

ELECTRONICS

Electron Tube Amplifies Very High Frequencies

➤ A NOVEL FORM of electron tube which can amplify radio signals of very high frequency was revealed by the Naval Research laboratory. This new electronic device has been dubbed "The Electron Wave Tube."

The inventor, Dr. Andrew V. Haeff of the laboratory staff, states that the instrument makes use of the same method as nature itself uses in generating microwaves in the sun and stars. Streams of electrons of different velocities are injected into evacuated space. The electrical repulsion between electrons causes radio signals applied to the streams to be greatly amplified as the electrons drift through space.

By this method, he states, he has achieved energy amplification of over 100,000,000 times in a single electron wave tube. The fact that in order to obtain such tremendous amplification, the electrons are simply injected into a hollow metal tube and permitted to drift along, makes the new device unique in the family of high frequency radio tubes, which usually require electrical circuits of intricate mechanical construction.

The development of the electron wave tube promises to expedite greatly the exploitation of the optical properties of extremely short waves.

Science News Letter, February 5, 1949

ENGINEERING

Portable Power Plants For Disaster Aid

➤ PORTABLE power plants on railway cars can help bring electricity overnight to disaster-stricken communities, an engineer proposed.

Brainard G. Hatch of the General Electric Company suggested that gas turbine power plants with a capacity of 3,500 to 5,000 kilowatts of electricity be mounted on two or three railway cars. This unit could be rushed to any area where emergency power was needed.

Science News Letter, February 5, 1949

INVENTION

New Check Is Adapted To Three Groups of People

➤ CHECKS have to fit the habits of three different groups of people—usually an impossible demand. First, you and I, average citizens, want to scribble them as we please, pin them to letters, carry them folded or even crumpled in our pockets. Then there is the teller at the bank window, who squints at the endorsements, slaps on a rubber stamp, spears them on a spindle and gives you your money.

Finally, back in the "works" of the bank, are the workers on mysterious punch-

card machines, who translate your figures into meaningful holes and notches for the mechanical fingers and brains of their robots. These folk look with disapproval on foldings, pinholes, spindle punctures and the like, which may lead the robots to false conclusions.

A check form that will reconcile these conflicting demands has been invented by N. D. Callanan of Buffalo, who has just received U. S. patent 2,459,263 on his idea. It is simple enough. One end is made of ordinary check paper, which can be worked on with pens, pins, tellers' spindles or what have you. The other end, firmly bonded to it, is of punch-card stock, and is sacred to the robot-feeders in the accounting department. So everybody ought to be happy.

Science News Letter, February 5, 1949

PALEONTOLOGY

Fossil Coyote Species Found in California

➤ A COYOTE-LIKE animal with some of the features of a hyena is represented by a fossil skeleton found near Ricardo, Calif., and described in a new University of California scientific publication, by Morton Green, graduate student in paleontology.

The animal, which Mr. Green has named *Tomarctus robustus*, was shorter-legged and bigger-pawed than the modern coyote. It had heavy crushing jaws, which further heighten its resemblance to the hyena.

In the place where the animal's stomach was when it lay down and died were found the remains of its last meal, the teeth and crushed bones of a rabbit.

Science News Letter, February 5, 1949

FORESTRY

Porcupines Prefer Larger Sizes in Trees

➤ PORCUPINES, which are merely interesting animals to summer tourists and campers, are serious, money-costing pests to foresters in winter. They gnaw bark from trees, frequently causing death by complete girdling.

Up to now, nobody has known for certain what size trees the bristly beasts were most likely to chew on. So tree-growing scientists of the Lake States Forest Experiment Station, St. Paul, Minn., made close counts of porky-gnawed trees on a jack pine plantation in northern Wisconsin and a Scotch pine plantation in lower Michigan. They found a definite preference for larger, more vigorous trees in all cases; hardly any attacks had been made on trees less than three inches in diameter.

Practical significance of this discovery is that anti-porcupine measures do not need to be taken until the trees are at the three-inch 'teen-age sizes; but these and all larger trees do need protection against porky's chisel teeth.

Science News Letter, February 5, 1949

IN SCIENCE

VETERINARY MEDICINE

The Army Mule Gone; "Vets" Find New Jobs

➤ HORSELESS cavalry scouts for the Army now, muleless supply trains bring up chow and ammunition, and the caissons go rolling along only in the song; yet the Army's veterinarians are not jobless. They have simply turned their skill to other tasks, the JOURNAL OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION points out.

Their main concern now is with the inspection of meats and other animal products used by the armed forces, and the planning of improvements in the handling of these commodities. Also, because unexpected developments may some day necessitate a return to animal power for some military purposes, veterinary corps personnel will continue to receive training along this line.

Science News Letter, February 5, 1949

MEDICINE

Develop "Single-Shot" Hypodermic Syringe

➤ A ONE-DOSE, discardable hypodermic syringe, intended primarily for military and other field uses, is the subject of patent 2,460,039, granted to Robert P. Scherer and John Otto Scherer of Detroit. As prepared for carriage, the dose of drug or serum is already in place, separated by a diaphragm from a compartment in which the needle is stowed, supported by a suitable guide, its point aimed at a sealed aperture. The whole setup is of course sterilized.

To put into use, the aperture is merely set against the point of injection and pressure applied to the plunger. This causes the needle to thrust forward through the seal and into the patient's muscle. The other end of the needle, in the meantime, pierces the diaphragm into the stored dose, which is thus injected in the usual manner.

Science News Letter, February 5, 1949

ENGINEERING

Scientists Build New Phone Booth

➤ NEWEST scientific advance in telephoning, reported by Bell Telephone Laboratories, is a better phone booth.

The new booth features a ceiling ventilator, concentrated lighting on the phone and writing shelf and a tougher, rubber floor. Production is scheduled to begin soon on the new booth.

Science News Letter, February 5, 1949

CE FIELDS

HORTICULTURE

Seed Catalogs Becoming Less Like "Spring Fiction"

➤ SEED catalogs, once jocularly referred to as "spring fiction", are becoming more factual, declare scientists of the U. S. Department of Agriculture. Such Hollywoodian adjectives as "superb," "magnificent," and "colossal" are giving way to soberer mention of the vegetables' suitability for freezing, canning, home consumption or shipping.

There is still room for improvement, the never-satisfied research men point out. Much is now known about the specific vitamin values of certain vegetable varieties, and they think it would be fine if the catalog compilers would use the ax on a few more adjectives and use the space for some mention of what vitamins you are harvesting when you gather a mess of snap-beans or pick a basket of tomatoes.

Science News Letter, February 5, 1949

ENGINEERING

New Explosive Cuts Cost Of Removing Tree Stumps

➤ PULLING TREE STUMPS to make pulpwood out of them is rarely economical because of the cost, but blasting them out with a new explosive provides a method that is not too expensive, the U. S. Department of Commerce indicates.

The explosive, known as Macite, is a TNT-coated ammonium nitrate mixture with a special catalyst making it sensitive enough for use with standard detonating caps. The use of this explosive is particularly recommended where cut-over land is being cleared for farming.

The report of the government agency, entitled Stump Removal Project, is based on work carried out by the University of Florida. It is available to those interested at a dollar a copy. It suggests cutting trees as close to the ground as possible because the entire trunk is good pulpwood while the stump itself is only of secondary value.

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CHEMISTRY

Natural Gas Freezing Due to Forming Hydrates

➤ COLD-WEATHER "freezing" of natural gas in transmission lines is due to the formation of crystalline compounds rather than the solidifying of the water in the gas, scientists now say. This conclusion comes from a joint investigation by representatives of the American Gas Associa-

tion in New York, and the U. S. Bureau of Mines in Washington.

The compounds formed are known as natural-gas hydrates. They are formed by the chemical combination of water and natural gas. Since the hydrates "freeze" or solidify at temperatures considerably above the freezing point of water, they form ice-like plugs which obstruct and often completely stop the flow of gas. These formations occur more frequently in high-pressure natural-gas lines.

A joint report of the study has been published at the expense of the American Gas Association, an organization supported by private industry. Copies may be obtained from the association, 420 Lexington Ave., New York City, but are not available from the government agency.

Science News Letter, February 5, 1949

PHYSICS

Slide Rule Measures Invisible Heat Rays

➤ THE amount of heat coming from a hot object can now be quickly and easily measured with what engineers of General Electric dub a special slide rule.

The device may be used to compute the total amount of energy being radiated, the wavelengths of the energy and the intensities of the radiation at the different wavelengths. Its use makes easy a process that has been long and tedious in the past.

In use, the radiation slide rule is set with one scale of the device on the temperature of the hot body. This setting brings other scales into line so as to indicate the wanted radiation factors. The device is particularly designed for the convenience of engineers working with problems in illumination, military applications in infrared, radiant heating and heat transfer. In such work it is important to know how much energy is coming from a source and where it is going.

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PALEONTOLOGY

Fish Fossils Being Excavated in Virginia

➤ FOSSIL skeletons of freshwater fish that lived in the middle of the Age of Dinosaurs have been found in a road cut near Haymarket, Va., and are being excavated for the Smithsonian Institution by Dr. David H. Dunkle. They belong to the upper Cretaceous period, approximately 175,000,000 years ago.

Fossils of this type are rare in this particular area, though similar ones are common in rocks found from Massachusetts to New Jersey. Related forms are also known from Australia and South Africa.

Nearest living relatives are found in the relatively primitive fish group known as the ganoids, of which the gar-pike and bowfin or freshwater dogfish are best known.

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AERONAUTICS

One-Man Attack Plane Carries Huge Load

See Front Cover

➤ A MARTIN AM-1 Mauler, one-man Navy attack plane, with a payload of more than 9000 pounds and a total gross weight of over 25,000 pounds has been flown on a routine test flight, it was recently revealed.

The photograph on the cover of this week's SCIENCE NEWS LETTER shows how the new attack plane carries its three full-size torpedoes and rockets on the outside where it can easily be jettisoned in case of emergency. The cannon are built into the leading edge of the wings.

Pilots call the big dive-torpedo bomber "Able Mabel". This girl is faster and offers greater range and firepower than earlier carrier-based attack airplanes. On the recent flight the pilot reported that the takeoff, rate of climb and response to controls, even at low speeds, were "pleasant and easy" while landing with the tremendous weight was no problem at all.

Besides torpedoes, bombs and rockets, the Mauler's optional loading arrangements can include search radar equipment or extra fuel tanks, giving the powerful attack plane a maximum range of more than 2000 miles.

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ENGINEERING

Traffic Lights Can Be Cause of Accidents

➤ TRAFFIC lights can cause accidents instead of preventing them. Whether or not an intersection should have a light is a question for engineers, declares Prof. Taylor D. Lewis, Cornell University engineer.

Prof. Taylor explained that traffic lights where they are not needed "only encourage the contempt of the motorist for traffic regulation and weaken the whole structure of traffic control."

Poor design, faulty timing, improper installation and the contempt of the motorist can make the stop-and-go light a traffic hazard, he points out. He cites the amber "caution" light as an example. One motorist speeds through it, while another who has been waiting may "sneak" into his path.

Self-enforced slowing-down zones are one method which has proved more effective than lights in some traffic control situations, Prof. Taylor says.

Even when traffic lights prevent right-angle collisions, they may be dangerous at an intersection, he contends. In some cases, rear-end and right-turn smashups may be increased by the signal.

Diagrams of accidents at an intersection and counts of vehicles and traffic density are useful in helping decide whether a light will be useful or dangerous, Prof. Taylor concluded.

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