AERONAUTICS

U. S. Improves British High-Powered Jet Engine

➤ AN AMERICAN-improved, British-designed jet engine, which recently successfully completed its official 150-hour military test, is now in production and is said to deliver a static thrust of 5,000 pounds, the highest yet announced for any American jet engine.

At 650 miles an hour or more, 5,000 pounds of thrust is equivalent to almost 9,000 horsepower, Pratt and Whitney engineers in East Hartford, Conn. stated in revealing the new engine. It will be known as the JT-6B Turbo-Wasp, and will be used first in the Grumman F9F-2 Panther, a Navy carrier-based fighter with an announced speed of over 600 miles an hour.

This Turbo-Wasp is a pure jet propulsion power plant, with a single-stage, double-entry centrifugal compressor, nine combustion chambers and a single-stage axial flow gas turbine. The basic design of the engine was the work of Rolls-Royce, in England. Pratt and Whitney acquired the United States manufacturing and sales rights to this British Nene in May, 1947, and has since made extensive changes in accessory case design to meet U. S. Navy requirements.

Americanization of the engine has also included the incorporation of metals, parts and accessories from domestic sources. Magnesium for example, is used to replace the heavier aluminum for some parts. The complete engine is roughly eight feet long and four feet in overall diameter. It can be operated either with kerosene or with gasoline.

Science News Letter, January 8, 1949

AERONAUTICS

Cross-Wind Landing Gear For Planes To Be Promoted

➤ THE USE of landing gear for airplanes, the cross-wind type which will permit safe landings on single runways regardless of the direction of the wind, is to be promoted during the coming year, the U. S. Civil Aeronautics Administration revealed in announcing the appointment of John H. Geisse to take charge of the program.

This so-called cross-wind landing gear, which has landing wheels on casters instead of fixed in a single position lengthwise with the plane, is to be promoted primarily as an economy measure in airport construction. Airports for all-weather use today have runways extending in several directions so that planes can land headed directly into the wind, or at an angle not over 22.5 degrees from directly into the wind. When planes are equipped with the cross-wind gear, one landing strip only will be required in light-traffic ports, and parallel strips can be used in others.

The program will involve working with aircraft manufacturers on further refinements of the cross-wind gear developed during the past year or two, and their installation on new and old planes. It will involve also work with operators of private and commercial planes on conversion of their craft to cross-wind gear, and work with communities planning to build or improve airports.

The use of cross-wind landing gear is not new because it was used on some planes 25 years ago but later was discarded in favor of undercarriages having two fixed wheels ahead of the center of gravity and a castered steerable tail-skid or V-wheel. The present cross-wind gears were not designed by the government but by individual airplane manufacturers at the suggestion of the CAA. This government aviation office has tested the various types developed and has issued a report covering several of them.

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ENGINEERING

Roofing Paper Protects Basementless House

➤ ROOFING paper, covering the soil under a basementless house, helps keep the moisture low in the crawl-space between floor and earth and decreases danger of timber rotting and iron rusting. It lessens the need for crawl-space ventilation, thus making it easier to keep the floor warm.

This is the finding of the U. S. Department of Agriculture after extended observations. Heavy roofing paper is recommended by it. With properly covered soil, the crawl space was often found dry enough to be used for storing garden tools, lawn mowers and lumber.

"Sweating" or condensation of moisture has not been found in a single case where this precaution was taken, Dr. J. D. Diller, a Department forest pathologist, stated. This means protection not only for the lumber in the structure but against rusting of steel, deterioration of insulating materials, buckling of floors, and the short-circuiting of electric wiring that sometimes occurs in moist spaces.

Science News Letter, January 8, 1949

INVENTION

Pilots Forced to Jump Are Protected by New Device

➤ PROTECTION for aviators forced to jump from high-speed planes in a hurry is provided by an English inventor, James Martin of Higher Denham. Around the pilot's seat, but out of the way in ordinary flight, are a series of quickly engageable plates to cover his body and face against the sudden buffeting of the outside air when he is tossed out of the falling or spinning plane. This invention is covered by patent 2,457,252.

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IN SCIEN

AERONAUTICS

Radar Housing on Plane Wing Tips Satisfactory

➤ A PLACE to carry radar equipment on airplanes without using valuable cargo space has been discovered. It is at wing-tips, in bomb-like casing similar to the tanks used on jet planes to carry extra fuel.

These experimental wing-tip radio-radar domes have been successfully tested in Hagerstown, Md., by Fairchild Aircraft on a Fairchild C-119, the improved version of the well-known box-car Packet. They were developed for the U. S. Air Force at the request of the Air Materiel Command at Wright Field.

Dubbed radomes, they are made of plastic and built into special wing tip sections adaptable for Fairchild planes of the present and future. The radar equipment, mounted in the left wing-tip dome, weighs about 200 pounds. Standard radio equipment which was moved to the right wing to balance the ship, also eliminates two antennae usually mounted on the plane's exterior.

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BOTANY-CHEMISTRY

Wild Onion of India Good As Starch Substitute

➤ A WILD onion in India is passing from a useless weed to a useful plant. It has just been found at the Jiwaji Industrial Research Laboratories in Gwalior, India, that it can yield a white powder suitable to replace starch for sizing and finish in textiles.

The discovery was made in research to obtain a cheap substitute for grain starch because all grain grown in India is badly needed for food, explained Dr. R. R. Seth of the Laboratory. The desire was to find a starch substitute from a plant which seemed to have no food value and no other known uses. This Indian wild onion has some value in medicine, but it is expected that a commercial process will be found to recover the medical ingredients and still obtain the starch substitute.

The botanical name of the plant from which the sizing material is obtained is *Urginea indica,* but it is known locally as Kolikanda. Although its common English name is wild onion, the plant is actually more nearly related to the red squill, *Urginea maritima,* that grows in the Mediterranean region and has long been used as a rat poison. It has also been used, oddly enough, in the preparation of a standard cough remedy, syrup of squill.

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CE FIELDS

METEOROLOGY

New International Weather Code Put into Effect

➤ WEATHERMEN all over the world gave a New Year's present to each other, in the form of a new code for the swift and compact transmission of information on which daily weather maps are drawn up and several-times-daily forecasts made. It was put into use for the first time Jan. 1, 1949.

When the teletype machine in a weather office starts to stutter out on its printed tape something like this: 40350 83220 12716 and so on, it didn't mean they had tuned in on any of the "bowl" football games. Those numbers, and the order in which they occur, told a meteorologist's experienced eye where the message came from, when the observations were made, whether there was rain or snow or sunshine, how hard the wind was blowing and from what direction, and all the other data which appeared presently on the weather map as black dots for rain, stars for snow, swishy lines for cloud types, and all the other hieroglyphics that make weather-map reading a fascinating game nowadays.

Cooperating meteorologists will be sending and receiving these code messages in most of the European countries, including former enemy lands, as well as the more advanced Asiatic countries, and all the Latin-American, South African and other Southern Hemisphere regions.

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HORTICULTURE

Medals Awarded to New Varieties of Vegetables

➤ MEDALS are being handed out to squash, lima beans, lettuce, radishes, cauliflower and sweetcorn. These new vegetables, winners of the All-America Selections awards for 1949, may be grown in your own garden this spring.

Caserta summer squash, light yellow with irregular green stripes, wins the first Gold Medal given for vegetables in over a decade. Just a few plants will supply a family with squash over a long season. Developed by Dr. Lawrence C. Curtis of the University of Connecticut experiment station, it is of the summer bush type.

The coveted Silver Medal goes to the Triumph bush lima bean, which produces the finest quality butter beans available throughout the whole country. Especially tasteful fresh from the garden, Triumph is great for canning and freezing and it is valuable for dry or shelled beans. Drs. Roy Magruder and Robert E. Wester, U. S. Bureau of Plant Industry, are responsible for this achievement.

Two heat-resisting head lettuce varieties, both developed by Prof. M. T. Lewis of Penn State College, receive Bronze Medals. Premier Great Lakes lettuce is resistant to tip-burn. Trials produced over 90% of choice marketable heads in summer, an outstanding record. This lettuce matures about a week earlier than its co-winner, Pennlake lettuce. Strongly resistant to heat and tip-burn Pennlake lettuce makes a smaller head that fits conveniently into the refrigerator.

Cherry Belle radish, also a Bronze Medal winner, grows into round globes of the brightest red. It is crisp and firm at all stages.

Easy to grow, Ideal Snowball cauliflower produces beautiful big heads or curds which hold for days without ricing or granulation. Flagship hybrid sweetcorn provides bigger ears on stronger stalks, even under adverse weather conditions. Both of these receive Honorable Mention.

Seeds of all these vegetables, destined to soon replace many of the older favorites, may be obtained conveniently through any reliable seed house. They should be ordered early, however, if you want to be sure of a supply this first season.

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AERONAUTICS

Polarizing Sun Glasses Not Approved for Pilots

➤ POLARIZING sun glasses, worn by aircraft pilots in flight, may cause spots and streaks in front of their eyes, and are regarded as hazardous and distracting by officials of the U. S. Civil Aeronautics Administration. Their use is not recommended.

Glasses which polarize light cause the appearance of numerous dark areas in certain types of windshields, this government agency states in a report. Sometimes these resemble large-screen mesh; in other cases they form parallel light and dark streaks. Visibility is greatly decreased.

The reason for the phenomena is that "strain patterns" in the original material from which the windshield was made become visible when light is polarized. This fact has long been known, and has been applied in various industrial processes. However, the appearance of such patterns in a windshield, where they are normally invisible, can be a serious flight hazard.

The report, copies of which are available free from the Civil Aeronautics Administration in Washington, was prepared in Oklahoma City in the agency's Medical Research laboratory, by John J. Swearingen and George R. Johnson. Its title is STRAIN PATTERNS IN AIRCRAFT SAFETY WINDSHIELDS AND VISIBILITY THROUGH POLAROID SUN GLASSES.

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ORNITHOLOGY

Bird Migration Patterns Still Puzzling Watchers

➤ BIRDS are still proving puzzles to men, particularly in their ability to make long and seemingly unguided flights between their summer and winter ranges. In SCIENCE (Dec. 24), several observers offer their data and suggest explanations.

A recently propounded theory, that birds making east-west flights over oceans are merely following ancient routes that were shorter before continental drift separated the land masses, is examined and rejected by Dean Amadon of the American Museum of Natural History in New York. He declares that most paleontologists, students of ancient life, do not accept the theory of continental drift, and he also argues that the primitive birds that existed when this drift is supposed to have started can hardly be imagined as having anything resembling the highly developed migration pattern of modern birds.

Bird migration patterns are by no means fixed and changeless, states James Hodges of the Davenport, Iowa, Public Museum. He cites definitely established cases of band-identified birds shifting from one flyway to another in the central valley of this continent, although these flyways are separated by scores or hundreds of miles.

An English observer, C. Suffern of Fareham, Hants, calls attention to the tendency of birds to follow shorelines or island stepping-stones instead of going in the straight lines imagined in the old phrase, "as the crow flies." He mentions several such island guide-chains followed by birds in flight across the Mediterranean, some of which were continuous land bridges in relatively recent geologic time.

Bird migration routes across oceans may be determined, at least in part, by prevailing wind patterns at migration time, suggests H. Landsberg of the U. S. Research and Development Board, Washington, D. C. Some of the most puzzling of transatlantic bird flights fit rather neatly into the patterns of seasonal weather maps, he declares.

Another migration-guide theory, that birds somehow respond to the magnetic field of the earth, has been re-examined, with negative results, by Donald A. Gordon, University of Illinois psychologist. He attached light but powerful magnets to the wings of one lot of Army homing pigeons, slugs of similar unmagnetized metals to the wings of a similar group, and used a third group without anything attached as controls. All the birds got home, though according to the theory the birds with rapidly oscillating magnets on their wings should have become confused and got lost. The experimenter feels that further research, with still more careful methods and analysis of results, is needed before a final verdict can be turned in.

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