Wing Tips

A CAP Aerospace Education Moment

Did you know?

While many aviation enthusiasts, who were trained scientists, experienced engineers, or even just hopeful dreamers in Europe and America sought to find a way to fly, one man, Lawrence Hargrove toiled away in relative obscurity in Sydney, Australia. In 1867 (the year Wilbur Wright was born) he became an apprentice in the engineering workshops of the Australasian Steam Navigation Company. However, he was a true renaissance-man. In addition to the mechanical knowledge and skills that he learned, he took an interest in cultural anthropology, astronomy, and all sorts of technology. He took a particular interest in flight.

He built three different types of rubber-band model airplanes: 1) with one propeller in front, 2) with two propellers in front, and 3) with one propeller in the rear. He also built models with flapping wings (ornithopters). He concluded that propellers and flapping wings were about equally effective as a source of propulsion, but felt that flapping wings held better promise for the future especially when steam engines came to be used because only one cylinder is required for both wings and there would be no need to convert reciprocal motion into rotary motion.

Having exhausted the possibilities of rubber-band power and being committed to flapping wings, he switched to compressed air as a power source for his models. The compressed air was stored in a tube 2 inches in diameter and 48 ¼ inches long that weighed 19 ½ ounces. It formed the "backbone" of the model. The total weight of the engine was only 6 ½ ounces. The piston rod was fixed to the "backbone" and the cylinder (1 ½ inches in diameter) moved up and down. Two links connected the wooden rods that supported the wings which were made of paper and weighed 3 ounces.

Hargrove, having built and flown many models, turned his attention to kites with which he achieved awesome success and international renown. He approached the idea of kites in an entirely different manner from other people. His idea was to use two identical cells in tandem, connected by a stick to which the kite string was attached. One version consisted of two cylindrical cells 13 Inches in diameter by 4 ½ inches made of sheet aluminum and set 30 inches apart. Another consisted of two sections, each made of sixteen 3 inch x 3 inch x 3 inch light cardboard cells set four across and four down. These sections were set 22 inches apart. Then he tried two single rectangular cells made of wooden frames covered with paper that were 6 ¼ inches high, slightly less than 10 ¾ inches wide and 4 inches deep. These cells were set 21 ¼ inches apart and the whole kite weighed only 3 ¼ pounds. This kite would grow much larger, get built of sturdier materials, fly steadily with scientific instruments or cameras, have good lifting power and several could be attached to the same line if greater lifting power was required. They were known as box-kites or Hargroves. Hargrove, himself, was raised 16 feet in a sort-of boatswain's chair by four large box-kites connected to a single line.

REMINDER AEROSPACE EDUCATION ANNUAL REPORTS AND PLANS OF ACTION ARE DUE BY 15 OCTOBER

Aerospace Education, as well as well as most other CAP things, is now on the CAP Fiscal Year and has been since last year. The CAP Fiscal Year begins on 1 October and ends on 30 September each year. That is why the due date for Annual Activity Reports and Plans of Action is now 15 October.

We hope that every unit has now received a blank Annual Activity and a blank Plan of Action to fill out and send to Wing at NYWgAeroEd@aol.com and also to your Group AEO. If you don't have the blank forms, please get in touch with us at the above email.