

T H E
C O N T E N T S.

P A R T I.

THE HISTORY OF ELECTRICITY.

P E R I O D I.

***E**XPERIMENTS and discoveries in electricity prior to those of Mr. Hawkeſbee. page 1*

P E R I O D II.

The experiments and discoveries of Mr. Hawkeſbee. p. 15

P E R I O D III.

The experiments and discoveries of Mr. Stephen Grey, which were made prior to thoſe of Mr. Du Faye, and which bring the hiſtory of electricity to the year 1733. p. 26

P E R I O D IV.

The experiments and discoveries of Mr. Du Faye. p. 45

P E R I O D V.

The continuation, and concluſion of Mr. Grey's experiments. p. 54

P E R I O D

THE CONTENTS. xxv

PERIOD VI.

The experiments of Dr. Defaguliers. page 64

PERIOD VII.

Experiments of the Germans, and of Dr. Watfon, before the discovery of the Leyden phial in the year 1746. p. 70

PERIOD VIII.

The history of electricity, from the discovery of the Leyden phial in the year 1746, till Dr. Franklin's discoveries. 81

SEC. I. *The history of the Leyden phial itself, till Dr. Franklin's discoveries relating to it.* *ib.*

SEC. II. *The methods used by the French and English philosophers, to measure the distance to which the electric shock can be carried, and the velocity with which it passes.* p. 100

SEC. III. *Miscellaneous discoveries of Dr. Watfon, and others, till the time of Dr. Franklin.* p. 111

SEC. IV. *Experiments on animal and other organized bodies in this period, and other experiments connected with them, made chiefly by the Abbe Nollet.* p. 135

SEC. V. *The history of the medicated tubes, and other communications of medicinal virtues by electricity, with their various refutations.* p. 146

PERIOD IX.

The experiments and discoveries of Dr. Franklin. p. 158

SEC. I. *Dr. Franklin's discoveries concerning the Leyden phial, and others connected with them.* *ib.*

d

SEC.

xxvi THE CONTENTS.

SEC. II. *Dr. Franklin's discoveries concerning the similarity of lightning and electricity.* page 170

SEC. III. *Miscellaneous discoveries of Dr. Franklin and his friends in America during the same period.* p. 185

P E R I O D X.

The history of electricity, from the time that Dr. Franklin made his experiments in America, till the year 1766. p. 193

SEC. I. *Improvements in the electrical apparatus, with experiments and observations relating to it.* p. 195

SEC. II. *Observations on the conducting power of various substances, and particularly Mr. Canton's experiments on air; and Signior Beccaria's on air, and water.* p. 204

SEC. III. *Mr. Canton's experiments and discoveries relating to the surfaces of electric bodies, and others made in pursuance of them, or relating to the same subject; all tending to ascertain the distinction between the two electricities.* p. 220

SEC. IV. *Mr. Delaval's experiments relating to the two electricities, and his controversy with Mr. Canton upon that subject.* p. 237

SEC. V. *Mr. Canton's experiments and discoveries relating to bodies immersed in electric atmospheres, with the discoveries of others, made by pursuing them.* p. 246

SEC. VI. *Mr. Symmer's experiments relating to the two electricities, and those made by Johannes Franciscus Cigna in pursuance of them.* p. 266

SEC. VII. *The history of the Leyden Phial continued,* p. 287
SEC.

T H E C O N T E N T S. xxvii

- SEC. VIII. *Experiments and observations concerning electric light.* page 297
- SEC. IX. *The electricity of the Tourmalin.* p. 314
- SEC. X. *Discoveries that have been made since those of Dr. Franklin, with respect to the sameness of lightning and electricity.* p. 327
- SEC. XI. *Observations on the general state of electricity in the atmosphere, and its more usual effects.* p. 362
- SEC. XII. *The attempts that have been made to explain some of the more unusual appearances in the earth and heavens by electricity.* p. 373
- SEC. XIII. *Observations on the use of metallic conductors to secure buildings, &c. from the effects of lightning.* p. 398
- SEC. XIV. *Of medical electricity.* p. 408
- SEC. XV. *Miscellaneous experiments and discoveries made within this period.* p. 423

P A R T II.

- A SERIES OF PROPOSITIONS, COMPRISING ALL THE GENERAL PROPERTIES OF ELECTRICITY. p. 433

P A R T III.

- THEORIES OF ELECTRICITY. p. 441
- SEC. I. *Of philosophical theories in general, and the theories of electricity preceding that of Dr. Franklin.* ib.
- SEC. II. *The theory of positive and negative electricity.* p. 455
- SEC. III. *Of the theory of two electric fluids.* p. 468

xxviii THE CONTENTS.

PART IV.

DESIDERATA IN THE SCIENCE OF ELECTRICITY, AND
HINTS FOR THE FURTHER EXTENSION OF IT. page 497

SEC. I. *General observations on the present state of electricity.* *ib.*

SEC. II. *Queries and hints calculated to promote further discoveries in electricity.* p. 487

I. *Queries and hints concerning the electric fluid.* *ib.*

II. _____ electrics and conductors. p. 489

III. _____ excitation. p. 490

IV. _____ electrification. p. 492

V. _____ *the power of charging electrics.* p. 493

VI. _____ *the electricity of glafs.* p. 494

VII. _____ *the effect of electricity on animal bodies.* p. 496

VIII. _____ *the electricity of the atmosphere.* p. 497

SEC. III. *Branches of knowledge peculiarly useful to an electrician.* p. 499

PART V.

OF THE CONSTRUCTION OF ELECTRICAL MACHINES,
AND THE PRINCIPAL PARTS OF AN ELECTRICAL AP-
PARATUS. p. 508

SEC. I. *General observations on the construction of an electrical apparatus.* *ib.*

SEC. II. *A description of some particular electrical machines, with observations on their principal advantages and defects.*

p. 525

PART

THE CONTENTS. xxix

PART VI.

PRACTICAL MAXIMS FOR THE USE OF YOUNG ELECTRICIANS. page 535

PART VII.

A DESCRIPTION OF THE MOST ENTERTAINING EXPERIMENTS PERFORMED BY ELECTRICITY. p. 547

SEC. I. *Entertaining experiments in which the Leyden phial is not used.* p. 551

SEC. II. *Entertaining experiments performed by means of the Leyden phial.* p. 561

SEC. III. *Entertaining experiments made by a combination of philosophical instruments.* p. 569

PART VIII.

NEW EXPERIMENTS IN ELECTRICITY, MADE IN THE YEAR 1766. p. 573

SEC. I. *Experiments on excitation, particularly of tubes in which air is condensed, and of large glass globes.* page 581

SEC. II. *Experiments which prove a current of air from the points of bodies electrified either positively or negatively.* p. 591

SEC. III. *Experiments on mephitic air, and charcoal.* p. 598

SEC. IV. *Experiments on the conducting power of various substances.* p. 609

SEC. V. *Experiments on the diffusion of electricity over the surfaces of glass tubes, containing a new method of giving the electric shock.* p. 621

SEC. VI.

xxx THE CONTENTS.

- SEC. VI. *Experiments to verify several particulars of Signior Beccaria's theory of electricity; particularly concerning the electric matter carrying into its path light substances to assist its passage.* page 635
- SEC. VII. *Various experiments relating to charging and discharging glass jars and batteries.* p. 642
- SEC. VIII. *Experiments on animals.* p. 653
- SEC. IX. *Experiments on the circular spots made on pieces of metal by large electrical explosions.* p. 659
- SEC. X. *Experiments on the effects of the electrical explosion discharged through a brass chain, and other metallic substances.* p. 672
- SEC. XI. *Experiments on the passage of the electrical explosion over the surface of some conducting substances, without entering them.* p. 685
- SEC. XII. *Experiments on the Tourmalin.* p. 697
- SEC. XIII. *Miscellaneous Experiments.* p. 714
- I. *Observations on the electric spark taken through several pieces of metal.* ib.
- II. *A deception relating to the direction of the electric spark.* p. 715
- III. *An experiment intended to ascertain whether electric substances, in their natural state, contain more of the electric fluid than conductors.* p. 716
- IV. *The musical tone of various discharges ascertained.* ib.
- V. *Experiments on the effects of giving a metallic tinge to the surface of glass.* p. 718
- VI

T H E C O N T E N T S. xxxi

- VI. *An experiment intended to ascertain whether fermentation contributes to the production of electricity.* p. 720
- VII. *An experiment intended to ascertain whether evaporation contributes to the production of electricity.* page 721
- VIII. *An experiment intended to ascertain whether freezing be accelerated or retarded by electrification.* *ib.*
- IX. *The examination of a glass tube, which had been a long time charged and hermetically sealed.* p. 722
- X. *The weight requisite to bring some bodies into contact ascertained by the electrical explosion.* *ib.*
- XI. *The effect of the electrical explosion transmitted through various liquors.* p. 724
- XII. *Observations on the colours of electric light.* p. 725
- XIII. *Observations on the small wires that collect electricity from the excited globe.* p. 727
- XIV. *Experiments intended to ascertain the difference in the conducting power of different metals.* p. 728
- XV. *Experiments with an electrified cup.* p. 731