

### Multi-Winged Planes Called Most Logical Air Liners Of The Future

By W. E. Berchtold  
(Associated Press Aviation Editor)  
ANN ARBOR, Mich. (AP)—Students of aeronautical engineering, whose notions in airplane design may shape the future of air transportation, now have another wind tunnel laboratory in which they may test their toy-like models without the expense and danger of building full-sized planes.

Started in 1922, the University of Michigan's wind tunnel has been developed year by year until now its builder and master, Prof. Felix W. Pawlowski, says it is ready for a heavy research program that will include studies on types of airplanes radically different from those now seen in the air.

The controversy over the relative efficiency of monoplane and multiplane is far from ended, according to Professor Pawlowski, who believes that the monoplane's present popularity is a transitory whim of designers. He and an

associate, L. V. Kerber, plan further research with multiplanes in the new Michigan wind tunnel.

"The monoplane is well adapted to the present stage of air transportation," Professor Pawlowski says, "but when airplane designers are called upon in future years to construct trans-oceanic planes big enough to carry hundreds of people, the multiplane—that is, the airplane with three, four, five or more wing surfaces—appears to offer greater possibilities."

Kerber already has carried on some experiments in the Michigan wind tunnel during the last three years with a quadriplane having four wings set back in tiers above each other. The model, developed to perfect scale of a full-sized machine, proved to have high lift efficiency and other characteristics favorable to operation.

Experts in the industry recognize that the universities must be depended upon for development

of future aeronautical engineers. Aerodynamics and other specialized subjects in which the aeronautical engineer must have thorough training probably can be taught with greatest ease and efficiency through competent university instruction.

Wind tunnels, which are the laboratories for research in aerodynamics—a highly technical field embracing a study of airplanes' flight properties—have a romantic appeal to the popular imagination. They make it possible to study exactly how an airplane will act in winds of velocities up to several hundred miles an hour, without ever building the full-sized airplane.

Toy-like models, built with great accuracy and precision, are used. Delicate wires suspend the models in the tunnel air stream, and sensitive instruments record the forces acting upon the model as if it were in flight.

The University of Michigan wind tunnel, designed by Professor Pawlowski, differs from most others at the university, military and commercial aeronautical laboratories.

### Death Rate For 1927 Less Than Preceding Year

WASHINGTON, D. C. (Special)—The Department of commerce announces that 1,255,949 deaths occurred in 1927 within the death registration area of continental United States, representing a death rate of 11.4 per cent 1,000 population—the lowest since 1909.

This area in 1927 comprised 42 states, the District of Columbia, and 21 cities in nonregistration states, with a total estimated population on July 1, 1927, of 148,227,000, or 91.2 per cent of the estimated population of the United States.

The principal decreases in death rates in 1927 were from pneumonia (all forms) from 103 to 81 per 100,000 population, influenza, from 41 to 25, tuberculosis (all forms), from 57 to 51, diarrhea and enteritis (under 2 years), from 27 to 22, nephritis, from 91 to 92, measles, from 5 to 4, and diseases of the heart from 159 to 156.

An increase is shown in 1927 in the death rate from automobile accidents, from 18 to 20 per 100,000 population.

### Kushiro Explosion Traps 63 Miners

TOKYO, Japan, Dec. 21—(AP)—Sixty three miners were trapped today by an explosion in the Harutori coal mine near Kushiro, Yezo island. Fire followed the explosion and the fate of the miners could not be determined.

A rain died the other day after 19 years' service leading 7,000-000 sheep to the slaughtering pens in the Chicago Stock Yards. There are several of that kind left, though, in the Stock Exchange.



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|--|--|---|---|---|--|---|---|--|--|---|---|--|--|--|--|
| <b>Bulk Dates</b><br>The finest new crop<br>Hallowi dates<br>2 lbs. <b>25c</b> | <b>Chocolates</b><br>Fancy Assorted Creams<br>Xmas pack<br>5 lb. box <b>\$1.50</b> | <b>Creams</b><br>Special cream mixed<br>2 pounds <b>39c</b> | <b>Cut-Mixed</b><br>A very fine pure sugar<br>Xmas mix<br>2 pounds <b>39c</b> | <b>Chocolate Cones</b><br>2 pounds <b>35c</b> | <b>Mixed Nuts</b><br>All new crop nuts<br>a dandy mixture<br>3 pounds <b>87c</b> | <b>Pop Corn</b><br>Jolly Time in tins<br>2-10 oz. cans <b>25c</b> | <b>Prunes</b><br>Extra large fruit<br>packed for shipping<br>5 pound box <b>97c</b> | <b>Pumpkin</b><br>Preferred Stock—best<br>Eastern Pumpkin<br>2 No. 2 1/2 tins <b>35c</b> | <b>Knox Gelatine</b><br>for salads and desserts<br>pkg. <b>22c</b> | <b>Raisins</b><br>Sunmaid puffed or nectars<br>3 pkgs. <b>25c</b> | <b>Oysters</b><br>A. & L. Brand<br>for soup or dressing<br>large can <b>34c</b> | <b>Shrimp</b><br>Preferred Stock<br>The finest packed<br>2 No. 1 cans <b>38c</b> | <b>Coffee</b><br>No dinner complete without<br>Preferred Stock coffee<br>2 pound can <b>\$1.00</b> | <b>Cake Flour</b><br>Airy Fairy<br>a real buy<br>2 lbs. pkgs. <b>45c</b> | <b>Pineapple</b><br>Preferred Stock<br>perfect fruit—rich syrup<br>2-No. 2 1/2 tins <b>53c</b> |
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