

temperatures encountered by airplanes flying many times the speed of sound.

Chemicals that bond plastic to glass were developed, thus making plastic cars, boats and airplanes more practical.

A machine that converts sawmill scraps into strong, warpless board was invented; three men can operate it.

Work continued on an electronic aid for the blind; it is planned to use modulated light to detect obstacles, and will emit vibrations to signal a stepdown or other hazard.

A curb-climbing wheelchair for invalids was perfected.

The Army tried out television as a war weapon; cameras on the battlefield showed generals at headquarters how their strategy was progressing.

A television camera tube sensitive to X-rays was developed to help industries make X-ray pictures without film.

Ultrasonic tooth drilling without pain or audible sound was demonstrated upon human patients.

A high-speed tooth drill, driven by a tiny water turbine, was developed.

Titanium carbide, with a high strength at 2,000 degrees Fahrenheit, was developed for jet engines.

Tests using transistors in a new telephone system indicated that several conversations can be carried on at the same time on a single rural telephone line without interfering with each other.

PATENTS

Patents of the Year

Numbers following items are U. S. Patent numbers. Printed copies of patents can be obtained from the U. S. Patent Office at 25 cents each. Order by number, do not send stamps, and address orders to the Commissioner of Patents, Washington 25, D. C.

Notable and interesting inventions patented during the year included:

Chemical heating pads for GI battle clothes to keep soldiers warm for 290 hours. Patent 2,680,063.

Electrodes that harden reinforced concrete in 13 minutes, even at near-freezing temperatures. Patent 2,683,916.

High-voltage batteries, printed with polarized layers of metallic ink, to power printed radio circuits. Patent 2,688,649.

A quick, easy and efficient way of recovering uranium oxide from pitch-blende, carnotite, autunite or becquerelite ore. Patent 2,690,376.

A long-range supersonic guided missile having a fuel storage system that does not upset the missile's balance as fuel is used. Patent 2,690,314.

A camera for prospectors that can photograph underground radioactive ores to reveal the extent of the strike. Patent 2,688,095.

A way to give titanium metal a hard outer "skin" comparable to that of case-hardened steel. Patent 2,674,542.

A pulverized, mineral-enriched meat for babies who are allergic to cow's or human milk. Patent 2,673,803.

A tool that bores into mineral ores with a supersonic flame. Patent 2,675,993.

A steel alloy that can withstand temperatures of 1,500 degrees Fahrenheit in jet planes and gas turbines. Patent 2,677,610.

A talking dictionary, on magnetic tape, that also pronounces words through a loudspeaker. Patent 2,677,200.

A wartime radar that picks up only moving

Development of an ultra-high-frequency transistor was a step toward use of these tiny devices to replace a large array of vacuum tubes in radio sets, the transcontinental radio relay system, and submarine telephone and television repeaters.

Objects made of dry ice were tested in a supersonic wind tunnel to shed light on missile-cooling problems and the way meteors burn while plunging through the earth's atmosphere.

Bayonet-fighting tactics were revised for the first time since 1905 to increase survival and to save great amounts of energy.

A doughnut-shaped metal ring smaller than a shirt button was developed as a magnetic amplifier to govern huge machines.

A 110-watt fluorescent tube was developed that gives 35% more light than any previous fluorescent light source.

Plans were completed for an endless belt, linking Lake Erie with the Ohio River 100 miles away, to shuttle iron ore and coal overland.

Electronic computers were harnessed to such tasks as:

Forecasting amount of precipitation in advance of storms.

Routine office record-keeping.

Translating a foreign language into 85% sensible English.

Predicting how and when a flood upstream will hit communities downstream.

"Testing" the performance of jet engines and nuclear reactors while plans were still on drawing boards.

Science News Letter, December 18, 1954

PUBLIC HEALTH

Penicillin Success Hints Vaccine Against Syphilis

► POSSIBILITY OF vaccinating against syphilis appears in human volunteer studies reported by Dr. John C. Cutler of the U.S. Public Health Service at the meeting of the American Academy of Dermatology and Syphilology in Chicago.

"First conclusive evidence" that humans develop immunity to syphilis after penicillin treatment for the infection was obtained in the studies with the 62 human volunteers infected by inoculation with syphilis at the New York State Penitentiary, Sing Sing, N. Y.

The results, Dr. Cutler stated, show that "significant immunity develops during the course of human syphilis. This confirms the concepts of immunity established in animal experimentation.

"The 15-month study also developed information suggesting the possibility that a vaccine might be developed to immunize against syphilis," he declared.

"An injection of killed syphilis organisms (germs) apparently protected part of the volunteers who previously had syphilis from being infected a second time when inoculated by live organisms."

The information, Dr. Cutler and associates said, is "far from conclusive but appears to be a step in the right direction toward the search for such a protective agent."

Associated with Dr. Cutler in the study were Drs. Evan Thomas and Lopo de Mello of the New York State Department of Health, Dr. Bernard Kaplan of the New York State Department of Correction, and Drs. Sidney Olansky and Harold Magnuson of the Public Health Service.

Science News Letter, December 18, 1954

VETERINARY MEDICINE

Find Insecticidal Spray To Control Cattle Grubs

► THE FIRST effective insecticidal spray for the eradication of the cattle grub, a highly destructive insect parasite of cattle, was described to the Entomological Society of America meeting in Houston, Tex.

Entomologists A. R. Roth and Gaines W. Eddy of the U. S. Department of Agriculture's Western Research Center, Corvallis, Ore., reported on the results of preliminary tests with the experimental phosphate-type insecticidal spray.

They cautioned livestock men, however, that until further tests are completed, cattle grub control should continue to depend on the standard rotenone, to which the new spray has proved an equal.

In the tests, the scientists found that a 0.5% spray of 3-chloro-4-methylumbelliferone, 0, 0 diethylthiophosphate, simply designated 21/199, applied to the backs of nine grubby cattle, killed all the grubs, 245, in less than a week.

Science News Letter, December 18, 1954