

McDONALD DABBLES IN BASEBALL

# UA Physicists Examine Bat's Speed When Tribe, Cat Hitters Take Cuts

By JESUS BARKER

Ever wonder just how much "wallop" it takes to sock a 400-foot home run?

For average Joe Fan, a simple guess as to bat speed at impact might be enough. But not for the scientists.

University of Arizona physicists, headed by Dr. James E. McDonald of the Department of Atmospheric Physics with an assist by Dr. John W. Robson of the Department of Physics, set out to find out how fast the bat is traveling at the time it crosses home plate.

Initial computations had predicted a bat speed of 115 to 125 feet per second would

be needed to hit a home run in the order of 400 feet.

Willie Kirkland, Woodie Held and Ty Cline of the Cleveland Indians, and Joe Skaisgir, Leo Tosto, Tom Celli and Bill Brown of the University of Arizona volunteered for the experiments.

Each player was told to take a healthy "home run" swing.

Dr. Robson set up and operated the Physics Department's high-speed stroboscopic lighting equipment. The batter and bat are illuminated by a light that emits very bright but at the same time very brief flashes at a rate of 100

Each flash was for 15 millionths of a second.

A Polaroid camera was set before the flashing light with the shutter open during the second or so it required for the batter to execute his swing.

The bats used had two pieces of tape wound around them, set a foot apart, and used for calibrating the speed of the bat.

All three Indians' batters and Skaisgir and Tosto of the University team were also told to swing a special bat supplied by the Louisville Slugger line of bats, which was an exact replica of the heavier and longer bat (37-ounce, 35 inches) used by

Babe Ruth in his 1927 season when he hit 60 home runs.

The first test was made last November, when Tosto, admittedly out of condition, swung a regular bat at a little over 90 feet per second.

The joint UA-Cleveland tests were run last week with Held and Skaisgir of Arizona swinging the fastest bats.

Their speed was measured at 115 feet per second, while Brown's swing was measured at 114 feet per second. Tosto's swing was 111 feet per second, Kirkland and Cline at 108 and Celli at 105.

Using the heavier Babe Ruth bat, Skaisgir and Tosto both swung at 100 feet per second while Held was 110 feet per second and both Cline and Kirkland had an identical 100-feet-per-second power.

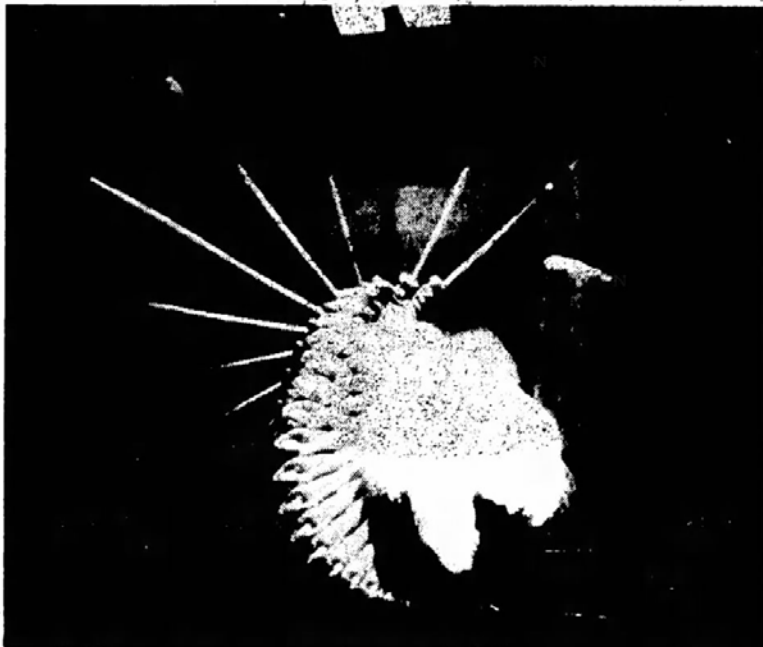
The report by the physicists goes on to point out that the tests run on the Indians should be a little under their expected maximum batting speed since they had been training just a little over a week at the time the tests were taken, while the Wildcat batters had been working for approximately two months.

As a method of comparison, a swinging speed of 115 feet per second is approximately 78.4 miles per hour, while at 110 feet per second the speed is about three miles per hour less.

Another point of comparison is the speeds of two professors, several years removed from the active participation of baseball, and the speed of an 11-year-old Little Leaguer.

Dr. L. J. Battan swung the 34-ounce "Roger Maris" bat at 96 feet per second, while Dr. Robson's speed was 93 feet per second. The youngster, David Robson, swung a 31-ounce Henry Aaron bat up to 44 feet per second.

More tests are scheduled to be made on the Indians before they break camp and head for the major league season then the results of the tests will be used to try and find out the correlation between bat weight and length of hits.



WOODIE HELD'S SWING

This picture, taken by special equipment at the University of Arizona, shows the Cleveland Indians' Woodie Held taking a healthy cut at the ball. The picture was taken during a series of tests being conducted by UA scientists to try and find the correlation between the weight of the bat and how far the ball will travel when hit.