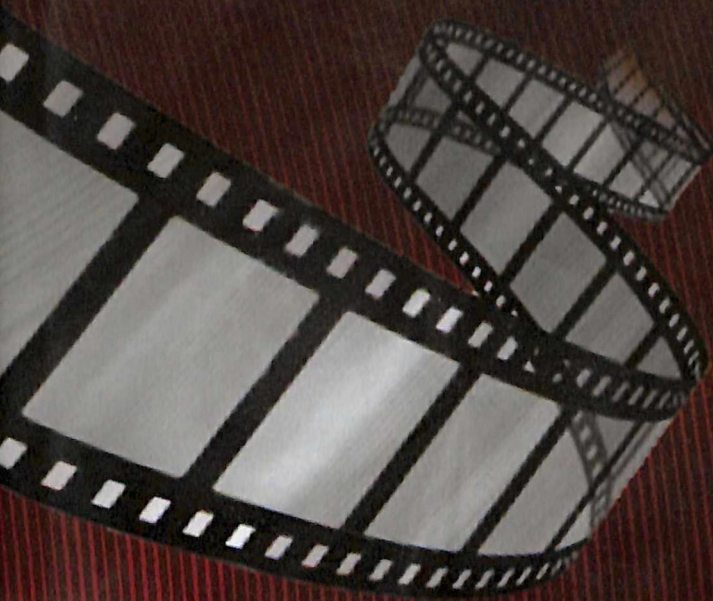


# Science Communication in Assam



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Ankuran Dutta  
Anamika Ray



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DVS PUBLISHERS  
Panbazar, Guwahati

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## Preface

The power to change is the power to communicate. Communication is what makes the modern equipment gifted by science and technology a very powerful thing. Gerry McGovern has rightly said in his article 'Communication is power'. Basically a person having great thoughts and ideas has to learn how to communicate the sense of greatness of his ideas. In this context, we can refer to Gandhiji, the greatest communicator of modern India.

Young generation assumes that journalism and mass communication are very attractive and glamorous field in today's world. This field has political, economic, sports and entertainment coverage. Now, if we talk about science communication or science journalism, the picture will be quite different. Controversial or sensational reporting gets first preference, whereas science is always misunderstood.

Science in itself is communication. Unless it is communicated, science does not subsist at all. Though it has a very old tradition and history in India but still it is felt as a constrained meadow. There is lack of understanding of how advances in science and technology affect our lives. Science communicators and the media should act as a responsible bridge between scientific development

and society. But it does not happen every time. Science communication is such a process where the *common message* on *common science* to the *common mass* is conveyed. It is easy to say but hard to do. Today's high-tech modern society has become the weapon of revenue generation and the field of journalism is no exception.

Before coming to the academic profession, we both were in the practical field of journalism. While we were there, we witnessed the negligence in the coverage of the advancement of science and technology, which is very much necessary for the total development of society. After entering to the academic profession of mass communication and journalism, we have noticed that the students are very confused regarding the proper process of coverage of science related issues, because particularly in the North East, there was no scope for training for students. We were fortunate to meet Dr. Manoj Kr Patairiya in a Science Communication workshop held in Jaipur. He helped immensely to start science communication as a part of journalism and mass communication course first at Cotton College and following it up later at Gauhati University, Guwahati. The implementation opportunity of science communication for the first time in North East as a part of journalism institution has been able to change the media education scenario dramatically.

It cannot be denied that the present day media is not favourable for science and technology communication, but it is also true that we, the Assamese have an age old history of science communication for which we can be proud. *Orunodoi* was the first initiative in this field. Junaki, Assam Bandhu, Mou, Bahin etc. to mention a few were also efforts in this direction. The people like Bijoy Krishna Deva Sarma, Denesh Chandra Goswami, Santanu Tamuly, Khiradhar Baruah, Soneswar Sarma are a few anchors of science communication voyage of the present generation. We are very fortunate to be a part of this

noble endeavour, which inspired us to think about a volume on the stratum of science communication of the region.

This book is basically a compilation of a few research papers presented in science communication seminars and conferences held in different parts of the country and articles published in different media. It is designed for science communicators as well as for those who have interest in journalism and mass communication. Here, it is important to mention that a comprehensive knowledge on the present stage, status and prospect of Science Communication in Assam is very much necessary to build the background knowledge of the amateur and upcoming journalists. Emphasising its goal, the book contains not only an aesthetic but also a theoretical part including an overview of *Orunodoi* era, an outline of science literature, the present status of science communication in Assam, different science communication organisations, science communication education in Assam, legends in this field and of course, different scope for training and career advancements in this emerging field. Assam is one of the pioneer states of the country in science communication. Through this book, it is our humble effort to convey to the rest of the world about the growth and development of science communication and its prospects in the region. The emergence of journalism in India started as a mission. But over the years, it has been changed into a profession- *Mission to Profession*. After 230 years of the beginning of journalism in the country, now the question is- Are we able to develop rural India- *India which resides in the villages?* The answer is 'No'! We need to take *science communication as a mission through profession* to develop the *nation*. We hope that this book may extend a positive approach to this noble cause.

We would like to express our heartfelt gratitude to Dr. Patairiya for his never ending cordial support. The kind help from Prof. Bruce

Lewinstein, Prof. Bernard Schiele, Prof. David Skinner, Prof. K.V. Nagraj, Shri Khiradhar Barua and Prof. Robin Goswami heightens our sense of gratefulness towards them. We must thank Pritima, Bashabi and Hemprokash for their kind cooperation and necessary help to complete the book. We are grateful to all the institutions, organisations, members and individuals, who have extended their support to accomplish the task smoothly. We would also like to thank DVS Publishers, a reputed publication house of the north eastern region of the country for publishing this book. Last but not the least, we thank our parents without whose blessings, it would not have been possible to achieve our goal.

*Dr. Ankuran Dutta*

*Dr. Anamika Ray*

# Contents

Preface			
Chapter	I	Science Communication – the concept	I
Chapter	2	Science and Technology Communication in Assam	9
Chapter	3	Science in Daka Sayings	26
Chapter	4	Science Communication A Literature review	30
Chapter	5	Media Coverage on Science in Assam	40
Chapter	6	Science Fiction in Assamese Literature	59
Chapter	7	Prospects of Folk Media for Science Communication in Assam	69
Chapter	8	Cartoon for Communicating Science An Emerging Trend	91
Chapter	9	Science Communication for Tribal	105
Chapter	I 0	Organisational initiatives for Science Communication in Assam: Public Sector	139
Chapter	I I	Organisational initiatives for Science Communicatio: in Assam: Private Sector	171
Chapter	I 2	Renowned Science Communicators of Assam	186
Chapter	I 3	Science Communication Education in Assam	209
Chapter	I 4	Science Communication through Distance Education in Assam	223
Chapter	I 5	Science Communication: As Career	239
Conclusion			249
Annexure			255
References/Bibliography			280



## CHAPTER - I

### Introducing Science Communication

'In a world dominated by science and technology, science communication and popularisation is of utmost importance especially for our country where a large population needs to be told about the impact of science and technology in their daily lives', Dr. A. P. J. Abdul Kalam, the former President of India (Science Communication, 2010).

Dr. A. P. J. Abdul Kalam's conviction is in the power of science which can have a solution to the problems of our society. He focuses attention on science and technology as ideology-free areas and emphasizes the inculcation of scientific temperament and spirit of entrepreneurship among the common masses.

From time immemorial man has always been trying to explore reality. In fact, to make life wonderful, man has to constantly tackle the challenges from nature, which is the basic cause of the origin of science. We are now living in a hi-tech age. Infotainment and edutainment are two known words. We have been successful in reaching to the Mars. We can dream about having a house on the Moon. We have *Chandrayan*. We have nuclear power. But it is still a ridiculous irony when we somehow believe in the powers of the stones on fingers

and blindly support all kinds of superstitions. We usually stop the car whenever a cat crosses the road. People are intellectually bound to certain dogmas, myths, blind faiths and superstitions. These blind faiths cannot bring financial growth and economic empowerment to us, rather these would lead us to be blind to social, political and cultural slavery. An intellectually clogged brain can neither bring independence nor can defend his accessible economic, social, political or cultural liberty. In a country like India, it is rare to find common masses being imbued with a scientific temperament because science is not understood by them; even though they may be aware of or inquisitive about the latest scientific and technological development. Science remains a subject of academic discourse confined to the class room and continues to maintain to a wide gulf from the common people.

Nowadays, science and technology have all but become an obsession. They permeate all facets of our contemporary political, economic and cultural life (Schiele, 1994). But, the reality is that science is beyond the reach of the common people and has failed in its basic purpose to inculcate the spirit of rationality in the common people. Science remains an unfamiliar terrain for them. The presentation of science by the experts to the non experts in an attractive, lucid and popular manner has still not taken place.

In this context Michel Serres, a philosopher and member of the French Academy has emphasized the creation of a democracy of science (Democracy of Science, 2010). To increase societal knowledge on the role of science and to bridge the gap between science and society is extremely necessary. The calls of media itself the *vox populi*, deciding on what to report or not to report but skips science broadcasts in the interest of attracting higher audiences. Science does not figure much in the current media rat race targeted for large

audiences.

On the other hand, it won't be untrue to say that nobody enjoys science unless it is linked with the journalistic stuff of cuts and curls, covered with surprising and genuine facts, and flavoured with piquant instance through vivacious presentation. So there is an immense necessity of dissemination of science through media. The purpose of science communication is to acquaint the masses with scientific knowledge for inculcating scientific temper. It is also true that science communication itself is a multi-disciplinary field of expertise and it is never perfect, as no communication is perfect. Science communication means transmission of modern science of Nature-Man-Society by scientists/ science communicators to the audience (Chaubey, 2009). Study shows that the news and news based programmes (on political issues, crime, sports or business), entertainment (films, serials, soaps etc), religious and superstitious programmes (TV channels) are the major competitors of science coverage in mass media. Everyone wants entertainment and science always takes a backseat with insignificant attention. It is a vital point which we cannot overlook. Science communication through entertainment like puppetry shows, street plays, theatre, fantasy, fiction, novels, poetry, drama, scientoons, newspapers, magazines, books, radio, TV, cinema, animations, internet, etc. can be exploited because of their influence on the masses and wide coverage (Ray, Dutta, 2009). Broadcast and print media are traditionally seen as fairly passive ways of informing or educating people. In addition to these traditional media, we may think of the new media as well. The potential of social networking sites, podcasts and blogs for science communication remains under researched. These new media may offer exciting and interactive ways of reaching both new and traditional audiences (Brake, Weitkamp, 2010).

Generally, scientists and journalists are expected to write or communicate science to masses with the belief that the scientist knows science and journalist knows communication. But practically a scientist prefers to give more concentration to his research work. Similarly, a typical journalist prefers to report some scoop or sensational stories though there are very few exceptions among them who wish to write on science or any other development related issues. At this point, a trained science communicator appears into the picture to work between science and media. He or she may be a scientist conversant with communication or a journalist acquainted with science. He may be a lecturer, a scholar, a bank officer or a physician or anybody who has a skill of communicating science to the masses. Common people prefer edifying, informative, analytical, logical, investigative, critical and reason based messages methodically transmitted in a constant and continuous flow. So it will be the duty of a science communicator to study and be acquainted with the available literature. A science communicator must have the capacity for interpreting and discussing a topic with the concerned specialists. Necessary statistics, diagrams, photographs should be collected. Information should be presented with an exploratory bent of mind in an eye catching, clear manner and without technological jargons. A complex, science-heavy beginning with formulas and difficult concepts is an infallible recipe for making an audience abandon a science communication material (Vieira, 2008).

On the other hand, the fact cannot be overlooked that, a few writers in our country depend upon the translation from English itself. Upcoming science writers should communicate science through the unconventional mode. Though science has evolved over a period of time to create a tradition, yet science communication is still at an early stage in our country. Scientific writings are often dry and dull

and sometimes technical information can even be misleading. Selection of the right medium, format, style and language for science communication is a very important and at the same time a delicate task considering human sentiment, curiosity and amusement. These things together make science communication a complex procedure. For example, if dengue has become an epidemic, the people need to protect themselves from mosquito bite. The remedies of dengue fever should be popularized among people. Here the biological detail of mosquito is less important. Science information should be very much contemporary, relevant to time and purposeful and useful for the general mass so that common sense on common science can be increased and sustained.

Science communication is facing various problems on account of mass accessibility. The problems are also of cultural, social, religious and linguistic in nature. Communicating science successfully and professionally in order to inculcate scientific temper among the people is yet to be achieved. Only such science messages should be communicated, which are confirmed, genuine, well tested, verified and true. Authenticity of the scientific knowledge is most significant for science communication because wrong, incorrect, untrue, unauthentic information may mislead the society.

Conversely, the deep relationship between communication and culture cannot be overlooked and ignored. Only that much of science related message should be transmitted, which is suitable for the common people and compatible with the level or degree of their culture. Otherwise, the non-compatible science may lead to a cultural conflict. So, for sustained and long-term effects of science communication, the cultural compatibility must be given due consideration.

All the arguments come to an end when society shows a wide

gap between the scientific community and the common masses. The gap needs to be bridged. But it may take a long time and strenuous efforts to get rid of the century old superstitions, wrong beliefs and to bring science and masses into a common platform. Regional network and languages are very significant for science communication at the grassroots level. For the development of the society, it is dire necessity to bring some changes in the attitude of the public from the non-scientific to the scientific one and to motivate them to live in a scientifically rich environment. It is only possible when it will be based on scientainment (science + entertainment). Sometimes people confuse the two terms—science communication and science journalism. Journalism is part of the wide gaze of communication. Science communication is necessary to inculcate a scientific temperament among the general people in the form of logic, reasoning and method of accruing knowledge throughout the cultural evolution of human beings. It aims at various target groups as common men, children, students, farmers, women, workers and specialists. Science news, report, article, features, documentary, docudrama, scientoon (science + cartoon) are the various interesting forms (Patairiya, 2002).

Charles Babbage, Professor of Mathematics at Cambridge is famous as the first concoctor of the mechanical calculating engine. He met Sir David Brewster, an eminent personality in optics research in a meeting of the Yorkshire Philosophical Society in 1831. There they showed an interest to form a national association to advance the status of science in society. As a result, the British Association for the Advancement of Science was formed with the aim of obtaining more mass attention for the objects of science and the removal of any disadvantages of a public kind which impede its progress. In the World War-I (1914-18), the battle was not among the power poles, but it was a competition to show the massive applied science and

technology supremacy. It was able to form a soldier of scientists which came as an appearance of euphoria. It is also proved that science would provide the answer to all human queries. Again the World War-II (1939-45) is the evidence of the passion to destroy the human existence while the explosion of the atomic bomb sowed the seeds of disenchantment with science that have characterised the last sixty years.

At first, in the inundation of youths returning from the war that recommenced their education provided an enormous motivation for the growth of science. But by 1970, they were no longer enough. Interest in science as a career had declined worldwide. The appeal of science to a wider public was declining. A new approach was needed. In the United States, the outstanding instance of hands-on activity on science communication was San Francisco's Exploratorium (1969). The Exploratorium was envisaged to communicate a passion to people. The Public Understanding Science (PUS) approach ruled UK in the last decades of the twentieth century. The idea was to flow the knowledge on science from one person (the sender) to another (the receiver), arriving unchanged at its destination. The major consequence of PUS in the UK was to endow with the support for those that were already enthusiastic about science.

In a nutshell, it can be said that science communication is a growing pragmatism permitting us to compete efficiently with our surroundings. The incredible influence of science to authorize the radical manipulation of the world stem straight from its aptitude to clarify the initial method, which emphasize the progression of nature. The aim is to counter those ideas that relate to reality. It is also true that science communication is a wide meadow where innovative progress is illustrated for the common mass. The difficult scientific thoughts and ideas need to be rephrased these days using more visual

attitude to explain scientific developments. It is a fast and convenient way to make ideas and new findings known to a wide range of people of all ages and backgrounds. It is high time to give an impetus to scientific pedant and growth and expansion of scientific approach for the common mass.



## CHAPTER - 2

# Science and Technology Communication in Assam

Assam, famous world over for its tea, is a land of jaded mountains, singing waterfalls, merry people and ever-smiling young girls. In the past, Ahom kings infused fresh and varied colours into its art and culture. While in the modern times, following Shrimanta Shankardev and Madhavdev in the 16<sup>th</sup> century who embellished and enriched it with their great devotional enchanting poetry and performing arts, artists and writers like Bezbaruah, Jyoti Prasad, Bishnu Rabha made it truly rich with blended varieties of music, art, dance and literary forms and in them each found its representation. It is a unique composite culture blending the ethnic, national and the universal. Even in the field of religion and spirituality different cults cohere to offer a unique harmonious spiritual experience (Bhushan, 2007).

The state appears like a quiet bird perched on the crest of a mountain range with Patkai Mountain range forming the bird's beak. This north eastern state of India shares its international borders with China, Bhutan and Bangladesh (Bhuyan, 1999).

Assam, located in the tropical latitudes (24.3° N and 28° N) and eastern longitudes (89.5° E and 96.1° E), is the most populous state in north-eastern India. Surrounded by seven Indian states and two

foreign countries, it has a unique location and there are only a few Indian states which have such a strategic location. The state has an area of 78,438 sq. km. representing 2.39% of the Indian landmass (Gopalkrishnan, 1995).

After introducing the region, we would like to focus on the status of science communication in this part of the country. Science communication is not a new branch. It is one which exploits the art to convey information on science topics to the public forum in Assam. The communication of scientific knowledge via mass media is a continuing special relationship between the world of science and news media ever since the publication of the *Orunodoi* (1846). In recent times, a section of newspapers in Assam has been emphasizing on science and technology related stories but it is not up to the mark. As a positive initiative a few media institutions are also going to start science communication courses in their curriculum.

Science seeks to comprehend the nature and explanation of scientific knowledge, and its ethical implications. It is a logical analysis of impression upon our awareness. As such, scientific method cannot infer anything about the area of actuality that is ahead of what is visible by an existing or theoretical means. When an expression of our reality, earlier considered as supernatural is understood, in terms of cause and consequences, it obtains a scientific justification. The fundamental goal or intention of science to society and individuals is to create useful models of reality. Thus science is an emerging sector of understanding that permits us to compete more effectively with our environment, which in turn, will help us to develop holistically.

In recent years, the media coverage of scientific news has grown rapidly. The exchanges between the scientific community and news media have been therefore expected. Science communication can fulfil the growth of science approach of general mass, interpret their

mind with authenticity, make them creative in the treatment of topics, and mirror an intelligence of progression and enthusiasm about their real flavour of life. Media can act as an effective intermediate of education by giving interesting pictures, stories, cartoons, articles and current events of science. However in practice, the science writing focuses specially on topics of scientific study generally translating jargon which is difficult for those outside a particular scientific field to understand from a language that is easily digestible. Science and technology with their incredible power to create and destroy must be understood by the people in terms of its total impact on society. Now let us have a look at the historical perspective of science communication in India.

James Augustus Hickey is considered as the “father of Indian press”, because in 1780 he started the first Indian newspaper from Calcutta i.e. the *Calcutta General Advertiser* or the *Bengal Gazette*. Gradually *Bombay Herald* (the first newspaper from Bombay) in 1789, *Bombay Courier* (in 1790) which in 1861 was amalgamated with the *Times of India*, *Samachar Darpan* (the first newspaper in an Indian regional language-Bengali), *Samachar Sudha Varshan* (the first Hindi newspaper) in 1854 etc came into existence. As mentioned earlier, the *Orunodoi* got published from Sivasagar District of Assam in January 1846 containing 8 pages and having the title- *Orunodoi Sambadpatra* as the first Newspaper in the region. The journey of science journalism as well as science popularization is as old as journalism. From the beginning, many eminent personalities were involved in the science popularization. S N Bose initiated the attempt to bring science to the masses in their mother tongue by founding an association and a magazine in West Bengal. Meghnad Saha, along with the research journal *Science and Culture*, also used radio for this purpose. J V Narlikar, Prof. Yash Pal, M S Swaminathan, D Balasubramaniam, P M Bhargava,

Narendra Sehgal, Biman Basu, and Dilip M Salvi have also used TV shows for science popularization.

This movement got a spur in the second half of the 19<sup>th</sup> century, creating a good number of 'science writers' in regional languages, such as Lakshmi Shankar Mishra, Shankar Balakrishna Dikshit, Ramendrasundar Trivedi, Kerela Verma etc. In Hindi, science journalism started in the year 1818 with the Hindi-English bilingual *Digdarshan* published from Srirampur, West Bengal. In Bengali, it started with the magazine *Vidyadarshan* published in 1842. Later the job was also shared by other journals like *Marathi Dyan Prasarak* in Marathi, *Janabonothini* in Tamil, *Chintamani* in Telugu and so on by publishing science features and news from time to time.

From the sixties onward, some kind of scepticism was prevalent among the media community that science is not saleable in India. But practically, the science ventures did well. *Vigyan Pragati* was launched in 1952 in Hindi followed by *Science Reporter* in 1964. In 1966, Times of India Group started publishing *Science Today*. (This magazine has now been closed down). In 1965, Invention Promotion Board (now NRDC) launched *Invention Intelligence*. In 1971, it also launched *Aviskar* in Hindi. In 1983, Nehru Centre, Mumbai started the publication of *Science Age*, which was also closed down at a later date. In a milestone achievement, Centre for Science and Environment started publishing *Down to Earth* from 1991, a magazine devoted more to environmental issues. It was also from this time that science features, news, reports have started appearing sporadically in major English newspapers through supplements or in Sunday issues. *The Hindu* has been bringing out a science supplement for the last 20 years. *Indian Express* started its science supplement *Science Express* in 1986. *The Telegraph* is publishing its science supplement *KnowHow* since 1994. *Deccan Herald* also brings out a regular supplement on science and technology.

Initially, the journals and supplements writings were mainly focusing on the latest scientific developments in the West picked up from wire services and written by an Indian writer. Writers like Jagjit Singh, Amalendu Dasgupta, Dilip Salvi, Harish Aggrawal, Samarjit Kar, Pathik Guha, Nirranjan Ghate, Bal Phondke, Dinesh Chandra Goswami, etc. excelled in this job. Dearth of science correspondents was the reason that nothing much on scientific happenings in India was reported. But there is some exception too. Anil Aggrawal and R Ramchandran worked as science journalists in various newspapers. Gobinda Bihari Lal was able to establish himself as a science correspondent in a US newspaper. This effort fetched him the Pulitzer Prize in 1937.

Later, Press Trust of India started a separate Science Cell under the leadership of Dr. Jayaraman. This cell continues to supply features and stories on science to the Indian Press till date. Nowadays, scientific developments are appearing more frequently in Indian Newspapers. Internet is also providing immediate information on the latest developments in science and technology.

### Pre Orunodoi Era

Regarding the history of Science Communication in India, Marzia Mazzonetto wrote in the *Journal of Science Communication* that “the most recent history of science communication in India dates back to the end of the Nineteenth Century, when the first science books imported from Britain were translated into the main local languages and distributed amid the upper echelons of society” (Mazzonetto, 2005). Criticizing the above statement Dr. Partha Bandyopadhyay in the June 2005 issue of the journal said that science communication in India “started in early rather than ‘late’ nineteenth century – in the 20s and 30s. As a point of reference one could

mention the works of Raja Rammohan Roy (1772 - 1833), a polyglot, scholar and social reformer. He, among other things, translated books on geography and geometry into Bengali and also wrote popular articles on such subjects as “echo” and “magnet” in a Bengali journal named *Sangbad Koumudi*, which he himself edited, in early 1820's” (Bandyopadhyay, 2005).

In the light of above controversies we would like to provide some further information regarding science and technology communication in Assam. It can be said that Assamese science literature in written form started in fifteenth century during the Vaishnavite movement. Sponsored by King Naranarayan Bakul Kayastha translated a popular book on Mathematics namely *Kitabat Manjuri* in 1434. Bakul Kayastha can be regarded as the first Assamese science writer and his *Kitabat Manjuri* as the first Assamese science book (Dutta, 2002; p.15). Prior to that, Assam has a long and magnificent tradition of popularization of science. Dr. Dinesh Ch. Goswami says, “The Assamese society paid a lot of importance to scientific temper and scientific practices in day to day life. The sayings of Daka Purusha who flourished in Assam during the 4<sup>th</sup> or the 6<sup>th</sup> century, very well depict the practice of science and its acceptance by and influence on the society. Daka's sayings cover almost all aspects of the day to day rural life including agriculture, health, hygiene, gynaecology, paediatrics, infant care and food and nutrition” (Goswami, 2007; p.3).

### Orunodoi Era

As Dr. Manoj Patairiya (2002) cited in his article *Science Journalism in India*, it started in the country in 1818 with the publication of monthly *Digdarshan* (Satyaprakash, 1967), which was published in Hindi, Bengali and English, carrying a few articles on science and technology (Sharma, 1993). Assamese Science journalism can be traced

back to the mid nineteenth century, i.e., just after 28 years of the publication of *Digdarshan*, the first Indian journal to carry science and technology information. The Assamese science journalism started with *Orunodoi*, the first Assamese newspaper published in January 1846 (Dutta, 2007; pp.461-464).

The most interesting fact is that this first Assamese newspaper *Orunodoi* represents Baptists' role of benefaction towards the people of Assam. From the beginning, the publishers wrote in the printers line as "The *Orunodoi*- A monthly Paper, devoted to Religion, Science and General Intelligence, is printed and published at the Sibsagor Mission Press, by O. T. Cutter, for the American Baptist Mission in Assam" (Dutta, 2005). Pandit Maheswar Neog stated that 'the *Orunodoi* was devoted to Science and General Intelligence" and is especially to be emphasized, as its pages went a long way to extend the intellectual horizon of the readers. The columns brought news stories from all corners of the globe. It explained global geography and gave descriptions of the night sky with its stars and planets' (Neog, 1983; p.65).

The first issue of *Orunodoi* (published in January, 1846) did not carry any science news. But in the February issue, i.e. the second issue, it carried two features with about 35% total space covered in aggregate. The first two essays published in the paper were "*Grabar Bibaran*" and "*Prithibir Akarar Bishai*" (Ibid, pp. 12-13) about the description of planets and about the size of the planet Earth with two illustrations. In the third issue, the paper published a lengthy feature on the discovery of printing press (Ibid. pp. 23-24). In the fourth issue, it carried a detailed write up on the description of the world with two drawings of the globe from west and east sides. In the issue they published an article on the description of lion with a sketch and this was followed by other animals in the subsequent issues

(Ibid. pp. 28, 29, 32). Regarding the writing style of the scientific events and news in the *Orunodoi* Pandit Neog opined (Ibid. p.66), 'they could have the intelligence of scientific inventions and discoveries in a simple and digestible form.' *Orunodoi* pioneers the voyage of science communication in Assam. It not only signalled the beginning of science communication but also introduced science to the common mass. We have discussed *Orunodoi* in detail in chapter 4.

The science books published in the mid nineteenth century are Nathan Brown's "Bhogol Siksha" (1849) Nidhi Levi Faewell's "Padartha Bidyasar" (1855) "Bigyanar Barematara", "Lara Siksha" and others (Dutta, 2002).

### Post Orunodoi Era

In the beginning of the twentieth century magazines like "*Assam Bandhu*" (1906), "*Alochani*" (1908), "*Jonaki*", "*Assam Bandhav*" (1909), "*Bahin*" (1909), "*Milan*" (1922), "*Assam Hitaisbi*" (1926), "*Ababan*" (1929) and "*Jayanti*" (1938) published science articles and news in a regular basis. Famous litterateur Kaliram Medhi made effort to create an environment of scientific temperament among the readers and wrote a series of science articles in *Assam Bandhav* and *Alochani*. *Darwinar Mator Jatkinchit Abhas* (An introduction to the ideas of Darwin; published in *Assam Bandhav*, Vo. 3, No. 4, 1912), *Helir Nejal Tara* (Hailey's comet; published in *Assam Bandhav*, Vo. I, No. 8 & 9, 1910), *Pritibivi* (World; published in *Alochani*), *Surya* (sun), *Baidyutik Paramanu* (ion), *Pani aru Baraf* (Water and Ice; published in *Bahin*, Vol. 20, No. 01, p. 35) were the subject matters of these magazines. *Bahin* gave special stress on science and technology section. On the other hand, the journal, of Asom Chatra Sanmilani's *Milan* (1922) started to publish various science news and awareness stories. In an article published in *Milan* (Vol. 6, No. 2) on the journey to the moon in the section *Bijnan*



*Jagatar Jilingani*, a science communicator encouraged the general people with the last line – “whatever the case may be, that men will one day reign supreme on the moon, is certain.” In addition to that, *Jayanti* (1938) promoted the social awareness for scientific developments. In the pre Independence era, all magazines and newspapers published and covered science and technology news. For instance, popular magazines (*Usha*, *Asom Pradipika*) did not give attention on science news (Mahanta, 1998; pp.536-541).

Sarbeswar Sarma Kataki, Lakshmi Prashad Chaliha, Sarat Ch. Goswami, Lakshminath Das, Saifuddin Ahmed, Mahananda Barua, Birinchi Kumar Barua, Nagendranath Phukan, Girish Ch. Barua, Damudar Hazarika, Nalini Kumar Mishra, Dimbeswar Neog, Kiran Ch. Goswami were some successful science writers of this period, who tried to create an environment to popularize science (Mahanta, 1998; pp.536-541).

### Post Independence Era

In the post Independence period some new areas of science and technology communication occupied space in the magazines and the newspapers of the state. *Bijnan Baichitra* was a regular column published in *Ramdhenu* (popular magazine). A series of articles on psychology were published by them. *Amar Pratidinidhi* introduced and continued a special column named *Bijnanstambha*. *Sadiniya Navayug* published two important sections titled *Swasthyar Sitanat* (Health Section) and *Bijnanbidya* (Science) (Ibid. pp. 541-543). Children magazines like *Akash*, *Safura*, *Mukuta*, *Mouchak*, *Abiskar*, *Jnan- Bijnan* etc. also tried to develop the children’s mind to increase scientific attitude by reading science issues. Dr. Dinesh Chandra Goswami, a popular contemporary science writer, wrote a science based children’s novel titled *Tritonar Abhijan* for *Mukuta*.

### Science Magazines in Assam

The first Assamese science magazine is *Pashu Palan* -edited and published by Dr. Kanak Chandra Sharma, dealing with the subject of agriculture and veterinary science. This magazine was published monthly from 1925 to 1948. During the period from 1939 to 1961 there were about 30 science books that enhanced the Assamese science literature (Dutta, 2002). In 1953 we can see the emergence of Assam Science Society. This organization is the pioneer in popularizing science in Assam. *Bigyan Jeuti*, the second science magazine in Assamese language was published in 1962 by Assam Science Society and from that time onwards, *Bigyan Jeuti* have been playing the most vital role in the development of Assamese science literature. Some of the other science magazines published in seventies were – *Deh-man* (1970), *Swasthya Pradip* (1971), *Lahar* (1973-74), *Spandan* (1974-75), *Padartha Bigyan Patrika* (1975), *Bigyan Rasana* (1976), *Bigyan Barnali* (1979-80), *Bigyan Patra* (1979), *Bigyan Barta* (1979), *Jnan Bigyan* (1979) etc. On the other hand, *Nuclear* (1981), *Dristi* (1982), *Bigyan Safura*, *Bhougolika* (1985), *Abiskar* (1987), *Natun Abiskar* (1988) were published in the eighties. In the last decade of the twentieth century only two to three science magazines were published.

In the present decade a large number of science magazines proliferated were started. The nature of the recent science magazines are basically health based. The AIDS Control Society, the Public Health department and the National Rural Health Mission are creating health awareness campaign in the state. It is a good way of imparting general awareness, but it is unfortunate that most media and publishing houses are not interested in publishing pure science magazines, health being an exception in some issues.

In the contemporary period, along with the mentioned science magazines, a section of monthly magazines like *Prakash*, *Sutradhar*, *Prantik*

and others are creating a science popularization movement with a simple and accessible writing style. Dr. Paramananda Mahanta (1998) stated that we can divide the writing ways or genre of these magazines into three types. Firstly, the pure and applied science writings, secondly, the descriptive science writings, and lastly, news based science writings.

But in recent days, science communication sections in other Assamese magazines are comparatively negligible except a few magazines like *Prantik*. We have pursued a research on the coverage of science stories by the family and commercial magazines of Assam. From the analysis we have seen that *Prantik* regularly dedicates a large section to science and technology, followed by *Satsari* with at least 5 % of its total space devoted to science and technology. Some other commercial magazines like *Priyo Sakhi*, *Trisnatur*, *Rahashya*, *Saparibar*, *Jiban* and others allocate a minimum space for science. It includes basically health sections. On the contrary, a large number of magazines like *Gariyashi*, *Nandini*, *Bismoy* and *Maya* do not publish any science and technology stories.

### Newspaper Coverage in Assam

In an article published in the *Prantik* (1-15 March, 1988), Promod Ch. Neog and Dr. Dinesh Ch. Goswami opined that the tempo of publishing science writings in the newspapers and magazines of Assam was satisfactory compared to the other states of the country. But in the present day scenario, we cannot say that dailies especially vernacular dailies, give special stress on science and technology writings and news.

From a detailed content analysis, it can be seen that in Assam, the daily newspapers rarely cover science news in their front page. Even in the other pages science and technology news is difficult to find. We find a few technology advancement and new discovery related

news only in the international page and in the business pages of the vernacular dailies of the state. Compared to language dailies, *The Assam Tribune* to some extent covers more science news with special care. Except Friday, it had a regular section entitled *Beyond Frontiers* (published in page no. 13), that allocated maximum space for science and technology features. But recently it stopped publishing this section. In addition to that, they have a separate supplement with the Saturday edition named *Horizon* and it has regular columns like *Science Zone*. It is encouraging that *The Assam Tribune* dedicates nearly 11 broadsheet pages out of 120 pages in a week for science and technology.

On the contrary, the vernacular language dailies do not provide more space for science communication. *Asomiya Khabar* has three columns in a week on health (Suswasthya), science and technology (Bijnan Aru Prajukti), agriculture (Kheti–Pathar) published regularly on Thursday (page 3), Wednesday (page 12) and Tuesday (page 5) respectively. *Ajir Asom*, published from the *Sentinel* group, gives more pages for science. They have Women Health - *Sreemati (Swasthya)*, Good Health - *Suswasthya*, Agriculture - *Krishi Jagat*, Science and Technology - *Bijnan/Prajuktibidya*, Environment – *Paribesh* like regular sections published once a week. *Asomiya Pratidin*, the highest circulated Assamese daily has three sections named *Prakriti* (nature), *Swasthya Nidan Bibidha* (health) and *Jnan Bijnan* (scientific knowledge) published with the free supplements on Wednesday and Sunday. *Ajir Dainik Batori* does not have such a dedicated page for science. *Amar Asom*, a leading Assamese daily publishes only a section on nature in a week.

*Dainik Asom*, *Dainik Agradoot* and *Dainik Janasadbaran* publish science issues a little more than *Dainik Batori* and *Amar Asom*. They have some sections on a weekly basis on agriculture, health, nature and environment, science and technology, etc. Health is a common section

for all the daily newspapers. But the coverage of other features or writings on science, technology, new discoveries, scientific advancements, various problems like power cuts and pollution are less in number and too negligible to create a scientific temperament among the general masses. On an average, the science coverage in India is around 3%. In Assam, it is about 3.55 %, a little more than the national average. But efforts are on to enhance up to 15%, as per a resolution of Indian Science Writers' Association.

### Issues of Concern

- It is a common allegation of the media persons and especially the editors that they are very much interested in publishing special pages for science and technology or even science news in the front page, but the lack of interest of the general readers is the main barrier for encouraging science journalism.
- The health sections of the dailies or the magazines attract general readers. But here also we can find a common assertion that the general readers are confused with different advices of different doctors published at the same time in the same section of the same daily in different issues.
- Writing style is another challenge for science writers. It is difficult to write something on science to make it understandable for the general readers. It should not be a science literature. As Dr. Patairiya mentioned in his book *Bijyan Ptrakarita*, "Science articles published in the newspapers/ magazines today are not too different from what they used to be years ago, i.e. with prosaic style, technical jargon and excess of avoidable statistics." It should be a writing method of colloquial style with science contents, using simple words.
- Again, the use of science terminology is difficult to understand and also not attractive as such for the readers. It is better

to use some original English words, which is popular among the masses. For example we should use 'cigarette' instead of *Sweta Dhumradandika* or 'computer' instead of *Mahagananik Jantra*)

- We have regularly discussed in various forum that translation, trans-creation or transliteration as barriers to present a science write up effectively to the general mass. As stated earlier, only the application of Assamese terminology cannot make science literature intelligible and popular. Selfcalibre, capacity and the ways of expression of the journalists or writers can make the write ups on science and technology effective.

- Science writings especially for children are not presented in an effective way. Children, basically, do not want to read. But they love to see comic characters, photographs and sketches with a colourful presentation.

- Lack of space is another significant challenge. Due to lack of space editors cannot provide illustrations, sketches and charts for understanding an issue in a better way.

- There are no separate science journalists as such in the print media houses in Assam. So a staff reporter can not give more time to understand a scientific matter and to write a report. Science investigative reporting is beyond imagination. But, we are of the view that the media can take special care to publish local science news, for instance, *Deep Bahan* – a beautifully designed rickshaw of IIT, Guwahati. Media may cover extensive report pointing out how it works, why it is faster than other rickshaws, what advantages are there for the rickshaw puller as well as for the passengers, etc.

- Irregularity in the publication of science magazines is frustrating for readers. *Bijnan Jenti* is being published by the Assam Science Society (ASS) for nearby about five decades but it is not published on time. Readers would hardly wait and tolerate the

irregularity in publication.

- Popularity of Assamese health magazines is increasing gradually. It is a good sign. In the last seven years nearly five health magazines were started and almost all other magazines started publishing a health section. However except health, other categories of science and technology dedicated sections or purely science magazines are decreasing day by day. 70s was the golden age for science communication in Assam and a science society movement was conducted effectively. Various branches of ASS published separate science magazines such as *Bigyan Rasana*, *Bigyan Barnali*, *Bigyan Patra*, *Bigyan Barta* and others. But in the 80s and 90s, all these magazines were stopped. Now general people need some separate magazines on agriculture, veterinary and technology sciences.

- Rural people do not get magazines and newspapers regularly although the main focus should be the rural masses. They believe in superstitions. If dissemination of information and news is considered as a service to the society rather than a trade or business, then the aspect of social responsibility should get preference to business. It is an expectation of the general reader that being the mirror and guide of the society, media should concentrate on the rural people along with their urban counter part to create an environment for a scientific temper toward superstitions off and age old social evils.

- Many journalists treat a science story like other stories. They do not differentiate it from other stories. If needed, the media organizations may provide necessary training or orientation to their reporters, who work on science.

### Initiatives:

- **Assam Science Society:**

Established in 1953 and registered in 1960-61, this organization

is the pioneer in the field of creating scientific temper among the people of Assam. For this purpose the society has published over 140 popular science and reference books in Assamese and English language including *Explanatory Science Dictionary* (two vol.), *Glossary of Scientific Terms*, *Children Science Encyclopedia* (five vol.) and others. Since 1955 the society is also regularly publishing *Journal of Assam Science Society* (half yearly) and a bimonthly popular science magazine in Assamese *Bigyan Jenti*, since 1962. The society regularly organizes teachers' training camps, arranges visits to ecologically threatened areas and industrial units for school children along with their teachers; they organize health camps, science exhibitions, children's science festival and children's science congress (NCSC). The society campaigns for creating awareness about issues related to biodiversity of the region, necessity of safe drinking water, against use of environmentally hazardous materials, etc. The society has established the Institute of Advanced Study in Science and Technology at Paschim Boragoan, Guwahati and also a Science Complex with proposed aquarium, reference library, Planning and Research Center, Biodiversity Photographic Gallery, etc (ASS, 2009).

- **Broadcasting:**

Radio is one of the most popular mass media, especially for the rural people and All India Radio is one of the largest radio networks in the world. All India Radio, Guwahati has started its broadcast of a science serial for children from 2008 with the help of Vijnan Prasar, New Delhi and Assam Science Technology Environment Council. Dr. Shyama Prashad Sarma, the former Head, Department of Physics, Cotton College, was the coordinator of the serial named *Seuji Dharani Dhunia*. It was presented in an attractive way to influence and entertain children with its 26 episodes (ADB, 2007).



- **Media Institutions:**

As a group initiative of the authors of this book (with the help of authorities) we have submitted some projects to the NCSTC, Govt. of India. As a result Media and Communication Study Centre, EDC, Cotton College and Department of Communication and Journalism, Gauhati University have introduced science communication in semesters of PGDJMC and MA Mass Communication course respectively as special and compulsory papers in their curriculum with the financial help of NCSTC, Govt. of India.

- **Distance Courses:**

The initiatives of Cotton College and Gauhati University are purely for the media students. But these efforts are not sufficient to create an environment of science communication in the state. The intention should be to train up the journalists on how to report science and technology news, among creative some science writers and lastly, to generate an interest among the common readers. For these purposes, distance learning in science communication will be more effective. Though Indian Science Communication Society, Lucknow and Devi Ahalya University, Indore are providing science communication distances learning courses, but the language of instruction is a barrier for the Assamese medium students. So, Krishna Kanta Handiqui State Open University, the only state open university in the entire north eastern region of the country has started distance learning courses on science communication to create science writers and to train up working journalists. To develop a scientific temperament among the students' community in order to boost their growth and development, the university is also planning to introduce a short term course on popular science for the school and higher secondary level students.

## CHAPTER - 3

### Science in Sayings of Daka

*Dakar Bachan Védor Bani/ Po Loga Tirota Ghoroloi Nani*

The line itself expresses that Assamese society which is mostly village based and agriculture supported considers the sayings of Daka (Dakar Bachan) as Veda. It cannot be denied that though the context and function of Dakar Bachan are restrained to a non literate level in society, but the relevance of inner theme of those 'sayings' still have not become extinct in this modern high tech cultured civilization. According to the tradition, it is conveyed only verbally from one generation to another, for which it has lost the quintessence of its origin and the rests has been able to secure place in literature. But still the whiff of oral tradition is well maintained. No doubt, its embrace is too old and the main context and content are not any individual's writing or composition. In the sayings, the influence of local dialects and local languages is very apparent. The originators might be from the community itself and the incitement of their knowledge and experiences are manifested in the sayings according to the circumstances. It can be the reason for over shadowing the written language by the colloquial language in these sayings (Britanica, 2009).

Now the main query is - who is *Daka*? Once Dr. Mahaswar

Neog opined, 'Daka may be a historical holy person, but the sayings in his name seem to be born from heart of common mass' (Goswami, 2007). As in Assam, in West Bengal, Bihar, Orissa, Uttar Pradesh, Punjab, Rajasthan, similar traditional proverbs or sayings have prevailed over the years. Proverbs, an integral part of spoken language, which are related to the folk literature as riddles and fables originated from oral tradition. The use of proverbs in literature and oratory was at its height in England in the 16th and 17th centuries. It won't be untrue to say that proverbs appeared from many unknown and unspecified sources which are difficult to trace. Their first manifestation in literary form is often an adaptation of an oral saying. Popular usage sometimes creates new proverbs from old ones; for example, the biblical proverb, "The love of money is the root of all evil" has become "Money is the root of all evil." Sometimes proverbs exemplify superstitions and false notions in the mind of common masses ("Marry in May, repent always"), weather lore ("Rain before seven, fine before eleven").

What ever the source of these proverbs or sayings, it basically emphasises agriculture. These are still significant in our daily lives for which it is well accepted and is regarded with prominent reliance and magnitude. Dakar Bachan proclaims the age old introduction and expansion of science practice and existence of scientific temperament in Assamese society. These sayings are not only on farming, but also weather, health, food, child birth, diseases, nursing, child rearing and many more on science. They have been presented in local languages, dialects and literature for the sake of community welfare. In this context, Dr. Dinesh Chandra Goswami wrote, 'Assamese has a long and glorious tradition of science popularisation. The Assamese society paid a lot of importance to scientific practices in day to day life. The sayings of Daka Purusha who flourished in Assam during the 4<sup>th</sup> or the 6<sup>th</sup> century, very well depicted the practice of science and its acceptance and

influence on the society. Daka's sayings cover almost all aspect of the day to day rural life including agriculture, health, hygiene, gynaecology, paediatrics, infant care, food and nutrition. The distant origin and survival of these sayings give enough proof that the Assamese society had a strong affinity for practical scientific things connected with life science long past' (Goswami, 2007).

Mentioned below are a few examples from Dakar Bachan.

In the context of Betel nut plantation Daka says-

'Hatat Patal Pasat Ghan/ Choyot tamol nadan badan'

It means at the time of plantation, there should be at least six feet (If *Ek hat* is considered one feet approx) distance between two saplings of betel nut. If the distance is seven feet, it may not appear decent or attractive. On the other hand if it is five feet, the production may be less. Similarly, if the leaf of one plant touches the leaf of other plant, the closeness becomes the reason for not getting water, minerals, nourishment and fertilizer properly. So this should be taken care of and is emphasised in the line... 'Pate Pate Lagile Nalage/ Nalagile Lage'.

Again Daka says ..'Bambhumit Ghane Diba Ali/ Jodi Nahoi Hali pariba Dakak Gali'

In paddy cultivation -which species needs what amount of water, what will be the space between the two rows of paddy saplings— every thing has been cited very specifically (Sharma, 2010).

*Ghan ghan koi diba ali/ Tebe saba dhanar Sali*

(Make embankments in the paddy fields

And see the growth of the Sali paddy.)

*Bam bhumit ghane diba ali/ Jodi nahai Sali pariba Dakok gali*

(Make close embankments in high lands

If Sali rice is not grown, curse Dak.)

*Abu rua khujat buri/ Sali rua beget ghuri*

(Sow Ahu seed at every footstep

And plant sali turning round every span.)

*Ahin Katit rakhaba paneek/Jene rakhe rojai ranik*

(Keep water in the fields during Ahin and Kati

In the way a king protects a queen.)

*Garu kiniba chikun jail/Dui chari soi dantia bhali*

*Soi dontak bhalehe pai/Sat dontak dekhi polai*

(Purchase the bullock of a fine shape

Best ones are the two toothed, four toothed or six toothed.

The fortunate only can get the six toothed.

Everybody runs away from the seven toothed.)

*Harinar dore jibba kaan/Sei baladbik bichari aan*

(Search for a bullock

Whose tongue and ear resembles of a deer.)

*Garu kiniba dighal neja/Moit uthile nohoi kuja*

*Kiniba nighun boga/Dake bule moi holu loga*

(Buy a bullock with tails long

And he does not get bowed over on the harrow

Buy a bullock white and defectless

I am surety, Dak declares.)

At the end, we can refer to another saying which means – the boiled pest of leaves of black tulsi (Holy Basil-*Ocimum sanctum*) and bel (*Aegle marmelos*) is a very commendable medicine for the woman who has recently given the child birth.

*Kalia tulasi belor pat/Muthar soite boti potat*

*Topot koria janani khaibo/Tebehe narie dhirak paibo.*

So it can be concluded that in the very ancient culture of Assam, science is one of the referred topics. And Daka Saying is one of the best examples of science communication which always emphasises the general masses.

In this ground breaking work, Dr Dutta and Dr. Ray provide a clear and detailed account of the complex relationships between science, journalism, and society in their home province of Assam. Taking a broad historical approach, the authors clearly describe the aims and purposes of science communication and illustrate its history and relationships with various forms of media such as news, science fiction, folk media, and cartoons. They detail its importance for different communities such as indigenous peoples and the public and private sectors. And they provide a comprehensive overview of the state of science communication education in Assam today. This book is both a handbook and a history, an indispensable guide to science communication in Assam of interest to journalists, scientists, educators, public policy makers, and the general public alike.

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'Science Communication in Assam' is a step forward towards encouraging the thought process and creating standard teaching-learning materials to cater to the science communication enthusiasts in general and budding science communicators in the northeastern region in particular. I wrote 'Hindi Vigyan Patrakarita', a book on 'Science Journalism' including a chapter on 'Science Journalism in Regional Languages' with some information on 'Science Communication in Assamese' in 1990 and I am happy to see its comprehensive expansion that covers a wide spectrum of science communication activities and gives an understanding of the subject. Being a student of science communication, I am happy to learn that the subject is growing. The authors' duo has a natural interest and inclination and has been able to develop professional competence in the area of science communication. I wish the book and the authors a success.

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