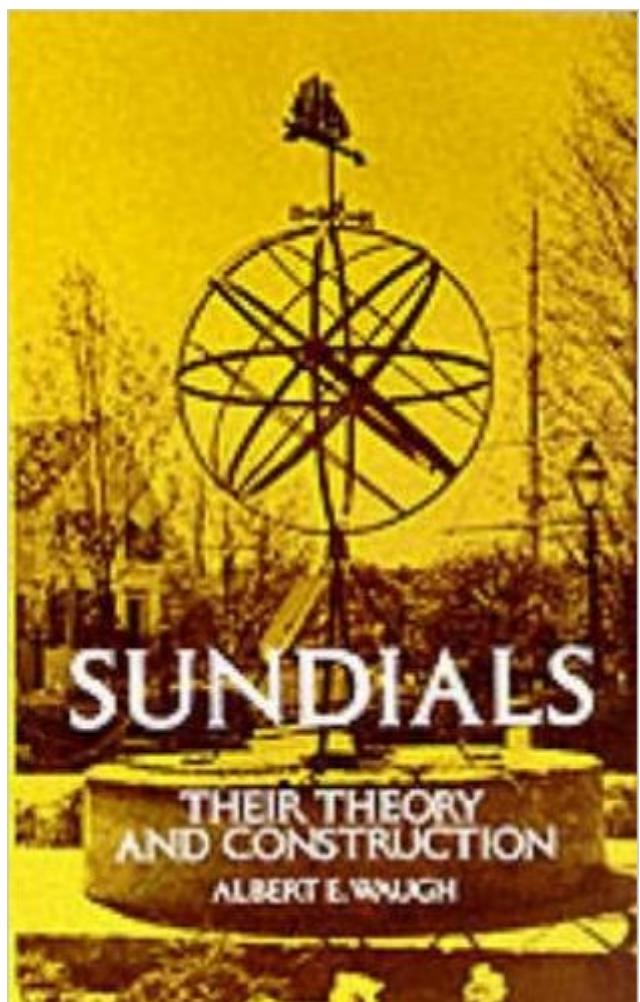


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# Sundials: Their Theory And Construction



## Synopsis

Have you ever wanted to build a sundial or to understand how one works? Then you have probably been frustrated as you search vainly for help. Most books on the subject are either rare out-of-print works published centuries ago and available only in highly specialized collections, or highly complicated treatises whose information is hidden behind frightening arrays of involved formulas. But now your search is over. This book is designed to meet sundialing needs at either the simple or the sophisticated level. Albert E. Waugh, professor and administrator at the University of Connecticut for 40 years, and an expert on the subject of sundials and their curious history, presents, on the one hand, a rigorous appraisal of the science of sundials, including mathematical treatment and an explanation of the pertinent astronomical background; on the other hand, he presents simple and non-technical treatments such that several of the dials can be built by children! The subject matter is arranged in 19 chapters, each covering a different aspect of dialing science. All the common types of dials are covered, but the reader can also learn about analemmatic dials, polar dials, equatorial dials, portable dials, memorial dials, armillary spheres, reflected ceiling dials, cross dials, and old-fashioned noon marks. There are also sections on dial furniture, mottoes, the actual layout out of a dial, the equation of time, finding time in other cities, how to find the meridian, how to find time by moonlight — even how to estimate time from the length of one's own shadow! Directions are given for designing dials for any part of the country, or any place in the world. The author has designed many dials, and his text is filled with helpful hints based on his own personal experience. There are over 100 illustrations, charts, and tables, followed by an appendix which is filled with material which reduces or eliminates the need for calculation on the part of the reader.

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## Customer Reviews

I have read and viewed the major English language texts on Sundials. These being 1. Waugh, 2. Mayall & Mayall, and 3. Rohr. The Waugh text has good, mostly clear, instructions and gives both graphical and equation based methods of constructions. Mayall and Mayall perhaps has better graphical constructions but Waugh excels in the variety of tables in the appendix. Waugh also has the clearest explanation of determining the declination of a wall. This is very important as many buildings are aligned along magnetic north (& south & east & west) rather than true north (south etc...). A shortcoming of the almost every book including Waugh, is the lack of clear instruction on how to draw other types of hours. Most importantly of these interesting alternatives types of hours are babylonian and Italian hours. These hours are still useful today. So far I've only found the Rohr text to have any attempt of explaining how to draw these lines. However the Rohr text simply doesn't match the clarity and breadth of Waugh and Mayall and Wayall. Waugh (and Mayall and Mayall) both could do with an update on trigonometry. With the easy availability of scientific calculators, the need for log versions of equations and the use of things like "cot" functions is not needed and simply makes the calculations clumsy to perform on a key pad. The book by Cousins is an excellent highly detailed text if you can get it, but it seems to be out of print. It is useful if you really want to get into the maths of spherical geometry and it wouldn't be the best book you'd want to read first. It makes you appreciate the wonderful elegance of the graphical solutions but it may convince you that it is all too hard when it actually isn't in a practical sense. Just about anyone can make a simple sundial. The text by Rohr also has a good section on how to do hour lines on just about any shaped surface (bowl, sphere, plane etc..) if you have a rod for a gnomon. This is about the only strength of this text over the others. So to conclude Waugh would be the best first text, very closely followed by Mayall and Mayall, then Rohr. The text by Cousins is excellent but at a much higher level that isn't needed for the construction for the standard types of dials.

Albert Waugh's "Sundials: Their Theory and Construction" is a veritable treasure-house of information on the ancient science of gnomonics. As a dedicated dialist of several years, I never could have achieved such wonderful results without Waugh's classic book. The work presents the art of building sundials from two perspectives: for the advanced dialist, Waugh's book approaches

the theory from a highly complex, mathematical viewpoint, including some aspects of celestial mechanics; for the average "do-it-yourself-er", Waugh presents several projects that are simple and well-explained. Accompanying this fine work is a collection of solar tables, astronomical information, and various data of inestimable value that would alone justify the purchase price of the book. So whether your purpose is to further your technical interest in the fascinating science of gnomonics, or merely to build an attractive sundial for your garden over the weekend, "Sundials: Their Theory and Construction" should be in your collection. It is considered the very "bible" of dialmaking. I couldn't brag about it more had I written it myself!

No other book, as far as I know, gives such clear detail about making your own sundials. That word seems so narrow; Waugh covers much more of solar time-telling than just dials. One thing that amazes me is his passion. He writes with clear pride about his own sundials, good to within (he says) ten seconds! This book covers graphical or analytic techniques for laying out sundials on just about any surface that doesn't move, horizontal, vertical (facing any direction), slanted, or even the ceiling. He also discusses the movable kind, like a "shepherd's dial". It has nothing inherently to do with sheep, but can be used anywhere, even without knowing true north. The historian may be disappointed. This is not a catalogue of sundials through the ages, although bits of history are scattered throughout. In one sense, though, this is a view into the time of its writing (1973). A modern reader, with access to modern calculators and computers, will be amused if not puzzled by some of tricks used to make hand computation more feasible. I don't know anyone any more who multiplies by adding logs, and the circumlocutions around negative logarithms look positively quaint. The only real flaw in this book is its systematic omission of half the world: the southern hemisphere. It wouldn't have been so hard to add just a paragraph or two about sundials that work "backwards". Although this book celebrates the craft and art that can go into a sundial, its real value is technical. This book gives the essential methods for the functional side of a solar time-piece; bring your own artistry.

History of time-keeping by the sun, all types of sundial (including some you will never have seen before) also moondials. If you read this book, you will not rest until you have made your own sundial (I didn't)

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