

An improved process for extracting liquid fuels from oil shale was developed, promising an ample supply of synthetic gasoline.

A magnetic logging device which measures the magnetic properties of the underground geological formations through which it is passed was developed to aid in locating oil.

A new method for recovering manganese from our low-grade ore was developed.

Radiocarbon dating showed that the last great glacier to cover North America began to melt only about 11,000 years ago.

A theory that the oceans and atmosphere had their origin in hot volatile gases escaping from the earth's interior was proposed.

Living bacteria were found in sediment cores taken from the ocean bottom six and a half miles below the surface where the pressure is more than 15,000 pounds to the square inch.

America's smallest fossil mammal, a tiny shrew, was identified from a piece of jawbone 3/16 inch in size.

A mile-high mountain was found with its top a mile beneath the surface of the Pacific.

There were 155 earthquakes of sufficient strength to record themselves on seismographs so that they could be immediately located, including two long series of damaging quakes in Formosa.

Science News Letter, December 22, 1951

ENGINEERING-TECHNOLOGY

Coast-to-Coast Television Inaugurated in September

Transcontinental home-to-home long-distance dialing of telephone calls was initiated from one city to certain others.

Coast-to-coast television was begun with the inauguration of a transcontinental radio-relay system with 107 relay towers spaced about 30 miles apart.

Relatively cold light production from flat glass plates was developed through use of electroluminescence, produced by current alternations in a luminous condenser containing a phosphor mixed with a plastic.

A tiny eraser-size cobalt-platinum magnet, extremely powerful, was made.

A crystal clutch was developed for use in high speed computers, using chemical crystals which bend when excited by direct current voltage.

Relatively new chemicals, fluorocarbons, were used as a cooling spray to increase greatly the efficiency of electrical transformers.

A tiny junction transistor, only half the size of a pea, and containing germanium, was developed to amplify electrical signals about 100,000 times.

New uses in servo-mechanisms, shock absorbers, recoil mechanisms and brakes were found for magnetic fluid clutch.

A synthetic fiber treated with 275-degree heat was made able to withstand temperatures as high as 1400 degrees Fahrenheit.

Two bonding methods were developed, one for joining metal and glass or ceramics and the other to unite silicone rubbers with steel and other metals, glass or ceramics.

A new aeronautical and engineering research center for the armed services, one of the most important applied science and testing stations of the world, was dedicated at Tullahoma, Tenn.

The feasibility was demonstrated of protecting a cobalt-bonded titanium-carbide ceramal against oxidation by the application of a ceramic-metal coating, promising better heat resistant turbine blades.



A-BOMB MANEUVERS—For the first time, picked Army troops this year participated in A-Bomb tests in the U. S. Soldiers are shown here observing from a safe distance an atomic explosion at the AEC's Nevada Proving Grounds.

An air-gravel concrete was developed for construction purposes in which the sand is replaced by tiny air bubbles produced by a resin or detergent.

A new and inexpensive method of beaming television or sweeping the sky with radar made use of a so-called "G-string antenna mast" which carries the signals along its surface to the top where they are reflected by flat plates.

A marine gas turbine engine was used for the first time in a commercially operating merchant ship.

A crystal which will amplify X-ray energy a million times was grown in the laboratory.

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MEDICAL SCIENCES

Control Cancer by Removal Of Both Adrenal Glands

Cancer control by removal of both adrenal glands could be undertaken successfully for the first time because cortisone is available to protect patients from death due to adrenal failure.

An anti-atom bomb substance which protects against irradiation by restoring the function of blood-forming bone marrow was discovered in "press juice" from embryonic mice and their spleens.

Infected wounds, particularly chest wounds, tuberculous abscesses and diabetic gangrene are cleaned up and heal faster when treated with two chemicals from hemolytic streptococci, streptokinase and streptodornase.

Prevention of one kind of cancer by aureomycin treatment of its precancerous stage, believed to be an infection, was reported.

For reducing high blood pressure, the following chemicals were reported: a synthetic, Amphiphenone B, acting through pituitary, thyroid and adrenal glands; sulfhydryl containing compounds such as BAL; methonium halides; Protopratin; two phthalazine compounds; and alkyl-sugar derivatives which promote diuresis.

A brain-produced chemical that may cause some kinds of high blood pressure was discovered.

First evidence that the heart can absorb a drug and break it down into other compounds was obtained with digitalis from radioactive foxglove plants.

Cretinism in dogs, giving a new approach to study of arteriosclerosis, was produced by prenatal and postnatal injections of radioactive iodine.

Large doses of radioactive iodine were reported effective in severe, intractable heart disease.

Triethanolamine trinitrate and a drug extracted from beef hearts, trade-named Myocardone, were reported effective for heart disease.

Two cyclotron produced chemicals, radioactive gallium and astatine, or element 87, were reported promising new weapons against cancer.

Thyroid gland cancer responded to treatment with male hormone for the first time in medical history.

Measuring amounts of two chemicals in blood, inhibitors of rennin and chymotrypsin, gave an index for response to treatment of leukemia and cancer.

Discovery that liver cells turn cancerous when some of their protein content is deleted by an azo dye was reported as giving a new clue to process of cancer formation.

First proof was obtained that nickel has cancer-causing properties.

Eight cancer-causing chemicals were discovered in processed rubber and carbon black.

Discovery of a new blood factor, called Jarrell, was seen giving a new approach to discovering the cause of cancer because a cancer was found the only cause of antibodies to this blood factor.

Ailments for which cortisone was reported effective: the eye diseases, phlyctenular keratoconjunctivitis, sympathetic ophthalmia, and blindness from growth of fibrous tissue in scarring wounds; toxemia of pregnancy; sarcoidosis; swelling of the larynx; severe, exhausting asthma; schizophrenia; and acute skin diseases.

Cortisone was reported capable of delaying liver degeneration due to faulty diet.

Cortisone and ACTH were reported capable of retarding the chest disease, chronic berylliosis; conquering rheumatic heart disease; saving lives in one kind of anemia and the blood disorder, thrombocytopenic purpura; and acting like a tonic for old people before operations or to get them out of bed faster after painful injuries.

ACTH was found effective as a remedy for snake bite and for keeping nerves functioning at their best.

Corticosterone, newly manufactured drug related to cortisone, proved successful in its first trials as a treatment for Addison's disease.

A blood cell test that shows how much ACTH a patient can safely take was developed.

A new synthetic pain-killing drug, more powerful and longer acting than morphine and only three steps chemically from being synthetic morphine, was announced under the trade name, Dromoran.

A faster, longer-lasting local anesthetic, 2-chloroprocaine, was reported promising for blocking pain nerve fibers regionally.

N-allylnormorphine was reported an antagonist to opiate drugs.

Acetylmethadol, related to pain-relieving methadon, was reported successful in treating morphine addicts and promising as pain-reliever in first aid treatment.

A gel of milk casein, sodium lactate and sodium lauryl acetate was reported good treatment for severe burns.

Tibione, German-developed tuberculosis drug, was reported most promising new drug for leprosy.

Thyroid gland cancers in animals have been produced experimentally for the first time by setting up a chain reaction of abnormal activity of two glands.

Promise of a birth control pill was held out in reports of animal experiments with an unnamed synthetic chemical already under trial on human patients for a quite different purpose.

Birth control in 98.2% of 704 patients was provided by a gel containing ricinoleic acid and p-diisobutyl-phenoxy polyethoxyethanol.

A simple test which tells within an hour whether a patient has influenza was developed.

Prospects for chemical conquest of poliomyelitis and influenza seemed brighter from the discovery that ethionine will stop growth of both 'flu and polio viruses, the former in embryonated hen's eggs and the latter in cultures of human tissue, by depriving them of its close relative, protein-building methionine, though treatment will probably come through some other similar-acting chemical, ethionine itself being unsuitable to give patients.

Success in growing poliomyelitis virus on tissue cultures outside the body was achieved, giving hope that weakened strains thus developed could be used for a vaccine.

A simple diagnostic test for polio, of the complement fixation type, was developed but has not yet reached practical use readiness.

A new quick, simple, cheap test, called a flocculation test, for diagnosing trichinosis, brucellosis, tularemia and possibly other parasitic diseases was developed.

Successful transplantation of the heart from one body to another was achieved in laboratory animals.

Construction of a substitute stomach from part of the large intestine succeeded in cancer patients who had to have their own stomachs removed.

The buds of developing permanent teeth were successfully transplanted from the jaw of one cat to that of another.

The first blood vessel bank was established.

Methods for freeze-drying bones and arteries to preserve them for future use were developed.

Hemophilia, hereditary bleeders' disease, can develop in women, contrary to previous medical reports, it was discovered.

A new family of B vitamins, called lipoic acids, were discovered and one of them, alpha lipoic acid, was isolated.

A B-complex vitamin, called the citrovorum factor, which may give better understanding of blood diseases and help in their treatment, was isolated.

Chemicals that are precursors of vitamin B 12 were discovered.

First evidence for hereditary obesity and diabetes was obtained in mice.

A new biological material, amino-iso-butyric acid, hitherto unknown in nature, was discovered in kidney secretions from certain families of normal, healthy humans.

A new, apparently safe sleeping medicine, 3-methyl-pentylne-ol-3, was announced.

Treatment with a fever-causing substance from certain bacteria permitted regrowth of nerve cells in completely severed spinal cords of dogs and cats by preventing growth of scar tissue.

Two antivirotics, that may stop viruses as antibiotics stop bacteria, were discovered, named viscosin and ehrlichin.

Speedy remedy for ivy poisoning was found in zirconium.

Wild birds were found to be the natural reservoir for the virus of encephalitis, sometimes called "sleeping sickness."

Tomatoes can be made to yield sex hormones and may become plentiful, cheap source of cortisone.

Feedback electrical systems were developed for control of anesthesia.

A plastic hypodermic needle for caudal anesthesia was made.

A plastic sponge was used as a framework for living tissue in reparative surgery.

A new hip-lift or hip-roll method of giving artificial respiration more effectively was developed.

The Nobel Prize in medicine was awarded to Dr. Max Theiler, of the Rockefeller Foundation, for his researches leading to successful vaccine against yellow fever.

The Guinea Pig Club, of men and women who have served as human test material for medical research, was organized under the formal name, Walter Reed Volunteers.

Cornerstone for a new national research hospital, the Clinical Center of the National Institutes of Health, U. S. Public Health Service, was laid by President Truman.

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PSYCHOLOGY-PSYCHIATRY

Diet Plus Shock Treats Mental Ills Successfully

A fat-protein diet producing acidosis, combined with electric shock, was successful in treating mental illness.

The fiber projections from the brain's frontal lobes which are the part of the brain governing anxiety were exactly located.

Symptoms of mental illness were produced experimentally in normal persons by an ergot derivative, affording scientists an opportunity for study of them.

Loss of a large part of the brain cortex in monkeys was partially compensated for by extensive training in problem solving previous to the operation.

Knowledge of the developmental anatomy of the brain cortex of the young human infant was significantly advanced by microscopic studies.

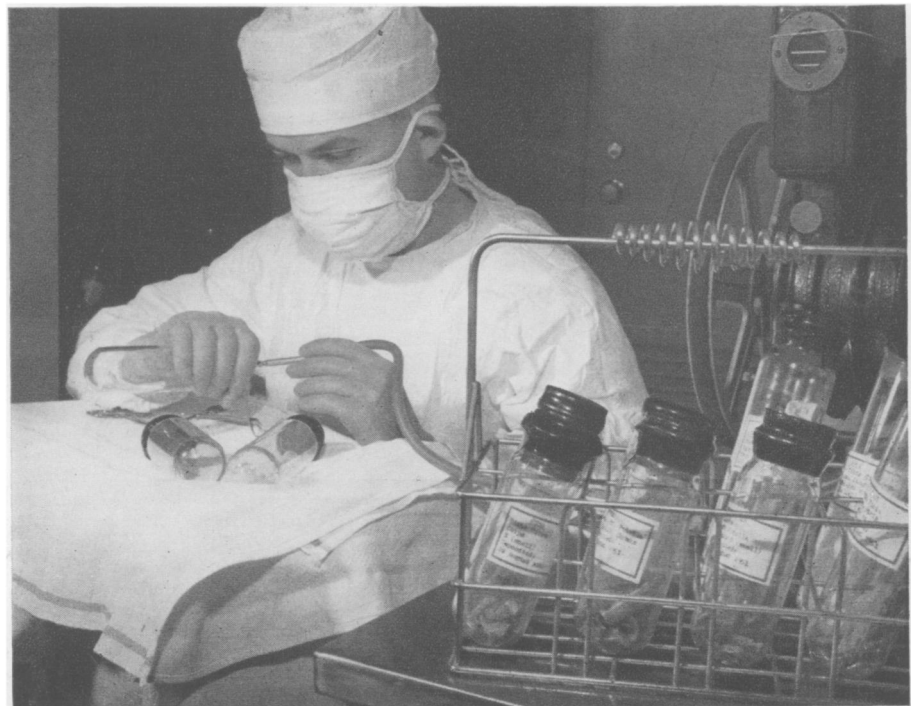
Glutamic acid fed to pregnant rats was found to improve the learning ability of the offspring.

Glutamic acid prevented deaths from noise-induced convulsions in susceptible mice, thus promising to throw light on the chemical processes in the brain.

Precise measurement of eye movement in binocular vision showed that the two eyes scan an object independently and the brain must combine both spatial and temporal patterns.

The mechanism of depth perception is different when the object observed is large than it is when the object is so small that the image is smaller than the eye's fovea.

A one-eyed person can perceive depth, distance and speed well enough to land an airplane successfully, tests in the Air Force showed.



BANK FOR BONES—The pieces of bone in the tubes in this rack have been freeze-dried at the Naval Medical Center, Bethesda, Md., and thus they can be safely kept at room temperature.