

Trees

During the course of its life, this 100 year old tree:

- a) Has processed and fixed the amount of carbon dioxide contained in 18 million cubic metres of natural air in the form of about 2500kg of pure carbon (C)
- b) Has photochemically converted 9,100kg of CO₂ and 3.700lit of H₂O.
- c) Has stored up circa 23 million kilogram calories. (a calorific value equivalent to 3,500kg of hard pit coal)
- d) Has made available for the respiration of human and beast 6,600kg of molecular oxygen (O₂).
- e) Against the forces of gravity, has drawn from its roots right up to its crown and evaporated into the atmosphere at least 2,500 tonnes of water,

Every tree is therefore a water-column and if such a column, which continually supplies and recharges the atmosphere with water, is cut down, then this amount of water is lost.

- f) Thereby fixing a mechanical equivalent of heat equal to the calorific value of 2,500kg of coal.
- g) Has supplied a member of the consumer society with oxygen sufficient for 20 years, and its nature is such, that the larger it grows, the more oxygen it produces

In view of such achievements, who in future could value this tree merely for its timber?

The combustion of 100 litres of petrol consumes about 230kg of oxygen. That is, after a trip of barely 30,000km = 100 years of oxygen production.

If a person chooses to breathe for 3 years, to burn 400lit of petrol or heating oil, or 400kg of coal, then the production through photosynthesis of 1 tonne of oxygen is required.

1 tonne of O₂ = the O₂ content of 3,620 m³ of air (+15C⁰ at 1 atm)

The photosynthetic production of 1 tonne of oxygen necessitates:

- a) The building up of 0.935 tonnes C₆H₁₂O₂ (carbohydrate),
- b) Which process requires 1.37 tonnes CO₂ (carbon-dioxide) and 0.56 tonnes H₂O (water)
- c) The transpiration of 230-930 tonnes H₂O
- d) Light energy equal to 527 x 10⁶ quanta ($\nu = 440 \times 10^{12}$) which represents 3.52 million kilocalories.

[Walter Schauburger}

AN ANIMAL is:

An apparatus of combustion or oxidation
Possesses the faculty of locomotion

Burns carbon
hydrogen
ammonium

Exhales carbonic acid
Or gives off water
oxide of ammonium
nitrogen

Consumes oxygen
neutralized nitrogenous matters
fatty matters
starchy matters, gum and
sugar

Produces heat
electricity

Restores its elements to air and earth
Transforms organized into mineral matters.

A VEGETABLE is:

An apparatus of reduction or deoxidation is
fixed

Reduces carbon
hydrogen
ammonium

Fixes carbonic acid
water
nitrogen

Produces oxygen
neutralized nitrogenous
matters
fatty matters
starchy matters, gum and
sugar

Absorbs heat
Abstracts electricity

Derives its elements from air and earth
Transforms mineral into organized matters

From "Design in Nature" by J.Bell Pettigrew, Longman Green & Co, 1908, p.671

Basic Tree Types

Trees can be categorized according to seven basic types.
These are determined to a great extent by:

Latitude and altitude.

- (1) **LIGHT-DEMANDING** timbers – **THICK**, generally rough BARK.
- (2) **SHADE-DEMANDING** timbers – **THIN**, generally smooth BARK.
- (3) **HARDWOODS** – thick and thin bark.
- (4) **SOFTWOODS** – thick and thin bark.

GENERAL DISTRIBUTION*

(5) **CONIFEROUS**
(evergreen)
(polar latitudes)
(high altitudes)

(6) **DECIDUOUS**
(intermittent)
(median latitudes)
(median altitudes)

(7) **RAINFOREST**
(evergreen)
(equatorial latitudes)
(low altitudes)

*These boundaries are not necessarily clearly defined.