

# INDEX

---

NOTE.—All items in this index refer first to the section (see the Preface) and then to the page of the section. Thus, "Alternators 20 41" means that alternators will be found on page 41 of section 20.

	<i>Sec.</i>	<i>Page</i>		<i>Sec.</i>	<i>Page</i>
<b>A</b>					
Air-brake cylinder . . . . .	25	64	Automatic drop . . . . .	28	38
“ “ governor . . . . .	25	57	Auxiliary bus-bar, Use of, in rail- way stations . . . . .	21	12
“ “ lever system . . . . .	25	65	<b>B</b>		
“ brakes . . . . .	25	51	Bare copper wire, Dimensions of . . . . .	26	24
“ “ Classification of . . . . .	25	51	Batteries . . . . .	28	27
“ “ on multiple-unit cars . . . . .	25	79	Battery out on the line . . . . .	21	30
Alternating-current machinery for railway work . . . . .	20	41	“ used to take peak of load . . . . .	21	29
“ current motors for railway work . . . . .	20	43	B6 controller . . . . .	25	69
“ current, Wiring calcu- lations for . . . . .	27	8	“ “ brake positions . . . . .	25	73
Alternators . . . . .	20	41	“ “ power positions . . . . .	25	72
Ammeters . . . . .	20	53	Bell and annunciator circuits . . . . .	28	32
“ and voltmeters, Thom- son astatic . . . . .	20	54	“ wire, Method of running . . . . .	28	31
“ and voltmeters, West- inghouse railway . . . . .	20	54	“ wiring . . . . .	28	24
Annunciator, Needle . . . . .	28	30	Blacksmith shop . . . . .	23	45
“ Self-restoring . . . . .	28	31	Boilers . . . . .	20	25
Annunciators . . . . .	28	29	Bonds . . . . .	22	30
Apparatus for multiple-lighting system . . . . .	28	49	Booster, Compound . . . . .	21	32
Approved conduit system . . . . .	27	50	“ Convertible . . . . .	21	21
Arc lamps . . . . .	26	16	“ Cutting in and out of . . . . .	21	17
“ “ Constant current . . . . .	28	15	“ Economy of . . . . .	21	25
“ “ Wiring for . . . . .	28	14	“ Motor-driven . . . . .	21	19
Armature, 93-coil, Connections for . . . . .	24	77	Boosters, Use of . . . . .	21	13
“ 95-coil, Connections for . . . . .	24	76	Brake cylinder . . . . .	25	64
“ 99-coil, Connections for . . . . .	24	74	“ Electric . . . . .	25	67
“ 105-coil, Connections for . . . . .	24	78	“ positions, B6 controller . . . . .	25	73
“ connections for railway motors . . . . .	24	73	“ rigging, Points on care of . . . . .	25	47
“ G. E. 52 motor . . . . .	24	66	“ valve . . . . .	25	54
“ with 93 coils and 47 slots, Connections for . . . . .	24	78	“ “ positions . . . . .	25	56
Armored cable . . . . .	27	24	Brakes . . . . .	25	42
Arrangement of lighting apparatus . . . . .	28	45	Branch lines and curves . . . . .	22	9
Automatic burner . . . . .	28	44	Brush holders, G. E. 52 motor . . . . .	24	67
“ cut-outs, Rules relating to . . . . .	26	35	Burglar alarms . . . . .	28	40
			Buzzer . . . . .	28	25
			Bus-bars . . . . .	21	5
			<b>C</b>		
			Cabinets and panel boards, Use of . . . . .	27	25
			Calculation of feeders . . . . .	23	1
			“ of line losses due to resistance . . . . .	26	59

	<i>Sec.</i>	<i>Page</i>		<i>Sec.</i>	<i>Page</i>
Calculation of proper size of wire			Circuit-breakers . . . . .	26	34
for a given loss . . . . .	26	62	"    "    Cutter . . . . .	20	61
of track resistance . . . . .	22	23	"    "    for street cars . . . . .	25	18
of wire in terms of cir-			Circuits, Laying out of . . . . .	27	31
cular mils . . . . .	27	5	Classes of trucks . . . . .	24	4
of wire sizes in terms			Classification of air brakes . . . . .	25	51
of resistance per			Coils with leads on opposite ends . . . . .	24	86
1,000 ft. . . . .	27	3	Combining several wiring sys-		
Calculations for a loop line . . . . .	23	11	tems . . . . .	28	1
"    "    line and track . . . . .	22	16	Commutator room . . . . .	23	43
Canopy insulator . . . . .	27	45	Comparison between track and		
switch, General Electric . . . . .	25	11	overhead resistance . . . . .	23	18
"    "    Westinghouse . . . . .	25	10	Compound booster . . . . .	21	32
switches . . . . .	25	9	"    wound dynamos . . . . .	20	34
Capacity of G. E. 52 motor . . . . .	24	64	"    wound generator, Con-		
"    "    No. 56 motor . . . . .	24	71	nections for . . . . .	20	36
"    "    wires for marine work . . . . .	27	70	Concealed electric-light wiring,		
Car barn . . . . .	23	35	Specifications for . . . . .	27	37
bodies . . . . .	24	1	"    knob-and-tube work . . . . .	27	21
body, Selection of . . . . .	24	2	Condensers . . . . .	20	24
Force required to move a, on			Condition of rail . . . . .	25	45
the level . . . . .	21	39	Conductors in multiple, Fuse pro-		
house . . . . .	23	35	tection of . . . . .	27	14
"    "    Wiring of . . . . .	23	38	Conduit, Flexible armored . . . . .	27	61
lighting . . . . .	25	34	"    road, Construction for . . . . .	22	56
lightning arrester, Westing-			"    systems, Approved . . . . .	27	50
house . . . . .	25	20	"    "    Early . . . . .	27	49
wattmeter . . . . .	21	4	"    wire and installation, Un-		
wiring diagram for 28A con-			derwriters' rules rela-		
troller . . . . .	24	51	ting to . . . . .	27	58
"    "    diagram for K12 con-			"    wiring . . . . .	27	49
troller . . . . .	24	56	Conduits, Drawing wires in . . . . .	27	62
"    "    for Johns heaters . . . . .	25	30	Connecting feeders to trolley wire . . . . .	22	15
"    "    with two rheostatic controllers . . . . .	24	26	Connections for armature with 93		
Carbon-cylinder cells . . . . .	28	29	coils and 47 slots . . . . .	24	73
Carrying capacity of feeders . . . . .	23	22	"    for 93-coil armature . . . . .	24	77
"    "    "    insulated			"    "    95-coil armature . . . . .	24	76
wires . . . . .	26	22	"    "    99-coil armature . . . . .	24	74
Cars operated on three-wire sys-			"    "    105-coil armature . . . . .	24	78
tem . . . . .	23	29	"    "    compound-wound		
"    Storage batteries on . . . . .	21	26	generator . . . . .	20	36
"    Weights of . . . . .	21	37	"    "    General Electric		
Cast welded joint . . . . .	22	35	arrester . . . . .	25	22
Center of distribution . . . . .	26	33	"    "    Johns heater . . . . .	25	28
"    "    "    . . . . .	26	64	"    "    lamps . . . . .	25	37
"    pole construction . . . . .	21	55	"    "    railway switch-		
Changeable headlight on two-cir-			board . . . . .	21	10
cuit car . . . . .	25	41	Consolidated heater . . . . .	25	31
"    headlight wiring dia-			"    "    switch . . . . .	25	32
gram . . . . .	25	41	Constant-current arc lamps . . . . .	28	15
Christensen governor for air-brake			Construction, Center-pole . . . . .	21	55
pump . . . . .	25	57	"    for conduit road . . . . .	22	56
Circuit-breaker, General Electric			"    in soft subsoil . . . . .	22	55
type M K . . . . .	20	56	"    Side-bracket . . . . .	21	56
"    breaker, Westinghouse . . . . .	20	60	"    Third-rail . . . . .	22	58
"    breakers . . . . .	20	55	Control, Methods of . . . . .	24	11

# INDEX

	<i>Sec.</i>	<i>Page</i>		<i>Sec.</i>	<i>Page</i>
Control of lamps from two points	27	39	Direct-current generators . . . . .	20	29
"    " lights from three or more points . . . . .	27	41	Disposal of the bonds . . . . .	22	32
"    Rheostatic . . . . .	24	11	Distributed load, Effect of . . . . .	23	8
"    Series-parallel . . . . .	24	28	Distribution circuits . . . . .	26	33
Controller, Car-wiring diagram for			"    of resistance in the rail return . . . . .	22	27
28A . . . . .	24	51	"    Underground . . . . .	22	16
"    for electric brakes . . . . .	25	69	Division of overhead work . . . . .	22	19
"    K10 . . . . .	24	45	Door openers . . . . .	28	39
"    K12 . . . . .	24	55	Double-current generators . . . . .	20	43
"    K2 series-parallel . . . . .	24	29	"    reduction motors . . . . .	24	61
"    K11 series-parallel . . . . .	24	42	"    truck hand-brakes . . . . .	25	49
"    Rheostatic . . . . .	24	18	Drawing wires in conduits . . . . .	27	62
"    room . . . . .	23	44	Drop, Measurement of, in volts . . . . .	27	67
"    Westinghouse 28A . . . . .	24	45	Dwelling house, Wiring of . . . . .	27	30
Convertible booster . . . . .	21	21	Dynamos for railway work . . . . .	20	28
Conveyers . . . . .	20	25			
Cooling towers . . . . .	20	24	<b>E</b>		
Copper fuses for 30-H. P. equip- ment . . . . .	25	14	Economical use of feeders . . . . .	22	16
"    "    " 50-H. P. equip- ment . . . . .	25	15	Economy of the booster . . . . .	21	25
Cost of power for electric railways	20	63	Effect of distributed load . . . . .	23	8
Cradle suspension . . . . .	24	71	Effects of low voltage . . . . .	23	23
Cross-overs . . . . .	22	10	Electric brake . . . . .	25	67
Crowfoot battery . . . . .	28	42	"    "    controller . . . . .	25	69
Current on grades . . . . .	21	39	"    "    controller, Wiring diagram for . . . . .	25	70
"    required by lamps, Esti- mation of . . . . .	27	7	"    "    Westinghouse . . . . .	25	76
"    required by motors . . . . .	28	20	"    brakes, Releasing of . . . . .	25	75
"    required for operating car	21	37	"    car heating . . . . .	25	26
"    supply for electric rail- ways . . . . .	20	11	"    heaters, Examples of . . . . .	25	27
Curves . . . . .	22	45	"    railways, Cost of power for	20	63
"    Transition or compound . . . . .	22	47	"    railways, Current supply for	20	11
Cut-out, 28A . . . . .	24	49	"    railways, Methods of sup- plying current for . . . . .	20	1
"    "    cabinets, Rules relating to . . . . .	27	29	"    railways, Station equip- ment for . . . . .	20	21
"    outs, Location of . . . . .	26	44	"    railways, Storage batteries in connection with . . . . .	21	26
Cutter circuit-breakers . . . . .	20	61	"    railways, Voltage used on	20	12
Cutting the booster in and out . . . . .	21	17	"    roadbeds, Methods of installing . . . . .	22	40
<b>D</b>			Electrical equipment of street-rail- way power station . . . . .	20	27
Damp places, Wiring in . . . . .	27	18	Electrical equipment of trolley cars	24	9
Dash lights . . . . .	25	40	Electrolysis . . . . .	22	22
Decorative series-lamps . . . . .	27	46	"    . . . . .	23	25
Defective rail bonds, Tests for . . . . .	23	31	"    Detection of . . . . .	23	28
Definition of low-potential system	26	24	"    due to railway cur- rents . . . . .	23	26
Designation of special work . . . . .	22	48	"    Influence of resistance of track return on . . . . .	23	28
Detection of electrolysis . . . . .	23	28	"    Prevention of . . . . .	23	29
Determination of sizes of wire according to current capacity . . . . .	26	44	"    Systems free from . . . . .	23	29
Determining the load center . . . . .	20	17	Electromagnetic system . . . . .	20	8
Differential storage-battery booster . . . . .	21	32	Electromotive forces and currents, Addition of . . . . .	12	9
Dimensions of bare copper wire . . . . .	26	24			

	<i>Sec.</i>	<i>Page</i>		<i>Sec.</i>	<i>Page</i>
Elevator annunciator, Wiring for . . . . .	28	37	Fittings used for exposed wiring . . . . .	26	45
Enclosed-arc lamps . . . . .	26	16	Fixture wire . . . . .	27	46
"    fuses . . . . .	26	56	Fixtures . . . . .	27	44
"    " . . . . .	26	67	"    Rules relating to . . . . .	27	44
Engine-driven booster, Operation of . . . . .	21	16	Flexible armored conduit . . . . .	27	61
Engineer's valve . . . . .	25	54	"    lamp cord . . . . .	26	48
Engines, Size of . . . . .	20	23	Force required to move car on the		
Equalizing rings . . . . .	20	31	level . . . . .	21	39
Equipment of feeder panels . . . . .	20	48	Four-motor equipments . . . . .	24	54
"    " generator panels . . . . .	20	47	Frequency . . . . .	12	5
"    " total-output panel . . . . .	20	47	Friction . . . . .	25	44
"    Straight-air . . . . .	25	54	Frictional machines for gas light-		
Equipments, Four-motor . . . . .	24	54	ing . . . . .	28	50
Equivalent cross-section of wires . . . . .	27	16	Fuel economizers . . . . .	20	25
Erection of trolley wire . . . . .	22	1	Fuse box, General Electric . . . . .	25	16
Estimates on wiring . . . . .	27	72	"    " Use of . . . . .	25	13
Estimation of current required by			"    " Westinghouse . . . . .	25	15
lamps . . . . .	27	7	"    boxes . . . . .	25	13
"    " load . . . . .	23	2	"    " Styles of . . . . .	25	15
Example of feeder calculation . . . . .	23	3	"    protection for conductors in		
"    " street-railway power			multiple . . . . .	27	14
station . . . . .	20	25	Fuses, Enclosed . . . . .	26	56
Examples of electrical fires . . . . .	26	4	"    " . . . . .	26	67
"    " electric heaters . . . . .	25	27	"    Factors determining		
"    " street-railway track			dimensions of . . . . .	25	14
construction . . . . .	22	51	"    for 30-H. P. equipment . . . . .	25	14
"    " third-rail construction . . . . .	22	58	"    " 50-H. P. equipment . . . . .	25	15
Excelsior dynamos . . . . .	11	7			
Exposed wiring, Fittings used for . . . . .	26	45			
			<b>G</b>		
<b>F</b>			G. E. 52 motor . . . . .	24	63
Factors determining dimensions			"    armature . . . . .	24	66
of fuses . . . . .	25	14	"    brush holders . . . . .	24	67
Feeder calculation, Example of . . . . .	23	3	"    Capacity of . . . . .	24	64
"    insulators . . . . .	22	14	"    field coils . . . . .	24	66
"    lines, Uniform drop in . . . . .	27	1	"    gears . . . . .	24	68
"    panels, Equipment of . . . . .	20	48	"    pole pieces . . . . .	24	65
Feeders . . . . .	21	47	Gears, G. E. 52 motor . . . . .	24	68
"    Calculation of . . . . .	23	1	General arrangement and method		
"    Carrying capacity of . . . . .	23	22	of control of four		
"    Economical use of . . . . .	22	16	motors . . . . .	24	55
"    Overhead . . . . .	21	50	"    Electric arrester, Connec-		
Feeding, General methods of . . . . .	21	48	tions for . . . . .	25	22
Ferrule for trolley pole . . . . .	25	2	"    " canopy switch . . . . .	25	11
Field coils, G. E. 52 motor . . . . .	24	66	"    " fuse box . . . . .	25	16
"    " General remarks on . . . . .	24	80	"    " motors . . . . .	24	62
"    " connecting . . . . .	24	84	"    " resistance coil . . . . .	25	24
"    " connections for railway			"    " type M K circuit-		
motors . . . . .	24	80	breaker . . . . .	20	56
"    " Test for . . . . .	24	82	"    methods of feeding . . . . .	21	48
"    excitation of alternators . . . . .	13	11	"    remarks on field coils . . . . .	24	80
"    excitation of multiphase and			"    " heater con-		
mono-cyclic alternators . . . . .	13	22	struction . . . . .	25	26
"    rheostats . . . . .	20	50	"    rules relating to interior		
"    switch . . . . .	20	49	wiring . . . . .	26	18
Fires caused by electric wiring . . . . .	26	2	Generator panels, Equipment of . . . . .	20	47
			Generators, Double-current . . . . .	20	43

	<i>Sec.</i>	<i>Page</i>		<i>Sec.</i>	<i>Page</i>
Governor for air-brake pump . . .	25	57	Johns heaters, Connections for . .	25	28
"    "    standard air brake .	25	61	"    regulating switch . . . . .	25	28
Grades, Current required on . . .	21	39	Joint, Cast-welded . . . . .	22	35
Grinding room . . . . .	23	46	Joints, Staggered . . . . .	22	38
Grooved rail . . . . .	22	41			
Ground return . . . . .	22	20	<b>K</b>		
Guard rails . . . . .	22	50	K10 controller . . . . .	24	45
"    "    curves, and special			K12 controller . . . . .	24	55
work . . . . .	22	44	"    "    Car-wiring diagram		
Guy wires and slanting of poles . .	21	60	for . . . . .	24	56
			K2 controller wiring diagram . . .	24	42
<b>H</b>			K2 series-parallel controller . . .	24	29
Hand-brakes, Double-truck . . . .	25	49	K11 series-parallel controller . . .	24	42
Hanger boards . . . . .	28	18			
Harp, Trolley . . . . .	25	3	<b>L</b>		
Heater, Consolidated . . . . .	25	31	Lamp bases . . . . .	26	51
"    construction, General			"    circuit . . . . .	25	34
remarks on . . . . .	25	26	"    "    Single . . . . .	25	37
"    switch, Consolidated . . .	25	32	"    sockets and receptacles . .	26	51
Heaters, Johns . . . . .	25	27	Lamps, Control of, from two points	27	39
High-potential systems, Rules			"    Location and distribution		
relating to . . . . .	28	11	of . . . . .	27	47
Hood lights . . . . .	25	40	Latticework poles . . . . .	21	59
			Laying out circuits . . . . .	27	31
<b>I</b>			Leclanché cell . . . . .	28	28
Incandescent lamps . . . . .	26	10	Lever system for air brakes . . . .	25	65
"    lamps on series cir-			Lighting apparatus, Arrangement		
cuits . . . . .	28	19	of . . . . .	28	45
"    "    Operation of . . . . .	26	14	Lightning arrester, Westinghouse		
"    lamps, Power con-			tank . . . . .	21	7
sumption for . . . . .	26	15	"    arresters for street cars .	25	20
Influence of future extensions on			"    arresters for street rail-		
location of power house . . . . .	20	15	ways . . . . .	21	7
Influence of resistance of track-			"    arresters, Inspection of .	25	21
return on electrolysis . . . . .	23	28	Lights, Control of, from three or		
Inspection of lightning arresters .	25	21	more points . . . . .	27	41
Insulated wires, Carrying capacity			Line and track calculations . . . .	22	16
of . . . . .	26	22	"    construction for electric rail-		
"    joints . . . . .	27	45	ways, Overhead . . . . .	21	44
Insulation resistance of interior			"    fittings and line erection . .	22	1
wiring . . . . .	27	67	"    losses due to resistance, Cal-		
Insulators for feeders . . . . .	22	14	culation of . . . . .	26	59
Interior conduits, Specifications			"    tests . . . . .	23	31
for . . . . .	27	51	Load center, Determination of . .	20	17
"    wiring, General rules			"    Estimation of . . . . .	23	2
relating to . . . . .	26	18	Location and distribution of lamps	27	47
"    wiring, Insulation resist-			"    of cut-outs . . . . .	26	44
ance of . . . . .	27	67	"    of power house for elec-		
"    wiring, Preliminary con-			tric railways . . . . .	20	12
siderations relating to . . .	26	1	"    of switchboard . . . . .	20	45
Interlocking device . . . . .	24	21	Loop line, Calculations of . . . . .	23	11
Iron poles, Setting of . . . . .	21	60	"    "    supplied by four feeders	23	16
			Low-potential system . . . . .	26	15
<b>J</b>			"    "    "    Definition of . . . . .	26	24
Johns heater . . . . .	25	27	"    "    "    Wiring for . . . . .	26	24
"    heaters, Car wiring for . . .	25	30	"    voltage, Effects of . . . . .	23	23

<b>M</b>		<i>Sec.</i>	<i>Page</i>			<i>Sec.</i>	<i>Page</i>	
Machine shop . . . . .	23	41	Operation of standard air-brake					
Main switch, cut-out, and meter . .	27	35	governor . . . . .	25	93			
Marine work . . . . .	27	68	Outlet and junction boxes, Use of .	27	53			
"  "  Capacity of wires for	27	70	Overcompounding . . . . .	20	34			
"  "  Rules relating to . .	27	68	Overhead feeders . . . . .	21	50			
"  "  Wires used in . . . .	27	68	"  line construction for					
Materials used for railway switch-			electric railways . . . .	21	44			
boards . . . . .	20	47	"  trolley system . . . . .	20	3			
Measurement of drop in volts . .	27	67	"  work, Division of . . . .	22	19			
Metallic return . . . . .	22	20	<b>P</b>					
Methods of arranging trolley wire	21	53	Paint shop . . . . .	23	44			
"  "  control . . . . .	24	11	Pit room and machine shop . . . .	23	40			
"  "  installing electric road-			Platform controller, Use of . . . .	24	16			
beds . . . . .	22	40	Plug switch, Westinghouse . . . .	25	36			
"  "  supplying current for			Points on care of brake rigging . .	25	47			
electric railways . .	20	1	Pole pieces, G. E. 52 motor . . . .	24	65			
"  "  using storage bat-			"  Trolley . . . . .	25	2			
teries . . . . .	21	29	Poles, Latticework . . . . .	21	59			
Mild steel, Resistance of . . . . .	22	23	"  Structural-steel . . . . .	21	59			
Mill and carpenter shop . . . . .	23	44	"  Tubular steel . . . . .	21	57			
Monocyclic system . . . . .	26	33	"  Wooden . . . . .	21	59			
Motor cars and their equipment .	24	1	Porcelain fuse blocks . . . . .	26	52			
"  cut-out switches . . . . .	24	39	Portable conductors . . . . .	27	70			
"  driven booster . . . . .	21	19	Positions of brake valve . . . . .	25	56			
"  G. E. 52 . . . . .	24	63	Pot headlight . . . . .	25	40			
"  Westinghouse No. 56 . . . .	24	69	Power consumption for incandes-					
Motors, Current required by . . . .	28	20	cent lamp . . . . .	21	36			
"  General Electric . . . . .	24	62	"  Estimates . . . . .	26	15			
"  Street-railway . . . . .	24	58	"  positions, B6 controller . .	25	72			
Multiple-lighting system, Appara-			Prevention of electrolysis . . . . .	23	29			
tus for . . . . .	28	49	Pure copper wire, Resistance of . .	56	58			
"  unit cars, Air brakes on .	25	79	Push button . . . . .	28	26			
"  "  system . . . . .	25	77	<b>R</b>					
<b>N</b>								
National electric code . . . . .	26	2	Rail bonds . . . . .	22	30			
Needle annunciator . . . . .	28	30	"  "  Disposal of . . . . .	22	32			
Nose suspension . . . . .	24	68	"  Condition of . . . . .	25	45			
Notches . . . . .	24	37	"  Grooved . . . . .	22	41			
Nuttall trolley stand . . . . .	25	6	"  joints and bonds . . . . .	22	26			
<b>O</b>				"  return, Distribution of resist-				
Offset in trolley wire . . . . .	22	3	ance in . . . . .	22	27			
Old style Thomson-Houston rheo-			Rails . . . . .	22	40			
stat . . . . .	24	12	"  Guard . . . . .	22	50			
One bell operated from two points	28	33	"  T and girder . . . . .	22	40			
Open-arc lamps . . . . .	26	16	"  with conical tread . . . . .	22	42			
"  conduit system . . . . .	20	5	Railway currents, Electrolysis due					
"  work in dry places . . . . .	26	40	to . . . . .	23	26			
Operating bell from lighting circuit	28	39	"  motor armature connec-					
Operation of an engine-driven			tions . . . . .	24	73			
booster . . . . .	21	16	"  "  field connections	24	80			
"  "  cars, Current required			"  switchboard appliances .	21	1			
for . . . . .	21	37	"  switchboards . . . . .	20	44			
"  "  incandescent lamps .	26	14	"  switchboards, Materials					
"  "  reverse switch . . . .	24	26	used for . . . . .	20	47			
"  "  rheostatic controller	24	23	"  work, Alternating-current					
			machinery for . . . . .	20	41			

	<i>Sec.</i>	<i>Page</i>		<i>Sec.</i>	<i>Page</i>
<b>Railway work, Alternating-current</b>			Simple bell circuit . . . . .	28	32
motors for . . . . .	20	43	"    example of factory wiring . . . . .	26	40
"    work, Dynamos for . . . . .	20	28	Single-lamp circuit . . . . .	25	37
Ratchet burner . . . . .	28	44	Size of engines . . . . .	20	23
Reactive coils . . . . .	28	5	"    "    fuses . . . . .	25	14
Reasons for use of resistance coils . . . . .	25	23	"    "    generators . . . . .	20	32
Regulating switch for Johns heater . . . . .	25	28	"    "    wire for three-wire system . . . . .	26	68
Relation between weight of rail and cross-sectional area . . . . .	22	23	Slow-burning weather-proof wire . . . . .	26	42
Repair shop . . . . .	23	39	Snap switches . . . . .	27	42
Resistance coils . . . . .	25	23	"    "    Rules relating to . . . . .	26	39
"    "    General Electric . . . . .	25	24	Snow and ice on third rail . . . . .	22	60
"    "    Reasons for use of . . . . .	25	23	Sockets and receptacles for lamps . . . . .	26	51
"    notches, Running cars on . . . . .	25	24	Soft subsoil, Track construction of . . . . .	22	55
"    of mild steel . . . . .	22	23	Soldering fluid . . . . .	26	20
"    "    pure copper wire . . . . .	26	58	Span-Wire construction . . . . .	21	53
Return-coil annunciator, Wiring for . . . . .	28	36	Special bell-wiring appliances . . . . .	28	38
Reverse drum . . . . .	24	21	"    electrical appliances . . . . .	21	11
"    switch . . . . .	24	18	"    purposes, Wiring for . . . . .	28	6
"    "    28A . . . . .	24	47	"    work . . . . .	22	44
"    "    Operation of . . . . .	24	26	"    "    Designation of . . . . .	22	48
Rheostatic control . . . . .	24	11	Specifications for concealed elec- tric-light wiring . . . . .	27	37
"    controller . . . . .	24	18	Specifications for interior conduits . . . . .	27	51
"    controller, Operation of . . . . .	24	23	Speed reduction . . . . .	24	60
Roadbed, The . . . . .	22	39	Splicing trolley wire . . . . .	22	13
Rotary converters . . . . .	20	43	Stage dimmers . . . . .	28	5
Rubber-covered wire . . . . .	27	20	Staggered joints . . . . .	22	38
Rules relating to transformer con- struction and installation . . . . .	28	13	Standard air-brake governor . . . . .	25	61
"    relating to wires . . . . .	26	21	"    air-brake governor, Operation of . . . . .	25	63
"    "    "    "    for open work . . . . .	26	42	"    track gauge . . . . .	22	42
Running bell wire . . . . .	28	31	Stands, Trolley . . . . .	25	6
"    cars on resistance notches . . . . .	25	24	Star wheel or index wheel . . . . .	24	21
<b>S</b>			Station equipment for electric rail- ways . . . . .	20	21
Section insulators . . . . .	22	11	Steam piping . . . . .	20	23
Selection of car body . . . . .	24	2	Storage batteries in connection with electric railways . . . . .	21	26
"    of fittings for 220-volt wiring . . . . .	26	66	"    "    Methods of using . . . . .	21	29
Self-restoring annunciator . . . . .	28	31	"    "    on cars . . . . .	21	26
Series field, Shunt for . . . . .	20	38	"    battery booster, Differen- tial . . . . .	21	32
"    parallel control . . . . .	24	28	Straight air equipment . . . . .	25	54
"    "    controller, K2 . . . . .	24	29	Street-car lightning arresters . . . . .	25	20
"    "    "    K11 . . . . .	24	42	"    railway motors . . . . .	24	58
Service stop . . . . .	25	56	"    "    power station, Elec- trical equipment of . . . . .	20	27
Setting iron poles . . . . .	21	60	"    "    power station, Example of . . . . .	20	25
"    wooden poles . . . . .	21	61	-Structural-steel poles . . . . .	21	59
Shoe pressure . . . . .	25	43	Styles of fuse boxes . . . . .	25	15
Shunt control . . . . .	24	15	Suspension, Cradle . . . . .	24	71
"    for series field . . . . .	20	38	"    Nose . . . . .	24	68
Side-bracket construction . . . . .	21	56	Suspensions for trolley wire . . . . .	22	5
Simple annunciator, Wiring for . . . . .	28	35			





# INDEX

**xv**

	<i>Sec.</i>	<i>Page</i>		<i>Sec.</i>	<i>Page</i>
<b>Weights of cars</b> . . . . .	21	37	<b>Wiring a dwelling house</b> . . . . .	27	30
<b>Westinghouse 28A controller</b> . . . . .	24	45	“ <b>Calculations for alternating-current</b> . . . . .	27	8
“ <b>canopy switch</b> . . . . .	25	10	“ <b>diagram for changeable headlight</b> . . . . .	25	41
“ <b>car lightning arrester</b> . . . . .	25	20	“ <b>diagram for electric-brake controller</b> . . . . .	25	70
“ <b>circuit-breaker</b> . . . . .	20	60	“ <b>diagram for K2 controller</b> . . . . .	24	42
“ <b>electric brake</b> . . . . .	25	76	“ <b>diagram for K10 controller</b> . . . . .	24	45
“ <b>fuse box</b> . . . . .	25	15	“ <b>estimates</b> . . . . .	27	72
“ <b>No. 56 motor</b> . . . . .	24	69	“ <b>for arc lamps</b> . . . . .	28	14
“ <b>No. 56 motor, Capacity of</b> . . . . .	24	71	“ “ <b>electric heaters</b> . . . . .	28	15
“ <b>plug switch</b> . . . . .	25	36	“ “ <b>electric motors</b> . . . . .	28	21
“ <b>railway ammeter and voltmeter</b> . . . . .	20	54	“ “ <b>electric motors, Rules relating to</b> . . . . .	28	22
“ <b>resistance coil</b> . . . . .	25	25	“ “ <b>elevator annunciator</b> . . . . .	28	37
“ <b>tank arrester</b> . . . . .	21	7	“ “ <b>low-potential systems</b> . . . . .	26	24
<b>Wheel base</b> . . . . .	24	8	“ “ <b>return-call annunciator</b> . . . . .	28	36
“ <b>Star or index</b> . . . . .	24	21	“ “ <b>simple annunciator</b> . . . . .	28	35
“ <b>Trolley</b> . . . . .	25	4	“ “ <b>special purposes</b> . . . . .	28	6
<b>Winding room</b> . . . . .	23	42	“ “ <b>three bells and three push buttons</b> . . . . .	28	35
<b>Wire gauges</b> . . . . .	26	23	“ “ <b>uniform drop</b> . . . . .	26	56
“ <b>Rubber-covered</b> . . . . .	27	20	“ <b>in damp places</b> . . . . .	27	18
“ <b>Slow-burning weather-proof</b> . . . . .	26	42	“ <b>of car house</b> . . . . .	23	38
“ <b>splicing</b> . . . . .	22	12	<b>Wiring, Selection of fittings for 220-volt</b> . . . . .	26	66
“ <b>Trolley</b> . . . . .	21	51	“ <b>table giving distances for loss of 1 volt</b> . . . . .	27	4
<b>Wires, Equivalent cross-section of</b> . . . . .	27	16	“ <b>tables and curves</b> . . . . .	27	9
“ <b>for high-potential systems</b> . . . . .	28	11	<b>Wooden moldings</b> . . . . .	27	63
“ <b>for open work, Rules relating to</b> . . . . .	26	42	“ “ <b>Rules relating to poles</b> . . . . .	27	63
“ <b>for use on constant-current series-arc systems</b> . . . . .	28	17	“ “ <b>poles</b> . . . . .	21	59
“ <b>Rules relating to</b> . . . . .	26	21			
“ <b>used in marine work</b> . . . . .	27	68			