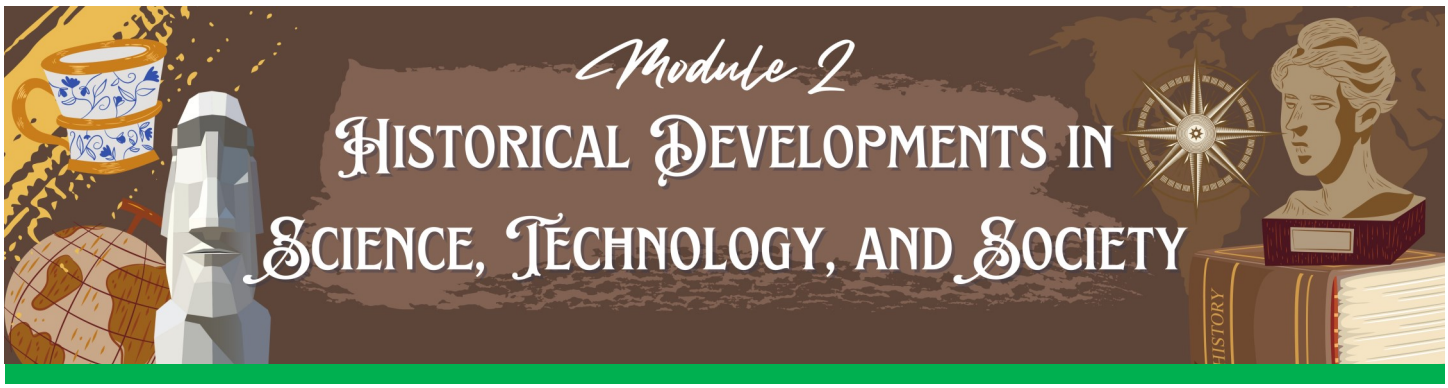


Learning Outcomes and Performance Indicators:

1. Explain the interconnections of science, technology, and society throughout the history.
2. Recognize notable contributions of the different civilization to the development of science, technology, and society.
3. Create an infographic of the major contributions of each era on the development of science, technology, and to the society.
4. Discuss the scientific and technological developments in the Philippines.

Content Outline

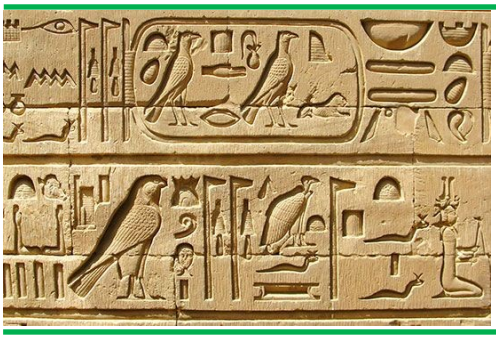
1. Historical Development of Science, Technology and Society during the:
   - Ancient Civilizations
   - Middle Ages
   - Modern Era
2. Historical Developments of Science and Technology, and Society in the Philippines.

INTRODUCTION

The history of science obviously includes many different facts about things which happened at various times in the past. Yet simply compiling a list of such facts does not suffice for genuine history. For this, it is necessary to bring out the relationships between facts, indicating where there is continuity and where there is a break with the past. The history of science has thus to take into consideration the process by which science comes into being, that's to say, the various stages of its development. It's sometimes necessary in this connection to take into account the personalities of scientists themselves, in order to understand how they came to their various conclusions.

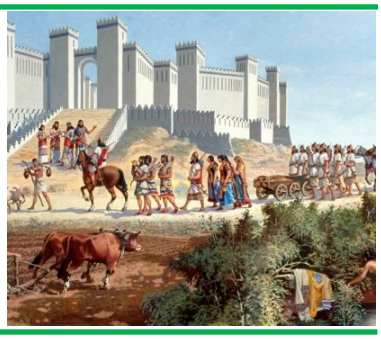
Not only must the history of science talk about 'facts', it must also talk about 'results', or about the diffusion within the wider scientific community of a particular piece of research. What happens here is that something which was the property of one individual becomes a sort of 'common good', and in the process gains a certain 'objectivity'. As soon as a result is published, it no longer belongs exclusively to the man who discovered it: it is now in the public domain.

What does this imply? It implies that other people may now find a significance of their own in what was discovered. They can adopt a given result for their own purposes and put it to uses which were not those of the original researcher.



ANCIENT CIVILIZATION

The ancient civilization focused more on transportation, navigation, communication, record-keeping, mass production, security and protection, health, aesthetics, and architecture.



Sumerian Civilization

The Sumerian civilization is considered as the cradle of early civilization, which transpired in Mesopotamia (modern day Iraq) region of the Fertile Crescent between the Tigris and Euphrates rivers.

CUNEIFORM. One of the major contributions of the Sumerians is the first writing system known as cuneiform which is first developed by the ancient Sumerians of Mesopotamia around 3500-3000 BCE. It is a system that utilizes word pictures and triangular symbols which are carved on clay using wedge instruments and then left to dry. Sumerians keep records of things with great historical value of everyday life. All of the great Mesopotamian civilizations used cuneiform until it was abandoned in favor of the alphabetic script at some point after 100 BCE. When the ancient cuneiform tablets of Mesopotamia were discovered and deciphered in the late 19th century CE, they would literally transform human understanding of history. Prior to their discovery, the Bible was considered the oldest and most authoritative book in the world.

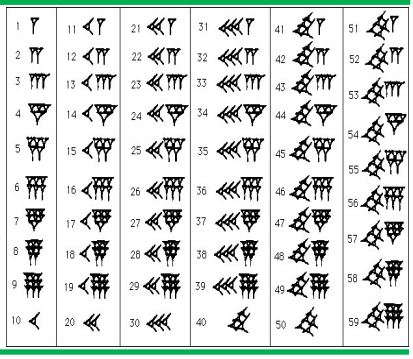
URUK CITY. It is considered the first true city in the world, the origin of writing, the first example of architectural work, the origin of the ziggurat, and the first city to develop the cylinder seal which the ancient Mesopotamians used to designate personal property or as a signature on documents. The city of Uruk is a great wonder for the way it is erected. The Sumerians were able to build the city using only mud or clay from the river, which they mix with reeds, producing sun -baked bricks – a true engineering feat.

THE GREAT ZIGGURAT OF UR. Pyramidal stepped temple tower that is an architectural and religious structure characteristic of the major cities of Mesopotamia (now mainly in Iraq) from approximately 2200 until 500 BCE. The ziggurat was always built with a core of mud brick and an exterior covered with baked brick.

Babylonian Civilization

The Babylonian civilization flourished from approximately 1900 to 539 BC in the central and southern regions of Mesopotamia. The original dwellers of Mesopotamia (Sumerian and Akkadians) were incorporated to the Babylonian empire after the invasion of dynastic kings. Along with this political and geographical dominance, the cities of the Babylonian empire became rich centers of learning, especially in the areas of astronomy, astrology (including the division of the night sky into a zodiac of constellations), mathematics, and medicine.

The **BABYLONIAN MATH** as seen by the scholars to be rather advance. The inscribed calculation methods on clay tablets shows multiplication table, addition, subtraction, sexagesimal, and also fractions. Additionally, they even use the "Pythagorean Theorem" long before it was known. Babylonian science was all practical and always used for the good of the state. For instance, advanced math was used to divide farmable land into plots that resulted in not only standard, rectangular parcels, but also triangular and even polygon plots of land. They also used math to produce sige equipment and other facets of warfare.



ASTRONOMY AND ASTROLOGY. Today the Babylonians are perhaps best known for their astronomical observations, but astronomy and astrology played a subordinate role in mathematics for quite some time in Babylonian history. After several dynasties, astronomy became more important and associated with religion which led to astronomers to begin mapping out constellations, dividing thirty-six into three circles represented by the gods Anu, Ellil, and Ea. Planets were associated with different deities and ziggurats in the city which became temples, scribal schools, and celestial observatories.

All forms of science were used for the king and state in ancient Babylon, which also included astrology. For the Babylonians, astrology consisted of making temporal predictions and decisions based on the movements of the celestial bodies. After observing the planets and stars, Babylonian scientists would suggest to the king such things as when and where to plant crops, when to pursue diplomacy, and when to go to war.

BABYLONIAN CALENDARS. The Babylonians were able to create calendars that were more accurate than those produced by their contemporaries because their calendrical observations were aided by advances in astronomy and math, which helped to iron out potential problems. The Babylonian calendar pave way for Greek and Jewish scholars to predict eclipses. The year began on spring equinox. It is a lunisolar calendar with years consisting of 12 lunar months. Each month beginning when a new crescent moon was observed. Months consist of 29-30 days. To keep the year 352 days, a month was added every 3 years or so. Months were divided into weeks-each week had 7 days Each day consisted of 24 hours, each hour consisted of 60 minutes, and each minute consisted of 6o second.

Egyptian Civilization

Ancient Egypt -- a land of mysteries. No other civilization has so captured the imagination of scholars and laypeople alike. Mystery surrounds its origins, its religion and its monumental architecture: colossal temples, pyramids and the enormous Sphinx. The Egyptian pyramids are the most famous of all the ancient monuments, the only remaining wonder of the seven wonders of the ancient world. The Egyptian civilization thrived in the Nile river which provided abundant amount of water and rich soil enabling them to advance in agriculture.

The Egyptians also believed that the body and soul were important to human existence, in life and in death. Their funerary practices, such as mummification and burial in tombs, were designed to assist the deceased find their way in the afterworld. The tombs were filled with food, tools, domestic wares, treasures -- all the necessities of life -- to ensure the soul's return to the body so that the deceased would live happily ever after.

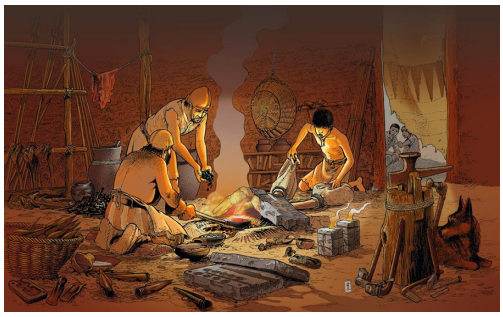

OBELISK


SUNDIAL


CLEPSYDRA

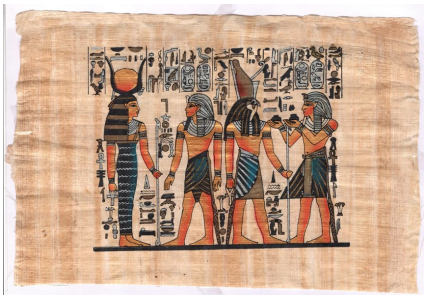
EGYPTIAN CLOCKS. The Egyptians were among the first to formally divide their days into parts resembling hours. The Obelisk, sundial, and Clepsydra are the devices that they used to tell the time of the day. The Obelisk and Sundial uses the light from the sun creating shadows. The Clepsydra on the other hand uses the gradual flow of water to tell time.

METALLURGY. The Egyptians figured out how to extract copper, iron, bronze from mines and many others but their greatest was gold. Mines supplied thousands of jobs for the people and gods were created based on the metals. These metals were then melted down and put into casts to create the many figurines and extravagant gold creations that they are known for. They also used similar techniques to make glass, which was very important in daily life.



COSMETICS. Kohl has been worn traditionally since the Protodynastic Period of Egypt (ca. 3100 BCE) by Egyptian queens and noble women, who used stibnite (the sulfide of antimony rather than of lead). The cosmetic palettes used for its preparation assumed a prominent role in the late Predynastic Egyptian culture. Kohl was originally used as protection against eye ailments. There was also a belief that darkening around the eyes would protect one from the harsh rays of the sun.

PAPER OR PAPYRUS. Papyrus is a plant (Cyperus papyrus) which once grew in abundance, primarily in the wilds of the Egyptian Delta but also elsewhere in the Nile River Valley, but is now quite rare. Besides writing, papyrus was used as a food source, to make rope, for sandals, as window shades, material for toys such as dolls, as amulets to ward off throat diseases, & even to make small fishing boats.

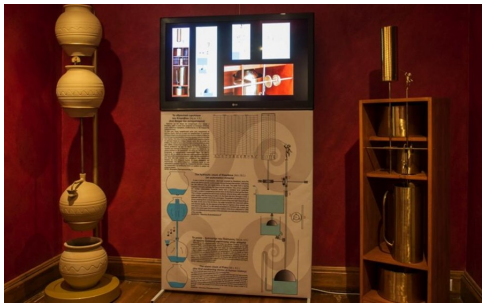


HEIROGLYPHIC WRITING. A system that employs characters in the form of pictures. Those individual signs, called hieroglyphs, may be read either as pictures, as symbols for pictures, or as symbols for sounds.

Greek Civilization

Numerous scientific and technological advances were accomplished by the Ancient Greeks. Greek philosophers started to adopt new perspectives on the world. They developed hypotheses about how the universe operated and believed that the natural world adhered to a set of rules that could be observed and understood via research.

WATER MILL. The water mill helped with the production of rice, beans, and cereals.



ALARM CLOCK. One of the most utilized gadgets that was invented by the ancient Greeks. The first alarm clock was made with the dripping of water, causing a rock to fall onto a gong at a set time. Although the alarm clock during that time did not resemble the present-day alarm clock, the purpose was just the same- to tell an individual when to stop and when to start.

EARLIEST PRACTICE OF MEDICINE. They created doctor to patient confidentiality, and they also started to notice that diseases were curable (Ancient History Lists). Some of the diseases included leprosy, diabetes, anemia, and plague (Ancient Greece Mythology Diseases).

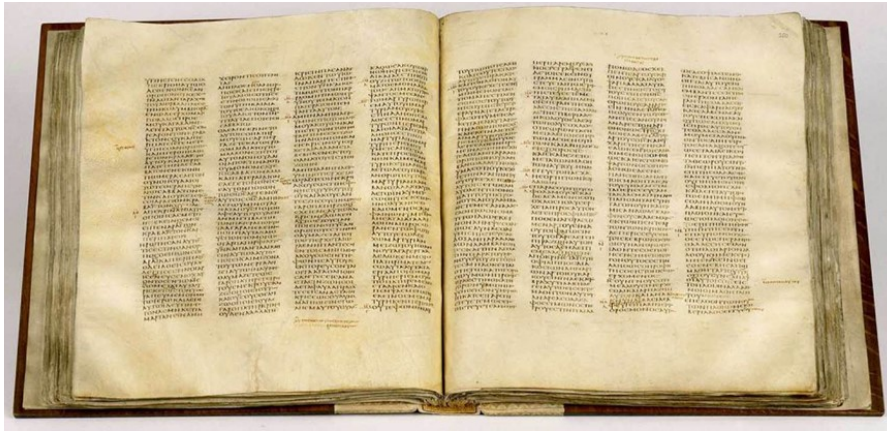
BIOLOGY. Greeks were avid students of the natural world, which included studying living things. The History of Animals is a book that Aristotle composed after conducting extensive research on animals. He had a long-lasting impact on zoologists by categorizing animals based on their many traits. Aristotle's work was carried on by other Greek scientists who studied and classified plants.

CRANE. The Greeks invented the crane to help lift heavy items such as blocks for constructing buildings.

Roman Civilization

As they did in other areas like combat, art, and theater, the Romans incorporated older Greek science for their own goals, assessing it, and then adopting or rejecting what was most helpful. The practical contributions the Romans made to the development of disciplines like architecture, engineering, and medicine, which were supported by advancements in sciences like geometry, physics, and biology, the traditional historical perspective that the Romans had no noteworthy sciences of their own has been reevaluated.

BOUND BOOKS (OR CODEX). A codex (Latin for block of wood, book; plural codices) is a book in the format used for modern books, with separate pages normally bound together and given a cover. Although the modern book is technically a codex, the term is used only for manuscripts. The codex was a Roman invention that replaced the scroll (Links to an external site.), which was the first book form in all Eurasian cultures.



THE COLOSSEUM. The Flavian Amphitheatre is one of Rome's most famous buildings and enduring monuments to the culture of the ancient Romans. Romans were famous for their advancement in architecture and engineering. Before the Romans, the most commonly used building style was the post and lintel. This way of building was of course limited in the weight it could carry and therefore the span between the supports. The Romans changed all this and advanced this by introducing new methods of architecture; The Columns and The Arches. With these methods the romans were able to construct bigger temples and buildings than ever before.

Chinese Civilization

Science and technology have made significant contributions throughout China's long and diverse history. Ancient Chinese philosophers made notable contributions to science, technology, mathematics, and astronomy in antiquity, independent of Greek philosophers and other cultures. Traditional Chinese medicine, acupuncture, and herbal medicine were also practiced in China. It is also in China where the first comets, solar eclipses, and supernovae were observed.

PAPER MAKING. Papermaking is one of the great inventions in china. It was invented by an official of the Imperial Court named Tsai Lun. He was the first recorded inventor of paper circa 105 A.D. He created a sheet of paper using inner bark of a mulberry tree and other bast fibers along with fishnets, old rags, and hemp waste (Needham Tsai Lun presented paper and a papermaking process to the Chinese Emperor and that was noted in the imperial court records. There may have been papermaking in China earlier than 105 A.D.) Tsai Lun's invention of paper is considered one of the most amazing and important inventions of all time, because it enabled China to create and develop their civilization quickly and eventually it helped us advance in our civilization as well.

GREAT WALL OF CHINA. One of the largest building-construction projects ever undertaken. The Great Wall actually consists of numerous walls—many of them parallel to each other—built over some two millennia across northern China and southern Mongolia. Although lengthy sections of the wall are now in ruins or have disappeared completely, it is still one of the more remarkable structures on. The Great Wall was designated a UNESCO World Heritage site in 1987.

MIDDLE / MEDIEVAL AGES

The start of the middle ages was marred by massive invasions and migrations. Wars were prevalent during this time. As such, great technology was needed in the fields of weaponry, navigation, mass food and farm production, and health. The wars have resulted in population decline, but during the latter part of the period, there was a significant rise in population. Trade and commerce among nations increased, which resulted in greater demands for transportation technology. Some of the most innovative minds came from this period.

Early Middle Age

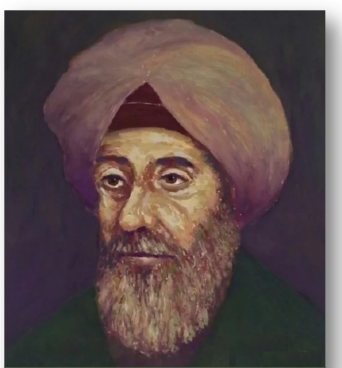
The early medieval period is also considered by historians as the Dark Ages in Western Europe. The country was filled with war and became barbaric which impeded the development of scientific works and destruction of written works of the Romans. However, evidences states that the era has scientific and technological advances despite the constant war and barbarism. Monastic studies kept some of the scientific processes alive. Monks in western Europe studied medicine to cure the sick, astronomy to observe stars and set date to important Easter, and mathematics and geometry. The advancement of science and technology may be slower in western Europe, it still laid a foundation the flowing medieval periods.

Despite the dark ages in Europe, the Islamic community advance their understanding in science and mathematics, translating Greek and other ancient text into Arabic.

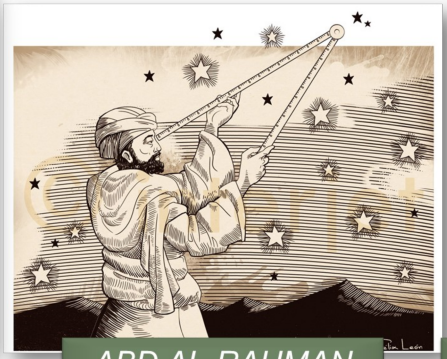
IBN AL-HAYTHAM. The world's first true scientist. One of the distinguished pioneers of the development of SCIENTIFIC METHOD and EXPERIMENTAL MEDICINE.

ABD AL-RAHMAN AL-SULFI. Wrote the book "Fixed Star", described the nebulous spot in the Andromeda Constellation. This paved way for the development of the Andromeda Galaxy.

ALHAZEN. Played a role in the development of optics. Visions occurred when light, travelling in a straight line, reflect off an object into the eyes.



IBN AL-HAYTHAM



ABD AL-RAHMAN AL-SULFI

ALHAZEN

High Middle Age

Beginning around the year 1050, European scholars built upon their existing knowledge by seeking out ancient learning in Greek and Arabic texts which they translated into Latin, accompanied by commentaries and independent works by Islamic thinkers.

MEDIEVAL EUROPEAN UNIVERSITIES. Scholars from a Stadium Generale were encouraged to give lecture courses at other institutes across Europe and to share documents, and this led to the current academic culture in modern European universities. The teachings are based on Aristotelian logics and writings and empiricism which paved way to the modern scientific method.

ROGER BACON. A major medieval proponent of experimental science. He was the first European to describe in detail the process of making gunpowder, and proposed flying machines and motorized ships and carriages.

Late Middle Age

The first half of the 14th century saw the scientific work of great thinkers like Byzantine and the Islamic scientific discoveries. Great minds such as John Philoponus, Jean Buridan, William Ockham, Thomas Bradwardine begin to work on scientific principles questioning and creating a more concrete explanation of the previous works. However, the scientific development was sealed and suddenly halted due to the Black Death in 1384.

BLACK DEATH. The plague killed a third of the people in Europe, especially in the crowded conditions of the towns, where the heart of innovations lay. The Black Death was an epidemic of bubonic plague, a disease caused by the bacterium Yersinia pestis that circulates among wild rodents where they live in great numbers and density. Originating in China, the disease spread west along the trade routes across Europe and arrived on the British Isles from the English province of Gascony. It is believed to have been spread by flea-infected rats, as well as individuals who had been infected on the continent.

How did it end?

The most popular theory of how the plague ended is through the implementation of quarantines. The uninfected would typically remain in their homes and only leave when it was necessary, while those who could afford to do so would leave the more densely populated areas and live in greater isolation.

Renaissance Period

The Renaissance was a ―rebirth‖ in many ways. What was ―reborn‖ in the areas of art, trade, exploration, religion and thinking. Science was still considered a branch of religion, and scientific thought held that the earth was a stationary object at the center of the universe. During The Renaissance many events such as the invention of the moveable printing press, exploration of the New World, and the rise of Humanism led to the breakthroughs of the scientific revolution.

JOHANNES GUTTENBERG AND THE MOVABLE PRINTING PRESS

LIFE BEFORE THE PRINTING PRESS

Before the printing press was invented, any writings and drawings had to be completed painstakingly by hand. Several different materials were used to transcribe books: clay and papyrus, wax, and parchment. It wasn't just anyone who was allowed to do this; such work was usually reserved for scribes who lived and worked in monasteries. Information had no means of mass distribution, except through storytelling.

Scriptorium

The monasteries had a special room called a "scriptorium." There, the scribe would work in silence, first measuring and outlining the page layouts and then carefully copying the text from another book. Later, the illuminator would take over to add designs and embellishments to the pages. In the Dark Ages and Middle Ages, books were usually only owned by monasteries, educational institutions or extremely rich people. Most books were religious in nature. In some cases, a family might be lucky enough to own a book, in which case it would be a copy of the Bible.

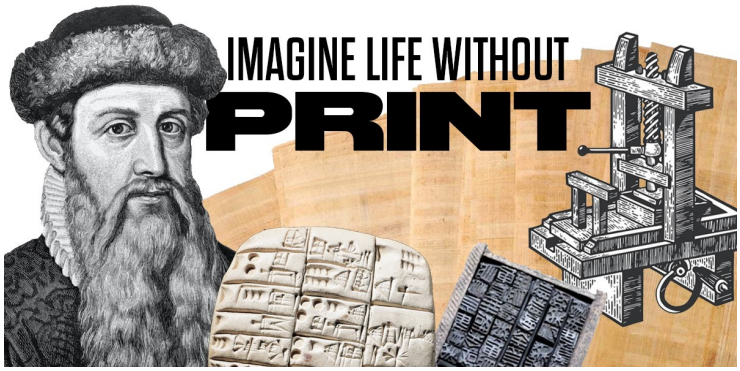
INSPIRATION AND INVENTION OF THE PRINTING PRESS

Around the late 1430s, a German man named **Johannes Gutenberg** was quite desperate to find a way to make money. At the time, there was a trend in attaching small mirrors to one's hat or clothes in order to soak up healing powers when visiting holy places or icons. The mirrors themselves were not significant, but Gutenberg quietly noted how lucrative it was to create mass amounts of a cheap product.

Gutenberg printing press, movable type

Instead of using wood blocks, Gutenberg used metal instead. This became known as a "movable type machine," since the metal block letters could be moved around to create new words and sentences.

With this machine, Gutenberg made the very first printed book, which was naturally a reproduction of the Bible. Today the Gutenberg Bible is an incredibly valuable, treasured item for its historical legacy.



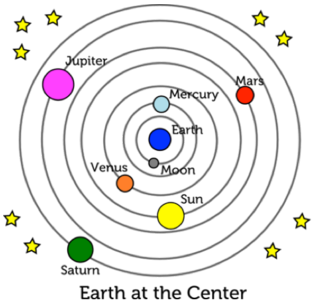
During the 1300s to 1400s, people had developed a very basic form of printing. It involved letters or images cut on blocks of wood. The block would be dipped in ink and then stamped onto paper.

Gutenberg already had previous experience working at a mint, and he realized that if he could use cut blocks within a machine, he could make the printing process a lot faster. Even better, he would be able to reproduce texts in great numbers. Johannes Gutenberg's invention of the printing press in 1451 opened lines of communication throughout the world. The advent of the printing press changed the face of journalism and education.

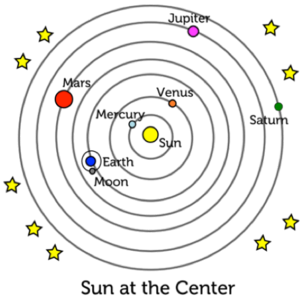
MODERN AGES

The **SCIENTIFIC REVOLUTION** of the sixteenth and seventeenth centuries changed the way of educated people looked at the world. Scientific Revolution developed gradually over a long period of time. The Scientific Revolution was a series of events that marked the emergence of modern science during the early modern period, when developments in mathematics, physics astronomy, biology (including human anatomy), and chemistry transformed the views of society about nature.

THEORETICAL MODELS OF THE UNIVERSE



Earth at the Center



Sun at the Center

Geocentric Theory – introduced by Claudius Ptolemy stating that the sun and not the earth, was the center of the universe. His theory is grounded on the works on Aristotle.

Heliocentric Theory – introduced by Nicholas Copernicus stating the Sun is the center of the universe in 1543.

MICROSCOPE

1590 First Microscope – Dutch lens makers created the first microscope.

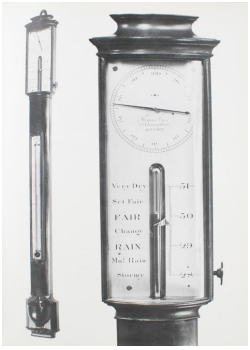
1680 - Antoine van Leeuwenhoek made his own powerful version to observe bacteria.

Use: To see tiny plants and animals not visible to naked eye with powerful lenses.

THERMOMETER

593 - Though it is not certain, Galileo probably made the first thermometer.

1700s - A German scientist named Daniel Gabriel Fahrenheit created a more accurate model in the early 1700s. He placed liquid mercury in a glass tube and observed how it expanded and rose within it as the temperature increased. He also created the Fahrenheit temperature scale that is still used in the U.S, it is use in measuring air temperature.



BAROMETER

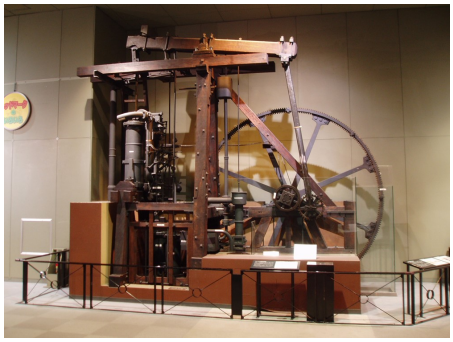
1643 - Evangelista Torricelli, an Italian scientist created the barometer by placing liquid mercury in a glass tube and placed it upside down in a dish. He observed how it moved up and down with changes in pressure of the atmosphere over a couple days. The barometer became a great tool for studying weather.

Use: Measuring barometric pressure in the atmosphere.

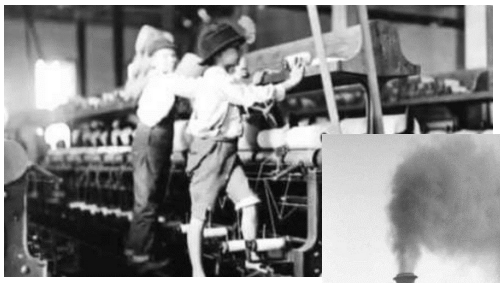
TELESCOPE

Though first created in Holland, the telescope went through many upgrades during the scientific revolution from such men as Kepler, Brahe and Galileo.

The **INDUSTRIAL REVOLUTION** was a period of major industrialization and innovation that took place during the late 1700s and early 1800s. This paved way to a more advance science and technological breakthroughs which became a foundation of the recent technological and scientific advancement of the 20th century.

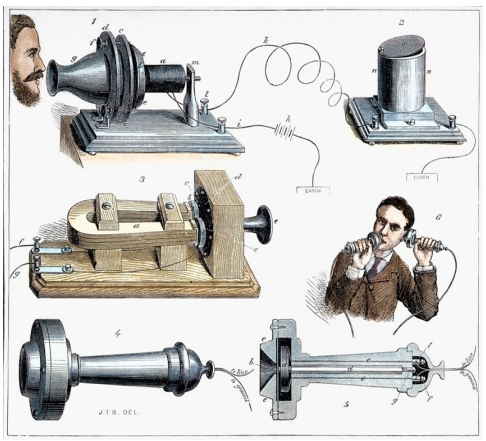


STEAM ENGINE. Perfected by James Watt in the 1700s. A machine using steam power to perform mechanical work through the agency of heat. The steam engine paved way for the industry to advance more further and more efficient.

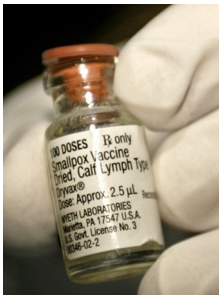


TRANSPORTATION. Huge increases in the production of goods led to a need for better transportation systems. Producers needed faster ways to get their goods to market. As a result, improved roads were constructed. The first steamboats appeared in the early 1800s. Steam engines also powered railroad locomotives, which began running in Britain after 1825. Railways quickly spread across Europe and North America. They helped to expand the frontiers of industrial society.

TELEGRAPH. Developed in the 1830s and 1840s by Samuel Morse (1791-1872) and other inventors, the telegraph revolutionized long-distance communication.



TELEPHONE. Developed by Alexander Graham Bell to maintain connections and to communicate in real time – for trade and exploration, government administration.



SMALL POX VACCINE. The smallpox vaccine, introduced by Edward Jenner in 1796, was the first successful vaccine to be developed. He observed that milkmaids who previously had caught cowpox did not catch smallpox and showed that inoculated vaccinia protected against inoculated variola virus.

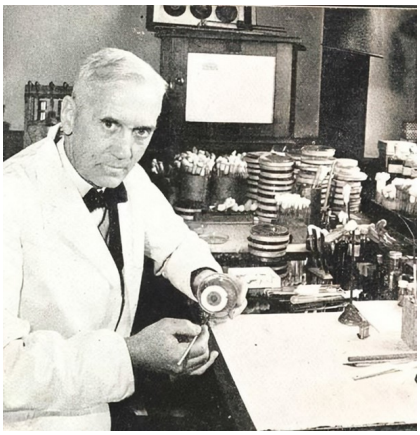
PASTEURIZATION. Keep manufacturing food with better means of food preservation and food safety. Louis Pasteur - a French biologist, microbiologist, and chemist, invented pasteurization – the process of heating dairy products to kill the harmful bacteria that allows spoilage; also prevents illnesses caused by harmful bacteria (diphtheria, food poisoning, and typhoid fever)

ANESTHETIC. In the mid 1800's Horace Wells, a dentist used laughing gas as anesthetic to his patients to pe form dental surgeries. Surgeons could not offer patients much more than opium, alcohol or a bullet to bite on to deal with the agonizing pain of surgery. William T.G. Morton and surgeon John Warren, dentist and surgeon invented Anesthesia on October 16, 1846.

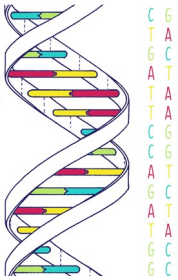
Science advanced dramatically during the **20TH CENTURY.** There were new and radical developments in the physical, life and human sciences, building on the progress made in the 19th century.

In the twentieth century, more science was done, and more scientists lived, than in any other century of human history. Furthermore, there were major changes in the framing ideas and organization of major disciplines. Physics, for example, grappled with the new ideas of quantum theory and relativity. The life sciences responded to genetics and molecular approaches to life science. Geology uncovered evidence for continental drift, while astronomy explored an expanding universe.

Social science experimented with new methods to measure society and the individual within it. These intellectual developments were intimately connected to social, economic, political and cultural trends and events, not least global conflicts, ideological clashes and economic transformations.

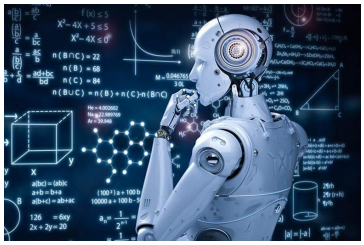


PENICILLIN. At St. Mary's Hospital, London IN 1928, Alexander Fleming discovered penicillin. This discovery led to the introduction of antibiotics that greatly reduced the number of deaths from infection.



DNA STRUCTURE. James Watson and Francis Crick published their theory that DNA must be shaped like a double helix IN 1953. A double helix resembles a twisted ladder. Each 'upright' pole of the ladder is formed from a backbone of alternating sugar and phosphate groups.

HUBBLE SPACE TELESCOPE LAUNCHED. Hubble Space Telescope (often referred to as HST or Hubble) is a space telescope that was launched into low Earth orbit in 1990 and remains in operation. It was not the first space telescope, but it is one of the largest and most versatile, renowned both as a vital research tool and as a public relations boon for astronomy.



ARTIFICIAL INTILLEGENCE

The capacity of a digital computer or computer-driven robot to carry out functions often performed by intelligent individuals.

IN THE PHILIPPINES

Despite being considered a developing country, the Philippines also contributes to the global advancement of science and technology. It is quite remarkable to note the ingenuity of the Filipinos despite the lack in resources. The Philippines is known to be one of the most vulnerable countries in terms of natural disasters. Many of the discoveries and inventions made by the Filipinos were therefore built from indigenous materials or created to adapt to the harsh tropical environment.

VEGETABLE OIL EXTRACTION IN COCONUT MEAT

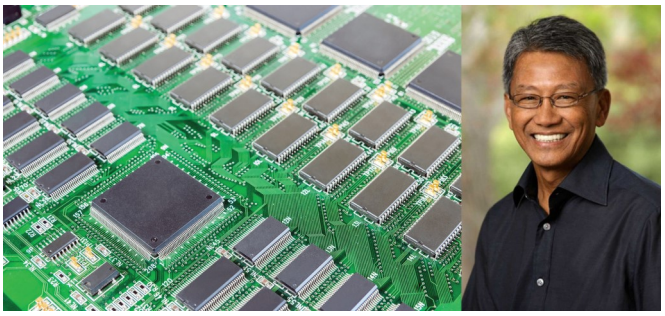
The "Process of Extracting Vegetable Oil from Fresh, Mature Coconut Meat" is the first ever patented invention in the Philippines in September 14, 1948. The inventors are ***Pablo Robledano*** and ***Eduardo Ruiz de Luzuriaga***. This invention was the first ever registered by the Philippines Patent Office which opened in June 20, 1947. It reflects the times when the Philippines was a top coconut product exporter. Coconut was the leading source of vegetable oil in the world until it was surpassed by soybean in the 1960s.

SING-ALONG SYSTEM

The sing-along system also known as Karaoke is patented in the Philippines in February 18, 1968 by ***Roberto del Rosario***. The Sing-Along System (SAS) is a form of interactive entertainment in which amateur singers sing along with recorded music or music video using a microphone and public address system. The music is typically a well-known pop song minus the lead vocal. Lyrics are usually displayed on a video screen, along with a moving

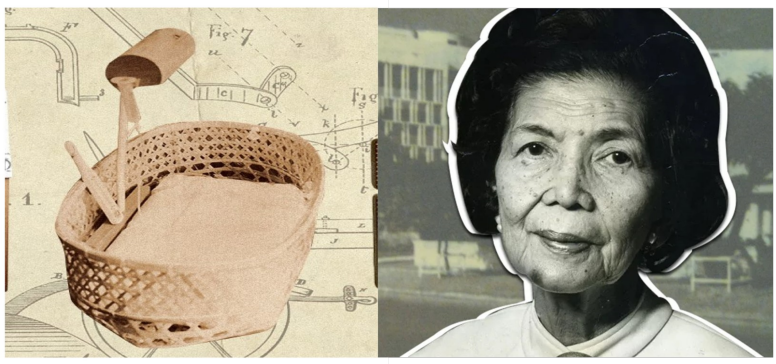
symbol, changing color, or music video images, to guide the singer. The SAS won a WIPO Gold Medal for Best Invention in 1986. Del Rosario was the first Filipino elected member of the IFIA Executive Committee.

MICROPROCESSOR CHIPS



Diosdado Banatao is widely considered the Filipino equivalent to Microsoft founder, Bill Gates. Similar to Gates, Banatao came from a technical background and made large contributions to microprocessing technology. His innovations make up about 30% of every computer in the world today. Banatao is credited for several key inventions, such as: the first single chip, 16-bit microprocessor-based calculator and the first Microsoft Windows graphics accelerator chip. He co-founded companies such as Mostron, Chips and Technologies and S3 Graphics and Technologies -- all of which were eventually acquired by Intel.

INCUBATOR



Fe Del Mundo is the first Asian to have entered the Harvard School of Medicine. She is primarily credited for her invention of the incubator designed specifically for medicinal use in rural areas. In particular, her incubator design is constructed with two laundry baskets and hot water bottles, allowing it to run without electricity. She also contributed toward the creation of several medical journals in the United States, India and the Philippines. She received the Elizabeth Blackwell Award in 1966 and the Ramon Magsaysay Award in 1977 for her outstanding service to society.

BIOGAS WATER LILY

A sustainable and economic control means battling floods that have killed scores of people and

turned thousands out of their homes caused by infestation by water lily choking main water bodies, hindering access to harbors and docking areas, preventing access by small fishermen to fishing sites and seriously threatening biodiversity. Also, phases in renewable biogas cooking fuel replacing pricy LPG. Invented by ***MALANG, DR. VIRGILIO L. and MALANG, YASMIN E.***

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