

infra-human environment as well as their physical make-up would permit. They can ape better than the apes. A human child living among apes or

wolves would be expected to do as the apes or wolves do. This might indicate high intelligence rather than low.

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AERONAUTICS—RADIO

New Rotating Radio Beam Directs Pilot to Fixed Beacon

BY MEANS of a radio beam which sweeps around the horizon 60 times a second, airplane pilots can now find their course to a fixed beacon at all times.

A dial on the instrument board displays a circle of light, around which an indicating mark moves to show the direction of the plane from the beacon.

Dr. David G. C. Luck described the new device to members of the Institute of Radio Engineers at their Boston meeting. It was developed under his supervision in four years of research at the RCA Laboratory at Central Airport, Camden, N. J., and is known as the "omni-directional radio range beacon," and operates on ultra-high-frequency, minimizing the effect of static. It also permits the use of a small, two foot high, antenna, instead of a group of high towers.

Previous radio beacons confine the pilot to a definite course. As long as he is following the course he knows it. If he goes off, he is also informed. But, though he can tell which way he is off, he cannot tell how far he has left the course, nor what direction his destination may be. To provide this information, some air lines have used direction finders

on the plane, which show the direction to the beam transmitting station from the plane, but these are not satisfactory in the ultra-high-frequencies.

Dr. Luck described the operation of the new system as follows:

"If the pilot must fly around bad weather on his regular course, he can always 'see' his direction from the radio station at a glance. If he wants to fly straight into or out from the beacon, he has only to hold the mark steady at that course against a scale on the instrument face.

"All this works like a lighthouse that sends out two kinds of light, one a beam which sweeps around steadily and the other a flash sent out in all directions just as the beam points north. Time the interval from the flash until the beam sweeps over you, and you know your exact direction from the lighthouse.

"In this new radio range, the radio lighthouse is on the ground and on the plane the indicating instrument automatically times the flash and beam. All this is done electrically, and our lighthouse beam sweeps clear around 60 times each second."

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IN SMALL COMPASS

Instead of five 125-foot towers, required for long wave radio range systems now in use, these five two-foot metal rods are all the antennae needed for the new Omni-directional Radio Range Beacon, developed at the RCA research laboratories in Camden.

at strategic points all over the Near East. Controlling channels of trade, they enjoyed wealth, amid the poverty and hunger of the conquered.

However, says Dr. Wilson, their "frightful engines of speed and power, meaning horses and chariots, could not be kept out of Egyptian hands. And Egypt, re-armed, and stiffened by a united spiritual force, smashed the Hyksos confederacy in battle, battered open the supposedly impregnable fortresses and threw the invaders out of Egypt. That did not happen until May 12, 1468 B.C.

The liberated Egyptians then turned to empire-building, themselves. Astutely timing their advance, they advanced toward Hyksos-controlled Palestine and Syria in spring, when their own harvest was in, while the more northerly lands were still being worked by the manpower. Outwitted by this strategy, the people and their food supply were soon at the mercy of the Egyptians.

In a later era, the Egyptian empire fell victim to fifth column tactics, Dr. Wilson shows. Powerful Hittites, living where modern Turkey is now, formed a fifth column among disloyal and discontented Egyptians of upper classes, while the Pharaoh Akhnaton was devoting himself to idealistic religious reforms, ignoring danger trends.

"There were many," says Dr. Wilson, "who took bribes of the Hittites to work

ARCHAEOLOGY

Blitzkrieg, Secret Weapons Downed Ancient Egypt

IF NAZI Germany continues to repeat the conquering career of the Asiatic Hyksos nearly 1800 years before Christ, civilizations now trampled may expect to rise and fight again, and win. But not very soon.

Citing the Hyksos lesson from history, Dr. John A. Wilson, director of the University of Chicago's Oriental Institute, finds that these Asiatic soldiers of adventure effectively used the modern

German formula of secret weapons, launched with blitzkrieg speed and surprise. Turning horses and chariots suddenly into the midst of old-fashioned Egyptian and Babylonian foot soldiers, the Hyksos spread terror and confusion, as the flying chariots wheeled and advanced, and mowed down the unprepared men.

In the peace following conquest, the Hyksos planted impregnable fortresses