

AERONAUTICS

New Navy Helicopter Has All-Metal Rotor Blades

➤ ALL-METAL rotor blades feature a new Navy helicopter just revealed. But nylon replaces metal in its fuel tanks, and a hatch in the floor permits the use of the craft in aerial photography.

This new experimental helicopter, built by Sikorsky Division, United Aircraft Corporation, Bridgeport, Conn., will be known as the XHJS-1 in the service. It has a maximum capacity of five persons, including the crew. It is specially designed for utility, rescue and observation work aboard aircraft carriers, battleships and cruisers.

It is a one-engine affair, and has a tail construction that makes it resemble the conventional airplane more than do other helicopters. Its tail rotor has been attached to an arm projecting upward at an angle from the tip of the tail cone. This raises the revolving blades above head level, making it safer for shipboard personnel, and will prevent the blades from striking the deck in landing in a heavy sea.

Science News Letter, March 27, 1948

ENGINEERING

"Yon Bonnie Banks" Are New Power Station Site

➤ IF ANY Americans are still suffering from sentimental qualms about TVA and the big dam construction projects planned for the Missouri River Valley, let them consider the plight of the Scots.

Loch Lomond, celebrated in the song dear to the hearts of many persons on both sides of the Atlantic, is to be involved in a new hydroelectric power development. London papers report that nearly \$200,000,000 will be spent on the project in the Scottish highlands.

Loch Sloy, a lake near Lomond, is being dammed. Water will be carried off in a two-mile tunnel through Ben Vorlich, a mountain.

And "On yon bonnie banks" will be the Sloy power station, on the west shore of Loch Lomond.

Science News Letter, March 27, 1948

WILDLIFE

American Biologists Are Surveying Cuban Birds

➤ AMERICAN biologists have begun a survey of the birds that winter in Cuba, the second Latin American country to request aid from this

country in studying its wildlife resources.

Three biologists of the U. S. Fish and Wildlife Service went to Cuba to make the bird survey. Although several Latin American countries have requested help in the development of their fishery resources, Director Albert M. Day of the Fish and Wildlife Service said that Guatemala is the only other country in South or Central America which has asked for U. S. assistance in a study of its wildlife resources.

The Cuban survey will help in planning future conservation programs to protect migratory birds all along their travels.

Frederick C. Lincoln, assistant to the director of the Fish and Wildlife Service, will head the group in Cuba. Other American scientists studying Cuban birds will be Allen J. Duvall and Thomas D. Burleigh, both of the Service's Division of Wildlife Research.

Science News Letter, March 27, 1948

FORESTRY

Preventing Floods Is Problem of the Land

➤ PREVENTING floods is a land job and not merely a water problem, Lyle F. Watts, chief of the U. S. Forest Service, declared.

The Department of Agriculture scientist discussed flood prevention as a guest of Watson Davis, director of Science Service, on Adventures in Science, heard over the Columbia network.

Floods result from "any upsetting of the natural balance between the soil and its ability to take in water, store it and control its run-off," Mr. Watts explained.

Causes of floods, as listed by the Forester, include:

Forest fires, excessive timber cutting, careless logging practice, over-grazing, and other abuses of land.

The forest and woodland areas, pastures and croplands at the headwaters of streams are where the flood problem begins, he said.

"What happens to a watershed," Mr. Watts declared, "is very often determined by who owns it."

He advocated public ownership of key watershed areas, citing Akron, Ohio, and Asheville, N. C., as cities that have bought up areas furnishing their water supplies.

But in most instances, watersheds involving flood hazards are under private ownership, the scientist reported.

Science News Letter, March 27, 1948

IN SCIENCE

ENGINEERING

Underwater Speed Greater In Streamlined Submarines

See Front Cover

➤ NAVY submarines are getting that new streamlined look. Called the "Guppy" program, the alterations involve streamlining the hulls of the fleet submarines by reducing the size of their superstructure and by removing deck guns and other topside appendages to cut down under-water resistance and increase their submerged speed, as shown on the cover of this week's SCIENCE NEWS LETTER.

These alterations are based upon research conducted by the Navy during and after World War II and on German U-boat developments. Several submarines have already been altered under this program and their trials are now being conducted in both Atlantic and Pacific waters.

Science News Letter, March 27, 1948

CHEMISTRY

Recover Diamond Dust By New Simple Process

➤ DIAMOND dust from polishing tools used in General Electric's laboratories at Schenectady, N. Y., are recovered for re-use by what is claimed as a relatively new and simple process. Over 1,000 carats of this dust were recovered during the past year.

One use made by G. E. of the diamond dust, a material as fine as face powder, is to polish dies of tungsten carbide, one of the hardest compounds yet devised by man. In use the dust falls into a receptacle along with oil, tungsten carbide powder and bits of bristles and rags. In the recovery process all can be burned off except the tungsten-carbide and diamond dusts.

This residue is washed with concentrated hydrochloric acid which oxidizes the tungsten. Tungsten is hard to dissolve, but by placing the mixed powders in a furnace at 800 degrees Centigrade the tungsten oxide is converted into tungsten trioxide which is easily dissolved in a solution of sodium hydroxide, commonly known as caustic soda.

Science News Letter, March 27, 1948

E FIELDS

CHEMISTRY

Check "Weed" Bacteria in Penicillin Mold with 2,4-D

➤ 2,4-D checks microscopic weeds in the laboratory as well as big ones in fields of cane or corn. Certain air-borne bacteria play the part of weeds in "crops" of *Penicillium notatum*, the mold that produces penicillin, stealing nutrients intended for it and inhibiting its growth. Two U. S. Department of Agriculture botanists, Elmer C. Stevenson and John W. Mitchell, have discovered that weak solutions of 2,4-D, from .02% to .08%, will prevent the growth of the bacteria without damage to the mold. The same treatment can be used for the protection of certain species of plant-disease fungi when these are intentionally grown for experimental purposes.

U. S. patent 2,437,766 has been issued on this discovery; rights are assigned royalty-free to the government.

Science News Letter, March 27, 1948

CHEMISTRY

Poison Ivy Chemical Now Imitated Synthetically

➤ URUSHIOL, which is the blistering compound that makes poison ivy such an intolerable nuisance, has been successfully imitated in a synthetic compound put together in the chemistry laboratories of Columbia University by Prof. Charles B. Dawson and Dr. David Wasserman. The new compound resembles the natural product not only in basic chemical structure but in physiological effects as well. Dr. Harry Keil of the New York Post-Graduate Medical School and Hospital is investigating this phase.

First use of the new synthetic ivy-poison analog may be for inoculation against poison ivy and its relatives, poison sumac and the poison oak of the Pacific Coast region. Principal value of the synthetic poison, however, will be in gaining a better understanding of the natural blister-raising substances, not only in native American plants but in Oriental lacquers and related materials which are derived from a small tree belonging to the sumac family.

Urushiol, the group-name of the poisonous principle in all these plants, both American and Asiatic, comes from the

Japanese phrase that means "lacquer-tree". It was coined in 1909 by a Japanese scientist named Majima, who was the first to isolate the poisonous, blister-raising compound. Later the close chemical kinship of poison ivy's toxin was demonstrated in this country.

Financial support for this research has been given by a New Jersey firm, the Irvington Varnish and Insulator Company. One of their best raw materials is an oil from the shells of cashew nuts. Botanically related to poison ivy and the poisonous Oriental lacquer tree, the cashew tree produces skin irritations resembling those of poison ivy. The company is therefore interested in obtaining a better knowledge of this toxic principle, for the better protection of its workers.

Science News Letter, March 27, 1948

ENGINEERING

Mud for Well Drilling Tested by New Apparatus

➤ THERE will be no "guess" in the so-called mud used in drilling deep wells if the mixture is laboratory tested in new apparatus developed by Norman E. Martello of Calgon, Inc., Pittsburgh.

The apparatus is relatively simple and inexpensive to construct. It circulates the mud mixture through it by a large centrifugal pump. The mud flows through a heated section where conditions encountered in action in the earth are simulated. A valve arrangement traps mud samples for viscosity checking. This viscosity can be checked periodically without withdrawal from the equipment. Chemicals may be added to the mud at any desired stage in the test period.

This mud is an essential in deep-well drilling. It is usually a mixture of certain clays, chemicals and water. It is pumped down the hollow shaft of the bit stock, lubricates and cools the cutting edge, and brings the debris from the bit to the surface through the bore outside the drill shaft. Another important function of the mud is to coat the walls of the bore, and also to hold back the oftentimes tremendous gas pressure encountered.

Modern drilling methods would be impossible without mud of low viscosity. In the well, the mud is being agitated and heated concurrently for long periods. These conditions may cause changes in the clays and the ordinary treating chemicals by complex reactions involving base-exchange, hydration or dehydration, or adsorption.

Science News Letter, March 27, 1948

AERONAUTICS

"Sweat-Cooling" System Aids Jet Engine Efficiency

➤ A "SWEAT-COOLING" system which operates in somewhat the same way as the body's perspiring has been found to increase the efficiency of turbo-jet engines, Dr. Pol Duwez of the jet propulsion laboratory, California Institute of Technology, told a national flight propulsion meeting of the Institute of Aeronautical Sciences in Cleveland.

Relatively large amounts of coolants are forced through porous metal walls of the combustion chamber at low pressures, Dr. Duwez explained. The common gases, nitrogen and hydrogen, have been found the most satisfactory coolants.

The coolant, forced in through the metal wall, forms a layer of gas between the wall of the chamber and the hot flame. This protects the chamber wall and reduces the heat loss.

In addition to increasing the efficiency of jets, the "sweat-cooling" will permit the use of different materials, in some cases ones less strategic or not in short supply.

Science News Letter, March 27, 1948

GENERAL SCIENCE

Rare New Zealand Parrots Eat Mutton, Not Crackers

➤ A TRIO of hard-to-please "Pollys" have arrived at the Balboa Park Zoo in San Diego, Calif.

The newcomers are three parrots that want meat—the fat lying about the kidneys of sheep, if you please—instead of the traditional crackers or the usual vegetarian diet of parrots.

Called keas, the meat-eating parrots are from South Island, New Zealand. They are rare even in New Zealand, probably because their unusual diet has not endeared them to sheep-raisers.

The keas' un-parrotlike taste for mutton is believed to be only about 80 years old. The kea formerly was a vegetarian in the manner of more common species. But they learned to eat meat during winter visits to the lowlands. Since then, hundreds of the birds have been killed by irate sheepmen.

Keas have a dull greenish-brown plumage and boast long, hooked bills.

The three keas in the San Diego zoo are the first brought to this country in several years.

Science News Letter, March 27, 1948