UNIT 4 : SCIENCE WRITING

UNIT STRUCTURE

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4.1 LEARNING OBJECTIVES

After going through this unit, you will be able to –

- understand the different types of science writings
- have a brief idea about the science news and basic qualities of a science news reporter
- learn about science features, articles and science fictions

4.2 INTRODUCTION

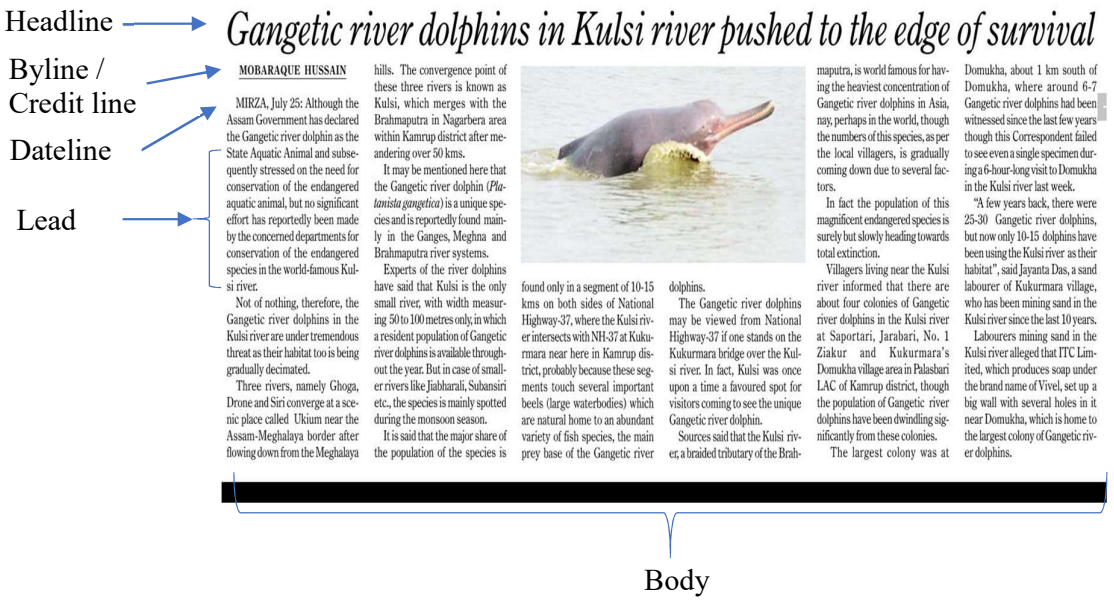
Scientific publication is an important component of literature. What people observed in nature in the early days of scientific research, or worked in the laboratory were communicated to the public either in oral forms (like debates and discussions) or through publications. Royal Society of London is the pioneer in encouraging such scientific writings. Today, with the advancements of science and technology in various fields (Physical, Chemical, Biological, Environmental, Health etc.), the need for scientific writing has gained more importance. Equally, the growth of research and journals, newspapers and other popular sources has expanded the horizon for science writers.

A good science reporter should be a good storyteller for the audience. We should remember that there are different expectations from scientists and audiences while writing on science. Science writer is a bridge between these two vital organs of his writing. It is therefore

essential that the science news is not framed with jargon. At the same time, there should not be any distortion to the facts while doing simplification of terminology.

4.3 WRITING SCIENCE NEWS

Science is a part of beat reporting resembling other areas of beats in journalism, like politics, culture, sports etc. As such, the basic elements of news writing (the 5Ws – Who, What, Where, When, Why and 1 H - How) remains constant for the construction of science news as well. Other features like headline, credit line/byline, lead and body are an essential part of science news too. Figure 2.1 is an example of Science News (environmental) with different elements. The news elements remain constant in formulating science news.



Gangetic river dolphins in Kulsi river pushed to the edge of survival

MOBARAQUE HUSSAIN

MIRZA, July 25: Although the Assam Government has declared the Gangetic river dolphin as the State Aquatic Animal and subsequently stressed on the need for conservation of the endangered aquatic animal, but no significant effort has reportedly been made by the concerned departments for conservation of the endangered species in the world-famous Kulsi river.

Not of nothing, therefore, the Gangetic river dolphins in the Kulsi river are under tremendous threat as their habitat too is being gradually decimated.

Three rivers, namely Ghoga, Drone and Siri converge at a scenic place called Ukium near the Assam-Meghalaya border after flowing down from the Meghalaya hills. The convergence point of these three rivers is known as Kulsi, which merges with the Brahmaputra in Nagarbera area within Kamrup district after meandering over 50 kms.

It may be mentioned here that the Gangetic river dolphin (*Platanista gangetica*) is a unique species and is reportedly found mainly in the Ganges, Meghna and Brahmaputra river systems.

Experts of the river dolphins have said that Kulsi is the only small river, with width measuring 50 to 100 metres only, in which a resident population of Gangetic river dolphins is available throughout the year. But in case of smaller rivers like Jiabharali, Subansiri etc., the species is mainly spotted during the monsoon season.

It is said that the major share of the population of the species is found only in a segment of 10-15 kms on both sides of National Highway-37, where the Kulsi river intersects with NH-37 at Kukurmara near here in Kamrup district, probably because these segments touch several important beels (large waterbodies) which are natural home to an abundant variety of fish species, the main prey base of the Gangetic river dolphins.

The Gangetic river dolphins may be viewed from National Highway-37 if one stands on the Kukurmara bridge over the Kulsi river. In fact, Kulsi was once upon a time a favoured spot for visitors coming to see the unique Gangetic river dolphin.

Sources said that the Kulsi river, a braided tributary of the Brahmaputra, is world famous for having the heaviest concentration of Gangetic river dolphins in Asia, nay, perhaps in the world, though the numbers of this species, as per the local villagers, is gradually coming down due to several factors.

In fact the population of this magnificent endangered species is surely but slowly heading towards total extinction.

Villagers living near the Kulsi river informed that there are about four colonies of Gangetic river dolphins in the Kulsi river at Saportari, Jarabari, No. 1 Ziakur and Kukurmara's Domukha village area in Palasbari LAC of Kamrup district, though the population of Gangetic river dolphins have been dwindling significantly from these colonies.

The largest colony was at Domukha, about 1 km south of Domukha, where around 6-7 Gangetic river dolphins had been witnessed since the last few years though this Correspondent failed to see even a single specimen during a 6-hour-long visit to Domukha in the Kulsi river last week.

"A few years back, there were 25-30 Gangetic river dolphins, but now only 10-15 dolphins have been using the Kulsi river as their habitat", said Jayanta Das, a sand labourer of Kukurmara village, who has been mining sand in the Kulsi river since the last 10 years.

Labourers mining sand in the Kulsi river alleged that ITC Limited, which produces soap under the brand name of Vivel, set up a big wall with several holes in it near Domukha, which is home to the largest colony of Gangetic river dolphins.

Figure 2.1: Elements of Science News (*Source*: The Assam Tribune, May 26, 2021)

Science falls under the **category** of *hard news* when it explains new inventions, findings and discoveries. It can be classified as *soft news* when the writing style amalgamates both information and entertainment. This type of news may be some time old in terms of findings or discoveries but may be relevant in some *context*. For example, the celebration of World Environment Day can be categorized as hard news on 5th June every year. This is because each year the motto of the day differs, people may celebrate the day with innovative ideas and government may adopt new schemes. But when news is written on e.g., *how the quality of air has been degraded in the last five years and its effect on the human body* on the same day or focusing on the life or work of scientists on a significant date, it can be termed as soft news.

Therefore, understanding of *hard news* and *soft news* of journalism is a prime requirement in science news writing as well.

Science News is written in *inverted pyramid style* like other hard news in journalism. In an inverted pyramid style of writing, the most important facts are placed at first followed by the less important details in the body. However, this rule can be modified on some occasions, where elaborate description becomes essential to write a news story. This is termed the *narrative style* of news writing.

An interesting style of science news reporting is that usually, news very often begins with summarizing facts from primary scientific sources like research papers. '...scientists have found that…', '...in a recent paper published in…by scientists…' are some of the common languages of science news. The lead of science reporting may be written in a *simple statement*, *bullet leads style*, *narrative lead* and *surprised* or *paradox lead*.

Discussing What makes a good science story, Nancy Baron in her book *Escape from the Ivory Tower: A Guide to Making Your Science Matter*, identifies a few qualities of good science news. These are *novelty* (what is new and surprising), *passion* (of a journalist), *adventure* (exotic locales, wild animals, extreme weather, and triumphs over difficult circumstances etc.), *overturning conventional wisdom* (present reader with the unexpected), *conflict and controversy* (from both public and scientist's expectation), *just plain cool* (making the story appealing with research and investigations "…look at your work with fresh eyes. What would someone who knows nothing about it find weird, fascinating, or just plain cool?'' example of programmes includes: *Quirks and Quarks*, the Canadian Broadcasting Company's science show, *Turning Point* and *Earth Matters*- the programmes by Doordarshan) *It's Not Necessarily the Whole Story* ("Journalists are usually looking for a "bite" of the story rather than the entire history and chronology of any particular scientific discovery. Thinking in terms of bite-sized pieces can go a long way toward helping journalists find a story that will work for them, their editors, and their audiences").

In science journalism, a reporter should remember that two different expectations work in science news framing: (a) expectations from scientists/ scientific communities and (b) expectations of the public. Scientists expect that people should know the background of their research, their methods while discussing their results. On the other hand, the public needs new findings in the field of science (Figure 2.2). Detail background of methods is not always necessary for the public. Therefore, maintaining the balance of these two expectations remains a challenge for a science reporter.

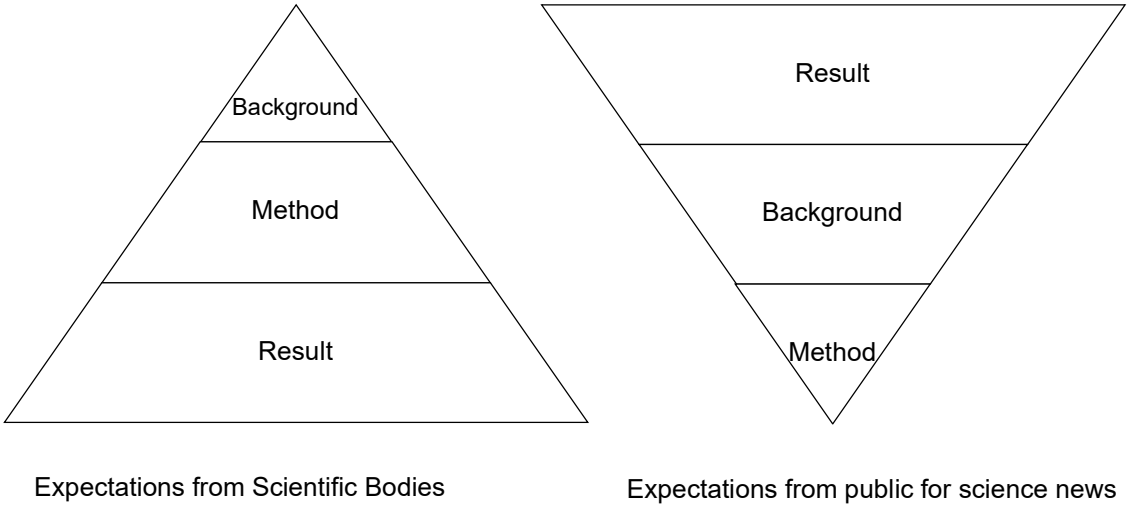


Figure 2.2: A science reporter has to maintain the balance between the expectations of both the scientific body and the public.

4.4 SOURCES OF SCIENTIFIC INFORMATION

Science information can be collected from various sources. Recent technological enhancements have changed the earlier unidirectional model of scientific sources into a multi-dimensional one. The addition of social media sites like blogs and micro-blogging sites such as Twitter has broadened the prospect for science reporters. Professor Bruce V. Lewenstein from Cornell University USA, a pioneer in science and technology communication, in his commentary on "Taking Our Own Medicine: On an Experiment in Science Communication" (2011), mentioned various spheres of Science Communication. Some of these are Government reports, Policy documents, Research news, Websites, Seminars, Lab/Fieldwork, Journals, Meetings, Documentaries, museums, General books, Entertainment media (movies, sitcoms, games), Park Visitor Centers, Patents, Reference works etc. These all are good sources of science reporting. Apart from these, interviews with scientists, community efforts/individual efforts, crises (examples – environmental crisis, health crisis, natural calamities etc.) also make reliable news sources on many occasions (Figure 2.3).



Figure 2.3: Sources of scientific information/news

Like other branches of journalism, it is always the instinct and knowledge for the news of a reporter that helps him to find breaking news.

Before preparing a science report, the following steps must be remembered by science reporters for accuracy and objectivity of news:

(a) **Finding a good source**: Most scientific reporting appears as a result of findings by scientists which get published in academic journals. All the scientific articles might not make a good story all the time. Therefore, the reporter needs to find out which story will be relevant and interesting for the audience.

(b) **Reading the scientific article**: Reading the scientific article leads the reporter to apprehend his story. Ivan Sample, science correspondent of *The Guardian* writes, 'You need to read the introduction for context, the discussion and conclusions for take-home messages, check the methods to find weaknesses and flaws. Also, it is important to spend time on the results. Have the authors omitted key data? Look at odds ratios, error bars, fitted curves and statistical significances. Are the results robust? Do they back up the scientists' conclusions? Read the supplementary material too.'

(c) **Verifying the content**: Before writing, a reporter should verify the content. In this era of fake information, there is overflow of information. As such, a reporter should have an inquisitive mind. For verifying the content, the reporter may directly talk to the writer or may take interviews of other experts from a similar field (the *primary data*). On other occasions, a reporter may also consult materials published earlier (like books/monographs/reviews) or can surf the authentic internet sources (*the secondary data*).

(d) **Understanding of the subject**: Before writing, a reporter should ask himself, do I understand the subject well? If one does not understand the subject matter, it is difficult to explain it clearly to the audience. Moreover, it may lead to wrong presentation of news. For example, while reporting news on *black fungus*, a regional newspaper wrote a headline that, 'Cases of black fungus virus are been reported' (Figure 2.4). This is a wrong headline as; Fungus and Virus are two different types of microorganisms with different features. Such mistakes lead to the loss of credibility for both writer and the media house.

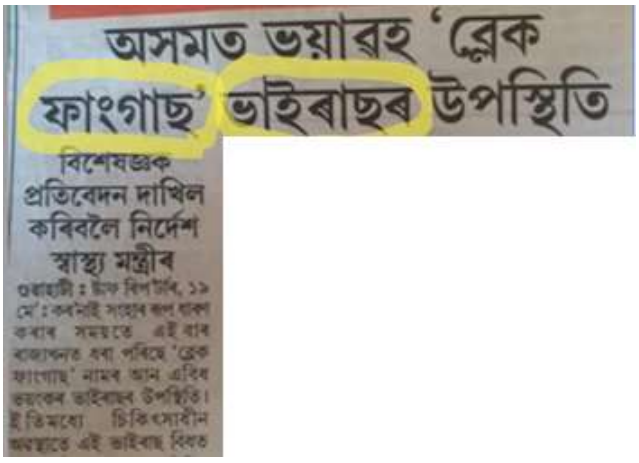


Figure 2.4 Understanding of a subject is important for science writing

(e) **Target audience**: A good writer always remembers the nature of his audience before finalizing the matter.

(f) **Knowing the media**: Every medium has different characteristics of writing. Writing for print medium differs from radio, television and web-based media. Hence, the science reporter must know the type of media he/she is writing for.

(g) **Building the message**: Building the message is a challenge to every science reporter. Comprehending science news is often difficult for common readers. Therefore, the science writer needs to write in a simple language with coherent information. Before the construction of the content framework, the writer should ask himself, 'why my writing should be read by the audience?' In addition, if you can add a relevant picture and photograph to your story, this will generate more interest in the mind of the audience.

4.5 QUALITIES OF A SCIENCE NEWS REPORTER

In his article *Who are the science journalists*? for National Geographic, Ed Young states, 'science journalism is the oeuvre of those who are specifically assigned to write about science'. Considering the amount of responsibility a science reporter has, Young further comments that '…depending on who you ask, they are (*the science journalists*) either the unsung heroes of science outreach or the villains of the piece with blood on their hands.' This is because, many a time, science reporters misunderstand a subject, misquote scientists or media organizations wrongly place a report without understanding the context.

Science reporting is a challenging task. Fiona Fox of the UK's Science Media Centre described science journalism as "a common set of standards including selection, investigation, truth-telling, independence, editing, accuracy, balance, scrutiny, objectivity and so on."

Discussing the need of science journalism and the role of science journalists, Khalil A. Cassimally, in his article, *3 Essential Qualities Up-and-coming Science Writers Should Develop* for *Scientific American* wrote, "communicating science to as many readers as possible is very important especially considering the challenges mankind will face soon. By encouraging non-scientist readers to read (and engage with) science, science writers (*or science journalists here*) can sensitize those readers to the importance and sheer awesomeness of scientific research. In turn, those readers, as citizens, can make more informed decisions as they lobby or elect policymakers".

In a world, dominated by science and technology, science journalists, therefore, have great responsibilities. Qualities of a good science reporter need all the conventional qualities of a reporter along with an interest to communicate science to the public.

(a) **Interest:** The prime requisite of a science reporter is - interest in the subject. In contrast to other branches of journalism, the potential of science journalism has been exponentially proliferated in recent years due to increased investments of Governments and private organizations in scientific research worldwide. New findings in scientific research every day makes science reporting challenging as well as exciting. Great science writers such as Walter Sullivan of the New York Times, and many of the leading science writers of the world, were self-taught, due to their interest in science communication. Science, as a subject, is considered sometimes dull and in other times, as monsters by people. It is therefore essential that before choosing science journalism as a career, a reporter must ensure that he/she has an interest in the subject.

(b) **An appetite for reading**: What late Anthony Tucker, former science editor of the British newspaper *The Guardian* once stated is relevant for science reporters or science writers. According to Tucker, science journalists, 'like all other journalists, must have an insatiable appetite for reading."

(c) **Investigation/ research skills:** As discussed in unit 2.2, a science reporter should have investigative skills for verifying the content before publishing.

(d) **Aptitude for analysis:** A science reporter should have the aptitude to analyse the issues objectively. Findings of new research, its applicability, positive or negative impacts etc. should be the priority of a science reporter as many scientific inventions are directly related to life in the earth in general and humans in specific. Valuing the *context* of research, therefore, holds significance in science reporting. The reporter should learn how to read like a reader before learning how to read like a writer.

(e) **Knowledge:** Knowing what is happening around is significant but science reporting gets momentum if the journalist has prior knowledge of a subject and knows the history or background of the incidents. This is like the stepping stone for a science reporter as prior knowledge helps a reporter to analyze an event from various perspectives.

(f) **Respecting deadline:** Deadline in science reporting may be of two types:

- Timeliness of an event
- Deadline from organization

As news is the most perishable thing in the world, it is essential to know the timeline of an event. A science reporter should be prepared to report a new happening at once.

If needed, a reporter should visit the field to gather information and supporting materials in support of the story. For example, if some animals die in a locality, a science reporter has to consult with concerned departments, experts and local people (if needed), immediately. Likewise, in case of disasters like nuclear blasts, fire in a laboratory, health issues, the science reporter's job is to report an event at the earliest so that necessary measures can be taken to control the situation. A science reporter must not forget that a delayed reporting may not find a news position in a media organization. Maintaining the deadline of the organization is indispensable in science reporting.

(g) **Establishing Network**

Every science reporter wants to make a breaking story. To get first-hand knowledge of happenings, a science reporter should be able to establish a good relationship with scientists and other sources from scientific organizations so that the bonding turns into a strong network for him/her. Moreover, a strong network is always beneficial in case of a follow-up story.

(h) **Command over the language:** A science reporter should have effective communication skills to persuade the minds of the audience. Once the topic is understood, the science reporter should be able to express his idea lucidly. The key coin of a science journalist's connection with the audience is his/her communication skill only. What kind of story you are writing and in which language you are addressing also matter for a science reporter? If you are doing a translation, then you should be conscious so that the meaning does not change and you can maintain the original quality of the author.

(i) **Ethics:** Ethics always remain the backbone of good journalism. Ethics is the morality that defines what is correct or acceptable and what is not. Media ethics rests on both legal and societal dimensions. What is legally acceptable may not be tolerable in a pluralistic country like India on every occasion. This is why media should be concerned about its role as a mirror of society. Studies show that many developmental initiatives failed in developing countries due to non-acceptability from a society. This crucial behaviour at the community level ought to be understood by a science reporter before framing the content. Science in most of the time interwind with culture. This makes the job for a science reporter arduous to differentiate between *duties* and *responsibilities*. This is why a science reporter will have to find out the based possible balanced way to spread the information maintaining social responsibility.

(j) **Is training in science or science communication mandatory**?

Almost all the established science writer of our time believes that having a science degree or training in science is not a mandatory qualification for a science journalist. While asking this question to Mariette DiChristina, the editor-in-chief of *Scientific American* during that time, (It is the oldest continuously published magazine in the United States) at the 2013 American Association for Advancement of Science (AAAS) Annual Meeting Communicating Science seminar, she said, "…science writers the world over have different backgrounds: Some are PhDs, some are journalists, and some have an engineering degree. Any kind of science training is helpful, but in the field, it's not the be-all and end-all. Today, the younger reporters seem to have at least a bachelor's degree in a science discipline and often a master's degree in science writing. But we come at science journalism from all sorts of backgrounds. Scientists devote huge chunks of their lives to knowing something in great depth and detail, and the journalist will know nothing so well, so I can see how we keep scratching our heads at each other. At the end of the day, however, we're all – both scientist and journalist – seeking knowledge".

K. S. Jayaraman, former science correspondent, the Press Trust of India in his article *How do I become a science journalist?* also said that "... Recruiters, however, do not always insist on degrees or diplomas in science journalism. They mostly look for zeal for science writing and the ability to write science stories in a way that the general public can understand".

CHECK YOUR PROGRESS
Q.1: Who is K. S. Jayaraman?
Q.2: Name two acclaimed science journalists of the world.

4.6 WRITING SCIENCE FEATURES AND ARTICLES

Science Features

Features are types of journalistic writing which are based on facts but written in an elaborate, simplified manner for popular consumption on contemporary issues. Feature writers have more freedom than a reporter to cover a subject in an interpretative way. Features are generally read during leisure hours. Hence, the sole aim of a feature is to inculcate the interest of readers towards a subject. The language of feature should be eloquent, fluent and simple. Sometimes, a feature may be presented in a dramatized narrative. The feature is a favourable format in radio broadcasting.

Features go beyond the facts, includes findings of research from a similar field, interviews or individual interpretations and opinions, thereby implanting deeper imagination in the audience mind.

Like other journalistic features, science features may be of different types:

(a) News features (focusing on a subject of recent interest),

(b) Personality feature (biographical write up in general)

(c) Historical feature (based on historical shreds of evidence. Historical science features are considered as one of the most popular types of scientific features these days)

(d) Adventure features (Based on adventures of environmental activists. Such types of features easily grab readers of environmental magazines)

(e) Photo features: A narrative presented through photographs are becoming a widely popular feature attracting readers spontaneously. As visuals are gaining popularity, newspapers and magazines prefer to tell a story through photographs. You should remember that photographs are considered a hundred times more powerful than words.

(f) Features on other issues of public interest: Any topic on human interest can be presented as a feature.

THE ECONOMIC TIMES | Panache

English Edition | 20 August, 2021, 09:41 PM IST | E-Paper

Scientists develop new material that repairs itself without external intervention

Synopsis

Called bipyrazole organic crystals, the piezoelectric molecules self-heal in milliseconds.



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Cluster of raw piezoelectric crystals 3D (Representative Image)

NEW DELHI: Scientists have developed piezoelectric molecular crystals that repair their own mechanical damage without the need for any external intervention, the Department of Science and Technology (DST) said on Saturday. Piezoelectric crystals are a class of materials that generate electricity when it undergoes a mechanical impact.

Devices that are used daily often break down due to mechanical damage, forcing users either to repair or replace them. This decreases the life of the equipment and increases maintenance costs. In many cases, like in a spacecraft, human intervention for restoration is not possible.

"Keeping such necessities in mind, researchers from the Indian Institute of Science Education and Research (IISER) Kolkata, in collaboration with IIT Kharagpur, have developed piezoelectric molecular crystals that repair themselves from mechanical damages without need for any external intervention," the DST said in a statement.

Today, there exists professional organizations called *feature syndicates* which provide well-documented features on a wide range of subjects. Newspapers and other media organizations prefer such features as convenient, immediate and trustworthy to rely on for their publications.

Science Articles

There are large varieties of different scientific articles published by journals. Their names may vary depending upon the publisher. The various author service section of scientific publishing houses generally provides three categories for scientific articles: *Primary scientific articles*

(based on primary research, popularly called as 'paper'), *secondary scientific articles* (based on primary sources. Examples includes books, reviews, monographs etc.)**,** *Tertiary or popular scientific literature* (targeted for popular consumption and hence published in magazines and newspapers). We shall know about these three categories elaborately in Unit 11.

CHECK YOUR PROGRESS
Q.3: What is a 'feature syndicate'?
Q.4: Give examples of secondary scientific information.

4.7 WRITING SCIENCE FICTION

Science fiction, popularly termed Sci-fi is an imaginative storytelling approach related to scientific inventions, discoveries, catastrophizes etc. in the future timeline. Such write up may be types of books, films, novels, stories, drama etc. Bruce Sterling defines science fiction as a form of fiction that deals principally with the impact of actual or imagined science upon society or individuals. The term *science fiction* was popularized in the 1920s by the American publisher Hugo Gernsback. For his contribution, the Hugo Award is given annually since 1953 by the World Science Fiction Society. These achievement awards are given to the top SF writers, editors, illustrators, films, and fanzines (Britannica.com).

Scientific fictions contain plots, sub-plots, time and space, environment, sequences, settings, diction, as well as characters through which writers construct an imaginative story with a scientific base. It is interesting to note that many of the nineteenth-century sci-fi became reality in the twentieth and twenty-first centuries. For example, 'Knight Riders'- a detective TV show projected a car having supercomputer operations leading to auto functioning of the car. Today, it has become a reality. Jules Vern's book 'From the Earth to the Moon' (1865) described the story of three men who prepared a projectile to reach the surface of the moon before it happened in reality.

Today, sci-fi films have become the most popular movie genre among the cine-goers. Examples include A Trip to the Moon (1902), Frankenstein (1931), 2001: A Space Odyssey

(1968), Solaris (1972), Star Wars (1977), E.T. the Extra-Terrestrial (1982), Jurassic Park (1993), Avatar (2009), Gravity (2013), Interstellar (2014) etc. Like the fields of science, sci-fi movies are also becoming diverged about a theme, scientific elements, visual effects and imagery.

French sci-fi writer Jules Gabriel Vern (1828-1905), is considered as the 'father of the science fiction, alongside his English contemporary H. G. Wells (1866-1946) (Cairns, 2020, CNN). Mary Shelly's widely acclaimed book 'Frankenstein' (1918) is considered one of the pioneering works in the field of sci-fi. In India, 'The Runway Cyclone' (1896) by Jagadish Chandra Bose is considered the first example of Indian sci-fi literature. Renowned Marathi writer Jayant Narlikar, legendary filmmaker Satyajit Ray, Hindi writers Naval Bihari Mishra, Yamuna Dutta Vaishnava, Kailash Saha and many others have contributed to the growth of sci-fi in the country. Assamese science fiction literature dates back to Hari Prasad Baruah's story "Birasotiyar Desh" (1937). Some of the prominent science fiction writers of Assamese literature are – Dinesh Chandra Goswami, Ranju Hazarika, Bandita Phukan, Abhijit Sarma Barua Santanu Tamuli among others. *Axomiya Kalpabijnan Galpa Sankalan*, an anthology of Assamese science fiction stories (compiled and edited by Santanoo Tamuly) and brought out by *Sahitya Akademi* (2018) is remarkable addition in understanding the evolutionary trend of sci-fi writing in Assamese.

Rising numbers of popular publications like magazines, newspapers, books, digital platforms have accelerated the popularity of sci-fi literature these days. Some popular sci-fi writers of all times of the world are Jules Verne, Isaac Asimov, Arthur C. Clarke, H. G. Wells, Ray Bradbury, Mary Shelly, Douglass Adams and others.

CHECK YOUR PROGRESS
Q. 5: Give three examples of sci fi movies.
Q. 6: Who wrote the book, 'From the Earth to the Moon' (1865)?

4.8 LET US SUM UP

- Science is a part of beat reporting resembling other areas of beats in journalism. As such, all the elements of news are also visible in science news.
- Before writing science news, science reporters should check it for the accuracy and objectivity of content.
- Science news can be collected from various sources. Like other branches of journalism, it is always the nose for the news of a reporter that helps him to find a breaking news
- Interest, an appetite for reading, research skills, knowledge, respecting deadline: establishing a network, command over the language, respect for ethics are considered as some of the basic qualities of a science reporter.
- The basic objective of Scientific writings like features, articles and science fiction is to disseminate scientific information in a reader-friendly way so that science does not remain Greek for common people.

4.9 FURTHER READING

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4.10 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q No 1: K. S. Jayaraman is the former science correspondent of the Press Trust of India.

Ans to Q No 2: Walter Sullivan of the New York Times and Mariette DiChristina, the editor-in-chief of *Scientific American.*

Ans to Q No 3: Feature syndicates are professional organizations that provide well-documented features on a wide range of subjects that are taken by news organisations.

Ans to Q No 4: Examples of secondary scientific writings are: books, reviews, monographs.
Ans to Q No 5: Examples of sci-fi movies are: 'Star Wars, 'Jurassic Park' and 'Day After Tomorrow'.

Ans to Q No 6: The book was written by *Jules Gabriel Vern.*

4.11 POSSIBLE QUESTIONS

A. Short Questions (Answer each question in about 150 words)

Q.1: What are the sources of science news?

Q 2: What are the sources of scientific information? Mention with examples.

Q 3: What are the various types of science features?

B. Long Questions (Answer each question in about 300-500 words)

Q. 1: State the basic qualities of a good science news reporter.

Q 2: What are the basic steps that a science reporter should adopt before presenting science news to maintain credibility? Discuss.

Q 3: What are the qualities of good science news, according to Nancy Baron? Illustrate with examples.

Q 4. Discuss the important steps a reporter should remember before preparing science news.

Q 5. What are the elements of science news? Identify the elements of science news from the given example.