

### CONTENTS

Chapter

Pages

#### Introduction

1-10

The meaning and scope of Geography—The development of the study of Geography—Elements and factors constituting man's environment—Geography's relation with other sciences—Human and Physical Geography—Importance of the factors of geographical environment.

#### I. Our Earth

11-50

The Universe-Criticism of the Big Bang Theory-The Anti-universe-The Meteors and the Earth-The origin of the earth-Nebular theory of Laplace-Criticism of laplace's theory -Tidal hypothesis of Jeans and Jeffreys-Chamber-lain's and Moulton's Theory-Binary Star Theory of Lyttleton-Rossgunn's Rotational and tidal theory—Cepheid theory—The Solar system—The shape of the earth; Its proofs— The size of the earth—The planetary relations of the earth-Eclipses, Solar and Lunar-Motions of the earth—Rotation of the earth— Day and night—Revolution of the earth Its effects—Seasons—Latitudes and Longitudes: Latitude and altitude of the sun-Longitude and Time-Local Time and Standard Time-Zone time-International Date line.

#### II. The Interior of the Earth

51 - 57

Evidence of the earthquake waves—Layers of the earth Sial, Sima, Nife—Barysphere, Pyrosphere, Lithosphere. New Lines.

#### III. The Surface of the Earth

58-80

Distribution of land and sea—Its permanency—Isostasy—Origin of continents and oceans: Tetrahedral theory—Suess's theory; Wegner's theory of continental drift; Jolly's

( viii )

Chapter

theory of thermal cycles; Convection current theory of Holmes—Breaking of the sial crust—theory of the earth's surface—Eozoic or The history of the earth's surface—Eozoic or Primary era; Precambrian era; Paleozoic or Primary era; Mesozoic era; Neozoic or Tertiary era; Quaternary era.

## IV. The Atmosphere

81 - 95

Pages

Its Sections Troposphere—Stratosphere—Composition of the Atmosphere—Temperature of the Atmosphere: Insolation, Solar constant, Heating of the atmosphere; The altitude of the sun and duration of sunshine—Change of temperature—Seasonal change of Temperature: Altitude and temperature changes—Inversion of temperature—Horizontal distribution of temperature—Isotherms.

## V. Atmospheric Pressure

96-101

Air pressure and temperature—Altitude and air pressure—Water content and air pressure—Pressure changes—Barometric ripples—Surface distribution of pressure.

#### VI. Winds

102-124

Ferrel's law. Buys' Ballot's law—Velocity of wind—Classification of winds: planetary, Seasonal, local, thunderstorms, forced winds, variable winds—Planetary winds: Equatorial calms and Doldrums—Trade Winds—Subtropical calms—Westerlies—Subpolar lows—Shifting of wind belts—Seasonal winds: Monsoons—Local winds: Land and sea breezes, Mountain and valley winds; Whirl-winds; Berg; Bora; Mistral Sirraço—Khamsins; Thunderstorms—Forced winds Chinook or Foehn winds, cyclones Tornadoes—Hurricane and Typhoons.

# VII. Variable Winds

125-137

Cyclones and Anti-cyclones: Tropical cyclone—shape and size, velocity and speed, Track and movement, structure and weather—Temperate cyclone—Origin and types—Dynamic theory, Polar front theory—Tropopause: Thermal,

783

Insolation and Migratory—shape and size, velocity and speed, track and movement, structure and weather—occlusion, Anti-cyclones—general characteristics and weather—Types: cold and warm—Mechanical, Radiational, Thermal.

## VIII. Moisture in the Atmosphere

138-151

Humidity — Evaporation—Condensation— Dew and hoarfrost—mist and fog—Radiation fog. Advection fog—Clouds: Cirrus, Cumulus, Nimbus, Stratus—Cloudiness—Precipitation—Snow Rainfall. Physical processes leading to the formation of rains—Clauds—Types of Rainfall—Measuring the Rainfall—Variations of Rainfall—Drought.

#### IX, Climate

152-210

Climate and man; Climate and topography Climate and weathering; Climate and denudation: Climate and vegetation-Chief factors of climatic control-Latitude, altitude, distribution of land and water, prevailing winds, ocean currents, surface covering of the land, vulcanism, solar constant and sun spots, distance from the sun-Current Climate Change-Climatic regions of the world—Koeppen's division of climatic types—Their temperature, rainfall and seasons, soils, natural vegetation and people and industrial development. (A) Tropical rainy climates: Tropical rain forest, Savannali type, Monsoon climate. (B) Dry Climates, Hot deserts-Plateau deserts, and Basin deserts; Hot Steppe, Temperate Desert, Middle Latitude Steppe. (C) Humid Mesothermal climate—Dry summer subtropical or Mediterranean type, Humid subtropical or China type, Marine west-coast of West European type. (D) Humid microthermal climates: Humid continental climate, with short summers, with long summers and Modified or New England Type; Subarctic or Taiga Type. (E) Polar Climates-Tundra and the Ice Cap-Meterology & Economic Develop. ment.

## X. Earth's Crust

211-220

Rocks—Igneous rocks; Extrusive and intrusive: Plutonic Rocks—Dyke Rocks; Acid Rocks and

Chapter

Pages

Basic Rocks—Sedimentary Rocks: Inorganic and Organic Rocks, Arenaceous Rocks and Argillaceous Rocks, Calcareous and Carbonaceous Rocks—Metamorphic Rocks—Regional and Contact metamorphism, Gneisses Schirts.

#### XI. Landforms and Their Transformation

221-228

Endogenic and Exogenic forces—Sudden forces Earthquakes and Volcanoes—Types of landforms: first order, second order and third order—Constructional, Depositional, Destructional—The evolutionary cycle.

## XII. Major Landforms: Mountains

229-239

Theories of mountain building—stages in mountain building—Mountain building movements—Classification of mountains—Mountains of Accumulation, Mountains of Deformation, Reliet mountains—Folded mountains, Block mountains, Dome mountains—Arrangement of their ranges: cordillera, system, chain, ranges group Ridge, Peaks—Cycle of mountain development—Man and mountains.

## XIII. Major Landforms: Plateaus

240--244

Types-Intermontane, Piedmont, Continental-Their characteristics-Hill lands and their types.

## XIV Major Landforms: Plains

245-252

Their origin and types—Coastal plains—Destructional plains, Glaciated plains, Desert plains, peneplains Cuestiform plains, Karst plains, Depositional plains.

# XV. Forces of the Earth's Crust: Earthquakes

253-267

Elastic Rebound theory of Earthquakes—Earthquake waves—Epicentre—Study of earthquakes or seismology—Earthquake belts—Changes brought about by earthquakes—Volcanoes—Material ejected from it—Types of volcanoes, Lava Dome, Cinder Cone, Composite Cones—Theories of cone formation—Vulcanism—Fissure, effusive and explosive eruption—Active, dormant and extinct volcanoes—volcanoes and landscape—Distribution of volcanoes.

Chapter

XVI.

Forces of the Earth's Crust: (2) Mountain Building and Continent Building Movements

268-277

Pages

Eperiogenic and orogenic movement—Folding: Types of fold, synclines and anticlines—Faulting—Local and regional—Fault scraps, Rift valley and Horst—Block mountains—Jointing—Master joints, Dip joints and Strike joints—its importance—Lamination.

## XVII Denudation

278-283

Weathering—Mechanical and chemical weathering—Disintegration and decomposition—Agents of weathering—Insolation, frost, plants, winds and gases—Oxidation, Carbonation, Hydration, Solution kind and structure of rocks—Differential weathering—Erosion—Aspects of erosion—Picking. Transporting and Cutting—Tools of erosion—Cycle of erosion.

## XVIII. Agents of Denudation: (1) Running Water 284-305

Erosional work of rivers—River's load—Factors of erosional control—Valley formation—Sections of the valley; upper, middle and lower—The curve of water erosion—Headward erosion—Base level or grade—River valley cycle—Rejuvenation—River deposits—Alluvial cones, Flood plains, Delta—Drainage system and its development—various stages—Consequent and in-consequent drainage—Dendritic pattern, Trellic pattern, Annular pattern, Radial pattern—Consequent, Subsequent, Obsequent and Resequent streams—River Capture—Antecedent drainage and Superimposed drainage.

# XIX. Agents of Denudation (2) Underground Water

306-317

Water cycle—Aquifer rocks—Water table: Local, regional and permanent—Surface manifestation of underground water—Springs—Types: Saturation level and Syphon springs, Dipfoot springs and Fissure springs, Hot springs, Geysers, Mineral springs—Wells: Artesian

F HUEL

wells—Work of the underground water; solution deposition and petrification—Erosional work—Swallow holes. Dolines, Caverns, Natural helidges—Depositional work, Stalactites and stalagmities—Karst topography, Oyale of development and its characteristic forms.

( \* ii )

## XX. Agents of Denudation: (3) The Moving Ice 316 344

Snowline and snowfield-Neve: Their expanse and form—Characteristics of the moving les-Load of the moving ice-Work of the glasiers Protectionist and Erosionist school-Erosion work by the glaciers-its different aspects, characteristic profiles of Erosion; Cirques, Cols. Horns, Combridge, U. valley, Hanging valleys, Rock Bastion, Roche Mountannes-Depositional work by the ers: Moraines-Morainie ridges, Till, Kame gravel, Drumlins, Eskers, Kame-Drainage modification by the glaciers-Lakes formed by glaciers-Cycle of glaciation-Characteristics of glaciated regions-The continental glaciers of the Ice-their effect on America and Europe.

# XXI. Agents of Denudation: (4) Wind

345\_353

Arid regions and the erosive action of wind—Characteristic profiles of wind erosion—Zeugen, Mushroom topography, Yardangs, Earth pillars—Depositional work of the wind—Loess and sand dunes—Types of sand dunes—Travels of sand dunes—Desert deposits.

# XXII. Agents of Denudation: (5) Waves and Shore.

354\_365

Waves and breakers—Load of the waves—Erosive work of the waves: Retrogradation—Erosive forms of wave action: Skarries, Spouting horns, Chasms, Sea-Caves, Offshore Benches—Depositional work of the waves: Progradation Pocket beaches, Crescent beaches, Offshore Bars, Barrier Beaches, Cuspate Foreland—shorelines and their development—Classification of Shorelines—Coastline—and Shoreline—Dalmatian, Half, Fiord and Ria coastlines—Shorelines of emergence and submergence—Neutral and compound shorelines.

Chapter

XXIII. Hydrosphere

Pages

366-391

Importance and characteristics—Its zones: Continental shelf, Continental slope, Ocean trough, Ocean deep—Salinity of the ocean—Temperature of the ocean water—Ocean deposits—Oozes and coral formation: Fringing Reef, Barrier Reef, Atoll and Coral Islands—Theories of Coral formation: Darwin's theory, Murray's theory, Daly's theory—Movements of the ocean. Waves, Currents, Tides, Drifits and Creep—Currents of the Atlantic, Pacific and Indian Oceans—Currents and climate—Spring and Nead Tides—Theories of tides: Progressive wave theory and the Stationary wave theory—Tidal waves—Bore—Importance of Tides.

## XXIV. Lakes and Swamps

392-404

Swamps: Bogs, Alkali flats—Formation of lakes—Types of lakes, their origin and characteristics—Lakes in the economy of man and nature—Ephemeral nature of lakes—Extinction of lakes.

### XXV. Soils and Vegetation

405-421

Importance of soils-Composition, formation and types of soils-Origin of the soil-Texture of the soils-Structure of the soils-Soil Horizons-Soil Profiles-Spectrum of soils-soil dectruction and its agencies: water, wind and ice: reckless, cultivation; careless irrigation—Reple. nishing of soil fertility-Soils of the world: Pedalfars and Pedocols—Laterites, Red soils. Black cotton soil Podsols, Praire soils, Chestnut soils-Laterisation-Vegetation cover of the Xerophytes, earth—Hygrophytes, Prope. phytes-Forests, Grasslands and Desert shrubs-The different types of Vegetation and its distribution - Value of tress - Animals . and their distribution.

## Glossary

427 -- 424

Common Terms in use in Physical Geography as defined by the Britsh Association Glossary Committee.

Select Bibliography

425