

AERONAUTICS

Wing Shape Speed Factor

XF-91, combining jet and rocket thrust, makes the first faster-than-sound flight of any U.S. fighter plane completely equipped for combat.

See Front Cover

► THE UNUSUAL shape of the wings of the new Air Force XF-91 combat-type fighter plane, which has already made flights faster than the speed of sound, may be the forerunner of wings of the future for supersonic aircraft.

The wing is what is called an inverse taper type. It is wider at its tip than at its base where it joins the fuselage. It was adopted for this plane because earlier flight tests showed conclusively that it successfully reduces wingtip stalls due to loss of lift, which is normally experienced with conventional tapered wings.

The inverse taper combined with leading edge slots makes possible flying at speeds lower than that possible with other jet fighter planes. This gives the XF-91 a double advantage, a low speed for landing and at other times when desired, and a high speed when needed. In addition, extra thinness of the wing at the fuselage junction reduces drag and permits a more even flow of air at this point.

Another feature of the wing is important. It is a sweptback type with variable positions permitting a high angle of attack for take-offs and landings and a low angle of attack for high speed flights.

The new plane, rated in the 700-mile-per-hour class, is a product of Republic Aviation Corporation, Farmingdale, Long Island. Its primary power is a General Electric J-47 jet engine which has a thrust of 5,200 pounds, to which more can be added by an afterburner. Very important, however, is its supplementary rocket power. It is equipped with a rocket engine manufactured by Reaction Motors, Inc., Rahway, N. J., which has a 6,000-pound thrust and gives the extra power for supersonic speeds.

The Republic XF-91, with a span of about

31 feet and a length of 43 feet, is classed as a high-altitude, high-speed interceptor, able to meet and defeat any high-speed bomber that might attack American forces. It is a combat-ready airplane, but for some time it is to be used in research flights.

The plane is shown on the front cover of this week's SCIENCE NEWS LETTER, equipped with external fuel tanks, during a flight over Edwards Air Force Base, Calif.

Science News Letter, December 20, 1952

GENERAL SCIENCE

Recent Plastics Make Christmas Tree Bright

► YOUR CHRISTMAS tree this year will probably be gayer because of materials recently developed.

Bells, canes and snow men of foamed plastic are finding their way onto the home evergreen. Plastic modeling material that can be hardened in the oven enables you to design your own ornaments.

How different the Christmas trees today look from those of our grandparents who adorned their evergreens with festoons of cranberries threaded like beads and with strings of popcorn. The apples and nuts, cakes and candles, red strips of paper and bits of soft cotton that gave European Christmas trees a festive appearance in the early days are now seldom seen.

Christmas tree ornaments were first made of glass in the middle of the nineteenth century, in a little town of olden Germany. They continued to be hand-made until 1939, when machines similar to those used in manufacturing electric lights first began turning them out by the millions here in the United States.

Several interesting Christmas tree ornaments or materials for making them are included in the December unit of THINGS of science, just issued by SCIENCE SERVICE. They include a durable glass pine cone, plastic modeling material that can be hardened in the oven, a small block of lightweight foamed plastic for carving a snow-white ornament, aluminum foil for cutting long, narrow strips used as Christmas tree glisten.

The kit, available for 75 cents, is complete with instructions for using the specimens, and directions for identifying the most common Christmas trees. Just write SCIENCE SERVICE, 1719 N St., N.W., Washington 6, D.C., and ask for the Christmas Tree Ornaments kit.

Science News Letter, December 20, 1952

• RADIO

Saturday, Dec. 27, 1952, 3:15-3:30 p.m., EST
"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. Kirtley F. Mather, professor of geology, Harvard University, and retiring president of the American Association for the Advancement of Science, discusses "The Common Ground of Science and Politics."

INVENTION

Patent Delayed 19½ Years by Security

► AN INVENTOR has now received a patent after waiting 19 and a half years for it.

Chester T. Minkler, a Newport, R. I., Navy employe, received patent number 2,617,703 for a torpedo recording mechanism for which he applied May 9, 1933. The patent application was not granted for security reasons, a Navy spokesman said.

The recorder is a camera fitted into a practice torpedo. It takes a picture of the target ship at the moment the torpedo is supposed to go off. It is used in torpedoes that explode when they come near a target without actually hitting it. This underwater "proximity fuse" torpedo, only revealed after World War II, was the reason for keeping the invention secret.

Science News Letter, December 20, 1952

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