

tests, Dr. H. E. Weaver, of Oberlin College, had ten well-trained musicians tap out the rhythm of both normal and syncopated measures, tapping with both fingers and feet. The fingers and toes of the musicians were lightly attached to a recording device which put upon paper every movement.

Foot beats, he reports in the *Journal of General Psychology*, carry forward

the steady underlying regular rhythm. The finger beats vary much more widely and build up in intensity on each beat until the syncopical accent is reached. A syncopical accent increases the intensity of the adjacent time-keeping beat.

"The accentuated rhythm of syncopated music would seem to depend upon this fact," Dr. Weaver concludes.

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ENTOMOLOGY—AERONAUTICS

## Hundred Flying Immigrants Return on Atlantic Clipper

### And It Is Appropriate That They Should Fly Because They Are Flies That Will Battle Asparagus Beetle

By LEONARD H. ENGEL

Science Service Aviation Writer

**N**EARLY a hundred immigrants were stowaways on the Atlantic Clipper's return flight to America and I helped them. As a matter of fact, they have the consent and approval of the U. S. Government, because they promise to be very good citizens, fighting one of the dangers within our own country.

I had them cooped up in a little wooden cage, not much bigger than a cigar box. They had enough to eat and drink for the whole transatlantic flight and the steward didn't have to bother with them. It is quite appropriate that they flew to America for they are flies.

To the Bureau of Entomology and Plant Quarantine of the U. S. Department of Agriculture, I brought back a consignment of parasites that will fight the asparagus beetle. These creatures look like ordinary house flies and they are called scientifically *Meigenia floralis*. I received them from Dr. H. L. Parker, in charge of the U. S. Entomological Station at St. Cloud near Paris, one of Uncle Sam's two permanent parasite stations in foreign countries. The other is near Yokohama, Japan.

American scientists by discovering and importing enemies of insect pests into the United States are fighting for the farmer in his work of raising our food. Parasites are studied in foreign lands and when they give promise of usefulness are carried to America and set upon European corn borers, Hessian flies, oriental fruit moth, gypsy moth, lima bean pod borers and other pests.

Many of America's most bothersome

insect pests are unfortunate imports from Europe and the asparagus beetle to be fought by our flies came from Europe.

Thus the Atlantic Clipper is a troop ship in man's fight against the insects. This is the first time that insects have been ferried across the Atlantic by air for Uncle Sam's entomologists, although they have used Pan American Airways airplanes before to bring needed parasites overseas from other continents.

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PHYSICS

## Scientific "Torture" Tests Turbine Blades

**R**AINING 2,600-pound blows at the rate of 600 a minute for 277 hours is the new machine which tests the blades of steam turbines, developed at the research laboratories of the Westinghouse Electric and Manufacturing Co.

The six-inch samples during this pummeling are enclosed in a steam bath within an electric furnace at a temperature of 850 degrees Fahrenheit. This is sufficient to make steel glow a cherry red as the inner steel parts of a steam turbine actually do during service.

According to T. F. Hengstenberg, research engineer who designed the torture device, the centrifugal force on turbine blades—caused as they travel around the shaft at speeds in excess of 789 miles an hour—is duplicated by a force of 9,000 pounds which pulls upward on the test specimen.

A total of 10,000,000 individual impacts is given to each test sample. This more than equals the life experience a blade might receive in actual service. The primary object is to test the "roots" of the turbine blades where they are attached to the 18-ton turbine shaft that spins at 3,600 revolutions a minute.

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FOR "TORTURE" TESTS

T. F. Hengstenberg, Westinghouse Research Laboratories engineer operating the device he designed for testing turbine blades. It rains 2,600-pound blows at 600 a minute on the samples which are meantime being subjected to a temperature hot enough to make steel glow a cherry red.