

INVENTION

Patents of the Week

A disease preventing solution for plants results from a new patent. A chemical spraying machine for farmers and a balloon for high altitude measurement have been invented.

► **DRUGS USED** to control human diseases can now be commercially applied to plants to prevent infection, a patent claims.

Certain antibiotics, such as the well known streptomycin, can be combined with an alcohol and sprayed on growing plants to protect them from infectious organisms, Dr. Reed A. Gray, Roselle, N.J., who won patent No. 2,977,282, states. Assigned to Merck & Co., Inc., Rahway, N.J., the patent can supply commercial growers and farmers with a disease-preventing solution.

Rain falling on the plants within a short time after spraying can wash away the antibiotic materials. By combining the antibiotics with the "polyhydroxy" alcohol used in the invention, the resulting solution is rapidly absorbed by the leaves or blossoms sprayed, eliminating the rain or dew hazard, Dr. Gray claims.

Antibiotics are known to be an effective control of certain plant diseases, but a deterrent to widespread use among farmers and fruit growers has been their high cost.

Help for the farmer is also promised in patent No. 2,976,647, awarded to John W. Pickrell of Scottsdale, Ariz. A chemical spraying machine that thoroughly drenches the plants as it is pulled by a tractor can be used for applying fungicides, insecticides and other agricultural chemicals.

The chemicals are discharged in tiny drops from the spraying machine and swirled by jet streams of air to all parts of the plants, including the underside. Present

methods of spraying huge tracts of land do not cover the plants adequately, especially underneath the leaves, the inventor claimed.

United States Navy balloons for high altitude measurements can be lofted into the air by a new method that won patent 2,977,069 for William F. Huch and Dr. John R. Winckler of St. Paul, Minn. The huge balloons, which carry weather instruments, can be launched even in severe weather. The invention prevents the uninflated balloon from forming a billowing sail when gusty winds swoop down on ships prior to balloon launching.

The balloon, which is threaded through a huge spool, is held down by a guy wire. When enough air is pumped into the inflated object, it is automatically released and the spool falls harmlessly to the deck.

A compact "cloud chamber" that traces the flight of atomic particles by their cloud trails through the chamber received patent No. 2,977,476. It was awarded Robert E. Fearon of Tulsa, Okla., who assigned the patent rights to Electro Chemical Laboratories Corporation, also of Tulsa. The cloud chamber also houses a device for magnifying the trails left by the atomic particles.

A safety device for use in coal mines won patent No. 2,977,479 for James L. Lauer of Philadelphia, who assigned patent rights to Sun Oil Company of New Jersey. The portable instrument detects such dangerous gases as methane, a gas feared by all coal miners.

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GENERAL SCIENCE

News From Science Clubs

► **NEWS** highlights reported to Science Clubs of America by elementary and junior science clubs cover a variety of lively programs and accomplishments.

AT THE St. Ambrose School in Anderson, Ind., the S.A.M. Club (its name stands for Science, Art, Mathematics) is building up a science and mathematics library. This junior high school club also maintains a classroom science table filled with current "Interesting Things." The group reports that its most effective programs feature lectures and demonstrations of "THINGS of science" experimental kits produced by SCIENCE SERVICE. Current projects include studying number systems and topology. Next semester members plan to explore set theory.

AN ELEMENTARY school club, the Gamma Rays of Douglass High School, Key West, Fla., carries on telegraph and phonograph experiments, takes field trips, puts on programs for parents and for the school assemblies, and is active in the science fair.

THE CORONADO Science Club of Plainview Junior High School, Plainview, Texas, enters four science fairs a year, sponsors the local science fair, and holds an annual awards banquet. The club schedules many projects during the year and adds equipment to the school lab each year. Its most popular programs feature local people such as "rockhounds, ham radio people, etc." Last year members won several college scholarships.

THE CLAYTON Grammar School Science Club, Chicago, Ill., enjoys scientific lectures. The highlight of the year is the science fair every April.

SCIENCE CLUBS are busy with some unusually interesting programs and projects this year.

THE PHI-BI-CHEM CLUB, Excelsior Springs High School, Mo., is studying the effects of radiation on the germination of bean plants. Members are building a Geiger counter and constructing a scale model of their school.

THE BIOLOGY CLUB, Chiba Prefecture, Japan, has a unique program of artificial hatching and culture of fireflies and is planning now to establish a breeding farm that will help to replenish Japan's supply of fireflies. The larvae are important agriculturally since they devour field and garden pests. Fireflies are used by the thousands in ornamental lanterns.

IN PUEBLO, COLO., the Chemocrats of Pueblo Junior College put on a show, "Chemical Capers," for the annual science fair.

THE ONAWAY High School Science Club, Onaway, Mich., publishes the "Onaway Science Club Experimenter," a news note sheet covering club events and up-to-the-minute science news copied or condensed from the Science News Letter, by special permission.

THE SCIENCE CLUB at Seminaire d'Amos, Amos, Quebec, Canada, has completed construction of two eight-inch telescopes. Individual members are experimenting with microscopy and microphotography.

THE BUG CLUB, Bedford High School, Bedford, Va., specializes in radio, not insects, and goes in for training and indoctrination in a big way. The club boasted three General Class licenses last year.

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AERONAUTICS

Continuous World Flights By Nuclear Planes

► **REVOLUTIONARY** continuous flights around the world and electrical power for deep space probes are among the prospective uses for a nuclear propulsion system now in the fabrication and test stage.

In cooperation with the Atomic Energy Commission and the Air Force, the powerplant division of United Aircraft Corporation has been working on a lithium-cooled nuclear aircraft engine. One aim is to develop a 250-ton manned military plane to fly at 600 miles an hour at 35,000 feet.

Preliminary design was completed last year in cooperation with Convair, a division of General Dynamics Corporation. Convair designed the NX-2 aircraft which is to be powered by nuclear turbojet engines.

About 2,500 full-scale engine test hours have been run on a basic model of a Pratt & Whitney Aircraft J-58 turbojet engine with a 30,000-pound thrust that is being modified for the nuclear powerplant. These tests indicated a performance exceeding the requirements for nuclear turbojets, using which, an aircraft can fly for days without refueling.

In Pratt & Whitney Aircraft's nuclear engine, the reactor is placed to the side of the engine. A radiator replaces the normal turbojet combustion chamber. A two-loop piping arrangement carries heat from the nuclear reactor to the radiator which heats the air required to operate the turbine and generate thrust. The primary loop is filled with liquid lithium believed the lightest and most efficient heat transfer metal. The lithium-filled loop transmits its heat to a secondary loop leading to the radiator.

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