# THE VALUE OF MODEL AERONAUTICS

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Model aeronautics offers many fields of endeavor to its devotees; and, conversely, those who engage in model aircraft activities comprise a vastly heterogeneous group. Men and women, both young and old, from all walks of life, spend considerable portions of their spare time delving into the pleasures afforded by model aeronautics. Throughout the world there are eager followers of this hobby. In Africa, Australia, India, and China there are just as ardent and accomplished modellers as in Homeville, U. S. A. As a result of international contests such as the Moffett, Wakefield, and others, model-builders from all nations are brought closer together under the influence of a mutual devotion to model aeronautics.

In the United States alone there are over two million model aircraft builders who are the customers of an industry valued in excess of three million

dollars. Model aviation combines three types of hobbies: (1) collecting, (2) craft, and (3) recreation. In the course of time, a hobbyist will collect valuable friendships, experiences and knowledge, airplane pictures and magazines, contest awards, and many kinds of aircraft models. Handicraft is practiced when models are built and repaired. In the case of model airplane construction there is something else, an intangible quality, that serves to make this phase of model aeronautics very satisfying to the individual. There is something very inspiring in the realization that the graceful miniature flying so majestically overhead is the brain-child of its builder. Recreation is achieved when the models are flown. Very often a modeler has to combine the talents of a monkey and superman when pursuing a wayward model; which, after a five or six mile chase, finally comes to a not so graceful landing in the branches of the biggest tree in the neighborhood.

The educational value of model aeronautics is another one of the hobby's assets. This education is decidedly informal and usually accumulates as the result of much painful experience. Spiral dives and stalls are relatively easy to explain and account for in theory, but any model builder who has sadly raked together the remnants of a once perfectly good model can tell you with all his heart and soul the meaning of such terms. Model builders gradually develop a steady hand, patience (ah---that's the one the layman appreciates), and resourcefulness. Building successful models necessitates a knowledge of mathematics, characteristics of airfoils and methods of plotting them, relationships between areas of different flying surfaces, the proper placement of aerodynamic forces, and an appreciation of stress and structural design. One soon becomes versed in watch repairing (mending timers), soldering, electrical hook-ups, and the mechanics of internal combustion

engines. Throughout this educational process the modeller gains a profound respect for the practical limitations of empirical formulas and techniques and the compromises on theory required by actual working conditions and materials.

Model aeronautics serves both as a preparation for and an incentive to a career in some aeronautical activity. Such men as Donald Douglas, Igor Sikorsky, the Wright Brothers and William Stout started as model builders. Recent polls taken at air schools throughout the country reveal that from fifty to seventy five per cent of the students are model builders. At the same time this survey showed that these same students exhibited greater proficiency in the use of aircraft terminology and tools than did those who had never built models.

Today, as well as in the past when men merely dreamed flying, model aircraft are indespensable

factors in the success of full size airplanes. It is to research with models that full-scale aircraft largely owe the refinements of design which are the admiration of the laymen. As yet, aeronautics is not an exact, mathematically proven science and thus many results and formulas are largely empirical. Consequently, exact-scale models and parts are essential in determining the relative performance of full-scale aircraft. Many aircraft plants have their own research divisions, but probably the best known research center is that at Langley Field, Virginia. Here many of the skilled model makers were formerly model hobbyists. The characteristics of the scale models are directly determined in wind tunnels, free flight tunnels, free spin tunnels, gust tunnels and towing basins. After certain correction factors are applied to the experimental data to account for scale effect and difference in working conditions, the performance of the full-scale craft may be determined

within two or three percent.

The aircraft industry is vitally concerned with the acquistion of plant personnel, and thus the educational value of building models works both ways. It is as much a boon to the employer as it is to the employee. It might be amusing to send new workers to the boss for "dihedral grease", but it is no joke to plant managers trying to speed up production and increase plant efficiency. Any new worker who is already familliar with the language of aviation is a valuable asset to the aviation industry.

Considerable effort has been expended in educating the public to the advantages and safety of aviation, but it is the model builder who has brought aviation into the American home. We are all familiar with the circus barker type at the neighboring airport and the polished high-pressure advertising of aircraft plants and transport lines. Yet it is young model-minded America assiduously at

work in home workshops who have largely made the American family aware of the potentialities of aeronautics. A Sunday afternoon's visit to a model airplane contest and it isn't long before the entire family will at least acknowledge that aviation does "have something".

The United States, in a war torn world, has come to the abrupt realization of the essential position of aircraft in modern wars. Model aeronautics is also essential. Germany, Russia, Japan, and England all foster a youth movement emphasizing and establishing aviation backgrounds through the medium of model aviation. In the United States such organizations as the Junior Birdman of America (now defunct) and the Academy of Model Aeronautics have served to guide and consolidate developments in model aeronautics. A fundamental doctrine of the social sciences is that of multiple causation, and thus no claims are made that model aviation is all important or even strictly

essential, but it certainly can be an important factor both as a source of pleasure and as a chance to profit by the gaining of valuable knowledge and training.