

ANALYSIS OF CONTENTS

WONDERS OF ELECTRICITY

- I. AT THE DAWN OF THE CENTURY: — Earliest Observations on Electricity — Study of Amber — Earliest Electric Machines — Conduction of Electricity — The Leyden Jar — Franklin's Discoveries. II. NEW NINETEENTH CENTURY ELECTRICITY: — Galvanism — The Voltaic Pile — Davy's Arc-light — The Electro-magnet — Faraday's Discoveries — The Induction Coil — Fields of Force. III. THE TELEGRAPH: — First Successful Telegraphy — The Morse System — Improvements in Telegraphy — Ocean Telegraphy. IV. HELLO! HELLO! — Invention of the Telephone — Principle of the Telephone — Transmitter and Receiver — Uses of the Telephone — The Phonograph, Gramophone and Graphophone. V. DYNAMO AND MOTOR: — The First Motor — Perfection of the Dynamo — How it generates Electricity — Principle and Uses of the Motor. VI. "AND THERE WAS LIGHT": — Various Lights of the Past — Era of Electric Lighting — Arc and Incandescent Lamps — Principles of Each — Value of Electric Light. VII. ELECTRIC LOCOMOTION: — Passing of the Horse and Traction Car — Introduction of the Trolley — Features of the Electric Railway — The Storage Battery and Horseless Carriage. VIII. THE X RAY: — Discovery of — What the X Ray is — Photographing by Means of the X Ray. IX. OTHER ELECTRICAL WONDERS: — Electric Clocks — Electrotyping and Electroplating, etc. X. ELECTRICAL LANGUAGE . . . 19-54

THE CENTURY'S NAVAL PROGRESS

- I. INFLUENCE OF SEA POWER: — Sea Powers throughout the World — Enumeration of Great Naval Wars. II. THE CENTURY'S GROWTH IN NAVAL STRENGTH: — American Navies at Different Eras — European Fleets — South American and Chinese Navies. III. THE BATTLESHIP PAST AND PRESENT: — The Old Fighting Frigate — Evolution of the Modern Man-of-War — Comparison of Frigate with Ironclad. IV. PROGRESS OF NAVAL ENGINEERING: — Nelson's Vision — The 14,500 Miles Steaming of the Oregon — Revolution in Mechanism and Material — Types of Great Battleships — Introduction and Advantages of Steam — Invention of the Screw Propeller — Improvement in Hoppers and Engines — The Revolving Turret — Cruiser and Torpedo Craft — Phenomenal Speed. V. THE GROWTH OF ORDNANCE: — Description of Various Guns and Projectiles — Power of Modern Explosives. VI. THE DEVELOPMENT OF ARMOR: — Its Necessity in Naval Warfare — How it is made, tested, and put on. VII. THE RAM AND TORPEDO: — Evolution of the Ram — Introduction of the Torpedo — Various Kinds of Torpedoes. VIII. THE UNITED STATES FLEET: — Whence it sprang and how it has grown — Its Ships, Officers, and Men — Official Naval Ranks — The Naval Academy — Passage of the United States to a World Power 55-80

ASTRONOMY DURING THE CENTURY

- I. ASTRONOMY A CENTURY AGO: — Discovery of Uranus. II. HOW "BODE'S LAW" PROMOTED RESEARCH: — Further Discovery of Planets — Celestial Photography. III. HOW NEPTUNE WAS FOUND: — Le Verrier, "First Astronomer of the Age." IV. METEORITES: — Meteoric Showers — Various Large Meteorites. V. DO METEORS OFTEN STRIKE THE EARTH: — The "Fire-ball" of 1860. VI. ASTRONOMICAL OBSERVATORIES: — Their Equipment and Work — Number of Observatories. VII. IMPROVED INSTRUMENTS: — Their Effect on the Science. VIII. THE SPECTROSCOPE: — Its Triumphs — Elements discovered. IX. WORK IN A LARGE OBSERVATORY: — Discovery of Comets and Nebulae. X. WASHINGTON NATIONAL OBSERVATORY: — Its Instruments. XI. STAR MAPS AND CATALOGUES: — Number of Stars — The Planisphere. XII. ASTRONOMICAL BOOKS AND WRITERS: — Number of Students of Astronomy. XIII. PRACTICAL USES OF ASTRONOMY: — Its Help in Navigation — Uses in Geodesy. XIV. NOTABLE ASTRONOMICAL EPOCHES: — Clock Regulation — Invention of Chronograph and Spectroscope — Great Telescopes. XV. DISCARDED THEORIES: — Are Planets inhabited? — The Orrery. XVI. FUTURE ASTRONOMICAL PROBLEMS: — How long will the Sun endure? 87-104