



CONTENTS

INTRODUCTION

CHAP.	PAGE
I. THE TREND OF SCIENCE	1
MECHANICAL ENERGY	
II. ELEMENTS OF DYNAMICS	11
III. FORCE AND ENERGY	31
IV. STATICS. PARALLELOGRAM AND TRIANGLE OF FORCES	53
V. MOMENTS. PARALLEL FORCES. CENTRE OF GRAVITY	70
VI. MACHINES	90
VII. DENSITY AND SPECIFIC GRAVITY. ARCHIMEDES' PRINCIPLE	105
VIII. PRESSURE OF LIQUIDS. ATMOSPHERIC PRESSURE.	121
IX. SURFACE TENSION. OSMOSIS. ELASTICITY	146
FURTHER EXPERIMENTS	157
ANSWERS TO EXERCISES	158d
HEAT ENERGY	
X. MEASUREMENT OF TEMPERATURE	159
XI. EXPANSION OF SOLIDS AND LIQUIDS	171
XII. SPECIFIC HEAT. LATENT HEAT	193
XIII. HEAT AND MECHANICAL ENERGY	210
XIV. PROPERTIES OF GASES. THE GAS LAWS	217
XV. PROPERTIES OF VAPOURS. HYGROMETRY	232
XVI. CONDUCTION. CONVECTION. RADIATION	247
ANSWERS TO EXERCISES	256
LIGHT ENERGY	
XVII. LIGHT BEAMS AND RAYS	261
XVIII. REFLECTION AT PLANE SURFACES	268
XIX. REFLECTION AT CURVED SURFACES	279

CHAP.	PAGE
XX. REFRACTION AT PLANE SURFACES	298
XXI. REFRACTION AT CURVED SURFACES	318
XXII. PRINCIPLES OF OPTICAL INSTRUMENTS	333
XXIII. COLOURS OF LIGHT. DISPERSION	348
XXIV. PRINCIPLES OF PHOTOMETRY	358
ANSWERS TO EXERCISES	367
 SOUND ENERGY 	
XXV. SOUND WAVES	371
XXVI. VIBRATIONS IN STRINGS AND PIPES	387
ANSWERS TO EXERCISES	408
 ELECTRICAL ENERGY 	
XXVII. ELECTROSTATICS	411
XXVIII. ELECTRIC FORCE AND POTENTIAL. CONDENSERS	428
XXIX. PRINCIPLES OF CURRENT ELECTRICITY	448
XXX. ELECTRICAL ENERGY. HEATING EFFECT OF CURRENT	470
XXXI. ELECTROLYSIS	484
XXXII. PRIMARY CELLS AND ACCUMULATORS	498
XXXIII. ELECTROMOTIVE FORCE. THE POTENTIOMETER. MEASUREMENT OF RESISTANCE	509
XXXIV. MAGNETISM	528
XXXV. MAGNETIC MEASUREMENTS. EARTH'S MAGNETISM	543
XXXVI. MAGNETIC EFFECT OF CURRENT	566
XXXVII. FORCE ON A CONDUCTOR. THE MOTOR PRINCIPLE	585
XXXVIII. ELECTROMAGNETIC INDUCTION. THE DYNAMO	595
APPENDIX. M.K.S. UNITS	614
ANSWERS TO EXERCISES	618
 MODERN PHYSICS 	
XXXIX. USES OF ELECTRONS. ATOMIC STRUCTURE	623
MODERN PHYSICS EXPERIMENTS	663
ANSWERS TO EXERCISES	671
INDEX	673