

GENERAL SCIENCE

Science Review for 1951

Atomic artillery, breeder for more bomb material, advances in understanding photosynthesis, Old Stone Age skeleton among top science highlights of past year.

This summary of the year's happenings in the world of science is limited by space to just the highlights. Most of the events are described in detail in the pages of SCIENCE NEWS LETTER for the current year. If you wish to refer to any particular report, you may find it readily through the index. (See SNL, June 30, and also the issue that will appear next week, Dec. 29.)

By SCIENCE SERVICE STAFF

► IN MANY fields, ranging from the forefront of atomic energy to a most ancient chapter of Homo sapiens, science and technology has pushed forward during 1951. There have been significant gains of both practical and fundamental importance.

In the application of the atom to military uses, the atomic bomb has presumably been made smaller and applied to artillery and guided missiles capable of being used by ground troops.

The earth's meager supply of fissionable material for atomic energy production began to be augmented by the world's first large atomic breeder. This is a reactor that creates out of thorium a fissionable kind of uranium as the result of neutron bombardment furnished by conventional atomic "fuel," uranium 235 or plutonium.

Big installations looking toward even more atomic energy progress, including the hydrogen bomb plant, were pushed with unprecedented vigor.

Atomic bombs continued to be exploded for test purposes, with a series of U. S. trials on the Nevada desert contrasted with one or more Soviet bomb tests reported.

Some progress at understanding how sunlight is utilized by the green plant seems to have been made, with the goal of achieving photosynthesis artificially which could rival atomic energy in its practical importance. Growing algae as an efficient method of using the sun's energy was investigated more intensively.

Television achieved coast-to-coast transmission through completion of a radio relay system, which can also be used for other multiple communication channels. Color television's practical application was stymied by regulations intended to conserve production facilities and materials.

The exploration of the structure of the atom and fundamental particles continued, with cosmic rays providing the large smashing energies necessary. Perhaps the anti-proton has been found.

The most disastrous flood in our nation's history visited the Middle West.

A new method of light production by electricity, called electroluminescence, was

developed that promises to make possible glowing ceilings, walls and other surfaces.

Astronomers found that the space between stars is filled sparsely with hydrogen gas.

A new chapter in human history was unearthed in a cave in Iran when skeletons definitely like men of today were found among cultural remains of the Old Stone Age.

Many hopeful medical advances included control of some cancers by removal of both adrenal glands, use of new chemicals for reducing high blood pressure, and cortisone was reported effective in treating more ills.

New methods of synthesizing cortisone were reported, one of which started with a wild Mexican plant root.

The rate of growth of poultry and pigs was increased in practical application of feedstuffs containing antibiotics and vitamin B 12.

Science News Letter, December 22, 1951

AERONAUTICS

Radio-Radar Controlled Guided Missile Produced

The B-61 Matador, radio-radar controlled guided missile, was put into production and a unit formed for training men in its practical use.

A jet-propelled flying-boat fighter reached the flight test stage in England.

A composite aircraft engine with both piston and jet power was developed.

Airplane wings with degree of sweepback changeable in flight were tested on a new "flying laboratory."

Small ram-jet engines were successfully applied to the rotor tips of helicopters.

A slow- and low-flying airplane was designed and constructed especially for agricultural uses.

A new type of radar sending out a continuous radio wave instead of the intermittent waves commonly used was put in use recording the speeds of models flying faster than sound.

A new mass-production method of producing one-piece hollow-steel propeller blades by extrusion was developed, resulting in blades with greater resistance to severe stress.

Soil density and moisture content were successfully measured by use of a radioactive material and a detector to determine airfield subsoil stability.



CHANGEABLE WINGS—The Bell X-5 has wings whose degree of sweepback can be changed at will. For take-off, climbing and landing, they are best in the forward position, while for great speeds at high altitudes, they are best in the swept-far-back position shown here. The sweep-back will help reduce trouble with shock waves near the speed of sound.

A "wind tunnel" lacking wind but consisting of a vacuum simulating conditions 50 to 70 miles above the earth made possible study of supersonic flight conditions at extremely high altitudes.

Science News Letter, December 22, 1951

ANTHROPOLOGY-ARCHAEOLOGY

Find Stone Age Skeletons Are Definitely Modern Man

Three Old Stone Age skeletons that were definitely Modern Man were found, with animal bones and flint and stone tools, beneath layers of New Stone Age and Iron Age remains, in Hotu Cave, northeastern Iran.

Search continued for the oldest American: the forgotten bones of Natchez Man were found to be 11,000 years old by fluorine analysis, radio-carbon dating accorded an antiquity of 11,000 years to Tepexpan Man and 10,000 to Folsom Man.

Remains of a 12,000-year-old camp site were found in northern Alaska together with lamellar flakes and burins like those made by Stone Age Man in the Old World.

A link between the Stone Age people of Japan and ancient Americans was found in a collection of pottery from Japan strikingly similar in shape and surface treatment to that of early American Indians.

Remains of the world's first known farmers, who grew grain and raised animals for meat, clothing and milk some 8,000 years ago, were discovered in Iran.

What may be the first tree felled by man, a birch cut down 9,000 to 10,000 years ago, was dug up in England.

Three of America's oldest houses, probably more than 3,000 years old, were unearthed in California.

A baby's horoscope, cut into the plaster wall of the house in Dura where he was born in 176 A.D., enabled archaeologists to date the house.

Excavations were started at Timna in the Western Aden Protectorate, southern Arabia; two large bronze lions (1500 B.C.) were found.

Ruins of a 36-room palace built by Herod the Great (37-4 B.C.) or his son Archelaus, were unearthed at Jericho.

A very rich tomb, that of Mentemhet, Prince of Thebes, was re-excavated near the Valley of the Kings at Luxor, Egypt, with mural inscriptions revealing his career.

An ancient double pottery jar, that whistles as liquid is poured from one side to the other, was interpreted as indicating cultural interchange between ancient people of Peru and Middle America.

The fingerprints of men who sealed some jars of oil about 3,500 years ago were found still clear on the jars when they were unearthed in Mycenae, Greece.

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ASTRONOMY

Microwave Radiation Tells of Hydrogen Gas Between Stars

First direct evidence that the space between the stars is filled with hydrogen gas was obtained when its microwave radiation was picked up by radio telescopes.

Locations of planets Jupiter, Saturn, Uranus, Neptune and Pluto were calculated for the next century with large digital computing machines.

Measurement of the radial velocities of external galaxies more distant than any heretofore

recorded showed that nebulae are speeding away from our solar system at one-fifth the velocity of light.

Six new cameras, designed exclusively for tracking meteors and capable of photographing 40 times as many "shooting stars" as are now caught with sky cameras, were installed or neared completion.

Hydrogen nuclei (protons) in the aurora borealis (northern lights) were found to travel up to 2,000 miles per second.

Microwave radiations from four of the brighter spiral galaxies were detected with radio telescopes.

A "radio telescope" 50 feet across, world's most versatile, was installed for listening to microwave radio signals from the sun, moon and stars.

216 new variable stars were discovered in the so-called Sculptor cluster, wide-open spherical galaxy.

The light from only a few of the stars in the Pleiades, it was found, is polarized.

A new satellite of Jupiter was discovered, bringing to 12 the number of moons circling that giant planet.

Eighteen gigantic variable stars, each almost a billion miles across and thus so enormous they would overflow the orbit of the planet Jupiter, were detected in the southern skies.

Four important novae or "exploding stars" were seen to blaze forth—two in the constellation of Sagittarius, the archer; one in Aquila, the eagle; and one in the Small Magellanic Cloud.

New comets discovered include Pajdusakova, Arend-Rigaux Kresak, Wilson-Harrington, Arend and Harrington.

Element 43, technetium, found on earth only by atomic bombardment was almost certainly identified in the solar spectrum.

Forty-four new white dwarf stars were reported, raising the known number of these peculiar stars to about 150.

Giant dust cloud relatively near the solar system was reported in some instances to cut

off all except 0.20% of the light from stars beyond it.

The Perseid meteor shower was created forty thousand years ago, or 343 revolutions of Tuttle's comet ago, when it approached the big planet Jupiter, calculations indicated.

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BIOLOGICAL SCIENCES

Discover Key Mechanism for Changing Sunshine into Food

Discovery was made of the key mechanism by which the green plant converts the energy of sunshine into food and in which a single quantum of light is effective.

Wheat stem rust threatened the whole crop but was held in check by a severe drought.

An efficient method was developed for growing algae commercially, possibly paving the way for the production of algae for food and organic raw materials.

Antibiotics such as aureomycin and terramycin, added to the food of poultry and pigs with vitamin B-12, greatly increased their rate of growth.

A conventional high-powered microscope used in combination with a color-sensitive television camera provided an effective technique for the study of living cells.

How plants are made poisonous to insects by spraying with systemic insecticides was revealed through tagging the insecticides with radioactive elements.

For the first time silver salmon returned to artificial spawning grounds.

A new method was developed for treating difficult plants, such as onions, with colchicine in order to make polyploids, paving the way for bigger and better plants.

A missing chromosome mystery developed with the discovery that chromosomes in human cells from different tissues show a random deviation from the expected number of 48.

A chemical missing link joining animal and plant life at the very beginning of evolution was suggested by discovery of a pigment, protoporphyrin isomer 9, which gives rise to both the hemoglobin of animal blood and the chlorophyll of green plants.

A new blood type, Jka, the tenth human character for which the manner of inheritance is known, was discovered.

Oldest fertile seeds of scientifically established antiquity were found by radiocarbon dating to be some ancient Manchurian lotus seeds over 1,000 years old.

The war against DDT-resistant flies continues with the development of new insecticides and by combining DDT with other chemicals.

A weedkiller known as CMU was developed; it attacks both grasses and broadleaved weeds, leaving only bare soil in its wake.

Five live cahows, oceanic bird believed extinct since 1625, were found in Bermuda; an ancient murrelet was found for the first time in the interior of Oregon.

A powerful fungicide was found in the root system of some banana plants.

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CHEMISTRY-PHYSICS

Probe Nature's Secrets by Study of Cosmic Rays

An anti-proton or negative counterpart of the heart of the hydrogen atom was suggested



FAST-GROWING CHICKS — Antibiotics combined with vitamin B-12 have been shown to speed considerably the growth of baby chicks.