CONTENTS.

CHAPTER I.—ALGEBRA.	
Addition — Subtraction — Brackets — Substitution — Multiplication — Division—Simple Equations—Simultaneous Equations—Problems	1
CHAPTER II.—GEOMETRY.	
Bisection of Angles and Straight Lines—Parallel and Perpendicular Straight Lines—Construction of Triangles, Quadrilaterals—Circles and Tangents—The Escribed and Circumscribed Circles of a Triangle—Segment of a Circle—The Geometry of Problems in Plane Navigation	21
CHAPTER III.—GRAPHS.	
Speed and Distance—Time, Speed and Distance—Masters' and Mates' Certificates— Coal Freights—Thermometer Scales—Barometrical Pressure, Wind and Weather —Fuel Consumption and Speed—Draught and Displacement—Curve of Tons per Inch Immersion—Curve of Stability	35
CHAPTER IV.—CIRCULAR MEASURE AND MENSURATION.	
The Turning of a Bicycle Wheel and Paddle Wheel—The Arc described by a Derrick—Ship Sailing round a point—The Earth turning on its Axis—The Circumference of a Winch Barrel—Weights and Measures—Areas and Perimeters of Rectangles, Triangles and Circles—Surface Areas of a Box-shaped Body, Cylinder, Wedge—Volumes of a Box-shaped Body, Cylinder, Barrel, Wedge, Sphere—Summary of Formulae—Examples for Exercise	47
CHAPTER V.—LOGARITHMS.	
Multiplication and Division of Whole Numbers and Decimal Numbers—Involution— Evolution—Examples for Exercise	62
CHAPTER VI.—TRIGONOMETRY.	
Functions of an Angle, Reciprocals and Complements—Identities—Trigonometric Functions 0° to 180°—Signs of an Angle—Solution of Plane Triangles— Miscellaneous Examples—Solution of Spherical Triangles	80
CHAPTER VII.—THE SPHERE.	
The Earth, its Shape and Size—Circles on the Sphere—Latitude, Longitude, Difference of Latitude, Difference of Longitude, Departure—Definitions—Parallel Sailing—Course and Distance—Projection of the Sphere—Mercator Projection—Mercator Sailing—Examples for Exercise—Questions	149

CHAPTER VIII.—THE COMPASS.

The Gyro Compass—Magnetic Compass—Azimuth Mirror—Pelorus—Remarks on Magnetism—Analogy between the Earth and a Magnet—Magnetic Equator—Magnetic Poles—Definitions: Variation, Deviation, Compass, Magnetic and True Courses, Correction of Courses—Questions	175
CHAPTER IX.—THE DAY'S WORK.	
Definitions: Dead Reckoning and Estimated Positions—Resolving Traverses—Course and Distance—Set and Drift of Current—Various Examples -	194
CHAPTER X.—CHARTWORK.	
Reading a Chart—Courses and Distances—Cross Bearings—Running Fix—Tidal Information given on Charts—High Water Full and Change—Current Sailing—Bridge Navigation—Clearing Bearings—Sextant Angles—Radio Bearings—Visibility of Guiding Lights—Deviation Tables and Curves—Approximate Deviation from Sun, Pole Star and Transit Bearings—Worked Examples—Chart Papers—Questions on Chartwork	215
CHAPTER XI.—TIDES.	
Standard and Local Times of High Water—Reduction to Soundings, Range, Rise and Height of Tide, Spring, Neap, Mean and Datum Levels—Priming and Lagging of the Tide—Duration of Tide and Angle from High Water—Examples of Finding the Depth of Water at any State of the Tide—Questions	277
CHAPTER XII.—THE SEXTANT.	
Description of the Sextant—Reading the Sextant—Vernier—Principle of Construction, Adjustment of Mirrors—Index Error—Centring Error—Artificial Horizon— Degree of Accuracy of Verniers—Measurement and Correction of Altitudes— Sun, Star, Moon and Planet—Circles of Position—Meridian Passage of Planets and Moon—Examples for Exercise—Questions -	298
CHAPTER XIII.—TIME EQUATIONS.	
The Chronometer: Description, its Care and Rating—Finding G.M.T. from Chronometer— The Day, Sidereal, Solar and Lunar—Corrections of Nautical Almanac Elements, Sun, Planets and Moon—Principles of Time Equations connecting Ship Mean Time, Greenwich Mean Time, Right Ascensions, Hour Angles, R and E—Exercises—Questions—	327
CHAPTER XIV.—THE SOLAR SYSTEM.	
The Planets—Astronomical Distance—The Year—The Satellites of the Solar System— The Earth-Moon System—Phases of the Moon—Universal Gravitation—Eclipse of the Moon and Sun—The Earth's Orbit—The Seasons—Signs of the Zodiac— Real and Apparent Motions—Day and Night—The Sun's Apparent Motion— Obliquity of the Ecliptic—Right Ascension and Declination—The Celestial Sphere—The Pole-Zenith-Star Triangle defined—Questions	351
CHAPTER XV.—PROJECTIONS.	
The Orthographic, Stereographic and Equidistant Projections of the Celestial Sphere explained—Figure Drawing on the Equidistant Projection—Examples introducing Latitude, Declination, Zenith Distance, Hour Circles, Hour Angle and Azimuth—Examples for Exercise	366

CHAPTER XVI.—MERIDIAN ALTITUDES.	
Latitude by Meridian Altitude of Star above and below the Pole, Planet, Sun and Moon— Latitude by the Pole Star—A Position Line—Questions	378
CHAPTER XVII.—AMPLITUDE AND AZIMUTH.	
Rising and Setting of Heavenly Bodies—The Bearing Amplitude—The Time Amplitude—The Amplitude—The Amplitude—The Amplitude—The Amplitude—The Amplitude—Sun, Star, Planet—Examples for Exercise—Questions	3 98
CHAPTER XVIII.—POSITION LINE, LONGITUDE METHOD.	
The Principle of Position Lines—Charting Position Lines—Examples for Exercise— The Value of a Single Position Line—Ship's Position from Two Position Lines and the Ship's Run between by Plotting on Chart, on Squared Paper, and by Inspection of Traverse Table—Examples for Exercise—Forenoon Sights of the Sun for Hour Angle, Azimuth, Longitude and Position Line combined with Latitude by Meridian Altitude—The Noon Latitude combined with Afternoon Sights of the Sun for Position Line—Questions	415
CHAPTER XIX.—EX-MERIDIAN, SUN.	
Latitude and Position Line by Ex-meridian Altitude of the Sun—Reduction to the Meridian —Ex-meridian Tables—Examples for Exercise	439
CHAPTER XX.—POSITION LINE, STARS AND MOON.	
Longitude and Position Line by Star, Planet, and Moon—Ship's Position by Plotting and by A and B Tables—Examples for Exercise—Questions -	446
CHAPTER XXI.—INTERCEPT METHOD.	13994
The Principle of the Marcq St. Hilaire Method of Position Line—The Computation—Ship's Position by Plotting on Chart, on Squared Paper and by Inspection of the Traverse Table—Examples for Exercise—Questions	471
EXAMINATION PAPERS.	
Specimen Test Papers	491
Answers - was - was to great - man -	511
APPENDIX.	
Elements from Nautical Almanac—Table of Proportional Parts—Time Azimuth Table— Pole Star Tables—Tide Table—Phases of the Moon	529
INDEX -	613
POCKET.	
Chart Symbols and Abbreviations	
Chart of English Channel and of Tasmania	