**Syllabus of a course of lectures, read at Guy's Hospital / by Wm Babington.**

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# SYLLABUS

OF A

# COURSE OF LECTURES,

READ AT

GUY'S HOSPITAL,

BY

WM. BABINGTON.

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# SYLLABUS

OF

# CHEMISTRY.

## GENERAL DOCTRINES.

DEFINITION of Chemiſtry.
Diſtinction between this and other Branches of Natural Philoſophy.
Matter, the Object of Philoſophy in general.
General Properties of Matter: *Extenſion*; *Impenetrability*; *Diviſibility*.
States of Matter: *Reſt*; *Motion*.
Motion, either *communicated*, or *excited*.
Excited Motion: *Repulſion*; *Attraction*.

## *Of Attraction.*

Attraction of different Kinds: *Magnetic*, *Electric*, *Capillary Attraction*; *Attraction of Gravitation*, of *Cohesion*; *Chemical Attraction.*

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It's various Modes: *Brittleness*; *Ductility*; *Malleability*; *Crystallizability.*

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# OBJECTS OF CHEMISTRY.

NATURE of Chemical Objects.
Division into *Heat*, *Gasses*, *Water*, *Salts*, *Earths*, *Metals*, *Inflammables*.

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## OF HEAT.

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Opinions regarding its Nature.
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N. B. Theſe conſidered under ſimple Salts.

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Preparation.

Properties.

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Properties in it's State of Vapor.

——— in it's Fluid State.

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Theory of it's Compoſition.

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Uſes.

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Effects of Expoſure: *Deliqueſcence*; *Efflo-reſcence*; *&c.*

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——————————— on Earths.

——————————— on Metals.

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## OF SIMPLE SALTS.

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### OF ACIDS.

Their diſtinguiſhing Properties.

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### OF *Mineral* ACIDS.

Their diſtinguiſhing Properties.

Enume-

Enumeration: *Acid of Vitriol, Phlogisticated Acid of Vitriol, Acid of Nitre, Phlogisticated Acid of Nitre, Acid of common Salt, Dephlogisticated Acid of common Salt, Acid of Arsenic, of Borax, of Fluor, of Molybdæna, of Amber, of Tungsten, and the Aerial Acid.*

## Of Acid of Vitriol.

It's Sources.

Preparation and Concentration.

Sensible Properties.

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Phœnomena attending it's freezing.

Action upon other Salts: *Kali Vitriolatum* (P.L.); *Natron Vitriolatum* (P.L.); &c.

— upon Earths: *Heavy Spar*; *Selenite*; *Sal Amarus* (P.L.); *Alum*.

— upon Metals: *Vitriolum Album*, *Vitriolum Cæruleum* (P.L.).

— upon Inflammables: *Sulphur*; *Vitriolic Acid Air, and Glacial Vitriolic Acid*; *Æther Vitriolicus* (P.L.); *Spiritus Ætheris Vitriolici* (P.L.); *Acid Soaps*.

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Elective Attractions.

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It's Sources.

Uſual Mode of obtaining it.

Method of purifying.

It's ſenſible Properties.

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——— upon Metals: *Argentum Nitratum* (P.L.); *Nitrated Copper*; &c.

——— upon Inflammables: *Nitrous Gas*; *Phlogiſticated Nitrous Acid*; *Spontaneous Combuſtion*.

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Theory of it's Compoſition.

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It's ſenſible Properties.
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——— upon Earths: *Muriated Barytes*; *Muriated Lime*; *Muriated Magneſia*; *&c.*
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Theory of it's Compoſition.
Uſes: *Bleaching*; *Dying*; *Aſſaying*; *Medicine*; *&c.*

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Their Sources.
Preparation.

Pro-

Properties.
Combinations.
Attractions.
Conſtitutions.
Uſes.

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——— with Earths: *Aerated Earths.*
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It's Sources.
Purification.
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Sensible Properties.
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—— upon Earths: *Acetated Barytes.*
—— upon Metals: *Ærugo*; *Cerussa Acetata* (P.L.).
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Elective Attractions.
Theory of it's Composition.
Uses; *Dying*; *Printing*; *Preserving*; *Medicine*; &c.

Of

*Of Acid* of *Tartar*; of *Sugar*; of *Sorrel*; of *Lemons*; of *Wood*; of *Benzoin*; *and* of *Galls*.

Their Sources.
Preparation.
Purification.
Properties.
Combinations.
Attractions.
Conſtitutions.
Uſes.

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It's ſenſible Properties.
Effects of Heat on it: *Glacial Acid.*

Combination with other Salts; *Phosphorated Soda*; *Microcosmic Salt*; &c.

———— with Earths: *Cornu Cervi Ustum* (P.L.)

———— with Metals: *Siderite*; *Green Lead Ore*; &c.

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Theory of it's Composition.

Uses.

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Their Sources.

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Purification.

Properties.

Combinations.

Attractions.

Constitutions.

Uses.

# OF ALKALIES.

Their distinguishing Properties.

Theory of Alkalescence.

Division of Alkalies into *Vegetable*, *Mineral*, and *Animal*.

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(Kali P.L.)

It's Sources.

Preparation and Purification.

Sensible Properties.

Effects of Exposure on it: *Oleum Tartari per Deliquium.*

It's Solution in Water: *Aqua Kali Puri* (P.L.).

Effects of Heat on it: *Causticum commune Acerrimum* (P.E.).

It's Combination with Acids: *Kali Vitriolatum* (P.L.); *Common Nitre*; *Kali Acetatum* (P.L.); *Crystalli Tartari* (P.L.); *Kali Tartarisatum* (P.L.); *Prussian*

*Alkali*; *Kali Preparatum* (P.L.).

It's Combination with Earths: *Glaſs*; *Liquor Silicum.*

———————— with Metallic Subſtances.

———————— with Inflammables: *Phoſphoric Gas*; *Kali Sulphuratum* (P.L.); *Fluxes*; *Soaps.*

Elective Attractions.

Uſes: *Dying*; *Scowering*; *Bleaching*; *Agriculture*; *Glaſs-making*; *Metallurgy*; *Medicine*; *&c.*

## *Of Mineral Alkali.* (Natron P.L.)

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Preparation and Purification.

Senſible Properties.

Effects of Expoſure on it: *Efflorescence.*

———— of Heat: *Watery Fuſion.*

It's Union with Acids: *Natron Vitriolatum* (P.L.); *Rhombic Nitre*; *Common Salt*; *Borax*; *Natron Tartariſatum*

*riſatum* (P.L.); *Soda Phoſphorata*; *Natron Preparatum* (P.L.).

It's Union with Earths: *Glaſs*.

——— with Metallic Subſtances.

——— with Inflammables: *Hepar Sulphuris*; *Common Soap*; *Fluxes*; *&c.*

Elective Attractions.

Uſes: *Bleaching*; *Dying*; *Glaſs-making*; *Medicine*; *&c.*

## *Of Animal* or *Volatile Alkali.*

(*Ammonia* P.L.)

It's Sources.

Preparation: *Alkaline Gas.*

Senſible Properties.

Union with Water: *Aqua Ammoniæ Puræ* (P.L.).

——— with Acids: *Vitriolic*, *Nitrous*, and *Common Ammoniac*; *Aqua Ammoniæ Acetatæ*, (P.L.); *Ammonia Preparata* (P.L.).

——— with Earths.

——— with Metals: *Cuprum Ammoniacum* (P.E.).

Union

Union with Inflammables: *Spiritus Ammoniæ* (P.L.); *Spiritus Ammoniæ compositus* (P.L); *Spiritus Ammoniæ fœtidus* (P.L.), *Succinatus*, *Salis Ammoniaci* (P.E.); *Linimentum Ammoniæ* (P.L.).

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Theory of it's Composition.

Uses in the *Arts* and *Medicine*.

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Nature of their Composition.

Division into *Simply-Compounded*, and *Super-Compounded*.

### OF SIMPLY-COMPOUNDED SALTS.

Their Composition.

Selection.

Basis Vegetable Alkali.
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- *Common Nitre*,
- *Cream of Tartar*,
- *Soluble Tartar*,
- *Diuretic Salt. of Cold-*

Basis Mineral Alkali.
- *Glauber's Salt*,
- *Common Salt*,
- *Phosphorated Soda*,
- *Borax*.

Basis of Volatile Alkali. { *Vitriolic Ammoniac.* / *Nitrous Ammoniac.* / *Common Ammoniac.* }

## *Of Vitriolated Tartar.*

(*Kali Vitriolatum* P.L.).

It's Preparations.
Properties.
Uſes.

## *Of Nitre.*

(*Kali Nitratum* P.L.).

It's Natural Hiſtory.
Purification.
Senſible Properties.
Effects of Heat on it: *Vegetable Alkali*; *Pure Air.*
Solubility in Water.
Decompoſition by Acids: *Acid of Nitre.*
It's Deflagration with Metallic Subſtances: *Calces Antimonii* (P.L.).
Combination with Inflammables: *Pulvis Fulminans*; *Gunpowder.*
Uſes: *Mining*; *Gunnery*; *Glaſs making*; *Medicine*; &c.

## *Of Cream* of *Tartar*; *Soluble Tartar*; and *Diuretic Salt.*

(*Cryſtalli Tartari*; *Kali Tartariſatum*; *Kali Acetatum* P.L.)

Their Sources.
Preparation.
Properties.
Combinations.
Decompoſition.
Uſes.

## *Of Glauber's Salts.*

(*Natron Vitriolatum* P.L.)

It's Preparation.
Properties.
Uſes.

## *Of Common Salt.*

(*Natron Muriatum* P.L.)

It's Natural Hiſtory.
Preparation.
Purification: *Dundonald's Method.*
Properties.

Decom-

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Uſes: *Diet*; *Agriculture*; *Glazing*; *Metallurgy*; *Medicine*; *&c.*

## *Of Phoſphorated Soda.*

*(Natron Phoſphoratum.)*

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## Of Borax.

(Natron Boracicatum P.L.)

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Properties.
Uſes in the *Arts* and *Medicine.*

## *Of the Vitriolic, Nitrous,* and **Common Ammoniacs.*

(**Ammonia Muriata* P.L.)

Their Preparation.
Properties.
Decompoſition.
Uſes.

## Of SUPER-COMPOUNDED SALTS.

Their Compoſition.

Example: *Natron Tartariſatum* (P.L.).

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## Of EARTHS.

Their diſtinguiſhing Properties: *Weight*; *Inſolubility*; *Incombuſtibility*; *Fixity*.

Effects of Saline Subſtances on them: *Earthy Salts*; *Aërated Earths*; *Glaſs*.

——— of Earths on each other: *Porcelain*.

Their union with Metallic Calces: *Enamels*; *Coloured Glaſs*.

——— with Inflammables: *Earthy Hepars*.

Diviſion of Earthy Bodies into *Saline*, and *Inſipid*.

## Of SALINE EARTHS.

Their diſtinguiſhing Properties.

Enumeration: *Barytes*, *Lime*, *Magneſia*.

Of

## Of Barytes.

(Heavy Earth.)

It's Natural Hiſtory.
Modes of obtaining it.
Senſible Properties.
Union with Acids : *Heavy Spar* ; *Nitrated*, *Muriated*, *Acetated*, *Aërated Barytes.*
Precipitation by Pruſſian Alkali.
Effects upon Compound Salts.
—— upon Sulphur : *Barytic Hepar.*
Elective Attractions.
Opinions concerning it's Nature.
Uſes.

## Of Lime.

(Calcareous Earth.)

It's Natural Hiſtory.
Preparation.
Senſible Properties.
Effects of Expoſure on it : *Slaked Lime.*
Union with Water : *Aqua Calcis.*
—— with Acids : *Selenite* ; *Calcareous Fluor* ; *Chalk* ; *Marble* ; &c.

Effects

Effects upon Alkalies: *Calx cum Kali Puro* (P.L.); *Soap Lees.*

——— upon Compound Salts.

——— upon other Earths.

——— upon Metallic Subſtances: *Cementation of Iron.*

——— upon Inflammables: *Calcareous Hepar*; *Calcareous Soap.*

Elective Attractions.

Uſes: *Utenſils*; *Cements*; *Modelling*; *Dying*; *Bleaching*; *Tanning*; *Sugar-baking*; *Metallurgy*; *Medicine*; &c.

## Of *Magneſia*. (*Muriatic Earth.*)

It's Natural Hiſtory.

Preparation.

Senſible Properties.

Effects of Heat upon it: *Magneſia Uſta* (P.L.).

It's Combination with Acids: *Magneſia Vitriolata* (P.L.); *Magneſia Alba* (P.L.).

Effects of Compound Salts on it.

It's Union with other Earths: *Soap Rock*; *Aſbeſtos*; &c.

Union

Union with Sulphur : *Muriatic Hepar.*

Elective Attractions.

Uſes.

Of ~~INSIPID EARTHS.~~

Their diſtinguiſhing Properties.

Enumeration; *Clay, Flint.*

## Of Clay.

(*Argillaceous Earth.*)

It's Natural Hiſtory.

Preparation.

Senſible Properties.

Effects of Heat on it : *Wedgwood's Thermometer.*

Mixture with Water.

Union with Acids : *Alum.*

——— with Alkalies, and Earths : *Reaumur's Porcelain.*

Elective Attractions.

Uſes : *Pottery ; Pigments ; Dying ; Scowering ; Bleaching ; Tanning ; Refining Liquors ; Medicine ;* &c.

## Of Flint.

(*Silicious Earth.*)

It's Natural Hiſtory.
Senſible Properties.
Effects of Heat on it.
——— of Acids : *Silicious Fluor.*
——— of Alkalies : *Glaſs* ; *Liquor Silicum.*
——— of Compound Salts.
——— of other Earths.
——— of Metallic Calces : *Coloured Glaſs* ; *Stained Cryſtal.*
Elective Attractions.
Uſes : *Building* ; *Glaſs* ; *Paſtes* ; *Enamels* ; *Paints* ; *Poliſhing* ; &c.

## Of METALS.

Their Natural Hiſtory.
Manner of working their Ores.
Aſſaying of Ores.
Diſtinguiſhing Properties : *Weight* ; *Splendour* ; *Opacity* ; *Malleability* ; *Ductility* ; *Power of conducting Electricity.*
Effects

Effects of Expoſure on them : *Tarniſh*; *Ruſt*.

——— of Heat : *Annealing*; *Cementation*; *Fuſion*; *Granulation*; *Combuſtion*; *Calcination*; *Scorification*; *Vitrification*.

——— of Acids : *Solution*; *Corroſion*.

——— of Alkalies.

——— of Compound Salts; *Volatiliſation*.

——— of Earths.

——— of Metals on each other : *Amalgamation*; *Alloy*.

Separation of Metallic Compounds by *Solution*; *Fuſion*; *Sublimation*; *Calcination*.

Effects of Sulphur on Metals : *Artificial Ores*.

——— of Oils.

Diviſion of Metallic Bodies into *Metals*, and *Semimetals*.

## OF METALS.

Their Diſtinguiſhing Properties.

Diviſion into *Perfect*, and *Imperfect*.

### OF PERFECT METALS.

Their Diſtinguiſhing Properties.

Enumeration ; *Platina*, *Gold*, *Silver*, *Quick-ſilver*.

## Of Platina.

It's Natural Hiſtory.
Purification.
Senſible Properties.
Power of reſiſting Heat.
Solubility in Aqua Regia.
Properties of the Solution.
Solubility in Liver of Sulphur.
Combinations with other Metals.
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Uſes: *Chemical Veſſels.*

## Of Gold.

It's Natural Hiſtory.
Separation from it's Ores.
Refinement: *Cupellation*; *Quartation*; *Parting.*
Senſible Properties.
Effects of Heat on it.
Solubility in Aqua Regia.
Effects of Alkalies upon the Solution: *Aurum Fulminans,*
——— of Æthers.
——— of Eſſential Oils.
Effects

Effects of Metals.

——— of Metallic Solutions: *Purple Powder of Caſſius.*

Combination of Gold with other Metals: *Standard Gold.*

Action of Hepar Sulphuris upon Gold.

Manner of heightening the Colour of Gold.

Elective Attractions.

Uſes: *Utenſils*; *Ornaments*; *Enamelling*; *Gilding*; *Dying*; *Soldering*; *&c.*

## *Of Silver.*

It's Natural Hiſtory.

Separation from it's Ores.

Refinement.

Senſible Properties.

Effects of Heat on it.

——— of Acids: *Staining Liquor*; *Argentum Nitratum* (P.L.).

Decompoſition of it's Solutions.

——————— by Acids: *Luna Cornea.*

——————— by Alkalies, and Earths: *Argentum Fulminans.*

——————— by Metals: *Arbor Dianæ.*

Effects of Alkalies upon Silver.

Effects of other Metals: *Standard Silver.*
——— of Inflammables.
Elective Attractions.
Uſes: *Plate*; *Ornaments*; *Silvering*; *Bell Metal*; *Enamelling*; *Soldering*; *Dying*; *Medicine*; *&c.*

## *Of Quickſilver.*

It's Natural Hiſtory.
Extraction from it's Ores.
Purification.
Senſible Properties: *Fluidity.*
Effects of Expoſure on it: *Conſolidation.*
——— of Triture: *Pilulæ ex Hydrargyro* (P.L.); *Hydrargyrus cum Cretâ* (P.L.); *Syrupus Hydrargyri* (P.S.).
——— of Heat: *Volatiliſation*; *Calcination*; *Hydrargyrus Calcinatus* (P.L.).
——— of Acids: *Hydrargyrus Vitriolatus* (P.L.); *Hydrargyrus Nitratus Ruber* (P.L.); *Hydrargyrus Muriatus* (P.L.); *Hydrargyrus Muriatus Mitis* (P.L.); *Calomelas* (P.L.); *Hydrargyrus Acetatus* (P.L.).

Pre-

Precipitates by Alkalies: *Calx Hydrargyri Alba* (P.L.); *Mercurius Cinereus* (P.E.).

——— by Earths.

——— by Metals.

Effects of Compound Salts on Quickſilver.

——— of Sulphur: *Hydrargyrus cum Sulphure* (P.L.); *Hydargyrus Sulphuratus Ruber* (P.L.).

——— of Unctuous Subſtances: *Ointments*; *Plaiſters*.

Union with other Metallic Subſtances: *Amalgams*.

Elective Attractions.

Uſes: *Philoſophical Inſtruments*; *Gilding*; *Refining*; *Aſſaying*; *Mirrors*; *Anatomy*; *Medicine*; *&c.*

## OF IMPERFECT METALS.

Their diſtinguiſhing Properties.

Enumeration; *Lead*, *Copper*, *Iron*, *Tin*.

## *Of Lead.*

It's Natural Hiſtory.
Method of extracting from it's Ores.
It's ſenſible Properties.
Effects of Expoſure on it.
——— of Heat: *Plumbum Uſtum*; *Maſſicot*; *Minium*; *Litharge*.
——— of Acids: *Vitriolated*, *Nitrated*, *Muriated Lead*; *Patent Yellow*; *Ceruſſa*; *Ceruſſa Acetata* (P.L.); *Aqua Lithargyri Acetati* (P.L.).
Combination with Earths: *Glaſs*.
——— with Oils: *Unguents*; *Plaiſters*; *Paints*; *Varniſhes*.
——— with other Metallic Subſtances: *Pewter*; *Solder*; *&c.*
Manner of detecting the Preſence of Lead.
Elective Attractions.
Uſes: *Building*; *Utenſils*; *Shot*; *Statues*; *Glaſs-making*; *Glazing*; *Painting*; *Varniſhing*; *Refining*; *Aſſaying*; *Medicine*; *&c.*

## *Of Copper.*

It's Natural Hiſtory.
Extraction from it's Ores.
Senſible Properties.
Effects of Expoſure on it.
——— of Heat.
It's Solution in Acids: *Cuprum Vitriolatum* (P.L.); *Nitrated, and Arſenicated Copper*; *Ærugo* (P.L.).
Precipitates by Alkalies.
——— by Earths: *Verditer.*
——— by other Metallic Subſtances: *Ziment Copper.*
Effects of Alkalies upon Copper: *Cuprum Ammoniacum* (P.E.).
——— of Compound Salts: *Aqua Sapphirina* (P.E.).
——— of Sulphur: *Æs Uſtum.*
——— of Oils.
Union with other Metallic Subſtances: *Bell Metal*; *Bronze*; *Prince's Metal*; *Pinchbeck*; *Braſs*; *White Copper*; *Pewter*; *&c.*
Elective Attractions.

Uſes:

Uſes: *Navigation*; *Gunnery*; *Buildings*; *Utenſils*; *Alloys*; *Gold, and Silver Lace*; *Enamelling*; *Dying*; *Painting*; *Medicine*; *&c.*

## *Of Iron.*

It's Natural Hiſtory.
Manner of working it's Ores.
It's different States: *Crude Iron*; *Bar Iron*; *Steel.*
Senſible Properties.
Magnetic Quality.
Effects of Expoſure on it: *Ferri Rubigo* (P.L.).
Means of defending it from ruſting.
Effects of Heat: *Variation of Colour*; *Tempering Steel.*
——— of Acids: *Ferrum Vitriolatum* (P.L.); *Colcothar*; *Ferrum Muriatum* (P.L.); *Pruſſian Blue*; *Dyer's Ink*; *Common Ink*; *Vinum Ferri* (P.L.).
——— of Compound Salts: *Ferrum Tartariſatum* (P.L.); *Ferrum Ammoniacale* (P.L.).
——— of Sulphur: *Spontaneous Inflammation.*
Combination with Metallic Subſtances.
Elective Attractions.

Uſes:

Uſes: *Navigation*; *Gunnery*; *Utenſils*; *Painting*; *Dying*; *Medicine*; *&c. &c.*

## *Of Tin.*

It's Natural Hiſtory.
Extraction from it's Ores.
Senſible Properties.
Effects of Heat upon it: *Stannum Pulveratum* (P.L.); *Putty.*
——— of Acids: *Precipitates of Tin*; *Scarlet Dyes.*
——— of Compound Salts: *Smoaking Liquor of Libavius.*
Union with Sulphur: *Aurum Muſivum.*
——— with other Metallic Subſtances: *Pewter*; *Solders*; *&c.*
Elective Attractions.
Uſes: *Utenſils*; *Mirrors*; *Types*; *Tinning*; *Enamels*; *Medicine*; *&c.*

## Of SEMI-METALS.

Their diſtinguiſhing Properties.
Diviſion into *Fixed*, and *Volatile.*

## OF FIXED SEMI-METALS.

Their diſtinguiſhing Properties.
Enumeration; *Biſmuth*, *Nickel*, *Cobalt*, *Antimony*, *Manganeſe*.

## *Of Biſmuth.*

It's Natural Hiſtory.
Extraction from it's Ores.
Senſible Properties.
Effects of Heat: *Flowers of Biſmuth*; *Vitrified Calx*.
Solution in Acids: *Sympathetic Ink*.
Precipitates: *Magiſtery of Biſmuth*.
Union with Sulphur.
——— other Metallic Subſtances: *Sir I. Newton's Fuſible Metal*; *Adulteration of Quickſilver*.
Elective Attractions.
Uſes: *Pewter*; *Solder*; *Types*; *Mirrors*; *Aſſaying*; *Painting*; *Imitation of Silvering, and Gilding*; *&c.*

## *Of Nickel.*

It's Natural Hiſtory.
Separation from it's Ore.
Difficult Purification.
Senſible Properties.
It's Magnetiſm accounted for.
Effects of Heat upon it.
Properties of it's Solution.
It's Affinity to Sulphur.
Combination with other Metallic Subſtances.
Elective Attractions.
Uſes.

## *Of Cobalt.*

It's Natural Hiſtory.
Reduction from it's Ores.
Senſible Properties.
Effects of Heat upon it.
Solution in Acids: *Sympathetic Ink.*
Combination with Earths: *Zaffre*; *Smalt*; *Powder Blue.*
——— with other Metallic Subſtances.
Elective Attractions.

Uſes: *Colouring Glaſs*; *Glazing*; *Enamelling*; *Painting*; *Waſhing*; *&c.*

## *Of Antimony.*

It's Natural Hiſtory.

Different Methods of obtaining the Regulus.

It's ſenſible Properties.

Effects of Heat upon it: *Argentine Flowers*; *Antimonium Vitrificatum* (P.L.); *Vitrum Antimonii Ceratum* (P.E.).

——— of Acids: *Antimonium Muriatum* (P.L.); *Powder of Algaroth*; *Antimonium Tartariſatum* (P.L.); *Vinum Antimonii* (P.L.).

Deflagration with Nitre.

Combination with other Metallic Subſtances.

Union with Sulphur: *Crude Antimony.*

Effects of Heat upon Crude Antimony: *Pulvis Antimonialis* (P.L.).

Action of Alkalies upon it: *Kermes Mineralis* (P.S.); *Sulphur Antimonii Præcipitatum* (P.L.).

Defla-

Deflagration with Nitre : *Antimonium Calcinatum* (P.L.) ; *Nitrum Antimoniatum* (P.S.) ; *Crocus Antimonii* (P.L.) ; *Calx Antimonii Nitrata* (P.E.).

Combination of Crude Antimony with Metallic Subſtances : *Æthiops Antimonialis* (P.S.).

Elective Attractions.

Uſes. *Types* ; *Medicine* ; *&c.*

## *Of Manganeſe.*

It's Natural Hiſtory.

Manner of obtaining the Regulus.

It's ſenſible Properties.

Effects of Expoſure : *Black Calx.*

Action of this upon Acids : *Dephlogiſticated Marine Acid.*

——— upon Oils : *Spontaneous Inflammation.*

Elective Attractions.

Uſes : *Glaſs-making* ; *Glazing* ; *&c.*

### OF VOLATILE SEMI-METALS.

Their general Properties.

Enumeration ; *Arſenic*, *Zinc.*

*Of*

## *Of Arſenic.*

It's Natural Hiſtory.
Sublimation of the Regulus.
Difference between this and *White* Arſenic.
Effects of Heat upon the latter: *Garlick Smell.*
It's Solubility in Water.
Effects of Acids upon it: *Acid of Arſenic.*
Combination with Alkalies and Earths: *Hepar Arſenici*; *Macquer's Arſenical Salt.*
———— with Sulphur: *Realgar*; *Orpiment.*
———— with Oils.
———— with Metallic Subſtances: *White Copper*; *Scheele's Pigment.*
Methods of detecting the Preſence of Arſenic.
Elective Attractions.
Uſes: *Gilding*; *Imitating Silver*; *Mirrors*; *Enamelling*; *Glaſs-making*; *Glazing*; *Soldering*; *Dying*; *Painting*; *Medicine*; &c.

## *Of Zinc.*

It's Natural Hiſtory.
Diſtillation from it's Ores.
Senſible Properties.
Effects of Heat upon it : *Zincum Calcinatum* (P.L.).
Union with Acids : *Zincum Vitriolatum* (P.L.).
——— with other Metallic Subſtances : *Spelter* ; *Pewter* ; *Tutenag* ; *Braſs* ; *Pinchbeck* ; *Solders* ; *Prince's Metal* ; *Bronze*.
Elective Attractions.
Uſes : *Utenſils* ; *Gunnery* ; *Statuary* ; *Amalgams* ; *Painting* ; *Medicine* ; *&c.*

## APPENDIX.

TUNGSTEN.
WOLFRAM.
MOLYBDÆNA.

## OF INFLAMMABLES.

Their various Sources, and Forms.
Diſtinguiſhing Properties: *Combuſtibility, and Levity.*
Effects of Expoſure on them.
——— of Water.
Combination with Gaſſes, Saline Subſtances, &c.
Diviſion into *Mineral*, *Vegetable*, and *Animal.*

### OF *Mineral* INFLAMMABLES.

Their diſtinguiſhing Properties.
Enumeration; *Inflammable, and Hepatic Airs, Naptha, Petroleum, Aſphaltum, Jet, Coal, Peat, Amber, Sulphur, Plumbago, and the Diamond.*

### *Of Inflammable and Hepatic Airs.*

N. B. Theſe treated of under Gaſſes.

*Of*

## *Of Naptha; Petroleum; Aſphaltum; Jet; Coal; and Peat.*

Their Natural Hiſtory.
Theory of their Origin.
Senſible Properties.
Phenomena attending their Combuſtion.
Effects of Heat upon them in cloſe Veſſels: *Dundonald's Tar; Britiſh Oil.*
Inſolubility in Water, and Spirit of Wine.
Solubility in Oils.
Union with Sulphur: *Balſamum Sulphuris Barbadenſe.*
Uſes.

## *Of Amber.*

Natural Hiſtory.
Clarification.
Senſible Properties.
Effects of Heat in cloſe Veſſels: *Sal, & Oleum Succini* (P.L.).
Difficult Solubility of Amber.
Uſes.

## *Of Sulphur.*

It's Natural Hiſtory.

Manner of obtaining it: *Flores Sulphuris* (P.L.); *Sulphur Vivum.*

Senſible Properties.

Effects of Heat upon it: *Phlogiſticated Vitriolic Acid.*

Inſolubility in Water.

Union with Inflammable Air: *Hepatic Gas.*

——— with Alkalies: *Alkaline Hepars.*

Deflagration with Nitre: *Vitriolic Acid.*

Combination with Nitre and Charcoal: *Gunpowder.*

——— with Nitre and Vegetable Alkali: *Pulvis Fulminans.*

——— with Earthy Subſtances: *Earthy Hepars.*

——— with Metallic Subſtances: *Hydrargyrus cum Sulphure* (P.L.); *Hydrargyrus Sulphuratus Ruber* (P.L.); *Orpiment*; *Aurum Muſivum*; *&c.*

——— with Oils, and Bitumens: *Balſams of Sulphur.*

Elective

Elective Attractions.
Theory of it's Compoſition.
Uſes: *Impreſſions*; *Bleaching*; *Checking Fermentation*; *Manufacturing Vitriolic Acid*; *Gunpowder*; *Medicine*; *&c.*

## *Of Plumbago.*

Natural Hiſtory.
Senſible Properties.
Effects of Heat.
——— of Alkalies: *Inflammable Air.*
Decompoſition by Neutral Salts.
Union with Metals: *Cold-ſhort Iron.*
Theory of it's Compoſition.
Uſes: *Pencils*; *Shot-poliſhing*; *Razor Strops*; *Crucibles*; *Furnaces*; *&c.*

## *Of the Diamond.*

Natural Hiſtory.
Senſible Properties; *Refractive Power.*
Effects of Heat.
——— of Charcoal.
Opinions regarding it's Nature.
Uſes.

OF *Vegetable* INFLAMMABLES.

Their diſtinguiſhing Properties.
Enumeration; *Spirit of Wine, Eſſential Oils, and Reſins, Expreſſed Oils, Camphor, Charcoal.*

## *Of Spirit of Wine.*

Preparation, and Purification: *Alkohol* (P.L.).
Senſible Properties.
Effects of Combuſtion.
Union with Water: *Spiritus Vinoſus Rectificatus* (P.L.); *Spiritus Vinoſus Tenuior* (P.L.).
——- with Acids: *Dulcified Spirits*; *Æthers*; *Oleum Vini* (P.L.).
——- with Alkalies: *Spiritus Ammoniæ* (P.L.).
——- with Compound Salts.
——- with Sulphur.
——- with Eſſential Oils: *Spiritus Carui* (P.L.); *Spiritus Cinnamomi* (P.L.); *&c.*

Union

Union with Reſins: *Tinctures*; *Varniſhes.*

——— with Camphor: *Spiritus Camphoratus* (P.L.).

Elective Attractions.

Theory of it's Compoſition.

Uſes.

## *Of Eſſential Oils, and Reſins.*

Their Preparation.

Senſible Properties: *Spiritus Rector.*

Effects of Expoſure.

——— of Heat: *Oleum Terebinthinæ Rect.* (P.L.); *Reſina Flava* (P.L.).

Union with Water: *Aqua Cinnamomi* (P.L.); *Aqua Fœniculi* (P.L.); *&c.*

——— with Acids: *Acid Soaps*; *Spontaneous Inflammation.*

——— with Alkalies: *Starkey's Soap*; *Spiritus Ammoniæ Comp:* (P.L.).

——— with Spirit of Wine: *Spiritus Cinnamomi* (P.L.); *Spiritus Lavendulæ* (P.L.); *Tinctures*; *Varniſhes.*

——— with Sulphur: *Balſams of Sulphur.*

Combinations of Reſins with Expreſſed Oils: *Unguents*; *Plaiſters.*

Sophi-

Sophiſtication of Eſſential Oils.
Effects of Eſſential Oils upon Phoſphorus: *Liquid Phoſphorus.*
Nature of the Compoſition of Eſſential Oils, and Reſins.
Uſes: *Fuel*; *Painting*; *Varniſhing*; *Perfuming*; *Soap-making*; *Medicine*; *&c.*

## *Of Expreſſed Oils.*

Their Preparation.
Senſible Properties.
Effects of Expoſure on them: *Rancidity.*
——— of Heat: *Empyreumatic Oil.*
——— of Acids: *Acid Soaps.*
——— of Alkalies: *Common Soap.*
——— of Earths: *Calcareous Soap.*
Combination with Metallic Subſtances: *Paints*; *Plaiſters*; *Unguents.*
——— with Sulphur: *Balſamum Sulphuris.*
——— with Phoſphorus: *Liquid Phoſphorus.*
Nature of their Compoſition.

Uſes:

Uſes: *Diet*; *Lamps*; *Painting*; *Varniſhing*; *Soap-making*; *Mechanics*; *Medicine*; *&c.*

## *Of Camphor.*

Natural Hiſtory.
Refinement.
Senſible Properties.
Effects of Expoſure.
——— of Heat: *Acid of Camphor.*
——— of Acids: *Oil of Camphor.*
Solution in Water: *Miſtura Camphorata* (P.L.).
——— in Spirit of Wine: *Spiritus Camphoratus* (P.L.).
——— in Oils: *Oleum Camphoratum* (P.E.)
Nature of Camphor.
Uſe in Medicine.

## *Of Charcoal.*

It's Preparation.
Senſible Properties.
Durability of Charcoal.
Effects of Heat on it.

Effects of Charcoal on Gaſſes.

——— of Acids on Charcoal: *Sulphur*; *Inflammation.*

Union with Alkalies: *Phlogiſticated Alkali*; *Fluxes.*

Effects upon Compound Salts: *Hepar Sulphuris.*

——— upon Metallic Subſtances: *Reduction*; *Cementation.*

Mixture with Nitre and Sulphur: *Gunpowder.*

Effects upon Liver of Sulphur.

——— upon Expreſſed Oils.

Theory of it's Compoſition.

Uſes.

## OF *Animal* INFLAMMABLES.

Their diſtinguiſhing Properties.

Enumeration; *Phoſphoric Gas*, *Wax*, *Sperma Ceti*, *Fat*, *Butter*, *Ambergreaſe*, *Phoſphorus.*

## *Of Phoſphoric Gas.*

N. B. This treated under Gaſſes.

*Of*

## *Of Wax; Sperma Ceti; Fat; and Butter.*

Their Origin.
Senſible Properties.
Effects of Expoſure: *Cera Alba*; *Rancidity.*
——— of Heat: *Butter of Wax*; *Acid of Fat.*
——— of Acids: *Acid Soaps.*
——— of Alkalies: *Common Soap.*
——— of Earths: *Calcareous Soap.*
——— of theſe on Metallic Subſtances.
——— on other Inflammables.
——— on each other.
Theory of their Compoſition.
Uſes: *Diet*; *Fuel*; *Soap-making*; *Curriery*; *Varniſhing*; *Medicine*; *&c.*

## *Of Ambergreaſe.*

It's Origin.
Properties.
Uſes.

## *Of Phoſphorus.*

It's Preparation.
Senſible Properties.

Effects of Expoſure: *Slow Combuſtion.*
——— of Heat: *Acid of Phoſphorus.*
——— of Acids.
——— of Alkalies: *Phoſphoric Air.*
——— of Nitrous Salts.
——— of Earths.
——— of Metallic Subſtances.
——— of Metallic Solutions.
——— of other Inflammable Bodies: *Liquid Phoſphorus*; *Phoſphoric Matches*; *Portable Fire.*
Elective Attractions.
Theory of it's Compoſition.
Uſes.

## *Of ANALYSIS.*

Nature of Analyſis explained.
Diviſion into *Artificial*, and *Spontaneous.*

### *Of Artificial Analyſis.*

Diſtinction between this, and Spontaneous Analyſis.
Manner of proceeding in it; *Via Sicca*; *Via Humida.*

Ana-

Analyſis, Via Sicca, illuſtrated: *Aſſaying of Ores*; *Diſtillation of Vegetable, and Animal Subſtances.*

Analyſis, Via Humida, illuſtrated: *Analyſis of Mineral Waters.*

## *Of Spontaneous Analyſis.*

(*Fermentation.*)

Nature of the Bodies diſpoſed to this Analyſis.

Circumſtances under which it takes place.

It's different Stages: *Vinous*; *Acetous*; *Putrid.*

Products of theſe: *Aërial Acid*, *Spirit*, *Vinegar*, *Volatile Alkali*, *&c.*

Means of promoting or retarding Fermentation: *Ferments.*

Nature of Ferments.

F I N I S.