

INVENTION

Industrial Inventions Outstanding This Year

► **NOTABLE** and interesting inventions patented during the year include:

A process for enriching blast-furnace gases so they may be better used as a source for commercial chemicals such as ammonia.

A process for the synthetic production of toluene from benzene and methane.

A process for making synthetic liquid fuels and oils out of cheap gases.

A method for recovering small nuggets of steel embedded in old furnace slag.

A process for transmitting color pictures by wire or wireless in the form of three-color separation films ready for the usual photographic processing.

A new type of giant locomotive, built in three sections to get around curves, with two fuel-and-water tenders and two sets of driving wheels.

An apparatus which substitutes air pressure for gravity in administering blood plasma to the wounded in battle.

A space-saving cathode tube for use in electron microscopes and television sets.

A camera latching mechanism that prevents double exposure.

A fuel injector for internal combustion engines that injects the fuel at a relatively constant rate irrespective of the speed of the engine or amount being injected at each stroke.

A process for cracking naphtha and rearranging its atomic fragments into aviation gasoline in the presence of a synthetic silica alumina catalyst.

An ozone treatment to protect meat against spoilage, the ozone being generated by ultraviolet radiation.

Use of one of the chemicals of the chlorophenol group to protect green lumber against fungi while under treatment to prevent cracking and splitting.

A system of illuminating airfields by underground lights, eliminating overhead flood lights and superstructures.

A series of double salts of nicotine for insect-fighting, to replace the unstable simpler nicotine salts formerly used.

An airplane combining the advantages of conventional propellers and the newer jet propulsion.

A simple dashboard instrument for airplanes that shows climb and drop quickly and sensitively.

An infra-red bread-baking machine that cooks loaves evenly in 20% to 30% less than the usual time.

MEDICAL SCIENCES

DDT Hailed as Great Contribution to Health

► **THE INSECTICIDE**, DDT, was hailed as a contribution to world health, following Army experience in which it checked a louse-borne typhus epidemic when dusted as a powder in mass delousing of civilians and aided in control of malaria when used as an anti-mosquito spray.

Blood protein derivatives were put to many new uses; gamma globulin to prevent measles, albumin for shock, fibrin foam to stop bleed-

ing, fibrin film (a plastic) to repair the tough cover of the brain, and fibrinogen with thrombin for cementing skin grafts in place.

A paste of red blood cells salvaged from plasma production was reported to give good results in speeding the healing of old, infected burns, varicose and other ulcers, and extensive granulating wounds.

Thanks to mobile surgery and reconditioning treatment, 97% of the wounded soldiers recovered and about one-half of these returned to duty; death rates from disease among the fighting forces were lower than the annual death rate in the Army during any one of the last 10 years of peace.

Ultraviolet radiation of barracks reduced respiratory illness by one-fourth.

Daily doses of sulfadiazine cut down meningitis, scarlet fever and streptococcus sore throat, and subsequent attacks of rheumatic fever in Army and Navy camps; care was necessary, however, to prevent harm from the sulfadiazine treatment itself.

The spread of colds and other air-borne diseases can be checked by the vapor of triethylene glycol, a large-scale test in a military camp showed.

Faulty function of the cortex of the adrenal glands was seen as a possible cause of leukemia.

Penicillin showed possibilities as an effective remedy for relapsing fever, Haverhill fever, parrot fever and erysipeloid; the drug proved effective in preventing peritonitis and in treating syphilis.

Sulfa-resistant gonorrhea was successfully treated in six hours with penicillin.

Experiments with mice led to the hope that anthrax may yield to penicillin.

The action of penicillin was prolonged by mixing it with beeswax and oil; elimination of penicillin via kidneys was slowed by the use of para-aminohippuric acid, and

also by chilling the tissues into which it was injected.

The production of penicillin was speeded by the use of radium and also by placing strips of cellophane in the culture medium; radio heat proved to be 48 times as fast as the old "freeze-drying" method for drying the drug.

Human ova were fertilized outside the body and their development through the first two cell-division stages observed.

Isolation of the growth-stimulating hormone from the pituitary gland was announced.

Aid to the diagnosis and prognosis in diseases of circulation, including immersion foot, was found in the use of radioactive sodium for measurement of circulation time.

Discovery was reported of a unique protein, apoferritin, that acts as an iron storage depot for the body, the stored iron having a magnetic susceptibility of a magnitude rare in iron compounds.

A chemical, named pyrexin, was found that apparently causes the fever that comes with inflammations.

A hormone produced by the pituitary gland in the head, the adrenotrophic factor, was reported to play an important role in body resistance to invasion by disease germs and poisonous substances through influence on the lymphoid tissue.

Drinking large quantities of sodium lactate solution saved victims of shocks in severe burns without the use of blood plasma.

An anti-malaria vaccine was successful in laboratory tests on animals.

An anti-reticulocytotoxic serum was reported effective for stimulating wound healing, suggesting its use as a weapon against cancer, high blood pressure and premature old age.

An airman's ceiling may be raised as much as a mile by eating sugar before flight and



LIKE A SKY ROCKET—Jet-assisted take-off enables the Navy's massive twin-motored Martin Mariner to shoot up from the water rocket-fashion.