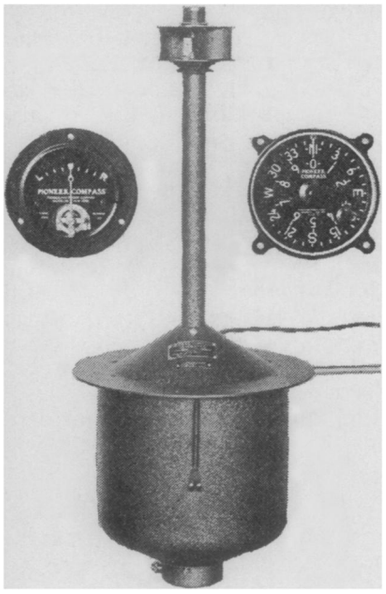
Inductor Compass Aviators' Guide



LINDBERGH'S GUIDE. The latest model of the earth inductor compass, made by the Pioneer Instrument Company, and used on recent trans-Atlantic flights

The newest means of using the magnetic field of the earth as a guide has played a prominent part in recent aerial flights. This is the earth inductor compass, developed first by the inventive genius of scientists at the U. S. Bureau of Standards.

With such a compass Lindbergh flew directly to Paris, without the aid of a single terrestrial or celestial guidepost. The Columbia and the America were also so equipped. While the storm which Byrd struck when he reached France apparently temporarily disabled his compass, it at least worked on the way over. As he did not see water or sky from the time he left the shores of North America, the compass must have worked while he was over the ocean, or he would not have hit France at all.

Like the familiar magnetic compass, the earth inductor compass depends on the fact that the earth is a great magnet. It also depends upon the principle of the electric dynamo: Spinning a coil of wire in a magnetic field produces a current of electricity in the coil.

In the dynamo, there is what is called a field magnet to produce the magnetic field which surrounds the moving coils, or armature. In the earth inductor compass, the earth itself acts as the field magnet. The armature consists of four coils of wire, wound to form a cross. It is spun as the plane goes through the air by means of a four-cupped windmill.

As the coils revolve they touch brushes which pick up the current generated. When the coils touch the brushes while they are in an east and west direction, there is no current. The wires of the coil are then moving in the direction of the lines of force of the earth. In order to have a current, the wires must cross the lines of force. However, if the coils are north and south, or in any other direction than east and west, a current does flow. Then a delicate galvanometer on the plane's instrument board shows the deviation from the course.

To use the compass, the brushes may be set so that they are in an east and west direction, when the plane is flying north, for example. The galvanometer will tell the pilot if he departs from a northerly direction. If he wants to fly in another direction, the pilot can set a controller dial. Then the galvanometer will indicate zero when he is flying in the direction for which the control dial has been set. If he starts in the wrong direction, he merely has to turn the plane slightly, and the galvanometer needle will again indicate zero.

The chief advantage of the earth inductor over the old form of compass is that it can be read at a distance. The inductor mechanism is set in the tail of the machine, far from the electric coils and steel of the engine and other machinery that would affect the compass needle. Also, the motion of the plane as it banks on one side or the other does not disturb it, as it would a freely swinging needle.

The sun compass which Commander Byrd used on his polar flight is especially adapted for use in the Arctic, because there the magnetic pole is south of the flyer. A magnetic compass, whether earth inductor or not, would indicate any direction but north. Every Boy Scout is familiar with the principle of the sun compass, for he can use it to find the north with a watch.

Point the hour hand of your watch to the sun. Then south is half way between the hour hand and the figure twelve. If the watch were of a kind used in European countries, with a twenty-four-hour dial, it would be simpler. Then you would merely need to point the hour to the sun, and the figure twenty-four would point to the south. In effect, the sun compass is such a twenty-four-hour watch.

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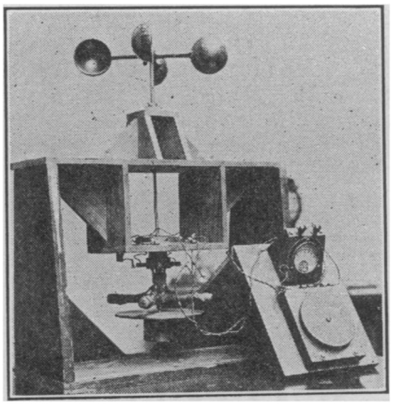

THE FIRST EARTH INDUCTOR COMPASS, made at the Bureau of Standards, and tried out at McCook Field

Excess Power Safe Planes

Though it may not often be used, plenty of power is one of the prime essentials of safe airplanes, especially if they are to reach the point where private individuals will have their own airplanes as they now have autos. This is the opinion of Louis G. Meister, aeronautical engineer of Marysville, Mich., expressed in a report to the Society of Automotive Engineers, on airplanes for individual ownership. Extra speed makes it possible for the planes to climb faster and so necessitates a shorter run before take-off. As most of the accidents to airplanes occur at the take-off, this is an important aid to safety.

Visibility is also important, says Mr. Meister, because even the most strongly built airplane will not be safe if it is "blind," and as a privately owned plane might frequently have occasion to land at a strange airdrome, it is necessary that the pilot's view be as unobstructed as possible. In order to secure this, especially in bad weather, it may be desirable that the pilot remain in an open cockpit, and not be inside a cabin, as the rain-covered glass might seriously hamper his sight.

Brakes are essential on the wheels for use when landing, and the amphibian landing gear, which makes possible alighting on land or water, looms large as a possibility of the future.

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