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E-info letter

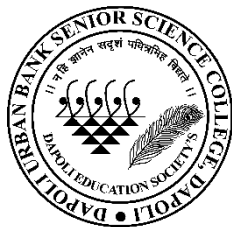
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Sign /-

(Dr. S.P. Jagadale, Principal)

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

Ethno medicinal Uses

- Botanical Name** : *Lygodium flexuosum* (L.) Sw. Schrad.
- Common Name** : Chitrangi, Malya, Wanashiwel, jakhamjodi.
- Family** : Schizaeaceae



Lygodium flexuosum (L.) Sw. Schrad.

Ethno medicinal Observations-

1. Decoction of fronds is applied to treat chronic cuts and wounds.
2. Juice of young plant about one teaspoonful once a day during bed time is prescribed to anthelmintic for expulsion of intestinal worms.
3. Decoction of fronds is drunk to cure jaundice.
4. Frond juice is used as ant rheumatic.
5. The rhizome paste is applied on piles.

Field observation:

Common on moist and shady localities found throughout the Ratanagiri district.

Reference-

Vikram P. Masal (2011), Ethno medicinal and phytochemical studies of some Pteridohytes of Ratnagiri District of Maharashtra (INDIA) Ph.D. Thesis Shivaji University Kolhapur.

Article by
Dr. Vikram Masal
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New ways to suck up methane can buy us vital time in the climate fight

As it is emitted from livestock and leaky pipes, methane also reacts with nitrous oxides to make the gas ozone close to Earth's surface. Here, ozone causes people breathing problems and is linked to a million premature deaths globally each year.

If we could scrub the air of methane, it would help stop temperatures rising, buying us some time to reduce our other carbon emissions. For every billion tonnes of methane removed from the atmosphere, Earth's surface temperature would be reduced by a roughly 0.2°C, according to recent estimates from Rob Jackson at Stanford University in California and his colleagues. "It's not easy, but if we can work out the chemistry, I think it's a fantastic opportunity," says Jackson.

Technologies for capturing CO₂ have been around for years. The gas given off in power station flues can be trapped by binding it to solvents in a reversible chemical reaction, and that CO₂ can then be imprisoned deep underground. But those same solvents can't absorb methane as easily. One reason for this is that methane molecules are a different shape, meaning those solvent molecules don't pack around them so easily.

One solution is to forget about capturing methane and instead chemically convert it to CO₂.

Releasing extra CO₂ into the air might sound foolish, but given how bad methane is, it may be a positive move. "Every molecule of methane released into the air eventually ends up as carbon dioxide anyway," says Jackson. "All we're trying to do is speed up the transition." Most US states are already using this idea to tackle methane leaking from landfill sites, using a cover impregnated with microbes that convert methane to CO₂.

Alternatively, we might employ zeolites, materials that are riddled with atomic-scale tunnels that molecules can fit inside. Certain zeolites can absorb methane and then catalyse a reaction that turns it into methanol, which can be used in the chemical industry. Chemists have already found hundreds of zeolites that do this job to some extent. This technology isn't mature, but Jackson thinks it has great promise.

Article by

Miss. Pooja Potkar

Department of Chemistry

GDP: Key Player in Changing Global Economic Scenario

The important thing to remember is that government spending, investment, and consumption all include imports. The real GDP breakdown appears to be as follows:

GDP = Domestically produced consumption + Imported consumption + Domestically produced investment + Imported investment + Government spending on domestically produced stuff + Government spending on imported stuff + Exports – Imports

The total monetary or market worth of all the finished goods and services produced within a nation's boundaries during a certain time period is known as the gross domestic product (GDP). It serves as a thorough assessment of the state of the economy in a particular nation because it is a wide indicator of total domestic production.

Even while GDP is frequently estimated on a yearly basis, it can also be calculated quarterly. For instance, the government of the United States produces an annualised GDP estimate for both the calendar year and each fiscal quarter. Each piece of data in this report is presented in real terms, which means that it has been adjusted for price changes and is therefore net of inflation.

Nominal GDP is a measurement of economic output in an economy that considers current prices. It does not adjust for inflation or the rate of price increases, which can overstate the growth rate.

In order to distinguish the effects of inflation or deflation from the trend in output over time, the number of goods and services produced by an economy in a particular year is expressed as its real GDP, which is an inflation-adjusted metric. Prices are held constant from year to year. GDP is susceptible to inflation because it is

dependent on the monetary value of goods and services.

The foreign balance of trade is particularly significant among all the factors that contribute to a nation's GDP. When domestic producers sell more products and services to foreign nations than domestic consumers buy from foreign consumers, the gross domestic product (GDP) of that nation tends to rise. A nation is said to have a trade surplus when this occurs. A trade deficit exists when the entire amount of goods purchased by domestic consumers from abroad exceeds the total amount of goods that domestic producers may sell to consumers abroad. In this scenario, a nation's GDP is likely to decline. As a result, while imports are deducted from GDP at the equation's conclusion, they are also added to its earlier components. To put it another way, imports are first added to GDP and then again deducted. Therefore, imports have no overall impact on GDP.

Considering this, how are imports ever considered to be produced within a nation's borders? The recent example from Russia reveals this phenomenon thoroughly.

Russia no longer releases comprehensive monthly trade figures. However, it is possible to determine what is happening using data from its trading partners. They claim that Russia is maintaining a record trade surplus as imports decline and exports remain stable.

China stated on May 9th that its imports from Russia increased by more than 56% while its exports of commodities to Russia decreased by over a quarter in April compared to a year earlier. In March, Germany recorded a 62% monthly decline in exports to Russia and a 3% monthly decline in imports. By adding together these



The Economist

movements among eight of Russia's largest economic partners, we calculate that while exports have increased by 8%, imports have decreased by around 44% since the invasion of Ukraine.

Analysts predict that as a result, Russia's trade surplus will reach new highs in the upcoming months. The current-account surplus in 2022, which includes trade and some financial flows, could total \$250 billion, or 15% of the previous year's gross domestic product, more than twice the \$120 billion reported in 2021. It is unfortunate in critics' opinion, because sanctions have increased Russia's trade surplus and so helped finance the conflict. The effectiveness of financial sanctions may have peaked while the next step remains is to decide whether to tighten trade sanctions.

Using time series data from 1976 to 2015, the link between India's gross domestic product (GDP), exports, and imports was analysed. It was found that when first difference is considered, the

GDP, export, and import series become stationary. The empirical finding indicates that India's GDP, exports, and imports have a long-term co-integrating connection. Changing scenarios of the global economy poses great challenges for Indian economy to put up with rising path of economic growth where GDP, import and exports will play the part of queen on chess board!

References

- <https://www.economist.com/finance-and-economics/2022/05/13/russia-is-on-track-for-a-record-trade-surplus>
- https://www.rajmr.com/ijrhs/wp-content/uploads/2017/11/IJRHS_2015_vol03_issue_07_09.pdf
- <https://www.investopedia.com/terms/g/gdp.asp>
- <https://econforeverybody.com/2022/05/18/imports-exports-and-gdp/#respond>

Article by

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Operating System

What is an operating system?

An operating system (OS) is the program that, after being initially loaded into the computer by a boot program, manages all of the other application programs in a computer. The application programs make use of the operating system by making requests for services through a defined application program interface (API). In addition, users can interact directly with the operating system through a user interface, such as a command-line interface (CLI) or a graphical UI (GUI).

Why uses an operating system?

An operating system brings powerful benefits to computer software and software development. Without an operating system, every application would need to include its own UI, as well as the comprehensive code needed to handle all low-level functionality of the underlying computer, such as disk storage, network interfaces and so on. Considering the vast array of underlying hardware available, this would vastly bloat the size of every application and make software development impractical.

Instead, many common tasks, such as sending a network packet or displaying text on a standard output device, such as a display, can be offloaded to [system software](#) that serves as an intermediary between the applications and the hardware. The system software provides a consistent and repeatable way for applications to interact with the hardware without the applications needing to know any details about the hardware.

As long as each application accesses the same resources and services in the same way, that system software the operating system can service almost any number of applications. This vastly reduces the amount of time and coding required to develop and debug an application, while ensuring that users can control, configure and manage the system hardware through a common and well-understood interface.

Which also include:

Once installed, the operating system relies on a vast library of device [drivers](#) to tailor OS services to the specific hardware environment. Thus, every application may make a common call to a storage device, but the OS receives that call and uses the corresponding driver to translate the call into actions (commands) needed for the underlying hardware on that specific computer. Today, the operating system provides a comprehensive platform that identifies, configures and manages a range of hardware, including processors; memory devices and memory management; chipsets; storage; networking; port communication, such as Video Graphics Array (VGA), High-Definition Multimedia Interface ([HDMI](#)) and Universal Serial Bus (USB); and subsystem interfaces, such as Peripheral Component Interconnect Express ([PCIe](#)).

Operating system types and examples although the fundamental roles of an operating system are ubiquitous, there are countless operating systems that serve a wide range of hardware and user needs.

General-purpose operating system. A general-purpose OS represents an array of operating systems intended to run a multitude of applications on a broad selection of hardware, enabling a user to run one or more applications or tasks simultaneously. A general-purpose OS can be installed on many different desktop and laptop models and run applications from accounting systems to databases to web browsers to games. General-purpose operating systems typically focus on process (thread) and hardware management to ensure that applications can reliably share the wide range of computing hardware present.

Common desktop operating systems include the following:

- Windows is Microsoft's flagship operating system, the de facto standard for home and business computers. Introduced in 1985, the GUI-based OS has been released in many versions since then. The user-friendly Windows 95 was largely responsible for the rapid development of personal computing.
- Mac OS is the operating system for Apple's Macintosh line of PCs and workstations.
- Unix is a multiuser operating system designed for flexibility and adaptability. Originally developed in the 1970s, Unix was one of the first operating systems to be written in the C language.
- Linux is a Unix-like operating system that was designed to provide PC users a free or low-cost alternative. Linux has a reputation

as an efficient and fast-performing system.

Mobile operating system. Mobile operating systems are designed to accommodate the unique needs of mobile computing and communication-centric devices, such as smartphones and tablets. Mobile devices typically offer limited computing resources compared to traditional PCs, and the OS must be scaled back in size and complexity in order to minimize its own resource use, while ensuring adequate resources for one or more applications running on the device. Mobile operating systems tend to emphasize efficient performance, user responsiveness and close attention to data handling tasks, such as supporting media streaming. Apple iOS and Google Android are examples of mobile operating systems.

Article by -

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Preparation of Biodynamic Farming



Biodynamics is a holistic, ecological, and ethical approach to farming, gardening, food, and nutrition. Biodynamics is rooted in the work of philosopher and scientist Dr. Rudolf Steiner, whose 1924 lectures to farmers opened a new way to integrate scientific understanding with a recognition of spirit in nature. Biodynamics has continued to develop and evolve since the 1920s through the collaboration of many farmers and researchers. Around the world, biodynamics is alive in thousands of thriving gardens, farms, vineyards, ranches, and orchards. The principles and practices of biodynamics can be applied anywhere food is grown, with thoughtful adaptation to scale, landscape, climate, and culture.

The main principles of Biodynamic Agriculture are:

- To create a diverse and balanced farm ecosystem that can support itself from within the farm.
- To restore the soil through the incorporation of organic matter
- To treat soil as a living system
- To create a system that brings all factors which maintain life into balance
- To encourage the use and importance of green manure, crop rotation and cover crops
- Treat manure and compost in a biodynamic way, and have knowledge of enzymes and

In terms of sustainability biodynamic agriculture is one of the most sustainable agricultural practices in modern day farming. It has no adverse effects on the environment, produces no waste, as everything that would typically be deemed as waste, is recycled to other parts of the farm. Hormones.

Preparation

Specific Biodynamic measures have now been in use for more than 65 years. Many farmers and gardeners know their effects from practical experience. Experimental evidence has also been produced, which has added to the available empirical knowledge. The measures include two groups of specifically fermented substances, which are called preparations. The first group includes 6 different herbal substances; they are numbered 502-507 and are added in small amounts to manures and composts. So they are collectively called as compost preparations. These numbers are arbitrary, having been chosen by those who first produced the preparations. The second group includes the sprays; they are numbered as 500 and 501.

Although not considered one of the eight main preparations, a ninth preparation, sometimes referred to as 508 is made by boiling the horse tail plant and is applied only in excessively wet years to prevent fungal diseases.

BD 500 Cow horn manure

It is basically fermented cow dung. It is the basis for soil fertility and the renewal of degraded soils. It is buried in Sept./Nov and lifted in Feb/March. This is the period when the earth is breathing in and comic earth forces are most active (winter).

References

- <https://justagriculture.in/files/magazine/special/ct/006%20BIODYNAMIC%20FARMING.pdf>
- https://agritech.tnau.ac.in/ta/org_farm/orgfarm_biodynmic.html

Article by -

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HIV (Human Immunodeficiency Virus)

What is HIV?

HIV (*human immunodeficiency virus*) is a virus that attacks cells that help the body fight infection, making a person more vulnerable to other infections and diseases. It is spread by contact with certain bodily fluids of a person with HIV, most commonly during unprotected sex (sex without a condom or HIV medicine to prevent or treat HIV), or through sharing injection drug equipment. If left untreated, HIV can lead to the disease AIDS (*acquired immunodeficiency syndrome*).

The difference between HIV and AIDS is that HIV is a virus that weakens your immune system. AIDS is a condition that can happen as a result of an HIV infection when your immune system is severely weakened. You can't get AIDS if you aren't infected with HIV. Thanks to treatment that slows down the effects of the virus, not everyone with HIV progresses to AIDS. But without treatment, almost all people living with HIV will advance to AIDS.

Transmission of HIV

The transmission of HIV requires contact with a body fluid that contains the virus or cells infected with the virus. HIV can appear in nearly any body fluid, but transmission occurs mainly through blood, semen, vaginal fluids, and breast milk. Although tears, urine, and saliva may contain low concentrations of HIV, transmission through these fluids is extremely rare, if it occurs at all.

HIV is not transmitted by casual contact (such as touching, holding, or dry kissing) or by close, nonsexual contact at work, school, or home. No case of HIV transmission has been traced to the coughing or sneezing of an infected person or to a mosquito bite. Transmission from an

infected doctor or dentist to a patient is extremely rare.

HIV is usually transmitted in the following ways:

- Sexual contact with an infected person, when the mucous membrane lining the mouth, vagina, penis, or rectum is exposed to body fluids such as semen or vaginal fluids that contain HIV, as occurs during unprotected sexual intercourse
- Injection of contaminated blood, as can occur when needles are shared or a health care worker is accidentally pricked with an HIV-contaminated needle
- Transfer from an infected mother to a child before birth, during birth, or after birth through the mother's milk

Symptoms

After the first month or so, HIV enters the clinical latency stage. This stage can last from a few years to a few decades. Some people don't have any symptoms during this time, while others may have minimal or nonspecific symptoms. A nonspecific symptom is a symptom that doesn't pertain to one specific disease or condition.

These nonspecific symptoms may include:

- headaches and other aches and pains
- swollen lymph nodes
- recurrent fevers
- night sweats
- fatigue

HIV is still transferable during this time even without symptoms and can be transmitted to another person. However, a person won't know they have HIV unless they get tested. If someone has these symptoms and thinks they may have been exposed to HIV, it's important that they get tested.

HIV symptoms at this stage may come and go, or they may progress rapidly. This progression can be slowed

substantially with treatment. With the consistent use of this antiretroviral therapy, chronic HIV can last for decades and will likely not develop into AIDS, if treatment was started early enough.

Treatment:

Currently, there's no cure for HIV/AIDS. Once you have the infection, your body can't get rid of it. However, there are many medications that can control HIV and prevent complications. These medications are called antiretroviral therapy (ART). Everyone diagnosed with HIV should be started on ART, regardless of their stage of infection or complications.

ART is usually a combination of two or more medications from several different drug classes. This approach has the best chance of lowering the amount of HIV in the blood. There are many ART options that combine multiple HIV medications into one pill, taken once daily.

Each class of drugs blocks the virus in different ways. Treatment involves combinations of drugs from different classes to

- Account for individual drug resistance (viral genotype)
- Avoid creating new drug-resistant strains of HIV
- Maximize suppression of virus in the blood.

References

- <https://www.mayoclinic.org/diseases-conditions/hiv-aids/diagnosis-treatment/drc-20373531>
- <https://www.healthline.com/health/hiv-aids>.

Article by:

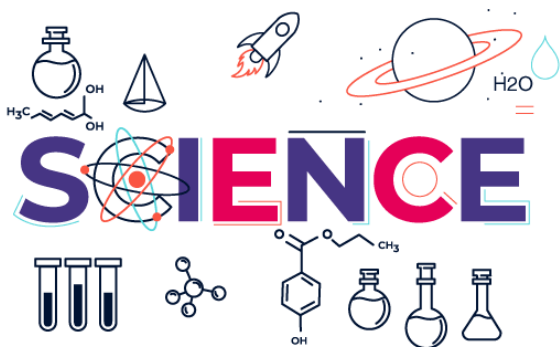
Miss. Priyanka Salvi

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History of Science

Science is the human effort to understand the natural world's history and the natural world's working with observable physical evidence. In this article, we will be discussing more science, its subcategories, and most importantly, the *origin and history of science*.

What is Science?



Science is the intellectual and practical activity comprising the systematic study of the structure and behaviour of every natural and physical object and phenomena through observation and experiment. In simple terms, Science is knowledge of nature. *Science can be defined as:*

The observation, identification, description, experimental investigation, and theoretical explanation of natural phenomena.

Basic Science can be subdivided into three types:

- ❖ **Natural Sciences** – The study of the material world
- ❖ **Social Sciences** – The study of people and societies
- ❖ **Formal Sciences** – Like Mathematics

Origin of Science

The history of science is the study of the development of science and scientific knowledge in both natural sciences and social science. A scientist is a person who

systematically studies science to acquire knowledge to further describe the natural world in a scientific method. The term 'Scientist' was first coined by William Whewell in the 19th century.

- Earlier, advice and knowledge used to flow vocally from generation to generation. For example, there are pieces of evidence that even before the development of the writing system, the cultivation of maize was domesticated.
- The scientific revolution brought a change in ancient thought and classical physics. Nicolaus Copernicus re-modeled the heliocentric model of the solar system described by Aristarchus of Samos. Johannes Kepler developed the very first model of planetary motion in the early 17th century, which suggested that the planets follow elliptical orbits, with the Sun at one focus of the ellipse.

Galileo, also known as the Father of Modern Physics, also contributed to this revolution by validating physical theories through his experiments. These theories became the prime factor of the scientific method—William Gilbert, with various experiments with magnetism and electricity, established that the Earth itself is magnetic. The scientific revolution enhanced the growth of knowledge, and by the end of the 20th century, the practice of this subject became professionalised and institutionalised. Gradually subjects like Physics, Chemistry, Geology, Astronomy, Biology, medicine and genetics, Ecology & Social sciences, etc., evolved.

Here are some of the astonishing facts:

- The average human body carries ten times more bacterial cells than human cells.

- 20% of Earth's oxygen is produced by the Amazon rainforest.
- Chalk is made from trillions of microscopic plankton fossils.
- If you took out all the empty space in our atoms, the human race could fit in the volume of a sugar cube.
- There are actually over two dozen states of matter.
- Venus is the only planet to spin clockwise.
- It takes 8 minutes, 19 seconds for light to travel from the Sun to the Earth.
- 41 new species are discovered by scientists every single day.
- The human stomach can dissolve razor blades.
- A cloud can weigh over a million pounds.

***Article by:
Prof. D.D. Kulkarni
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Liger

Kingdom	:	Animalia
Phylum	:	Chordata
Class	:	Mammalia
Order	:	Carnivora
Family	:	Felidae
Genus	:	Panthera
Species	:	leo♂ × tigris ♀



Information:

The Liger is a hybrid. It is the offspring of a male Lion and a female Tiger. This means that the Liger has parents that are different species, but the same genus. Ligers only exist in captivity today, because the habitats of the parental species do not overlap out in the wild. They typically grow much larger than either parent species. The Liger is not a new hybrid as they date back to the early 19th century in India. The name was coined to describe the creature in the 1930s. The Liger has appeared in art as far back as 1798 when a color plate depicted one, and in 1825 a Liger and its parents appeared in an engraving. A pair of Liger cubs born in 1837 were even put on display for King William IV and Queen Victoria who succeeded him. They are large, muscly and male ligers will have a mane, like a male lion, but often shorter than their father's. They have dark tawny fur, with broad heads. They often have feint tiger stripes, inherited from their mother. Ligers are fond of swimming, just like Tigers (lions don't like water), and are also quite sociable, just like lions.

Interesting Liger Facts

The Liger is the largest known cat in the world. Male Ligers can reach a length of 10 to 12-feet which makes them slightly larger than even large male lions or tigers in length. They weigh considerably more than a Tiger or Lion. A non-obese male Liger named Hercules was recognized as being the largest living cat on Earth in 2013, when he weighed a total of 922 pounds. He measured 3.33 m (131 in) and stood at 1.25 m (49 in) at the shoulder.

Reference:

<https://factanimal.com/ligers/>

Article by
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