Sacks, Oliver 2001 [b. September 1933]

“Uncle Tungsten: Memories of a Chemical Boyhood”

ch.1 Uncle Tungsten;
9 autodidact

ch.2 “37”;
14: pieces of eight

ch.3 Exile:

*ch.4 An Ideal Metal;
tungsten, Edison bulbs, platinum

*ch.5 Light for the Masses; Edison,
47 gas lights 1800’s, electric 1860’s;
51 Langmuir 1913

ch.6 The Land of Stibnite;
58 Galena (PbS),
60 cryolite?

ch.7 Chemical Recreations:

ch.8 Stinks and Bangs:

ch.9 Housecalls:

*ch.10 A Chemical Language:
102 Boyle (c. 1650) and Newton as Alchemists,
102.5: cleavage planes of crystals,
103: “The Skeptical Chymist” written to debunk the “Four Elements”
(Sacks had metal as a 5th), defined “element”;
f104 Hooke:
104: 1606 “New Expt”, assistant Robert Boyle (vacuum pump ? Guerike date);
105: combustion and respiration;,
106 phlogiston;
107 Lavoisier
109: Priestley (HgO),
110 L claimed discovery of O; “Oxygen” by Roald Hoffman and Carl Djerassi.
111 Lavoisier (constancy of mass);
f.5: Argand burner;
f.5 L: 33 elements, instead of “The Four Elements”; 3 gases O, H, N, 3 nonmetals S, P, C; balance sheet
113 L: “Elements” 1789; (executed 1794?);
*ch.11 Humphry Davy: A Poet-Chemist:
118: melted ice by friction and demolished caloric (Thomas Beddoes);
119 read Volta in 1800; Cavendish water dissociation, and H and O sparked to water;
f.120 C discovered H;
121 Davy made light from a glowing Pt wire AND a carbon arc;
122 electrolysis in 1807 -> K and Na (f.3: group!);  
124 alkali metals Ca, Mg, Sr, Ba (another group);
f.4 K used to extract Boron; late Si (Berzelius 1824), Al, Be; pupil Faraday:
IONS: +CATIONS and –ANIONS, e.g. NaCl -> Na+ , Cl-
[N.B. in electrolysis and vacuum tubes the (-)CATHODE is the source of the anions,  
e.g. especially electrons!, the (+)ANODE collects the anions, while the 
(++)CATHODE collects the cations];
125 (mid) chemical affinity and electrical force were one and the same; Mary Shelley  
(Frankenstein), Coleridge (1772-1834) (Romantic poets in Britain; and in Germany:  
Goethe f.126, J W Ritter (UV);
[William Blake 1757-1827: 70];  
127 Faraday’s notes;
128 Liebig’s error f.127/8;
129 Industrial Revolution (& 126);
130 Döbereiner Pt lamp

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141 stereo? Footnote
143; 144 Wells

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149 Dalton;
148 Proust (late 18C, 1799) [293: Prout ~1813]; alloys and mixtures v. compounds;  
footnote – iron sulphides;  Dalton atomic weights;
151 AFM; 152 D: 1803->1808 “New System”;
153 D: one-to-one; Gay-Lussac: 2 vols H to 1 of O; Avogadro’s Hypothesis (1811);
153 Cannizzaro Essay AND
154 (1858 & 1860) @ Karlsruhe (nr. Bottom HOS);

*ch.14 Lines of Force:  Faraday

ch.15 Home Life:

*ch.16 Mendelev:
189 valency – late 1850’s;
196 Dana;
204 Mn poor conductor;

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*ch. 20 Penetrating Rays:
246 X-rays;
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*ch. 21: Madame Curie’s Element:

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*ch. 23 The World Set Free: Nuclear energy:
282 Soddy and Rutherford;
284/5 Kelvin;
285 isotopes;
287: spinthariscope (Curie’s thesis cover, invented by Sir William Crooks – ZnS screen);
289 (3/4) why such a large energy?;
289-290 Soddy
291 S: (1903) simply based on Ra energy

*ch. 24 Brilliant Light (Tungsten W):
299 Bohr’s aufbau;
factor of 2?;
300-1 “numerical series”;
302 electron gas;
303 PE effect;
305 1929 -> fusion (who?), Gamow;
306 aufbau; [spintharoscope?];
307 Leibniz

*ch. 25 The End of the Affair
311 New Quantum Mechanics; Primo Levi;
312 Gamow;
313 Crookes

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Acknowledgement

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[Notes: Dr. Edwards; Abbe microscope resolution]