

**AEROPLANES**

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Aeroplanes by J. S. Zerbe

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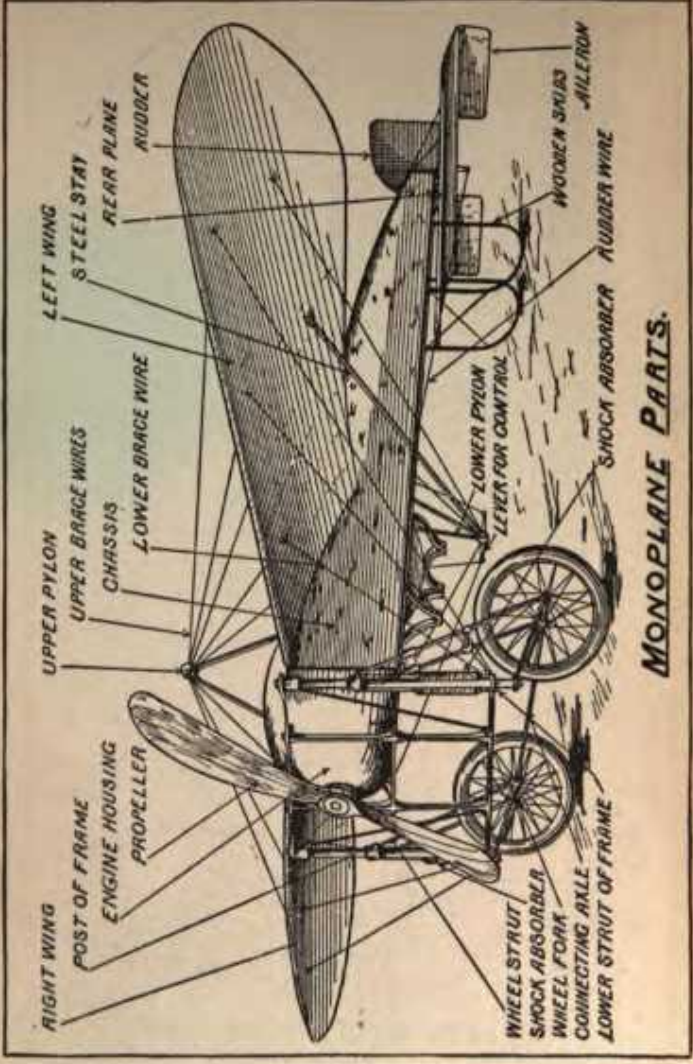
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**J. S. ZERBE**

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**MONOPLANE PARTS.**

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Every Boy's Mechanical Library

# AEROPLANES

BY  
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*Automobiles—Motors*

ILLUSTRATED

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## INTRODUCTORY

In preparing this volume on Flying Machines the aim has been to present the subject in such a manner as will appeal to boys, or beginners, in this field of human activity.

The art of aviation is in a most primitive state. So many curious theories have been brought out that, while they furnish food for thought, do not, in any way, advance or improve the structure of the machine itself, nor are they of any service in teaching the novice how to fly.

The author considers it of far more importance to teach right principles, and correct reasoning than to furnish complete diagrams of the details of a machine. The former teach the art, whereas the latter merely point out the mechanical arrangements, independently of the reasons for making the structures in that particular way.

Relating the history of an art, while it may be interesting reading, does not even lay the foundations of a knowledge of the subject, hence that field has been left to others.

The boy is naturally inquisitive, and he is interested in knowing *why* certain things are neces-



sary, and the reasons for making structures in particular ways. That is the void into which these pages are placed.

The author knows from practical experience, while experimenting with and building aeroplanes, how eagerly every boy inquires into details. They want the reasons for things.

One such instance is related to evidence this spirit of inquiry. Some boys were discussing the curved plane structure. One of them ventured the opinion that birds' wings were concaved on the lower side. "But," retorted another, "why are birds' wings hollowed?"

This was going back to first principles at one leap. It was not satisfying enough to know that man was copying nature. It was more important to know why nature originated that type of formation, because, it is obvious, that if such structures are universal in the kingdom of flying creatures, there must be some underlying principle which accounted for it.

It is not the aim of the book to teach the art of flying, but rather to show *how* and *why* the present machines fly. The making and the using are separate and independent functions, and of the two the more important is the knowledge how to make a correct machine.

Hundreds of workmen may contribute to the

building of a locomotive, but one man, not a builder, knows better how to handle it. To manipulate a flying machine is more difficult to navigate than such a ponderous machine, because it requires peculiar talents, and the building is still more important and complicated, and requires the exercise of a kind of skill not necessary in the locomotive.

The art is still very young; so much is done which arises from speculation and theories; too much dependence is placed on the aviator; the desire in the present condition of the art is to exploit the man and not the machine; dare-devil exhibitions seem to be more important than perfecting the mechanism; and such useless attempts as flying upside down, looping the loop, and characteristic displays of that kind, are of no value to the art.

THE AUTHOR.

