

**INDUCTION COILS:
HOW MADE AND
HOW USED; PP. 1-122**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649481385

Induction Coils: How Made and How Used; pp. 1-122 by Anonymous

Except for use in any review, the reproduction or utilisation of this work in whole or in part in any form by any electronic, mechanical or other means, now known or hereafter invented, including xerography, photocopying and recording, or in any information storage or retrieval system, is forbidden without the permission of the publisher, Trieste Publishing Pty Ltd, PO Box 1576 Collingwood, Victoria 3066 Australia.

All rights reserved.

Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

This book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, re-sold, hired out, or otherwise circulated without the publisher's prior consent in any form or binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

www.triestepublishing.com

ANONYMOUS

**INDUCTION COILS:
HOW MADE AND
HOW USED; PP. 1-122**

Revised — second.

INDUCTION COILS:

HOW MADE AND HOW USED.

THIRD AMERICAN

FROM

THE NINTH ENGLISH EDITION.



NEW YORK

D. VAN NOSTRAND COMPANY,

23 MURRAY AND 27 WARREN STREET.

1892.

PREFACE TO AMERICAN EDITION.

THE rapidly extending use of the Induction Coil in the hands of investigators lends a renewed interest to the experiments to which this instrument may be applied in the lecture room.

The continued demand for a manual which has so long served as a guide to the application of *intensity* currents, has led to this reprint of the eighth English edition of the work entitled "Intensity Coils," by Dyer, under the present title.

January, 1881

282991

- file 04-52-1

CONTENTS.

	PAGE
Discovery of Current Electricity.....	9
Definition of Galvanism.....	10
Manifestation of Galvanism.....	10
Evidences of the Existence of Galvanism.....	12
Influence of the Connecting Wire on Magnet.....	13
Ørsted's Discovery.....	15
Galvanometers.....	15
Action of Electrified Wires on other Wires.....	16
The Simple Battery.....	17
Influence of an Electrified Wire on an Iron Bar...	18
Electro-Magnets.....	18
Action of a Steel Magnet of a Helix of Wire.....	19
Increased Effects resulting from Increased Current	
Action.....	19
Current, or Dynamic Electricity.....	20
Static Electricity.....	20
Galvanic Batteries.....	21
Elements of a Galvanic Battery.....	22
Poles of a Galvanic Battery.....	22
Electrodes.....	24
Compound Batteries.....	24
Quantity Arrangement of a Battery.....	25
Intensity Arrangement of Battery.....	25
Necessity for Uniformity of Size in Batteries.....	25

	PAGE
Electrodes of Compound Batteries	26
Continuity of Circuit.....	26
Cruikshank's Battery.....	27
Daniel's Battery	27
Smee's Battery.....	28
Grove's Battery	29
Bunsen's Carbon Battery	30
Callan's or Maynooth Battery.....	31
Bichromate Battery.....	31
Amalgamation of Zinc Plates.....	33
Elements of a Battery to be kept apart.....	34
Induced Currents.....	35
Induced Current on Completing Circuit.....	35
Induced Current on Rupture of Circuit.....	37
Necessity for Rupture of Battery Circuit	37
Rapid Rupture of Battery Circuit	38
Induction in the Battery Circuit	39
Induction in Scalariform Battery Wire.....	40
Induction in Spiral Battery Wire.....	40
Magnetic Induction in Battery Circuit.....	41
Electro-Chemical Effects of Current Electricity...	42
The Primary Coil.....	43
Construction of an Ordinary Primary Coil.....	43
Construction of an Ordinary Secondary Coil.....	44
Sparks from Secondary Coil	44
Contact Breakers.....	45
The Mercury Contact Breaker.....	45
Vibrating Contact Breaker	48
Intensity Coils.....	51
The Reel.....	53
The Primary Coil.....	54

CONTENTS.

5

	PAGE
The Secondary Coil.....	56
Testing the Secondary Wire.....	58
The Iron Bundle	59
The Contact Breaker.....	60
The Condenser.....	61
The Pedestal or Base.....	64
The Commutator.....	65
The Coil Connections	68
Battery Power for the Coil.....	70
Electrodes of the Secondary Coil.....	71
Experiments with the Intensity Coil	71
The Discharger.....	72
Primary Spark.....	73
Secondary Spark	73
Static Spark.....	73
Elongated Dynamic Spark.....	74
Calorific Dynamic Spark	74
Intermittent Character of the Spark.....	74
Retaining Power of the Retina.....	75
Divergence of the Spark towards a Flame.....	75
Elongation of the Spark by a Flame	76
Action of the Flame of Bunsen's Burner.....	76
Change in Spark passing through a Flame.....	77
Modification of the Spark by Surfaces.....	77
The Shield Experiment	78
Apparent Bending of the Spark.....	78
Spark over Softened Gutta-Percha.....	78
Spark over Partial Conductor.....	79
Fiery Scrolls.....	79
Sheet of Fire.....	79
Spark over Finely-divided Metal.....	80

	PAGE
Spark over Water.....	80
Spark obtained from Water.....	80
Action of Oil on the Color of the Spark.....	81
Spark not Extinguishable by Water.....	81
Influence of the Electric Current upon Oil.....	89
Apparent Impelling Power of the Current.....	88
Dr. Wright's Cohesion Experiment.....	84
Disruptive Action of the Spark on Paper.....	85
Peculiar Character of these Perforations.....	85
Decomposition of Water.....	86
Decomposition of a Neutral Salt.....	86
Scintillation of Iron Wire.....	87
Deflagration of Leaf Metal.....	88
Ignition of Phosphorus.....	88
Inflammation of Ether.....	88
Inflammation of Hydrogen Gas.....	88
Explosion of Gas and Common Air.....	89
Ignition of Gun-Cotton.....	89
Combustion of Lycopodium.....	89
Re-lighting a Taper.....	89
Explosion of Gunpowder.....	90
Galvanic Cartridge.....	90
Statham's Fuse.....	91
Abel's Fuse.....	91
Charging a Leyden Jar.....	92
Detonating Plane.....	92
Spark in a Rarefied Medium.....	93
Luminous Electric Globe.....	96
Stratification of the Spark.....	96
Attraction of the Spark by a Detached Conductor.....	97
Different Appearances at the two Wires.....	97

CONTENTS.

7

	PAGE
Change in the Color of the Spark.....	99
Fluorescence	99
Fluorescent Plate.....	99
Fluorescent Writing.....	99
Phosphorescence	99
Phosphorescent Tube.....	100
Vacuum Tubes.....	100
Gassiot's Cascade.....	101
Compound Vacuum Tubes	102
Compound Volute Tube.....	102
Compound Spiral Tube	103
Double Branch Compound Tube.....	103
Horizontal Compound Spiral Tube.....	104
Horizontal Compound Bulb Tube.....	105
Motto Tubes	105
Phosphorescent Vacuum Tube.....	106
Seven Bulb Tube.....	106
Six Bulb Tube	106
Double Bell Tube.....	107
Combined Bulb and Spiral Tube.....	107
Nine Bulb Tube.....	108
Pagoda Tube.....	108
Triple Bar Tube.....	108
Gassiot Star.....	109
Multiplying Planes.....	109
Injury to Vacuum Tubes.....	110
Union of Vacuum Tubes.....	111
Background for Vacuum Tubes.....	111
Physiological Effects of the Intensity Coll.....	111
Shock from Primary Circuit.....	112
Uni-direction Shock	112