The Effects of Pitch on Propeller Thrust

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The purpose of this experiment was to investigate the effects of pitch on propeller thrust both at a constant RPM and wattage. Propellers with a 4, 5, and 6 degree pitch were tested using a simple lever system in which the propeller pushed one end of the lever up, pushing the other side of the lever down onto an electric scale that calculated the thrust produced. The wattage and RPM were controlled by a variable resistor, a knob that allowed the adjustment of voltage and amperage to reach desired wattage or RPM. It was hypothesized that at a constant RPM, the propeller whose pitch is more severe will be able to produces a stronger thrust than that of a lesser pitch, while at a constant wattage, the propeller whose pitch is less severe will able to produce a stronger thrust than those of a greater pitch. The resulting data supported the acceptance of this hypothesis; each calculation made from the data was extremely statistically significant, both in individual t tests as well as the experiment as a whole. In conclusion, this experiment proved that a propeller with a greater pitch produces a greater thrust at a constant RPM, while a propeller with a lesser pitch produces a greater thrust at a constant wattage.

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