Mind over Math by Stanley Kogelman: Joseph Warren
Review by: Lynn Arthur Steen
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A sprightly synopsis of the authors' workshop to cure "math anxiety," this book follows in five chapters the progress of the five-session workshop, from the causes of math anxiety to various techniques to overcome this oftentimes crippling mental handicap. Workshop discussion ("I was quite good at math until the eighth grade; then I became aware of 'boys') forms an authentic if somewhat trite counterpoint to homely advice ("The easiest place to start is with the first thought that comes to mind").

A supplemental sixth chapter actually offers some basic consumer math (percentages, metric measurement) for whose anxiety has been lowered sufficiently by the therapy of the first five chapters. Since the professionally crippling "mathophobia" is a common complication of the recently identified (and now quite fashionable) math anxiety, this small book concerning the cure is a valuable contribution to public mental health.—Lynn Arthur Steen, Mathematics, St. Olaf College

Engineering and Applied Sciences


Baker's book is the latest and most advanced attempt at a comprehensive history of missiles and rockets. With competence and much valuable detail on international developments in this century, the author guides the reader through the evolution of a technology that, as W. Dornberger once observed, compares only to the taming of fire and the invention of the wheel.

Among the highlights of this well-written book is an excellent description of the decision process on how to implement President Kennedy's Moon Program. The selection of Houbolt's Lunar Orbit Rendezvous concept, a variant of a technique considered heretofore for manned planetary missions only, was a decisive breakthrough beyond the classical (and still valid) Earth Orbit Rendezvous concept, originated in the 1920s by von Pirquet, whose "cosmonautical paradox" demonstrated the importance of space station and orbital assembly for reaching the Moon and planets. Important features include the accounts of Russian achievements, Japanese developments, French and Italian rocketery, and British missiles and launch vehicles. Unfortunately, a tendency toward judgmental hindsight and selective moralizing detracts needlessly from the nonparticipant historian's role as a fair broker between ages.

Missing is any mention of the fundamental contributions by G. von Pirquet, by H. Noordung, who originated the wheel-shaped space station concept (1928), and by W. Hofmann, the first to establish modern interplanetary flight profiles (1925) and originator of the bold concept of aerodynamic braking, used 44 years later by returning Apollo spacecraft. Among other historic aspects that would have been worth including are H. Oberth's original analysis and proposal (1928) to use pressure-stabilized structures to maximize mass ratios (unknown to the ingenious Karel Bossart at the time of MX-774), a concept rejected from A-4 to Saturn in favor of a more conservative design, and the key significance of Centaur. Without Centaur to demonstrate the practicality of hydrogen as fuel, the Saturn vehicles would not have emerged as we know them, quite different from their original configuration, since von Braun shared a widely held skepticism concerning the practicality of liquid hydrogen.

The Compendium and the World Rocket and Missile Inventory are valuable additions, comprehensive and accurate. In the Glossary of Terms, the specific impulse should be defined as pound thrust per pound propellant weight expended per second. This is an exception to the generally high standard of accuracy. The book is a first-rate reference, deserving congratulating to author and publisher, and deserving of a wide readership.—Kraft A. Ehricke, Space Global, La Jolla


Most, if not all, states have some form of legislation designed to protect the public through required registration or licensing of engineers who offer consulting services. As state legislatures reassess the status of their registration laws, modifications—such as the removal of the industrial exemption and recertification at periodic intervals—are being considered. Many larger firms are now encouraging their engineers to become registered. The prospect of taking an examination on engineering fundamentals causes some concern to the engineer who has been in practice for several years, particularly if his present responsibilities do not involve a wide range of them.

This book provides a good overview of the engineering fundamentals appropriate to the first two parts of most state registration examinations. It does not cover each area in depth; however, essential concepts and principles are discussed, and related explanatory material is given to assist in the analysis of problems. Numerous single-answer questions and problems and several application problems are included in each section for review.

The book would not be appropriate as a teaching tool for undergraduate engineering programs, although it might be useful to some students for purposes of self-study. Engineers with several years of experience, however, will find it helpful in preparing for the engineering funda