TABLES FOR FACILITATING THE DETERMINATION OF THE LATITUDE AT SEA BY THE SIMULTANEOUS ALTITUDES OF TWO STARS

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649319954

Tables for facilitating the determination of the latitude at sea by the simultaneous altitudes of two stars by Charles F. A. Shadwell

Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

www.triestepublishing.com

CHARLES F. A. SHADWELL

TABLES FOR FACILITATING THE DETERMINATION OF THE LATITUDE AT SEA BY THE SIMULTANEOUS ALTITUDES OF TWO STARS

Trieste

By the same Author,

TABLES

FOR FACILITATING THE APPROXIMATE PREDICTION

OF

OCCULTATIONS AND ECLIPSES

FOR ANY PARTICULAR PLACE.

THE accuracy with which the Longitudes of terrestrial places may be determined by the observed Occultations of the Fixed Stars by the Moon is well known to Astronomers and men of science. The object of this work is to afford to naval officers and others ready and simple means for predicting the occurrence of these phenomena, so that they may be prepared to avail themselves of the numerous opportunities which they offer for the absolute determination of the Longitudes of the stations which they may visit. The tables are to be used in conjunction with the data given in the general occultation list in the "Nautical Almanac;" and the simplicity of the requisite computations may be inferred from the fact, that they involve scarcely any logarithmic calculation, and that the reductions are almost entirely performed by means of inspection in the Traverse Table.

OPINIONS OF THE PRESS.

"Though we neither calculate occultations nor eclipses, and cannot therefore give the proof of this pudding from the eating, yet we can see very clearly that Capt. Shadwell knows what he is about; he has illustrated his processes by clearly worked examples, and one table in particular, to every degree of latitude and of the moon's declination, for facilitating the calculation of the moon's parallax in declination, must be found very useful."—*Athenæum.*

"This is a work of very great merit, and we trust that it will be properly appreciated by the service, especially the scientific branch of it."—*Naval and Military Gazette.*

"In this work Capt. Shadwell disclaims all novelty of design, having availed himself of the papers published on the subject by several mathematicians. But assuredly the credit is due to him of having first placed in the hands of seamen a compendious set of tables calculated by himself from established formulæ, by which tables a quantity of tedious computation is reduced to little more than the mere trouble of inspection."—*Nautical Magazine.*

London: R. B. Bate, 21 Poultry; W. Renshaw, 356 Strand; and W. Woodward, Common Hard, Portsea.

Price, cloth lettered, 7*s.* 6*d.*

TABLES

FOR

DETERMINING THE LATITUDE

BY THE

SIMULTANEOUS ALTITUDES OF TWO STARS.

TABLES

FOR FACILITATING THE DETERMINATION OF THE

LATITUDE AT SEA

BY

THE SIMULTANEOUS ALTITUDES OF TWO STARS.

BY

CHARLES F. A. SHADWELL, Esq. F.R.A.S.

COMMANDER, ROYAL NAVY;

AUTHOR OF "TABLES FOR FACILITATING THE APPROXIMATE PREDICTION OF OCCULTATIONS AND ECLIPSES FOR ANY PARTICULAR PLACE."

LONDON:
PUBLISHED BY R. B. BATE, 31 POULTRY;
SOLD ALSO BY
W. WOODWARD, COMMON HARD, PORTSEA.

1849.

ENTERED AT STATIONERS' HALL.

LONDON:
Printed by G. Barclay, Castle St. Leicester Sq.

PREFACE.

In offering to the Naval Profession a new collection of Rules and Tables for facilitating the Determination of the Latitude at Sea, by the observed Altitudes of Two Stars, the Author feels that some explanation is necessary of the reasons which have induced him to substitute the title "Simultaneous Altitudes" in lieu of the old established one "Double Altitudes," which seamen have hitherto been accustomed to.

Objections have been raised to the use of the term "Double Altitudes," when applied to the case of the observations of two different bodies taken at the same time, since it is argued that the term *double*, meaning *twice the same*, can only with propriety be used with reference to the observations of the same body made at

different times. The phrase "Combined Altitudes" has been suggested as a substitute.

Admitting, to their fullest extent, the force of these criticisms, the Author has been induced to adopt the term "Simultaneous Altitudes," which not only expresses the idea of combination, but also indicates the essential feature of this mode of obtaining the Latitude, viz. the union of the observations at the same instant.

To these reasons may be added the consideration that, as the process of calculation for the Latitude by the "Simultaneous Altitudes" of two Stars possesses few points in common with those developed in the corresponding reduction of "Double Altitudes" of the Sun, the selection of a distinct title, appropriate to the particular character of the observation, is better than allowing a comparatively new kind of computation to remain associated with an old name, which, to the minds of many, only recalls recollections of laborious and oftentimes unsatisfactory calculations.

Advantage has been taken of the present opportunity to introduce to the notice of navigators a new method

of computation, which, from its brevity and conciseness, possesses many points of advantage over the old method, by the direct processes of spherical trigonometry; but since, as an eminent astronomical writer has observed, "the substitution of a new method a little more simple and somewhat less long forms no good reason for getting rid of the old one, and for disturbing the technical memory of those who work by fixed rules," the Author has re-computed the Tables for the solution of the problem by the old method also.

All the examples given in illustration of the rules are founded on actual observations made at sea, the dates of the years having been in some cases altered in order to afford an exercise in the use of the Tables.

The Author trusts, in conclusion, that an increasing appreciation of the advantages of stellar observation may procure for these pages a favourable reception. The records of recent disasters at sea tend to shew, if proof were still wanting, the advantages which might arise from careful observations of the stars; but since confidence in the hour of uncertainty cannot be improvised for the