

Parrots' Muscles Active

► **THE MUSCLES** of an Australian parrot in flight contain some of the most actively changing tissues known, a North Carolina scientist has found.

Called budgerygahs, these parrots may have a higher rate of heart beat per pound of body weight than mammals, Dr. Vance A. Tucker of Duke University, Durham, said.

Dr. Tucker bases his observations on calculations of the amount of oxygen the birds consume while in flight.

The scientist trained two budgerygahs to fly horizontally in a sealed wind tunnel through which winds were driven by a fan at speeds of about 11, 15 and 20 miles per hour. An electrified grid on the floor and at ends of the working section kept each bird in flight while the tests were being conducted. The amount of oxygen the birds consumed

during their two-minute flight periods was calculated from an oxygen analyzer constantly in action.

A bird weighing a little over an ounce can use as much as 122 cubic inches of oxygen an hour while he is in flight, Dr. Tucker reported in *Science*, 154:150, 1966. When he is sitting quietly in the wind tunnel, however, the bird consumes less than one-sixth of that amount.

These high measurements of oxygen consumption reveal that budgerygahs in flight must have faster heart rates per ounce of weight—perhaps as high as 1,875 beats per minute—than are known on a comparable scale in mammals. The highest heart rates in vertebrates are believed not to exceed 1,320 beats per minute.

TECHNOLOGY

Packages May Float On Conveyor 'Belt of Air'

► A "BELT OF AIR," using the same air-cushion principle as ducted-fan hovercraft, will soon make it possible to move heavy sacks with only the power of a vacuum cleaner fan motor.

The "Aeroglide" will be able to carry 3,600 180-pound sacks per hour at speeds of five feet per second.

The secret of the system is a valve which remains closed until a load—a sack—covers it, when it opens just long enough to let air escape and provide a cushion under the object, floating it on to the next valve in line.

A 100-pound sack can be floated on a thin film of air only 0.4 mm thick using an air pressure of less than .5-pound per square inch. Just as in air or gas bearings, this thin film of air does away with surface contact and thus practically eliminates friction. This is

why the heavy loads will move with a force of only a few ounces—or under gravity if the chute is inclined by as little as half a degree or even less.

Previous attempts at using air cushions have suffered from the disadvantage of needing continuous air flow or incorporating mechanically operated valves which required a physical contact with the goods being transported. This gives rise to continuous mechanical shocks and increased opposition to the movement of the loads.

The special valve took two years to develop, during which time 20 designs were tried and rejected before the final solution was accepted.

The manufacturer, Spencer division of Elliott-Automation Ltd., said the system could be used in assembly lines in plants, to move goods.

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