

AERONAUTICS

New Robot Pilot for Planes Warns If Instruments Err

Newest Addition to the Instrument Board Can Flash As Many as 90 Lights for as Many Kinds of Trouble

AVIATION has a new robot pilot which automatically warns the men in the cockpit if something goes wrong. It is arousing wide interest among airmen as a possible safety advance of first rank importance.

Developed by engineers of the Curtiss-Wright Corporation's St. Louis Airplane Division under C. W. France and George Page, Jr., the new "tell-tale" robot can flash on 90 lights to announce as many kinds of "trouble" before it happens. It "watches" the plane's instruments continually.

If landing flaps are not operating properly when the plane comes in for a landing, for example, a light labelled "wing flaps" flashes on and calls the human pilot's attention to the situation. If the airport battery car is still plugged in when the pilot gets ready to start, the indicator lights another lamp.

Failure to notice a dial that shows

something out of kilter will be prevented by such a device. It may help prevent accidents in the future by simplifying the task of pilots in the midst of an increasingly complex welter of instruments.

The "tell-tale" indicator is the second robot pilot to find its way into the cockpit. The first, the gyro-pilot, is today at the controls nine-tenths of the time commercial airliners are aloft.

Ten pre-selector switches enable the pilot to set the system for each of the main operations concerned in flying an airliner. Pressing one of the switches picks out the particular combination of instrument readings and control adjustments proper to the chosen operation. Deviation from the proper combination causes the revealing light to flash on. Switches are provided for test, start, taxi, take-off, left engine, right engine, cruise, landing, stop and off.

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ARCHAEOLOGY

Ruins Yield Clues To Hittite Palace Life

THE MYSTERIOUS Hittites are not nearly so mysterious as they used to be.

Archaeologists are persistently digging up Hittite cities in Asia Minor and Syria to the north and northwest of Palestine. As a result, Hittites are now classed respectfully with the big powers of antiquity, and their two eras of expansive empire, when they dominated wide regions of the ancient world, are being restored in some detail to pages of history.

One gap in knowledge of Hittite fortunes has been the time between 1650 B.C. and 1400. That was between the two great empire eras, when Hittite kings seem to have lacked the militaristic urge to power.

So, it is a red letter Hittite day when Sir Leonard Woolley excavating for the

British Museum at Atchana, near Antioch in northern Syria, finds a Hittite palace that was built about 1600 B.C. and burned near 1400.

Whether the era was considered a time of fortunate peace, or one of weak depression, by people in those days, the palace ruins at Atchana suggest that Hittite rulers there lived well and conducted business as usual.

Wrecked by fire though it was, the palace ruins tell an amazing lot to an archaeologist. Sir Leonard identifies suites of rooms with bedroom and bath and points out women's apartments marked by the combs, pins, trinkets and toilet boxes in the debris. Other rooms containing little besides clay tablets and wine jars are presumed to have belonged to scribes—the secretaries and clerks.

In one annex to the palace is a suite

of work room, bedroom and lavatory, which belonged apparently to the archivist, since a room built especially for storing records is near it. Most of the tablets stored here were removed in the fire 3,400 years ago, but elsewhere in the annex offices 300 clay documents awaited the archaeologists.

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FORESTRY

Plant Grove in Hope Of Saving Chestnuts

KEEPING alive a remnant of America's nearly vanished chestnut forests is the task which botanists at North Carolina State College near Raleigh, N. C., have set for themselves. The species has been practically wiped out during the past 35 years by a fungus blight.

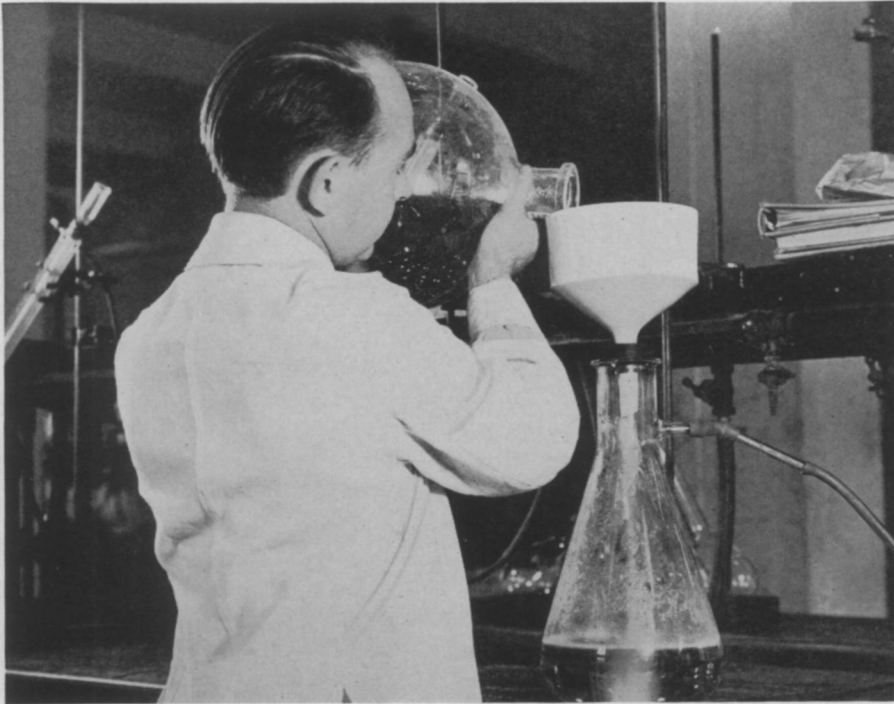
The botanists at State College have planted a grove of healthy young chestnut trees, 200 miles from the nearest natural chestnut habitat, in the hope that this isolated little group will escape the blight. The trees have now been standing for four years and appear healthy.

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WHERE IT GOES

Here's what happens to some of the hair that finds its way to barber shop floors—it goes into the manufacture of amino acids, building blocks of nature from which life-essential proteins are made and which have a variety of uses in science. The photo shows a laboratory assistant cleaning a tub of hair.



A STEP IN THE PROCESS OF GETTING ACIDS FROM HAIR

After treatment with hydrochloric acid, impurities are removed with a filter. Later the acids are isolated, purified, tested for purity and end up in bottles whose contents are worth as high as \$1,000 a pound.

WILDLIFE

Wild Ducks Still Suffering From Last Fall's Hurricane

Efforts to Save Trumpeter Swan and Desert Mountain Sheep Related Before Fourth North American Wildlife Conference

WILD ducks of the North Atlantic coastal marshes are still suffering from the effects of the New England hurricane of last autumn. It will be several years before the wet world where they like to swim and feed will be back to normal, Richard Griffith of the U. S. Biological Survey told the Fourth Annual North American Wildlife Conference in Detroit.

Giant waves whipped up by the great wind did the ducks dirt, coming and going. When the water rushed in, it cut away the barrier beach at many points, washing large quantities of sand on to the marshes bordering the inside beach. Then, when the water ran out again, it scoured many acres of bay bottom, removing large quantities of food, as well as the bottom muck that grows duck food.

One good thing, the ill wind blew the ducks: it cut new inlets, permitting tides to run more freely into the ditches that have been cut into the marshes as an anti-mosquito measure. This greater tidal play in the marshes is an advantage from the duck point of view.

The situation is not hopeless, however, Mr. Griffith made plain. In from two to five years the various types of wildfowl food will have reestablished themselves.

The "graceful white swan" of the popular ballad is very close, in one species at least, to total extinction. Not more than 200 trumpeter swans remain in the United States, and a small number in northwestern Canada, A. V. Hull of the U. S. Biological Survey told the Conference.

Efforts to keep the species in existence and to increase the number of birds are facilitated by the fact that the only

places where they live are rigidly protected. They are in Yellowstone National Park and on a newly established wildlife refuge at Red Rocks Lake nearby in Montana. The refuge is administered by the Biological Survey, and National Park Service rangers aid in the protection of the swans that nest in the park.

On Muskrat Houses

Favorite nesting places are on top of muskrat houses, Mr. Hull told the meeting. For this reason artificial mounds resembling muskrat houses were built, to make additional nests possible, and the swans took to them very readily. It is also planned to increase the water areas in their habitat, and to build artificial islands where they may safely rest and preen.

Their worst enemies are coyotes. Absolute control of these predators is essential for their preservation, Mr. Hull declared, adding, "A single coyote on their breeding grounds may destroy many nests, as well as adult birds and cygnets."

Efforts on behalf of the trumpeter swans seem to be meeting some success. A census in 1936 showed 69 adults and 39 cygnets, or young birds; the 1938 census showed 93 adults and 55 cygnets.

Another Vanishing American is being carefully watched, and safeguarded as far as possible, by the U. S. Biological Survey, Joseph C. Allen, Survey zoologist, stated. It is a species of bighorn known as Nelson's mountain sheep, that lives in the desert mountains of Nevada. There are pitifully few of the animals left, and it will require all possible vigilance and care to save the species from extinction.

Coyotes Take Toll

Coyotes and other predators take toll of the lambs, and it is necessary under some circumstances to fight the coyotes, Mr. Allen stated. A much more destructive predator, however, is one that cannot be shot at sight: the prowling human poacher. Incessant and thorough patrol of the sheep's range is necessary to keep his nefarious activities in check.

Bolder, more enterprising immigrants into this new land don't stop right at the ports where they enter this country. They keep on travelling, until they find a homesite that suits them. So is it also with the chukar partridge, a hardy, sprightly game bird brought here from northern India and central Asia, according to W. O. Nagel, research associate at the University of Missouri.

Missouri was chosen as a sample state