

**NOTES FOR STUDENTS IN  
CHEMISTRY: BEING A  
SYLLABUS OF CHEMISTRY  
AND PRACTICAL CHEMISTRY**

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Notes for Students in Chemistry: Being a Syllabus of Chemistry and Practical Chemistry by  
Albert J. Bernays

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**ALBERT J. BERNAYS**

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AND PRACTICAL CHEMISTRY**



# NOTES

FOR

## STUDENTS IN CHEMISTRY;

BEING A SYLLABUS OF CHEMISTRY AND  
PRACTICAL CHEMISTRY.

COMPILED FROM THE MANUALS OF GIBLIN, MILLER, FOWNES, BERZELIUS,  
NAQUET, GERHARDT, GOSUP-BESANNE, ETC.

BY

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## P R E F A C E.

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Soon after my appointment to the Chair of Chemistry at St. Mary's Hospital in 1854, I noticed that the chief part of the lecture-time was occupied by the most diligent students in taking notes of the various formulæ and reactions which were from time to time stated; and that they were thereby prevented from paying continuous attention to the course of the Lecture, and its illustrative experiments

To remedy this evil, I published in 1855 the first edition of my "Notes for Students," in which I endeavoured to supply all the information necessary to form a connecting basis for the teaching in the lectures.

A new feature of the present syllabus is an Appendix giving the doses of the chief chemical preparations of the "Materia Medica." This addition was suggested to me by one of my present colleagues, Dr. CLAPTON, and carried out by my friend Mr. H. B. DONKIN.

ALBERT J. BERNAYS.

*Chemical Laboratory,  
St. Thomas's Hospital Medical College,  
January, 1870*

100

100

100

100

100

100

100

100



# INDEX.

	PAGE		PAGE		PAGE
Acids, fatty . . . . .	87	Ethers . . . . .	83	Organic Chemistry 76-114	76-114
Albumen . . . . .	105	Excretions . . . . .	111	Osmium . . . . .	59
Alcohols . . . . .	80			Oxygen . . . . .	4
Aldehydes . . . . .	82	Feces . . . . .	114		
Alkaloids . . . . .	98-100	Fats . . . . .	89	Palladium . . . . .	58
Allouan . . . . .	97	Fermentation . . . . .	82	Pancreatic fluid . . . . .	110
Alumina . . . . .	41	Ferri-cyanides . . . . .	95	Peptone . . . . .	108
Ammonia . . . . .	8	Ferrocyanides . . . . .	95	Platinum . . . . .	57
Ammonium . . . . .	35	Fibrin . . . . .	106	Phosphorus . . . . .	17
Antimony . . . . .	21	Fluorine . . . . .	17	Potassium . . . . .	51
Arsenicum . . . . .	20			Properties of metals . . . . .	27
Atomic weights . . . . .	3	Gelatin . . . . .	107	Pus . . . . .	110
		Gluten . . . . .	75		
Barium . . . . .	97	Glycerin . . . . .	87	Resins . . . . .	83
Bases, artificial . . . . .	100	Glycolin . . . . .	108	Respiration . . . . .	114
Beryllium . . . . .	42	Glycols . . . . .	86	Rhodium . . . . .	58
Bile . . . . .	110	Gold . . . . .	58	Rubidium . . . . .	35
Bitumen . . . . .	103			Ruthenium . . . . .	58
Blood . . . . .	108	Hydrogen . . . . .	4		
Bismuth . . . . .	23			Sulva . . . . .	110
Bones . . . . .	107	Indigo . . . . .	104	Serrulone . . . . .	110
Boron . . . . .	78	Iodine . . . . .	58	Selenium . . . . .	12
Brain . . . . .	109	Iodine . . . . .	18	Silver . . . . .	24
Bromine . . . . .	15	Iridium . . . . .	59	Silver . . . . .	61
		Iron . . . . .	43	Sodium . . . . .	33
Cadmium . . . . .	41			Sugar . . . . .	76
Cæsium . . . . .	32	Kelone . . . . .	82	Serotonin . . . . .	37
Calcium . . . . .	57	Keratin . . . . .	108	Sigara . . . . .	77
Calculi, urinary . . . . .	113	Kresatin . . . . .	108	Sulphur . . . . .	9
Carbon . . . . .	8			Sulphocyanogen . . . . .	95
Casain . . . . .	106	Lanthanum . . . . .	49		
Cerium . . . . .	49	Lead . . . . .	52	Tannin . . . . .	80
Chemistry, Inorganic 1-41		Legumin . . . . .	108	Tantalum . . . . .	61
Organic 75-114		Lithium . . . . .	35	Taurin . . . . .	111
Practical 52-74		Lithone . . . . .	104	Tellurium . . . . .	13
Chlorine . . . . .	19	Magnesium . . . . .	38	Thallium . . . . .	60
Cholesterolin . . . . .	111	Manganeseum . . . . .	45	Thorium . . . . .	50
Chondrin . . . . .	107	Mercury . . . . .	53	Titanium . . . . .	25
Chromatium . . . . .	48	Milk . . . . .	109	Tin . . . . .	59
Cobalt . . . . .	47	Molybdenum . . . . .	80	Tungsten . . . . .	61
Coal-tar . . . . .	105	Mucus . . . . .	110		
Colouring matters . . . . .	104	Murexid . . . . .	98	Uranium . . . . .	50
Copper . . . . .	55			Urea . . . . .	97
Cryates . . . . .	30	Neurin . . . . .	109	Uric acid . . . . .	97
Cyanogen . . . . .	94	Nickel . . . . .	44	Urine . . . . .	112
		Niobium . . . . .	61	Urinary calculi . . . . .	113
Didymium . . . . .	50	Nitrogen . . . . .	8		
Doses, medicinal . . . . .	115	Nitro-prussides . . . . .	95	Vanadium . . . . .	61
				Yttrium . . . . .	40
Elements . . . . .	3	Oils, essential . . . . .	91	Zirconium . . . . .	28
Erbium . . . . .	49	Organic bases . . . . .	100	Zinc . . . . .	45

1

2

3

4

5

6

7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65  
66  
67  
68  
69  
70  
71  
72  
73  
74  
75  
76  
77  
78  
79  
80  
81  
82  
83  
84  
85  
86  
87  
88  
89  
90  
91  
92  
93  
94  
95  
96  
97  
98  
99  
100

## NOTES FOR STUDENTS IN CHEMISTRY.

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MANIFOLD as are the substances which we meet with on every hand, there are but few bodies which cannot be resolved by heat or otherwise into simpler forms. Those bodies which resist all attempts at decomposition are called **ELEMENTS** or simple bodies.

The elements are sixty-four in number; they may be divided for convenience into **NON-METALLIC ELEMENTS** and into **METALS**. The non-metallic elements are more or less imperfect conductors of heat and electricity, and their chief tendency is to unite with the element Hydrogen and to form acid compounds.

The elements are very unevenly distributed throughout the earth and the air. The most abundant constituents of this globe are Oxygen, Silicon, Aluminum, Iron, Calcium, Magnesium, Sodium, and Potassium.

Those elements and their compounds which are either little known, or of less importance, will be bracketed, so that they may be passed over by those students who do not require information with reference to them.

The non-metallic Elements are 13 in number: five are gaseous—viz, HYDROGEN, OXYGEN, NITROGEN, CHLORINE, and FLUORINE; one is a liquid, BROMINE; the other seven are solids—viz, CARBON, SILICON, SULPHUR, SELENIUM, PHOSPHORUS, IODINE, and BORON.

Chemists are in the habit of representing the elements by symbols: thus, the initial letters of the Latin names represent the smallest proportion in which one element will unite with another. When two elements commence with the same initial letters, the one is distinguished from the other by an affix. Thus, **S** stands for Sulphur; **Se** for Selenium; **Si** for Silicon.

Each element is supposed to consist of very minute particles, which cannot be further sub-divided; these particles are called *atoms*, from the Greek *ἀ* privative, and *τομή*, *temno*, I cut. The atoms of the various elements possess distinct weights; thus the