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INVENTION

Patents of the Week

A giant flying machine called an Ionocraft could be used as a defensive shield against enemy missiles or a back-up antenna in global communications—By Elizabeth Hall

► A STRANGE, new flying machine that can relay messages and detect and intercept enemy missiles has been invented by aviation pioneer Maj. Alexander P. de Seversky.

The U.S. Patent Office issued patent 3,130,945 for the machine, called the Ionocraft, which operates somewhat like a helicopter. It takes off vertically and hovers as high as 60 miles up in the atmosphere or flies horizontally at high speeds.

Several small models have been built and demonstrated to Pentagon officials. Maj. de Seversky foresees its use as a unique missile detector and interceptor which, by internal radar equipment, could "lock-on" to the path of a guided missile and destroy it in a collision. Since there is theoretically no limit to its size (a single Ionocraft could be one mile square), several of the Ionocraft hovering together would shield a city from attack.

Flying 'Antenna'

Because it is easily raised and lowered, it could be a valuable "flying" antenna for the military, one that could be pulled down quickly and moved to another spot. In a commercial sense, Ionocraft could back up communications satellites in global television and radio systems.

One Ionocraft stationed 700 miles west of New York and another 700 miles east of Los Angeles would provide direct TV and radio transmission between the two cities. Similarly stationed craft in Greenland and Iceland would provide comparable communications between the U.S. and Europe.

The Ionocraft has no moving parts, but moves by discharging ions or charged particles. Basically, it consists of two planes of electrode wires, one above the other. The upper grid of spaced wires emits electrically charged particles, which transfer their charge to surrounding air molecules.

The oppositely charged lower grid consisting of a wire mesh attracts the ions, thus pulling a mass of air down. The air passes through the wire mesh, providing lift, and the particles are neutralized by the lower electrode grid.

Energy Beamed From Earth

The craft would receive its energizing source by microwaves beamed from earth or from solar energy. Laser and maser beams could aid in the transmission of energy to the craft.

A gas turbine engine or internal combustion engine could be added for auxiliary power when extra speed is needed. The craft is remotely guided by de-energizing one or more of the four sections to cause it to tilt, turn or fly horizontally.

The author of "Victory Through Air Power" and "Air Power—Key to Survival,"

Maj. de Seversky is best known for inventing the world's first fully automatic bomb-sight, in-flight refueling devices, the P-35 and P-43 fighter planes, the prototype P-47 Thunderbolt fighter plane, the first air-cooled engine fighter with turbo-supercharger and the all-metal low-wing U.S. Air Force basic training plane.

A bombing ace in World War I, he has since set many world speed records. Patent rights to the Ionocraft were assigned to Electronatom Corporation, New York, of which he is president.



Electronatom Corporation

FLOATING SPIDER—Maj. Alexander P. de Seversky demonstrates takeoff and hovering of a small Ionocraft model.

Other Significant Patents

A radiation control system for spacesuits and moon capsules that operates like venetian blinds to shut out radiation—patent 3,130,413 to Otto Schueller, a physicist with the Aerospace Medical Research Laboratories, Wright-Patterson Air Force Base, Ohio; assigned to the U.S. Air Force.

A portable, collapsible front porch for a house trailer—patent 3,131,001 to Francis B. Meyer, Summerville, S. Car.

A device attached to a bathing suit that automatically inflates and keeps a swimmer's head above water if he has a diving accident—patent 3,130,424 to Anthony S. Santangelo, Syracuse, N. Y.

A metallic window-breaking tool for persons trapped in automobiles—patent 3,130,884 to James T. Lintz, Fombell, Pa.

A simulated golf game with a game board having recesses for fairways, a scorecard

and appropriate course, hazard, distance and par information for each hole—patent 3,130,973 to Argentine C. Zapolski, Hawthorne, Calif.

A washcloth, with a pocket for soap, designed especially for washing the back—patent 3,130,441 to Wilbur D. Hahn, Sidney, Ohio.

An air-cushion dashboard that protects passengers from injury in an accident—patent 3,130,807 to Bobby R. McHenry, Kansas City, Kans.

An electric jump-rope game for teaching children coordination—patent 3,130,970 to Eugene C. Hutsell, Seattle, Wash.

• Science News Letter, 85:318 May 16, 1964

GENERAL SCIENCE

Animated Movie Tells Of Stars and Men

► **THE FIRST MOVIE** of its kind, an animated color film telling of space and time, matter and energy, had its world premier in New York on April 28.

The cartoon-like movie is based on the book, "Of Stars and Men," by Dr. Harlow Shapley, retired director of Harvard College Observatory, Cambridge, Mass. Although the film primarily lets its spectacular color pictures speak for themselves, Dr. Shapley acts as narrator upon occasion. Its title is the same as the book, which has been translated into six languages including Russian, Hindi and Polish.

The movie was made "as a work of love" by Dr. John Hubley and his wife, Faith Eliot, of Storyboard, Inc., New York, Dr. Shapley told SCIENCE SERVICE. Dr. Hubley formerly worked with Walt Disney in making such animated movies as "Pinocchio."

Next fall, Dr. Shapley said, Beacon Press will bring out a deluxe edition of the book, "Of Stars and Men," containing some of the color photographs used in the film.

• Science News Letter, 85:319 May 16, 1964

BIOCHEMISTRY

Fluorides Show Promise Of Helping Bone Disease

► **FLUORIDES**, which harden tooth enamel, are believed to have a pain-relieving effect on a destructive bone disease of old age called osteoporosis.

Dr. Daniel S. Bernstein of Harvard Medical School and Peter Bent Brigham Hospital, Boston, told a meeting in Philadelphia that a "significant" number of patients treated with fluoride who have osteoporosis have reported appreciable reduction in bone pain. Their brittle bones get hard.

When fluoride is given by mouth, X-rays show that the bone crystals become larger and therefore harder. Evidence suggests, Dr. Bernstein said, that fluoride decreases both the bone formation rate as well as the resorption, or break down, rate.

Dr. Bernstein spoke at a seminar on anabolism and catabolism, which are phases of metabolism. The meeting was sponsored by Hahnemann Medical College and Hospital, Philadelphia.

• Science News Letter, 85:319 May 16, 1964

Nature Note**Ovenbird**

► **IN THE QUIET** of a spring night you may hear, if you live near the woods, the ecstatic flight song of the ovenbird. He is seldom seen as he leaves his perch to fly, for he and his mate are very shy, but his lovely song is easily recognized by its familiar teacher, teacher, teacher ending.

The ovenbird, *Seiurus aurocapillus*, sings in the spring to establish his territory in the woods. Like many birds, the ovenbirds in an area set up well defined boundaries for the area in which each pair may nest and hunt for food. Probably each bird recognizes the individual songs of his neighbors.

Once the territory is set up, the female builds her nest on the ground. First she intertwines grass and twigs into a base. Then she carefully selects long strips of bark, grass and leaves to build three sides and a roof, which will keep her and her eggs safe from wind, rain and sun.

You may see her walking about on pink legs among the leaves near her "oven" nest. She is a sparrow-sized ground bird, a member of the warbler family. Olive brown above, white streaked with black beneath, and with a dull orange patch on the crown of her head, she resembles a small thrush.

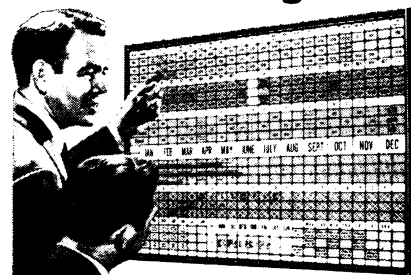
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