



TO BE MINED FOR THE SKY'S IRON?

Airplane view of Meteor Crater, under and near which five large magnetic masses have recently been located by geophysical methods.

AVIATION

## Tandem Propellers for Planes Turn in Opposite Directions

**H**IGH SPEED airplanes of the not-too-distant future may be pulled through the air by the whirling blades of tandem propellers mounted close together, one behind the other, and rotating in opposite directions on concentric propeller shafts.

Forced by the growing size and weight of propellers needed to deliver the full power of ever larger engines, U. S. Army aeronautical engineers at Wright Field, Dayton, Ohio, are experimenting with a set of such propellers and are planning the construction of two more sets for further study.

Two propellers mounted eight inches apart in tandem style would cut the size of the propeller in half. Propellers needed on the most powerful planes flown by the Army Air Corps are now 13 feet in diameter and are relatively heavy. More powerful engines contemplated by aeronautical engineers and a certain aviation development of the next few years will require larger propellers still.

The world airplane speed record, 440.681 miles per hour, set by Lt. Francesco Agello of Italy in October, 1934, is held by the only tandem propelled plane now flying. Designed to compete in the Schneider Trophy Races in England in 1931, the ship was not completed in time and was used instead for

several successful assaults on the speed record. No other such plane is known to exist.

The most powerful engines in use today have about reached the limit in size of the accompanying propeller. The tandem propeller scheme is one possible attack on the problem of cutting down the size of the whirling blades.

The twin propellers being tested by the Army are of the fixed pitch type, Brig. A. W. Robins, chief of the Materiel Division of the Air Corps reports, while the two sets under design and construction are controllable. Construction of the propeller shafts, involving one shaft inside the other and rotating in opposite directions, represents a difficult engineering problem.

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RADIO

## U. S. Joins 14 Other Nations Using Robot Radio Alarm

**S**AFETY at sea on American ships has now moved up to par with that of fourteen other nations by official approval of the robot radio alarm system which makes it possible for small freighters to detect SOS signals even though their single radio operator may be asleep in his bed. The Federal Communications

Commission has approved for installation on American vessels the automatic radio alarm system that is already in operation on more than 3,000 vessels of other nations.

The radio alarm listens, thinks and acts in a way that truly makes it a robot mechanism. On completion of his watch the radio operator leaves the cabin and sets the alarm.

It is set to recognize a distress call of a series of dashes lasting four seconds each, spaced a second apart. It has a memory long enough to realize if four or more of these dashes come in sequence, when it rings a bell in the radio operator's room and also on the navigation bridge.

Finally the device also warns both the radio operator and the bridge officers when it fails to function.

The robot alarm, a product of the Radiomarine Corporation of America, is not designed as a substitute for radio operators but may be used by cargo vessels of over 5,500 gross tons employing only a single operator in order that a continuous radio watch can be maintained for distress signals.

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METALLURGY

## Draw-Casting New Trick In Making Copper Rods

**T**HE ART of making castings is old but there is a new technique which is only now coming into production. It is called draw-casting. It consists of drawing, directly from a bath of molten metal, rods and tubes of copper.

Dr. Byron E. Eldred, new president of the Engineers Club, New York City, and one of the nation's few remaining independent research scientists, is the inventor of draw casting.

Dr. Eldred melts his copper in a furnace which has one or more holes in the bottom. In each of these holes is inserted a copper rod that is going to be the "parent" of hundreds of feet of additional rod the same size. These parent rods are cooled by a surrounding water chamber and transmit their coolness up into the molten copper. Around each of their tips the melted metal starts to "freeze" and in turn becomes cooler. As the metal in the bath freezes, from the inside out as it were, the rods are pulled out and continually solidify more metal within the furnace.

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Night drivers travel five to ten miles an hour slower than daytime drivers.