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# DAPOLI URBAN BANK SENIOR SCIENCE COLLEGE, DAPOLI

# Eureka

*E-info letter*

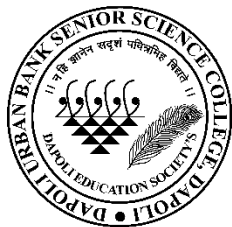
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Sign /-

(Dr. S.P. Jagadale, Principal)

(The editor and publisher may not agree with the views expressed in articles.)

## *Globba marantina L.*

### Beautiful and very rare plant in Konkan



*Globba marantina* is an herbaceous, perennial plant with erect, unbranched stems up to 50cm tall. Stems 20-60 cm high, erect or drooping; root of fleshy fibres. Leaves elliptic-lanceolate or oblong-lanceolate, distichous, shortly petiolate. Racemes or spikes 5-8.7 cm. Flowers yellow. Capsule oblong, terete, smooth.

**Fls. &Frts.** : August-November. It is reported from sacred grove of Sadavli of Dapoli Tahasil

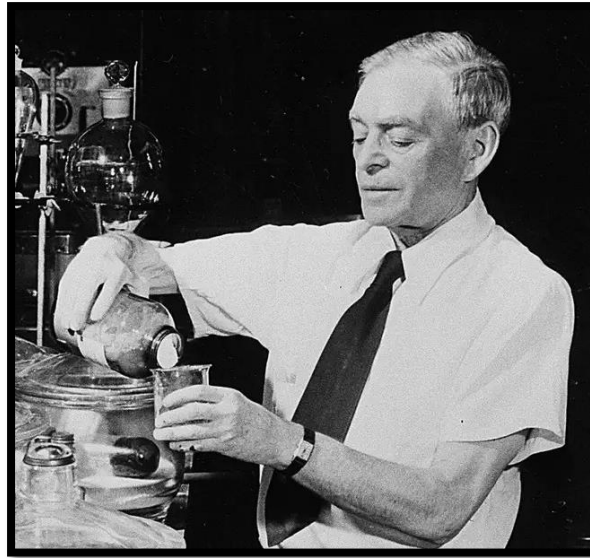
**Uses :** The plant is harvested from the wild for local use as a food and medicine. The small bulbils are used as a flavoring somewhat spicy; they can be eaten fresh or dried. They are also used in the same way as cardamom because of their pleasant, not pungent taste. The small bulbils are used to stimulate the appetite. Ethnomedicinally roots and leaves of *G. marantina* is claimed to be used in the management of asthma, rheumatoid arthritis, cough, cold, snakebite and others. Rhizome extract is given orally for abortion.

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*Article by*  
*Dr. R.L. Ghalme*  
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## Casimir Funk: The scientist who gave us the word 'vitamin'



Casimir Funk, the Polish biochemist who coined the term “vitamins” for the vital class of molecules that help keep us alive, is the subject of today’s Google doodle. There have been theories of how food affects health for millennia. In ancient Greece and Rome, early physicians invented “humoral” theory, which stated that foods must have the right balance of wet, dry, hot and cold to keep the body’s four essential humours – fire, earth, blood and phlegm – in check. Much later, physicians made more distinct associations, such as the observation that consuming citrus fruits like lemons helped to prevent the disease scurvy in sailors on long voyages.

In the late 19th century, scientists were trying to figure out the cause of beriberi disease, which can affect a person’s nervous or cardiovascular system and is today known as a vitamin B1 deficiency. In 1897, Christiaan Eijkman published a study based on experiments in chickens, proposing that diets containing brown rice were

protective against beriberi, compared with those consisting of only white rice.

Casimir Funk read Eijkman’s paper and set himself the task of finding the chemical compound that gave brown rice its protective properties. In 1912, Funk managed to isolate a chemical that he thought was responsible and found it contained a characteristic nitrogen compound called an amine, so he named it a vital amine, or vitamine. When scientists eventually realised that vitamins didn’t necessarily need to contain an amine group, they dropped the final “e”.

Funk suggested that similar compounds might exist for many other “deficiency diseases”, as he called them, writing: “We will speak of a beriberi and scurvy vitamine, which means a substance preventing that special disease.” Funk also correctly suggested that vitamins existed that prevented the diseases pellagra and rickets.

The compound that Funk isolated and dubbed an “anti beriberi factor” was what we now call vitamin B3, or niacin, which doesn’t actually prevent beriberi.

Two years earlier, Japanese scientist Umetaro Suzuki isolated vitamin B1 from brown rice and correctly identified its role in preventing beriberi. However, his work was published in a Japanese journal and the first Western translation, in German, failed to note that it was a new discovery.

In the 35 years after Funk's initial finding, scientists discovered the rest of the vitamins, which number 13 in total, including eight kinds of vitamin B and vitamins A, C, D, E and K. Funk continued working with vitamins, and for pharmaceutical companies, for the rest of his career. He produced the first widely used vitamin concentrate in the US, called OSCODAL, which contains liquid vitamin A and D.

While vitamins are recognised as helping to prevent certain diseases, their use as supplements is still debated by scientists. A recent meta-analysis found there isn't good evidence that supplements and vitamins protect against cancer or heart disease for most people.

**Reference:**

<https://www.newscientist.com/>

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# Agreements Opposed To Public Policy

## Introduction

Some agreements or contracts are said to oppose public policy if they promote breach of the law of land, or of the policy underneath an agreement or seems to degrade or injure the state or its citizens. Public Policy refers to the policies of government for the welfare of society, It can also be said that if any agreement contravenes any developed interest of society or morals of time, it can be said to be as against public policy and the agreement turns to be void.

Some agreements are given below..

### 1. Interference with course of justice-

Any agreement with judges, or officers of justice is declared void by applying unreasonable influence in changing the decision or wavering of the liabilities from the accused or by interfering with the court proceeding may led the agreement void. Agreements or contracts that are causing infringement of a statue or vocative of public policy will not be enforced by law.

### 2. Trading with enemy

Any agreement done by two parties in different countries at the time of war with another country then that agreement will be considered as void. The agreements will only come into force when there is peace between the countries.

### 3. To create interest against duty

Agreement which binds or forces government servants to not perform the duty. So as to indulge in corrupt practices. If any individual enters into a contract or agreement with a public servant which is inconsistent with public policy. Such agreements are void.

### 4. Suicide

In many prominent countries like England, suicide commission by person with sound mind is known as felode sec[3] is said to void in claims of the person who has committed suicide are not entitled to insurance claims as it is opposed to the public policy as he committed such actions intestate.

### 5. Sale of Public Offices

Agreement which affect public offices and appointments of officials, in public dealing may lead to the invalidation of agreement. Many people practice the selling of the positions which are recommended for the government employees but by the virtue of corruption they tend to sell those seats with hefty sums of money. Such types of agreements are opposed to the public policy as equal opportunity should be granted and this would amount to unfair for those who struggled.

### 6. Waiver of Illegality

Some agreements which tend to waive an illegality may be considered void as declared in public policy. The evidence provided by one side or the other, if illegality appears then it amounts to void agreement, being opposed to public policy. Many evidence are tainted on the basis of waiving of obligation which is immoral. It may also be as the original contract.

### 7. Marriage Procurement Contract

Agreements done with regard to marriage which impose unreasonable restriction, reward or if a stranger is appointed to procure his wife and pay some amount of money make the agreement opposed to public policy. Marriages done without the consent or

with force for obtaining unfair advantage, or doing business may lead marriage void on the ground of agreement opposed to public policy.

### **Conclusion**

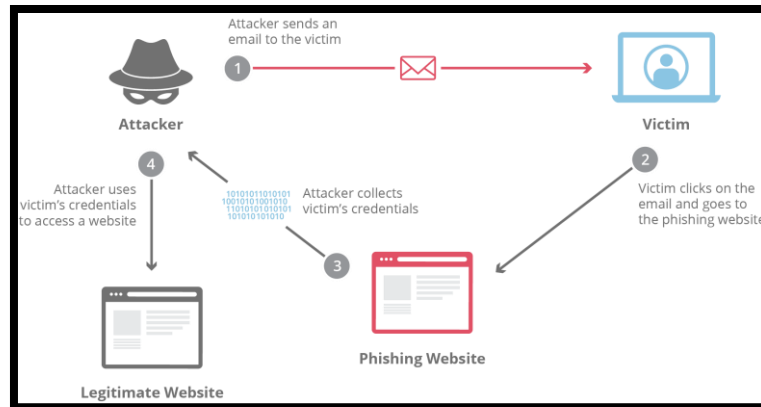
Public policy is the right way to set things for like-minded people as to what opinion they have about a certain law, made by the government as in the long run what should be the right way for future generation laws should be made inconsistent with the particular obligation. Public policy is one such instrument through which people in today's society can shape tomorrow's world government can maximize the well-being of the citizens therefore policies are made which do not violate public policy.so, every citizen should follow the rules regulation of our country to maintain peace and stability.

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# Phishing Attack



## What is Phishing attack?

“Phishing” refers to an attempt to steal sensitive information, typically in the form of usernames, passwords, credit card numbers, bank account information or other important data in order to utilize or sell the stolen information. By masquerading as a reputable source with an enticing request, an attacker lures in the victim in order to trick them, similarly to how a fisherman uses bait to catch a fish.

## How is Phishing Carried Out?

The most common examples of phishing are used to support other malicious actions, such as [on-path attack](#) and [cross-site scripting](#) attacks. These attacks typically occur via [email](#) or instant message, and can be broken down into a few general categories. It’s useful to become familiar with a few of these different vectors of phishing attacks in order to spot them in the wild.

### Advanced–fee scam :-

This common email phishing attack is popularized by the “Nigerian prince” email, where an alleged Nigerian prince in a desperate situation offers to give the victim a large sum of money for a small fee upfront. Unsurprisingly, when the fee is paid, no large sum of money ever arrives. The interesting history is that this type of scam has been occurring for over a hundred years in different forms; it was originally known in the late 1800s as the Spanish Prisoner scam, in which a con artist contacted a victim to prey on their greed and sympathy. The con artist is allegedly trying to smuggle out a wealthy Spanish prisoner, who will reward the victim handsomely in exchange for the money to bribe some prison guards.

This attack (in all its forms) is mitigated by not responding to requests from unknown parties in which money has to be given to receive something in return. If it sounds too good to be true, it probably is. A simple Google search on the theme of the request or some of the text itself will often bring up the details of the scam.

### Account deactivation scam :-

By playing off the urgency created in a victim who believes an important account is going to be deactivated, attackers are able to trick some people into handing over important information such as login credentials. Here’s an example: the attacker sends an email that appears to come from an important institution like a bank, and they claim the victim’s bank account will be deactivated if they do not take action quickly. The attacker will then request the login and password to the victim’s bank account in order to prevent the deactivation. In a clever version of the attack, once the information is entered, the victim will be directed to the legitimate bank website so that nothing looks out of place.



This type of attack can be countered by going directly to the website of the service in question and seeing if the legitimate provider notifies the user of the same urgent account status. It's also good to check the URL bar and make sure that the website is secure. Any website requesting a login and password that is not secure should be seriously questioned, and nearly without exception should not be used.

### **Website forgery scam :-**

This type of scam is commonly paired with other scams such as the account deactivation scam. In this attack, the attacker creates a website that is virtually identical to the legitimate website of a business the victim uses, such as a bank. When the user visits the page through whatever means, be it an email phishing attempt, a hyperlink inside a forum, or via a search engine, the victim reaches a website which they believe to be the legitimate site instead of a fraudulent copy. All information entered by the victim is collected for sale or other malicious use.

In the early days of the Internet, these types of duplicate pages were fairly easy to spot due to their shoddy craftsmanship. Today the fraudulent sites may look like a picture-perfect representation of the original. By checking the URL in the web browser, it is usually pretty easy to spot a fraud. If the URL looks different than the typical one, this should be considered highly suspect. If the pages listed as insecure and [HTTPS](#) is not on, this is a red flag and virtually guarantees the site is either broken or a phishing attack.

### **What is spear phishing :-**

This type of phishing is directed at specific individuals or companies, hence the term [spear phishing](#). By gathering details or buying information about a particular target, an attacker is able to mount a personalized scam. This is currently the most effective type of phishing, and accounts for over 90% of the attacks.

### **What is clone phishing :-**

Clone phishing involves mimicking a previously delivered legitimate email and modifying its links or attached files in order to trick the victim into opening a malicious website or file. For example, by taking an email and attaching a malicious file with the same filename as the original attached file, and then resending the email with a [spoofed email](#) address that appears to come from the original sender, attackers are able to exploit the trust of the initial communication in order to get the victim to take action.

### **What is whaling :-**

For attacks that are directed specifically at senior executives or other privileged users within businesses, the term whaling is commonly used. These type of attacks are typically targeted with content likely to require the attention of the victim such as legal subpoenas or other executive issues.

Another common vector of this style of attack is whaling scam emails that appear to come from an executive. A common example would be an email request coming from a CEO to someone in the finance department requesting their immediate help in transferring money. Lower-level employees are sometimes fooled into thinking the importance of the request and the person it's coming from supersede any need to double check the request's authenticity, resulting in the employee transferring large sums of money to an attacker.

*Article by -*

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## Limiting environmental impacts through unused or expired medicine



Pharmaceuticals are widely considered as essential for maintaining human and animal health, but many of us do not consider their impact beyond treating infections and disease. In fact, residues from medicine can become an environmental concern when they enter the environment. This can happen in a myriad of ways – not just from improperly discarded unused or expired medicine, but also after they are consumed and excreted. While it is hard to address the latter, the former is more straightforward.

Flushing antibiotics down the toilet or pouring unused liquid medicine into the sink leads to leakage into freshwater systems. Alarmingly, most conventional wastewater treatment plants are not designed to remove these pharmaceutical residues. Medicines thrown away amongst residual household waste can also enter the environment when this waste is landfilled. A significant share of household medicine is thrown away, with volumes growing steadily due to increased consumption. Household medicines remain unused for various reasons.

An early recovery, therapy changes, non-adherence, or prescription and purchasing

errors can lead to medicines remaining unused. Studies in the United States estimated that up to 42% of prescription drugs remain unused and six out of ten patients reported having leftover opioids after the completion of their treatment. In France, an estimated 17,300 tons of pharmaceuticals became waste in 2019, approximately 260g per capita.

Meanwhile, pharmaceutical consumption is rising, driven by an ageing and growing population, a rise of chronic health conditions and changes in clinical practice. Unused or expired medicines harm our environment and can present a public health risk. Improper disposal of unused or expired medicine is widespread and results not only in wasted healthcare Resources but poses significant risks for environmental contamination. Eco toxicological studies show worrying effects of pharmaceuticals on ecosystem health. Observed impacts on wildlife include traces of oral contraceptives causing the feminization and reproductive failure of fish and amphibians, as well as residues of psychiatric drugs altering fish behavior. There are also serious risks to human health including accidental

poisoning or intentional misuse if unused medicines are not stored and disposed of safely. As well, leaked antibiotics can contribute to the development of antimicrobial resistant bacteria, rendering treatment ineffective and posing a serious risk to public health.

What needs to be done to minimize and better manage pharmaceutical household waste?

1. Avoid medicine waste when possible
2. Improve collection and treatment of unavoidable waste
3. Raise awareness

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*Article by -  
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# Vancomycin



Vancomycin is an antibiotic medication that explicitly targets gram-positive bacteria responsible for a wide range of infections. It is available as oral formulations or intravenous solutions. It is one of the few antibiotics that successfully works on bacteria highly resistant to other antibiotics. For this reason, the use of vancomycin is limited to the treatment of serious bacterial infections. It is available under the brand name Vancomycin.

## What are the uses of vancomycin?

Vancomycin is one of the strongest antibiotics used against bacteria such as *Staphylococcus* and *Streptococcus*. Vancomycin, in its oral formulations, is used for the treatment of serious bacterial intestinal infections. Vancomycin has been successfully used to treat enterocolitis, pseudomembranous colitis, and other types of bacterial intestinal infections. The drug acts on the intestinal bacterial to stop their growth. Vancomycin can also be administered intravenously to fight skin, bone, and joint infections.

## What are the side effects of vancomycin?

Vancomycin can have a variety of side effects. The drug can induce vomiting, nausea, and stomach pain very commonly. Apart from the gastrointestinal side effects, vancomycin can also induce tinnitus or the sensation of ringing sounds in the ears. It can reduce urination or produce black urine

as its side effect on the kidney. Vancomycin can also lower body potassium levels causing complications such as heart flutter, cramps, and constipation.

**Mode of action** - Vancomycin stops the growth of gram-positive bacteria. It does so by inhibiting the cross-linking between the structural units of the bacterial cell wall. This results in the weakening of the structural integrity of the bacteria, ultimately leading to death. Contact our medical experts to gain more knowledge about vancomycin

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**Article by:**

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# Exploring the Mysteries of the Moon: The Chandrayaan Missions

## INTRODUCTION

The Moon, Earth's closest celestial neighbor, has long fascinated humankind with its enigmatic beauty and its profound influence on our planet's tides, cultures, and imagination. In the pursuit of unraveling the lunar mysteries and expanding our knowledge of the lunar landscape, India embarked on a remarkable journey with its Chandrayaan missions.

The word "Chandrayaan," derived from the Sanskrit words "chandra" (moon) and "yana" (craft), aptly encapsulates the essence of these missions – they are lunar craft, designed to venture into the enigmatic realm of the Moon. Through these missions, the Indian Space Research Organisation (ISRO) has made a significant mark in the field of space exploration, joining the League of Nations engaged in lunar exploration.

The Chandrayaan missions represent a series of ambitious lunar expeditions undertaken by India, each with its unique objectives and scientific goals. These missions have not only advanced our understanding of the Moon but have also brought India to the forefront of lunar research. They have ignited the imaginations of scientists and space enthusiasts around the world and set the stage for future lunar exploration.

This article takes you on a journey through India's Chandrayaan missions, exploring their key highlights, discoveries, and significance in the realm of lunar exploration. From Chandrayaan-1, the maiden mission that made groundbreaking discoveries, to Chandrayaan-2, the ambitious venture that captured global attention, and beyond, we will delve into the missions' objectives, challenges, and the

exciting possibilities they hold for the future.

Join us as we embark on a celestial journey, where science, technology, and the thirst for knowledge come together to reveal the lunar mysteries hidden within the vast expanse of the Moon. The Chandrayaan missions exemplify India's unwavering commitment to pushing the boundaries of space exploration and advancing our understanding of the cosmos.



## Chandrayaan-1: India's Lunar Triumph

In the annals of space exploration, India's Chandrayaan-1 mission stands as a remarkable testament to scientific ambition, technological prowess, and international collaboration. Launched on October 22, 2008, by the Indian Space Research Organisation (ISRO), Chandrayaan-1 was India's first lunar exploration mission. Over the course of its brief but eventful journey, this spacecraft not only discovered water molecules on the Moon's surface but also played a pivotal role in advancing our understanding of Earth's nearest celestial neighbor.

### Mission Objectives

The Chandrayaan-1 mission had several key objectives:

1. **Mapping the Lunar Surface:** One of the primary goals was to create a high-resolution, 3D map of the Moon's surface. This mapping was crucial for future lunar missions and scientific research.

2. Studying Lunar Topography: The spacecraft aimed to analyze the Moon's mineral composition and terrain, providing valuable insights into its geological history.

3. Detecting Water on the Moon: Chandrayaan-1 was equipped with instruments capable of detecting water molecules on the lunar surface, shedding light on the Moon's past and potential resources.

4. Exploring the Moon's Poles: The mission sought to investigate the Moon's polar regions, where water ice deposits were suspected to exist.

### **The Journey to the Moon**

Chandrayaan-1 embarked on its journey to the Moon aboard India's Polar Satellite Launch Vehicle (PSLV-C11). After a successful launch, it entered lunar orbit on November 8, 2008. The spacecraft's initial phase involved a series of orbit adjustments and checks to prepare for its scientific objectives. Once in orbit, Chandrayaan-1 began its meticulous mapping of the Moon's surface using its Terrain Mapping Camera (TMC) and Hyperspectral Imager. These instruments provided valuable data on lunar topography and mineral composition, contributing to our understanding of the Moon's geological history.

### **Discovering Water on the Moon**

One of the most significant discoveries made by Chandrayaan-1 was the presence of water molecules on the lunar surface. This discovery was made possible by the Moon Impact Probe (MIP), which was released from the spacecraft and crash-landed near the Moon's south pole. The MIP's Moon Impact Spectrometer (MIS) detected traces of water vapor, confirming the presence of water molecules on the Moon. This discovery had profound implications for future lunar exploration and potential human colonization efforts. Water is essential for sustaining life and can be used to generate oxygen and hydrogen

for rocket fuel. The presence of lunar water raised hopes of establishing a sustainable human presence on the Moon in the future.

### **Chandrayaan-1's Unexpected End**

Unfortunately, Chandrayaan-1's mission came to an unexpected end on August 29, 2009, when ISRO lost contact with the spacecraft. The exact cause of this communication failure remains unclear, but it marked the conclusion of Chandrayaan-1's operational phase. Despite its premature end, the mission had achieved many of its scientific objectives. The spacecraft had completed over 3,400 orbits of the Moon and had transmitted a wealth of data back to Earth, including detailed maps of the lunar surface and critical findings related to water on the Moon.

### **Legacy and Impact**

Chandrayaan-1's legacy extends far beyond its operational life. It demonstrated India's growing capabilities in space exploration and paved the way for future ambitious missions. ISRO's successful launch and management of the mission garnered international recognition and respect. The discovery of water on the Moon by Chandrayaan-1 ignited interest from space agencies worldwide. Subsequent lunar missions, such as NASA's Lunar Reconnaissance Orbiter and the Chinese Chang'e series, built upon the findings of Chandrayaan-1 and further explored the Moon's resources and potential for human exploration.

Chandrayaan-1 also highlighted the importance of international collaboration in space exploration. India cooperated with various nations, including the United States, in sharing data and expertise, fostering an environment of global cooperation in lunar research.

### **Chandrayaan-2: India's Ambitious Lunar Mission**

In the annals of space exploration, India etched its name with the launch of Chandrayaan-2, a ground-breaking lunar

mission that captured the world's attention. This ambitious venture, initiated by the Indian Space Research Organisation (ISRO), aimed to build on the success of its predecessor, Chandrayaan-1, and further India's reputation as a spacefaring nation. With a vision to unravel the mysteries of the Moon, Chandrayaan-2 embarked on a journey filled with challenges and triumphs.

### **The Genesis of Chandrayaan-2**

The inception of Chandrayaan-2 can be traced back to Chandrayaan-1, India's maiden lunar mission launched in 2008. Chandrayaan-1 made significant discoveries, including the detection of water molecules on the Moon's surface. This success served as a catalyst for the development of Chandrayaan-2, a more complex and ambitious mission. Chandrayaan-2 was officially announced in 2007, and its primary objectives were to conduct a detailed study of the Moon's topography, mineral composition, and exosphere. Additionally, it aimed to examine the presence of water ice on the lunar south pole and explore the Moon's origin and evolution.

### **The Structure of Chandrayaan-2**

Chandrayaan-2 comprised three major components: the Orbiter, the Lander named Vikram, and the Rover named Pragyan. Each component had specific tasks and responsibilities, working in tandem to achieve the mission's objectives.

1. **The Orbiter:** The Orbiter was the spacecraft that would remain in orbit around the Moon. It was equipped with a suite of scientific instruments designed to study the Moon's surface, measure the composition of the exosphere, and capture high-resolution images.

2. **The Lander (Vikram):** Vikram was designed to make a soft landing near the lunar south pole. It carried the Pragyan Rover, which was intended to explore the Moon's surface and conduct experiments. Vikram was equipped with a variety of

scientific instruments, including a seismometer and a thermal probe, to study the Moon's geology and thermal properties.

3. **The Rover (Pragyan):** Pragyan was a six-wheeled robotic rover designed to explore the lunar surface, collect data, and conduct experiments. It was equipped with instruments such as an alpha particle X-ray spectrometer and a laser-induced breakdown spectroscope to analyze the Moon's composition.

### **The Launch and the Journey**

Chandrayaan-2 embarked on its journey to the Moon on July 22, 2019, with a successful launch atop India's most powerful rocket, the GSLV Mark III. The launch marked a significant milestone for ISRO, demonstrating its capability to undertake complex interplanetary missions. Following its launch, Chandrayaan-2 embarked on a series of Earth-bound maneuvers and lunar orbit insertion maneuvers to gradually reach its intended orbit around the Moon. These precise maneuvers showcased ISRO's expertise in celestial navigation.

### **The Challenges Faced**

However, not all stages of Chandrayaan-2's mission were smooth sailing. The most critical moment, the soft landing of Vikram on the lunar surface, proved to be a nail-biting ordeal. As Vikram descended towards the Moon on September 6, 2019, it encountered a deviation from its intended trajectory, and communication with the lander was lost. The entire world watched anxiously as ISRO attempted to re-establish contact with Vikram. Unfortunately, the attempt was unsuccessful, and Vikram was declared lost.

### **The Orbiter's Triumph**

While Vikram's loss was undoubtedly a setback, the Orbiter continued to circle the Moon and functioned exceptionally well. In fact, it surpassed its expected mission life and continued to send

valuable data and images back to Earth. The Orbiter's longevity and success highlighted the resilience and adaptability of ISRO's technology.

### Scientific Discoveries and Contributions

Despite the challenges faced during the soft landing, Chandrayaan-2 made significant scientific contributions. The data collected by the Orbiter, including detailed images of the lunar surface and the Moon's exosphere, provided valuable insights into the Moon's geological history. Additionally, the detection of water ice in the polar regions had profound implications for future lunar exploration and resource utilization.

### Chandrayaan-2's Legacy

Chandrayaan-2 demonstrated India's prowess in space exploration and bolstered ISRO's reputation on the global stage. While the soft landing did not go as planned, the mission's overall success in achieving its scientific objectives and the endurance of the Orbiter were noteworthy achievements. Furthermore, Chandrayaan-2 paved the way for future lunar missions, both by India and international collaborators. The mission's findings about the Moon's water ice and geological features generated renewed interest in lunar exploration, setting the stage for potential future missions focused on resource utilization and sustained lunar presence.

### Chandrayaan-3

Chandrayaan-3 has made history by becoming the first mission to soft-land on the lunar South Pole, a region that has never been explored before. The mission aimed to demonstrate safe and soft lunar landing, rover mobility, and in-situ scientific experiments.

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# Diseases of Aquatic Animals

Like people and terrestrial animals, aquatic animals can contract infectious diseases that can be brought on by pathogens like bacteria and viruses fungus parasites protozoa. While illness and infection are common in aquatic creatures, under some circumstances they can become rather serious. These can include the spread of novel diseases within a community or factors that encourage the spread of disease, including stress on the hosts. Aquatic ecosystems that are in good health support a wide variety of plants, fish, and fauna. The health and survival of aquatic animal populations are under unprecedented threat from invasive species, environmental pollutants, habitat changes, water scarcity, and climate change. The frequency and severity of disease in aquatic populations can be directly impacted by these environmental factors. In the upper Chesapeake Bay Watershed, for instance, recurring fish kills are linked to a variety of opportunistic diseases that thrive in stressed fish populations. Within two weeks of entering the maritime environment, an estimated 80% of endangered young Puget Sound steelhead trout perish, and the potential role of disease in these losses is being studied. The Great Lakes fishery, which is believed to be worth \$7 billion a year, was affected by the introduction of the viral hemorrhagic septicemia virus (VHSV), which led to widespread fish deaths and the identification of the virus in 28 distinct fish species. Research into sea star wasting illness has been prompted by the millions of dead sea stars on North

America's west coast. Through field surveillance, research to support the development of mitigation methods, and ecological assessments of aquatic animal diseases, experts from the U.S. Geological Survey (USGS) are helping managers with these concerns.

Certain illnesses and ailments that affect fish can spread to people through the fish or the water they are raised in. While the ingestion of fish infections by humans is a very uncommon occurrence, those handling and/or consuming farmed seafood must be aware of the potential health risks. This includes fish farmers. The type of organism (viral, parasitic, or bacterial), the host's susceptibility (immune-compromised individuals, open wounds), and environmental factors (water quality, fish spine penetration depth) all affect the likelihood of disease transmission from fish to humans. The majority of pathogenic agents that can be transferred from fish to people are bacteria. *Aeromonas hydrophila* bacteria that seldom cause serious infections

Typically in those with weakened immune systems; septicemia, cellulitis, or muscular necrosis. *Botulinum Clostridium* generates botulinum toxins, which can lead to botulism from inadequately processed food, and is occasionally discovered in the digestive tract of fish. can cause paralysis of the muscles and breathing system. Fatigue, vertigo, vomiting, diarrhoea, constipation, and abdominal swelling are some of the early symptoms. Agents that do not cause

bacterial diseases include: Parasites and harmful algae

Unhealthy algae and parasites People are non-traditional hosts for a number of parasite infections. Humans contract them by eating raw or undercooked contaminated fish. Human infections are known to be caused by nematodes and trematodes. Additionally, harmful algae (diatoms and dinoflagellates) can build up in shellfish and make people sick. Muscle aches, gastrointestinal issues, and neurological abnormalities are examples of clinical signs.

### **Viral illnesses**

Viral diseases from contaminated waters can bio-accumulate in shellfish, including clams, mussels, and oysters. Hepatitis, fever, respiratory ailments, and gastroenteritis can all result from eating contaminated shellfish. The NSW Food Authority oversees a stringent food safety programme for the cultivation of commercial shellfish. Optimal farm layout, proper handling and husbandry of fish, management of water quality, and frequent fish health checks will lower the possibility of disease transmission from fish and their surroundings to aquaculture personnel.

The following actions should be done to lessen the chance that aquatic animal diseases will spread:

To prevent harm to both fish and fish handlers, fish should be anaesthetized before handling. Fish handling should always be done with gloves on.

Small cuts should be cleaned up completely with clean water and treated with an antiseptic. A medical professional should be consulted for more serious illnesses and

injuries. Any injuries that result from "fish handling" should be reported to the doctors.

Employees with weakened immune systems or underlying medical conditions (such as diabetes, liver disease, cancer, or HIV) should not handle fish since they are more vulnerable. Employees with cuts, abrasions, or open wounds shouldn't handle fish or the waters used for fish rearing. To reduce the risk to employees, hygienic codes of practice and excellent aquaculture procedures are crucial. Preventing these diseases will be greatly aided by informing employees about the frequency of these hazards.

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