

# TABLE OF CONTENTS.

VOL. I.

## CONVERSATION I.

### INTRODUCTION.

Distinction between Minerals and Organised Beings.

— Distinction between the Animal and Vegetable Kingdoms. — Effect of Vegetable Poisons on Plants. — Irritability and Contractability of Plants. — Properties of Plants, relative to Structure and to Vitality. — Organs of Plants of four kinds: 1. Cellular System; 2. Vascular System; 3. Tracheæ; 4. Strangulated Vessels. — Fibres of Plants. — Layers of Wood. — Cuticle.

### CONVERSATION II.

ON ROOTS.

Six Periods relative to the Nutrition of Plants:

1. Absorption by the Roots; they also fix the Plant in the Ground. — Spongioles; suck up whatever is sufficiently minute to enter their Pores. — Fibrous



viii

#### CONTENTS.

Roots. — Creeping Root. — Spindle-shaped, Tap, or Pivot Root. — Abrupt Root. — Bulbous Root. — Tuberous or Knotted Root. — Page 21

#### CONVERSATION III.

#### ON STEMS.

Subterranean Stems. — Willow Grass. — Neck of a Plant. — Endogenous Plants, or Monocotyledons. — Exogenous Plants, or Dicotyledons. — Acotyledons. — Structure and Growth of Endogenous Stems. — Ditto of Exogenous Stems. — Wood. — Pith. — Medullary Rays of Cellular Tissue. — Perfect Wood. — Alburnum, or new Wood. — Bark. — Rise of Sap.

### CONVERSATION IV.

#### ON LEAVES.

Expansion of Leaves. — Sessile and articulated. —
Pores or Stomats. — Leaves divided into five
Classes: 1. Permated; 2. Palmated; 3. Peletated;
4. Pedalated; 5. Simple Ribs. — Dissected Leaves.
— Compound Leaves. — Stipula. — Succulent
Leaves. — Seminal Leaves, or Cotyledons. — Primordal Leaves. — Bracteas, or Floral Leaves. —
Radical Leaves. — Arrangement of Leaves on the
Stem. — Of Buds: scaly or naked; of three descriptions of Germs; various Modes in which the
Leaves are folded within the Bud. — Deciduous
Leaves. — Evergreens. — Fall of the Leaf — 64



#### CONTENTS.

ix

#### CONVERSATION V.

ON SAP.

Sap absorbed by the Roots. — Bonnet's Experiments on the Ascent of Sap through the Stem. — Spring Sap to Feed the Buds. — Exhalation by the Leaves. — Quantity of Water exhaled. — Chemical Changes which take place in the Leaves. — Purification of the Air by Plants. — Sennebier's and De Saussure's Experiments. — Oxygen given out, and Carbon retained, by Plants.

#### CONVERSATION VI.

ON CAMBIUM, AND THE PECULIAR JUICES OF PLANTS.

Cambium descends through the Liber; its Descent accelerated by Agitation. — Mr. Knight's Experiment. — Effects of Stakes and Ligatures. — Of the Annular Incision. — Composition of Cambium. — Water combined in Plants. — Internal Secretions from Cambium. — Milk. — Resins. — Gum. — Gum Resin. — Manna. — Essential Oil. — Fixed Oil. — Excretory Secretions from Cambium. — Vapour of Fraxinella. — Odours of Plants. — Bloom of Fruits. — Glands of Excretory Organs. — 112

### CONVERSATION VII.

ON THE ACTION OF LIGHT AND HEAT ON PLANTS.

Light enables Plants to decompose Carbonic Acid; produces their green Colour; increases Absorption;



X CONTENTS.

increases Evaporation. — Effects of Intensity of Light. — Effects of Deficiency of Light. — Action of Heat on Plants. — Effects of Deficiency of Heat. — Freezing of Plants. Page 137

#### CONVERSATION VIII.

#### ON THE NATURALISATION OF PLANTS.

Plants more affected by Change of Temperature than by Change of Air, Moisture, or Soil. — Habits of Foreign Plants. — Directions for transplanting delicate Plants from a warmer Climate. — Ditto from a colder Climate. — Construction of Hot-houses and Green-houses.

### CONVERSATION IX.

### ON THE ACTION OF THE ATMOSPHERE ON PLANTS.

Temperature of the Atmosphere. — Moisture. — Fogs. — Vapours. — Wind. — Elevation and Temperature at which different Trees will grow. - 174

## CONVERSATION X.

### ON THE ACTION OF WATER ON PLANTS.

Water a Vehicle of Food, dilutes Plants, is a Vehicle for the Conveyance of Air. — River Water preferable to that of Lakes or Springs, for watering Plants. — Rich Manure of Stagnant Waters. — Watering Plants. — The Seed when Germinating,



CONTENTS.

хi

when in Flower, when in Fruit.— Seeds when Ripening.— Natural Means of Watering— Rain. Dr. Well's Theory of Dew.—Melted Snow. Page 186

#### CONVERSATION XI.

ON THE ARTIFICIAL MODES OF WATERING PLANTS.

Watering Pots applicable only to Garden Culture. —
Watering Green-house Plants. — Watering by Infiltration applicable to delicate Plants and to Meadows. — Watering by Irrigation. — Meadows. —
Rice Fields. — The Pelagra. — Draining Land. —
Pontine Marshes. — Marshes of Holland and of Tuscany. — Valley of Chiana. — 202

#### CONVERSATION XII.

ON THE ACTION OF SOIL ON PLANTS.

Origin of the Formation of Soil. — Argilaceous Soil. — Sandy Soil. — Sandy Deserts. — Sand of Rivers. — Steppes. — Sand-Hills. — Belgic Cultivation. — Campine. — On the Improvement of Soil by Tillage. — Instruments of Agriculture. — Of Ploughing.

### CONVERSATION XIII.

THE ACTION OF SOIL ON PLANTS CONTINUED.

Improvement of Soil by Amendments; by Manure. - - 240



xii contents.

### CONVERSATION XIV.

THE ACTION OF SOIL ON PLANTS CONTINUED.

Assolements. — System of Cropping Simultaneous or in Rotation. — Exudation of Plants. — Natural Forests. — Difference of Annual and Perennial Plants. — Hoed Crops. — Assolements of Trees. — Assolements of Belgium and of Tuscany. Page 257