

# Contents

## PART I

### MECHANICS

CHAPTER	PAGE
1. INTRODUCTORY . . . . .	1
2. STATICS . . . . .	12
3. KINETICS . . . . .	25
4. GRAVITATION AND FALLING BODIES . . . . .	35
5. WORK, ENERGY, POWER, AND FRICTION . . . . .	47
6. MOTION IN A CIRCLE . . . . .	67
7. ROTATION OF A BODY . . . . .	80
8. ELASTICITY . . . . .	92
9. HYDROSTATICS . . . . .	98
10. MECHANICS OF GASES. . . . .	110
11. FLUIDS IN MOTION . . . . .	116
12. SURFACE TENSION AND CAPILLARITY . . . . .	123

## PART II

### HEAT

13. TEMPERATURE . . . . .	131
14. THERMAL EXPANSION . . . . .	135
15. IDEAL GASES. . . . .	142
16. HEAT MEASUREMENTS. . . . .	153
17. CHANGE OF STATE . . . . .	159
18. VAPOR AND GASES . . . . .	169
19. RELATIONS BETWEEN THE STATES. . . . .	175
20. HEAT AND ENERGY . . . . .	181
21. SOLUTIONS. . . . .	193
22. PROPAGATION OF HEAT . . . . .	202

## PART III

### WAVE MOTION AND SOUND

23. WAVES . . . . .	217
24. SOUND AND ITS TRANSMISSION . . . . .	234
25. PROPERTIES OF SOUND. . . . .	240
26. ACOUSTICS. . . . .	252
27. THE PHYSICAL BASIS OF MUSIC. . . . .	257
28. THE PRODUCTION OF TONES—VIBRATING SOLIDS . . . . .	263
29. PRODUCTION OF TONES (CONTINUED)—VIBRATING GASES . . . . .	270

## CONTENTS

PART IV  
LIGHT

CHAPTER	PAGE
30. PRODUCTION, PROPAGATION, AND PERCEPTION . . . . .	279
31. REFLECTION . . . . .	290
32. REFRACTION AT A PLANE SURFACE . . . . .	302
33. LENSES . . . . .	308
34. OPTICAL INSTRUMENTS. . . . .	320
35. DISPERSION AND SPECTRA . . . . .	332
36. INTERFERENCE OF LIGHT. . . . .	344
37. DIFFRACTION. . . . .	353
38. POLARIZED LIGHT. . . . .	361
39. COLOR. . . . .	371
40. SOURCES OF LIGHT . . . . .	378
41. OPTICAL PHENOMENA IN NATURE. . . . .	386

## PART V

## ELECTRICITY AND MAGNETISM

42. MAGNETISM . . . . .	393
43. ELECTROSTATICS . . . . .	406
44. ELECTRODYNAMICS . . . . .	427
45. THE ELECTRIC CURRENT. . . . .	441
46. BATTERIES AND THERMOCOUPLES. . . . .	455
47. ELECTRICAL MEASUREMENTS. . . . .	467
48. ELECTROMAGNETISM. . . . .	476
49. INDUCED CURRENTS. . . . .	483
50. ELECTRICAL MACHINERY. . . . .	495
51. ELECTRICAL OSCILLATIONS. . . . .	507

## PART VI

## CORPUSCULAR PHYSICS

52. ELECTRICAL DISCHARGES . . . . .	515
53. THERMO- AND PHOTOELECTRIC EMISSION. . . . .	527
54. X-RAYS AND RELATED PHENOMENA . . . . .	536
55. ATOMIC STRUCTURE. . . . .	546
56. RADIOACTIVITY. . . . .	560

## APPENDIX

THE SOLUTION OF PROBLEMS. . . . .	571
TABLES OF PHYSICAL CONSTANTS. . . . .	573
FOUR-FIGURE LOGARITHMS. . . . .	578
CONDENSED TABLE OF NATURAL TRIGONOMETRIC FUNCTIONS. . . . .	580
INDEX . . . . .	585