted in the continued presence and progress of the missionaries. Special mention is made of Skrefsrud and Borensen's entrepreneur assets. This was in the backdrop of *Kherwar* movement in Bengal in 1870s. Chapter 6 deals with gradual study of the Santali culture by the scholar-intellectual missionaries. In post-rebellion era, with new research methodology work was carried out on Santal lifestyle and Santali vernaculars. This gave political recognition to the Santals. Chapter 7 is on the newly-formed

constitution of the British India, based on universalisation. The politics of ethnic minorities, tribes and indigenous people were studied in the perspective of Human Rights Law and Anthropology. The Santal Mission was considered as social and moral reformer.

The third section of the book contains chapters 8 to 10. This Section is titled as 'Globalisation localised: settlers, heirs, icons'. The three chapters in it are with headings respectively as, 'Ebenezer Mission in the jungle as settler history'; The 'Trust Deed and a succession of drama'; and 'Cast selves, submission, silences – a person gallery'. In chapter 8 the author gave an account of how in 1867 the pioneering Scandinavian evangelists found a place adjacent to three Santal hamlets in Benagaria and constructed a building for the Mission Head Quarter. After resolution of legal matters a number of mission estates grew up in the Santal Parganas and the evangelists continued saving the souls of the unbelievers. Chapter 9 tells of 'faith enterprise', effort of the Santal Missionaries' to take a place in the inner circle of British Raj and be in the forefront of the Trust Deed in 1880. In fact for the formation of Santal Pargana Land Settlement, efforts of Skrefsrud as an intermediary helped the mission to accumulate estates for the mission through 1872 to 1910. Chapter 10 gives account of how the early woman's civil right and political right movement on both the transatlantic continents made to include women in the religious domain at the time of British Raj. The women had to maintain strict moral codes and remain single, while serving as missionaries. However, duties as priests and pastors strictly remained with the males.

Section 4 contains three chapters. This section is titled as 'Museums, churches, and mission in the 20th Century'. Chapter 11 is titled,' 'A history of a Norwegian ethnographic museum and its Bodding collection'. There are considerable numbers of collections of tangible cultural materials in the ethnographic museum at Oslo. Major portion had been shipped by P. O. Bodding between 1901 and 1934. Bodding became more of a scientist and collected both tangible and intangible cultural materials belonging to the Santals. The tangible elements start from prehistoric stone tools to material cultural objects of the Santals. Bodding presented articles on his findings at the meetings of The Asiatic

Society of Bengal, which were published in the Society's journal. His best known research on intangible elements of Santal culture is published by the Asiatic Society of Bengal in three volumes subsequently from 1925 to 1940. The three volumes as one book are published together now, named as, *Studies in Santal Medicine and Connected Folklores*. Several editions are printed on public demand, the latest is in 2026. The question now arises about repatriation of materials collected by colonial and is exhibited in several overseas museums. She has discussed in detail custodianship of the materials and their repatriation in this chapter. Santosh Kumar Soren, an Assam colony-born Santal, works in the library of the University of Copenhagen has catalogued the items. Bleie has given account of the handing over of manuscripts of Bodding collection to St. Xavier's College, Asiatic Society, Anthropological Survey of India and Ranchi University. The chapter closes with a note on the polity of the present day scheduled tribes, the Santals. Chapter 12 covers suggestions for reforms of transatlantic society, possibility of self-support and self-governance in the context of new nationalism. Gradually educated Santals themselves took charge of executive managements. Second World War and the Indian and Scandinavian independence brought in changes in sphere of Santal mission. This chapter mainly dealt with the rise of national museums. The chapter 13 headed as 'The Post-Raj period of churches — neocolonialism as a prism'. This is the concluding chapter. It mainly describes post colonial mission society and its national churches. Bleie informs about the great and historical *Maha Sabha,* held at Benagaria in 1950. The outcome was unity model. The Santal Mission Norwegian board was formed as a continuation of Indian home mission to Santals. The 20th century has seen and nurtured "a lasting Scandinavian-Santal-Boro-Bengali legacy."

The book is extensively provided with end notes and Annexures. Annexure 1 is year-bound transatlantic and South Asian connects starting from 1620 to 2001. Annexure 2 is with two maps of Eastern India, Eastern Nepal, Bangladesh, South Asia and Southeast Asia. Vast amount of literature is cited. The book is the outcome of exhaustive research, *A New Testament*, which has revealed the advent of missionaries and colonials one in support of the other, in the name of gospel.

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

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C.W. Troll, ed. *Muslim Shrines in India : Their Character, History and Significance,* Delhi, 1989.

Articles in Journals :
G. Hambly, "A Note on the Trade in Eunuchs in Mughal Bengal", *Journal of the American Oriental Society* (hereafter *JAOS*), Vol. 94(1), 1974, 125-29.

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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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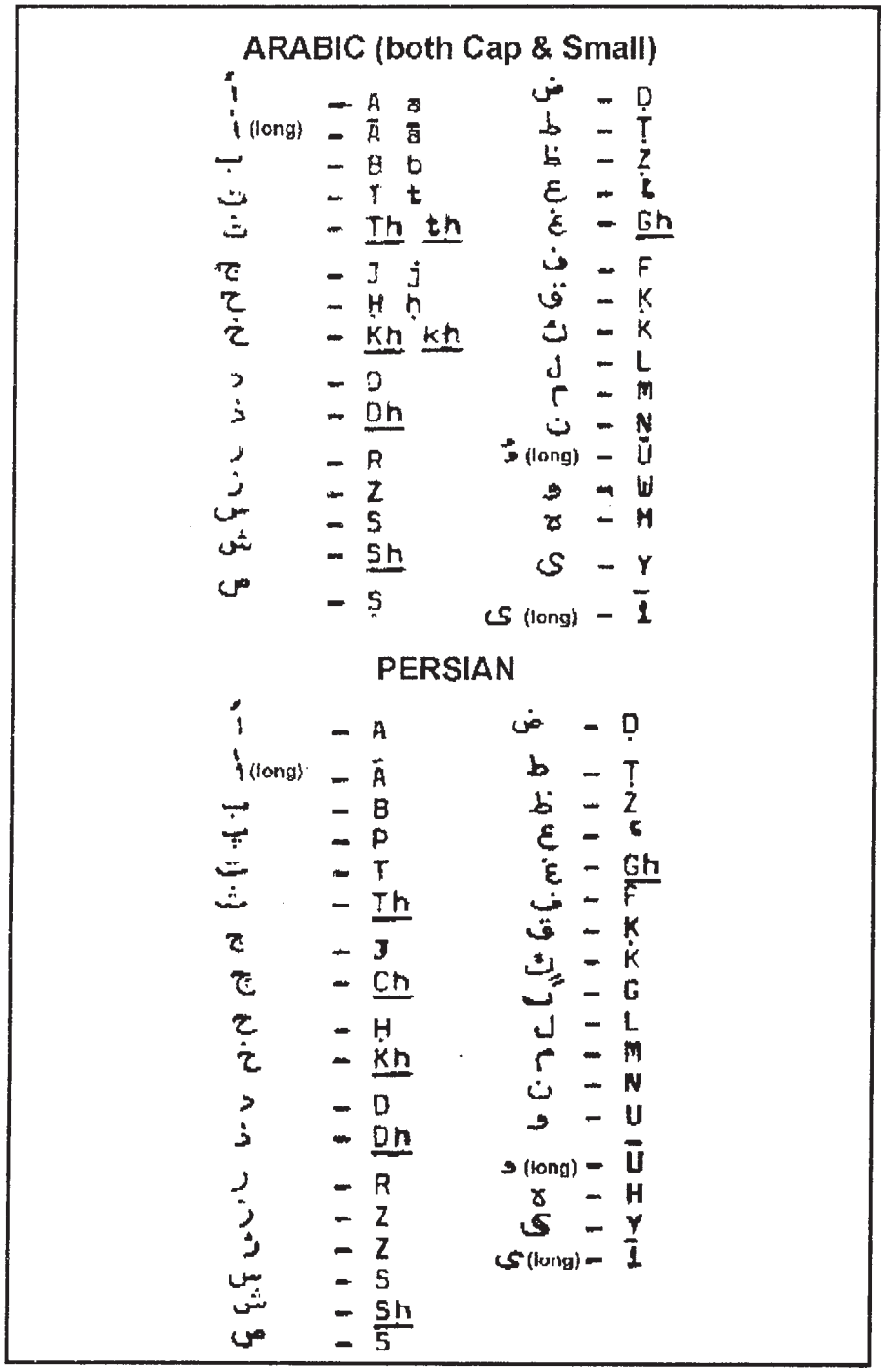
SYSTEM OF TRANSLITERATION

SANSKRIT

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	6	


ARABIC (both Cap & Small)
ا (long) – A a
– Ā ā
– B b
– T t
– Th th
– J j
– Ḥ ḥ
– Kh kh
– D
– Dh
– R
– Z
– S
– Sh
– Ṣ
– Ḍ
– Ṭ
– Ẓ
– Gh
– F
– K
– L
– M
– N
و (long) – Ū
– W
– H
ی – Y
ی (long) – Ī
PERSIAN
– A
ا (long) – Ā
– B
– P
– T
– Th
– J
– Ch
– Ḥ
– Kh
– D
– Dh
– R
– Z
– Z
– S
– Sh
– Ṣ
– Ḍ
– Ṭ
– Ẓ
– Gh
– K
– K
– G
– L
– M
– N
– U
و (long) – Ū
– H
ی – Y
ی (long) – Ī

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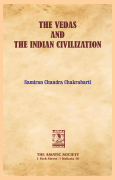

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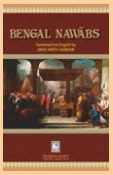

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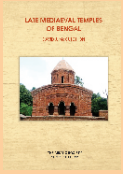

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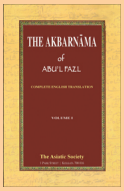

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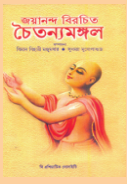

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It will flourish, if naturalists, chemists, antiquaries, philologers and men of science, in different parts of Asia, will commit their observations to writing, and send them to the Asiatick Society at Calcutta; it will languish, if such communications shall be long intermitted; and it will die away, if they shall entirely cease.

Sir William Jones
on the publication of The Asiatic Society