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This Book is Different: It is not a Novel, not an Engineering Text Book. Its purpose is to teach the Logic, the understandable Physical Horse Sense Logic of how Propellers Work, previously the most complex, unintelligible Mind Swamp in Aerodynamics.

To help Pilots pick out, and tie together the many, many insights, the key logic insights are highlighted, *superemphasized*, to make what you are trying to learn, **literally Jump off the Page at you!**

I've learned we **Professionals** need that more than I ever would have imagined, core issues, simple Aero 101 Insights in hindsight, that we **never saw in 138 years**. Leave all your hubris behind until you grasp the same logic that Novices need, then with the Superemphasis, the advanced reader can speed read, skim ahead.

Introduction:

1

Intended for Everyone, but **especially for Pilots**. Goes slower at First to prepare and inform, help everyone aboard, become aware, more prepared to grasp the core of Prop Logic on just two very concise, incisive pages. Later Skims ahead for a very good overall basic grasp of Prop Logic!

Many Pilots may be well satisfied after the great insight offered in the overall basic introduction.

Primer:

40

A further, shorter, Introductory Summary, and Expansion of Insight. Advance Ratio Introduced.

Experience shows that everyone needs at least a day to think about it all, genuinely absorb, what can be read, and first learned, in an hour, or two.

Chapter 9, Book 1

Book I, p. 116

An Expanded Insight for the Thinking Man Pilot, introducing many Advanced Insights; The Norris Bauer Law, A Look at the key, core questions, in Propeller Logic, a grasp of the broader answers, A Deeper Look at Betz, Goldstein – Theodorsen, A First Look at the Heart of the Inflow Geometry.

Chapter 1 Book II

a Lead In, then :

Book II, p. 1

A nice smooth read, into the ever more advanced Insights, closer, ever closer to a full professional level grasp, as always, tying everything together!

A Special Newton Lead in to Chapter 2

Book II, p. 22

Newton, and the “Actuator Disk” concept, played such a basic role in early understanding of props, that it demands that we stop and look close, Learn. The simple little formula $T = M \Delta V$, a key basic!

Chapter 2 Book II

Book II, p. 40

Laying out the Basic Helical Pitch Prop, (not air), The Magic Graph, The Super Magic Graph, great insight, Advance Ratio, Gearing, Angle Accuracy Required. The 800# Gorillas of Propeller Design.

Chapter 3 Book II Advanced Logic

Book II p. 70

Where we can finally get our arms and mind fully around Propeller Logic, at the Professional Level, finally 82 pages of Sophisticated Insight, all built around, and from the specific computer results of Betz Logic, Goldstein – Theodorsen Rare Genius Level Math, all built from Understandable Logic!!

Chapter 4 Book II

Final Summary

Book II p. 154

Appendices

- B A Special Insight into the Logic of Betz.
- dT/dQ The Interesting High School Level Math that Proves that a friction free screw, has a Constant Ratio of Thrust to Torque at every radius, a fundamental of Betz!
- H The History, the Propeller Benchmarks. The Historic Individuals who gave us an essentially Exact math Solution --- 1865, Rankine, to 1948, Theodorsen, 83 years!
- N Newton: His Laws, the Concept of Mass. Not multiplying Apples, time Oranges! Keeps our Math Answers, Units Correct!
- SSSS Calculating a Velocity Profile at the nose of an embedded Body, in a Stream Tube. Slowdown, Source Sink Simulation! The Math Model Method of Rankine, 1865!
- T Theodorsen's Core math, his Chapter 6 – Converting the Goldstein-Theodorsen K_x Blade Loading Factors Chart, the Radial Loading, vs. Advance Ratio, his Special Heavy Loading λ , Lambda. The Factors look somewhat Elliptical, fooling People. The Math, It comes out a Half Teardrop!