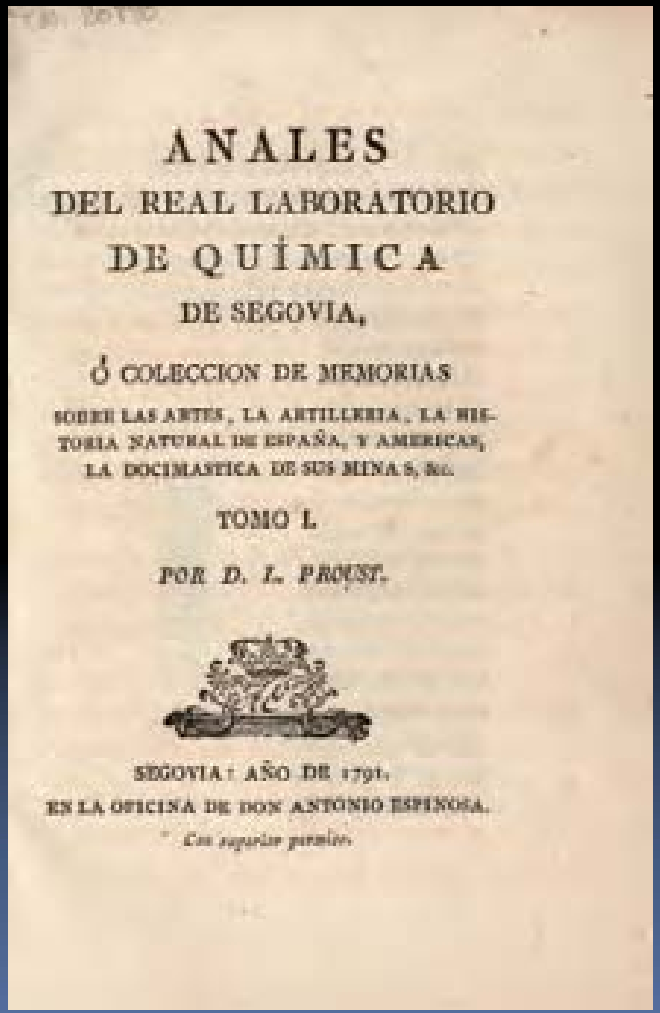
LA QUÍMICA CUÁNTICA Y EL DESARROLLO DE LA FÍSICA CUÁNTICA

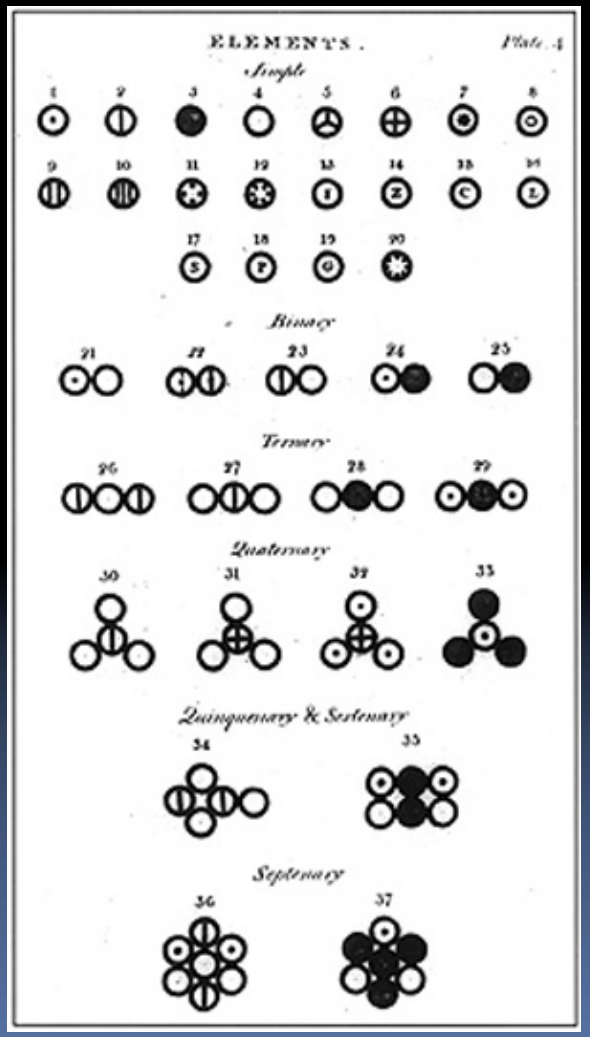
JOSÉ MANUEL SÁNCHEZ RON

Joseph-Louis Proust (1754-1826)

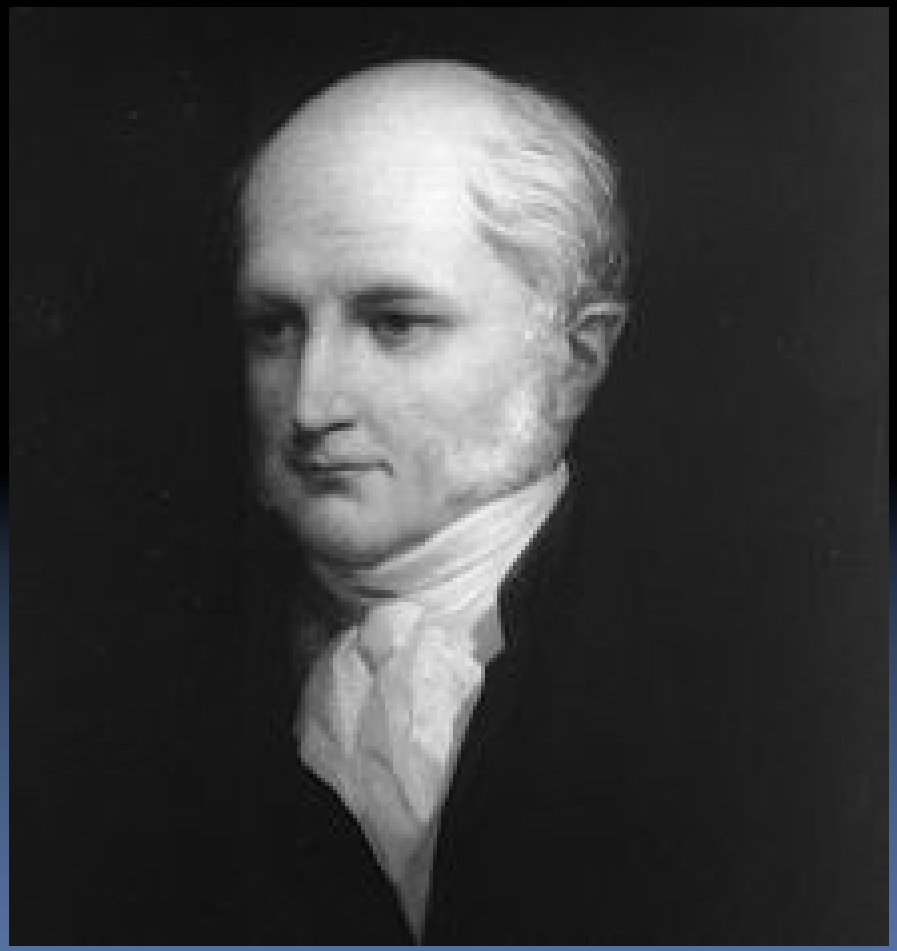


ANALES
DEL REAL LABORATORIO
DE QUÍMICA
DE SEGOVIA,
Ó COLECCION DE MEMORIAS
SOBRE LAS ARTES, LA ARTILLERIA, LA HISTORIA NATURAL DE ESPAÑA, Y AMERICAS, LA DOCIMASTICA DE SUS MINAS, &c.
TOMO I.
POR D. L. PROUST.
SEGOVIA: AÑO DE 1791.
EN LA OFICINA DE DON ANTONIO ESPINOSA.
Con superior permiso.

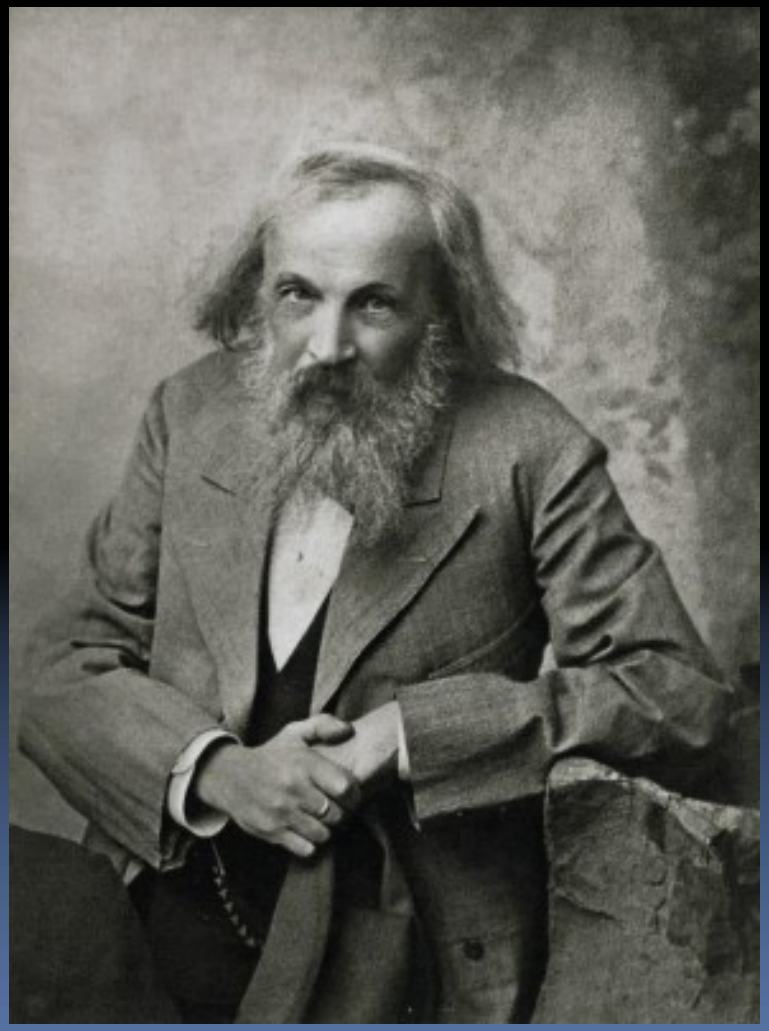
John Dalton (1766-1844)



William Prout (1785-1850)



Dmitri Ivanovitch Mendeleiev (1834-1907)



ОПЫТЪ СИСТЕМЫ ЭЛЕМЕНТОВЪ.

ОСНОВАННОЙ НА ИХЪ АТОМНОМЪ ВѢСѢ И ХИМИЧЕСКОМЪ СХОДСТВѢ.

			Ti = 50	Zr = 90	? = 180.
			V = 51	Nb = 94	Ta = 182.
			Cr = 52	Mo = 96	W = 186.
			Mn = 55	Rh = 104,4	Pt = 197,1.
			Fe = 56	Ru = 104,4	Ir = 198.
			Ni = Co = 59	Pl = 106,6	Os = 199.
H = 1			Cu = 63,4	Ag = 108	Hg = 200.
	Be = 9,4	Mg = 24	Zn = 65,2	Cd = 112	
	B = 11	Al = 27,4	? = 68	Ur = 116	Au = 197?
	C = 12	Si = 28	? = 70	Sn = 118	
	N = 14	P = 31	As = 75	Sb = 122	Bi = 210?
	O = 16	S = 32	Se = 79,4	Te = 128?	
	F = 19	Cl = 35,6	Br = 80	I = 127	
Li = 7	Na = 23	K = 39	Rb = 85,4	Cs = 133	Tl = 204.
		Ca = 40	Sr = 87,6	Ba = 137	Pb = 207.
		? = 45	Ce = 92		
		?Er = 56	La = 94		
		?Yt = 60	Di = 95		
		?In = 75,6	Th = 118?		

Д. Менделѣевъ

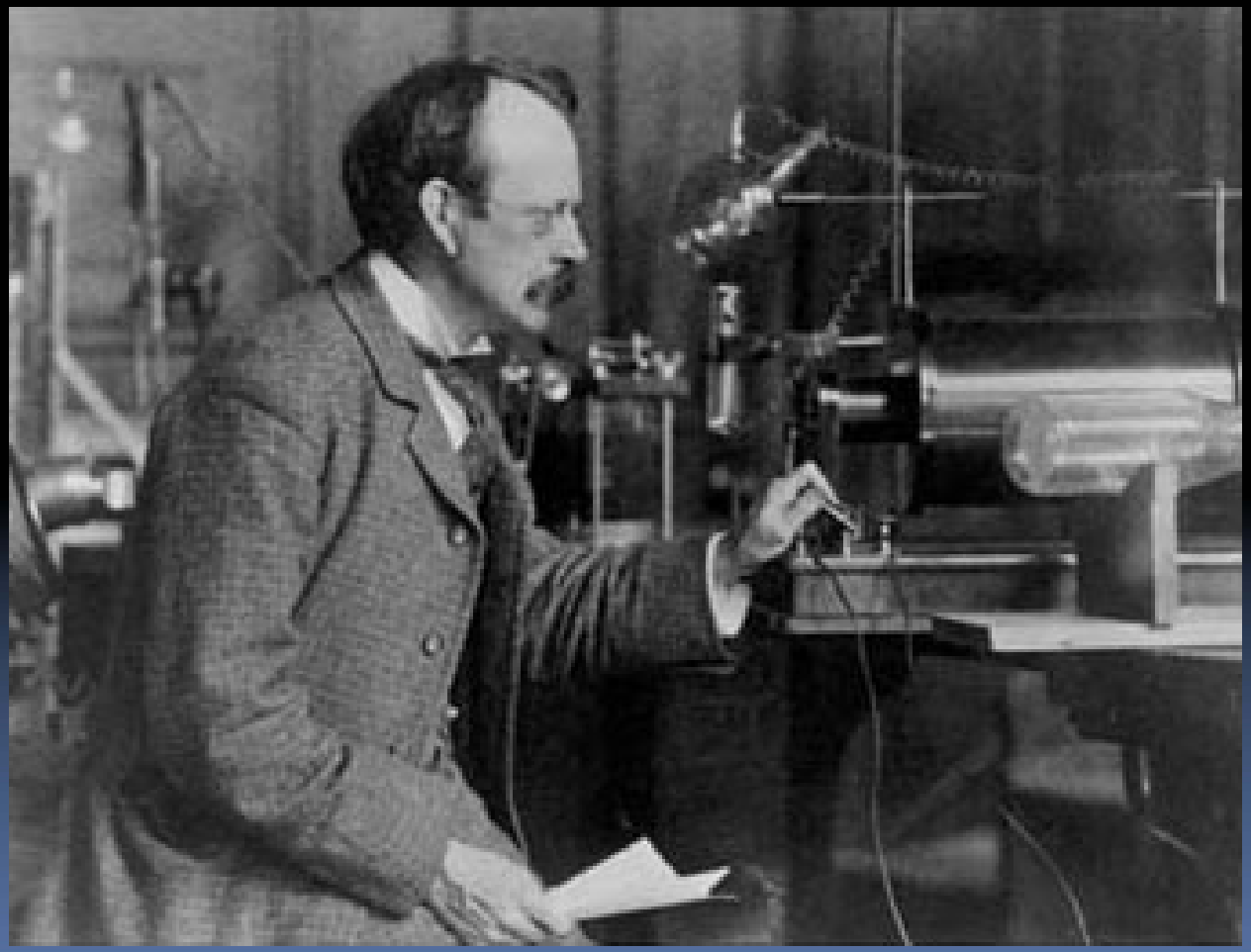
Tabelle II.

Reihen	Gruppe I. — R^1O	Gruppe II. — RO	Gruppe III. — R^2O^3	Gruppe IV. RH^4 RO^2	Gruppe V. RH^3 R^2O^5	Gruppe VI. RH^2 RO^3	Gruppe VII. RH R^2O^7	Gruppe VIII. — RO^4
1	H = 1							
2	Li = 7	Be = 9,4	B = 11	C = 12	N = 14	O = 16	F = 19	
3	Na = 23	Mg = 24	Al = 27,3	Si = 28	P = 31	S = 32	Cl = 35,5	
4	K = 39	Ca = 40	— = 44	Ti = 48	V = 51	Cr = 52	Mn = 55	Fe = 56, Co = 59, Ni = 59, Cu = 63.
5	(Cu = 63)	Zn = 65	— = 68	— = 72	As = 75	Se = 78	Br = 80	
6	Rb = 85	Sr = 87	?Yt = 88	Zr = 90	Nb = 94	Mo = 96	— = 100	Ru = 104, Rh = 104, Pd = 106, Ag = 108.
7	(Ag = 108)	Cd = 112	In = 113	Sn = 118	Sb = 122	Te = 125	J = 127	
8	Cs = 133	Ba = 137	?Di = 138	?Ce = 140	—	—	—	— — — —
9	(—)	—	—	—	—	—	—	
10	—	—	?Er = 178	?La = 180	Ta = 182	W = 184	—	Os = 195, Ir = 197, Pt = 198, Au = 199.
11	(Au = 199)	Hg = 200	Tl = 204	Pb = 207	Bi = 208	—	—	
12	—	—	—	Th = 231	—	U = 240	—	— — — —

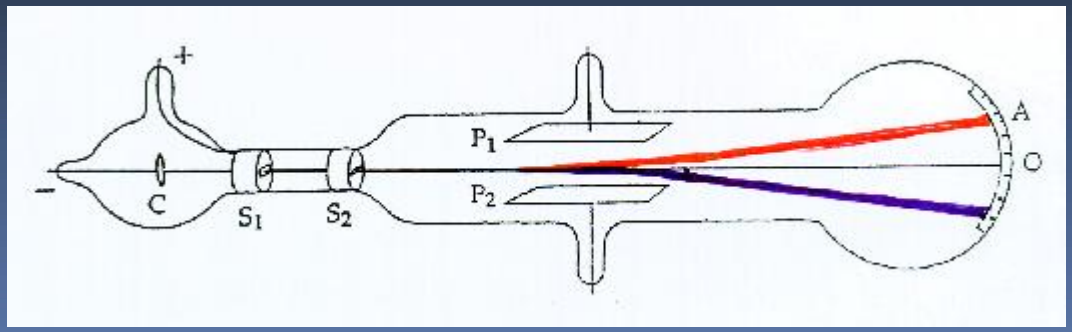
Tabla de Mendeleiev

C / F	I	II	III	IV	V	VI	VII	VIII
1	H							
2	Li	Be	B	C	N	O	F	
3	Na	Mg	Al	Si	P	S	Cl	
4	K	Ca		Ti	V	Cr	Mn	Fe, Co, Ni, Cu
5	(Cu)	Zn			As	Se	Br	
6	Rb	Sr	?Y	Zr	Nb	Mo		Ru, Rh, Pd, Ag
7	(Ag)	Cd	In	Sn	Sb	Te	I	
8	Cs	Ba	?Di	?Ce				
9								
10			?Er	?La	Ta	W		Os, Ir, Pt, Au
11	(Au)	Hg	Tl	Pb	Bi			
12				Th		U		

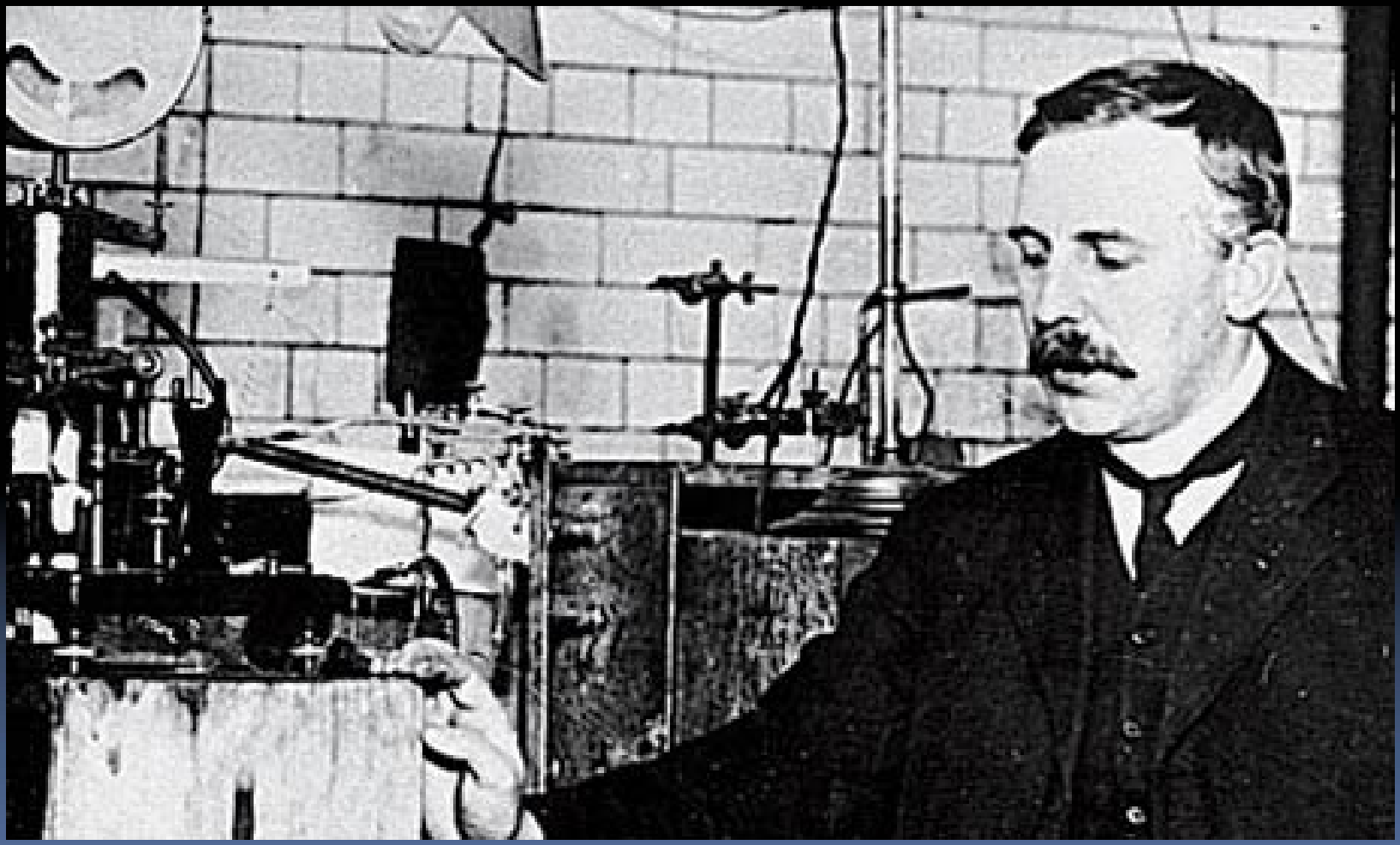
J. J. Thomson (1856-1940)



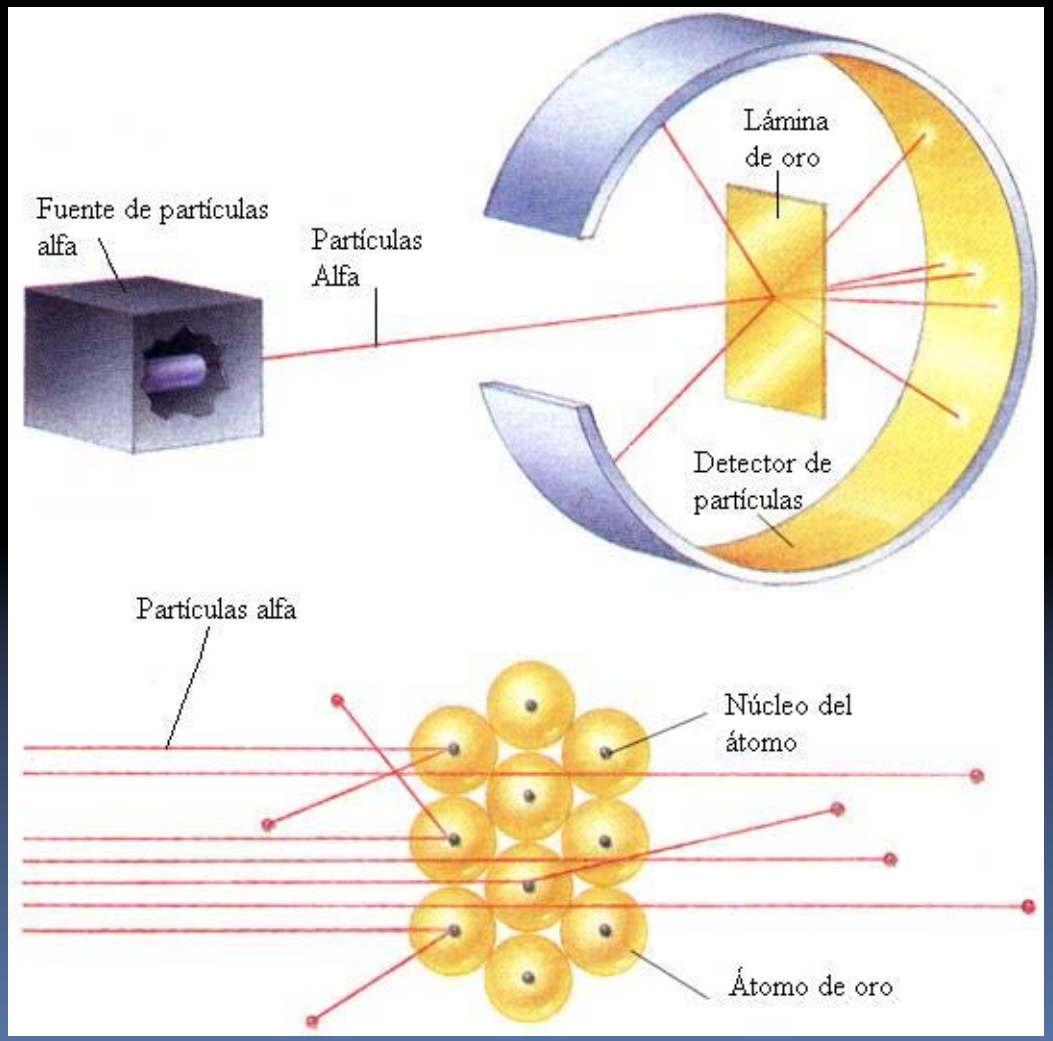

Gas discharge tube with which
Thomson discovered the electron


+
−
C
S1
S2
P1
P2
A
O

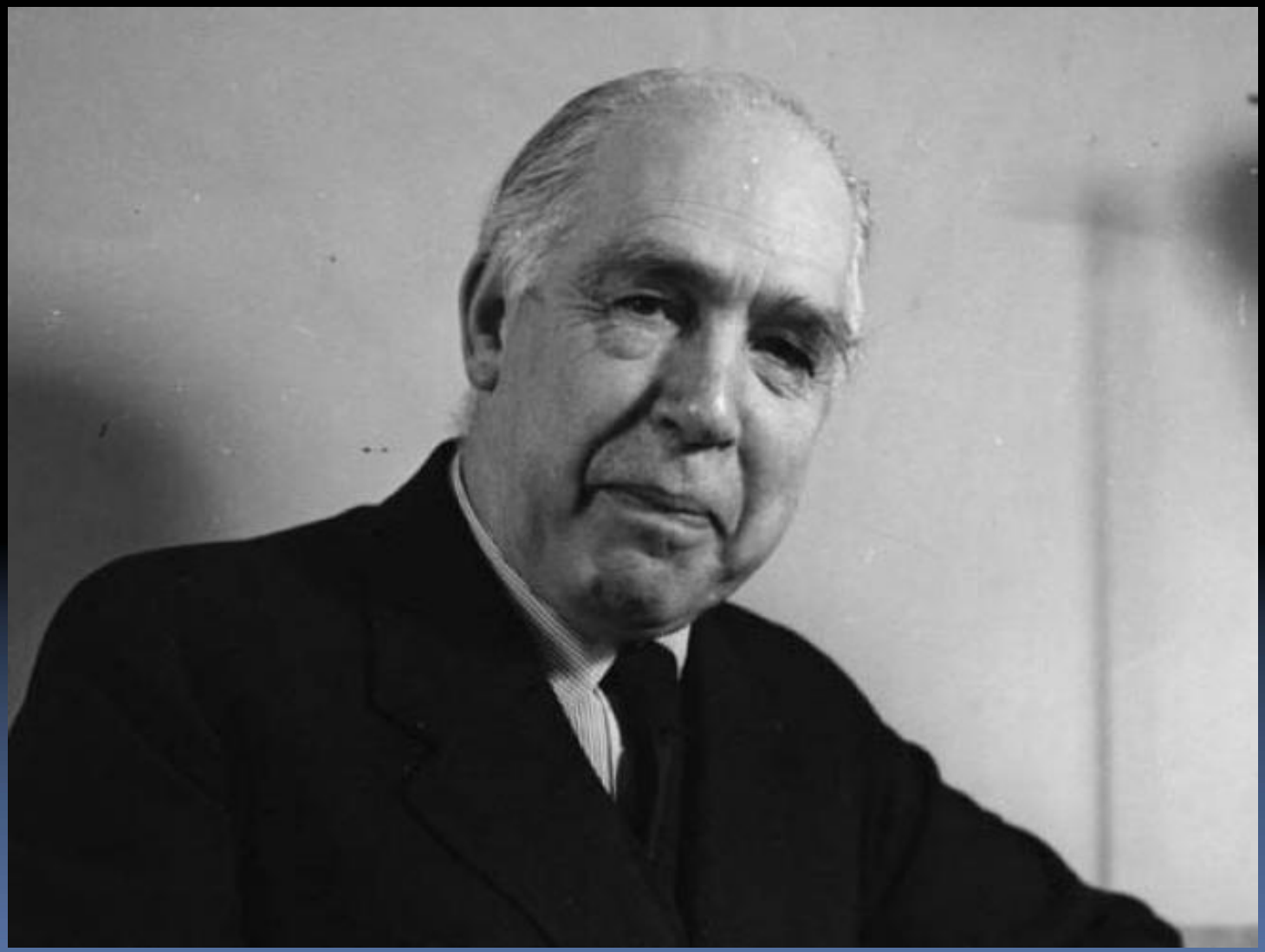
Ernest Rutherford (1871-1937)



Experimento de Geiger y Marsden (1909)

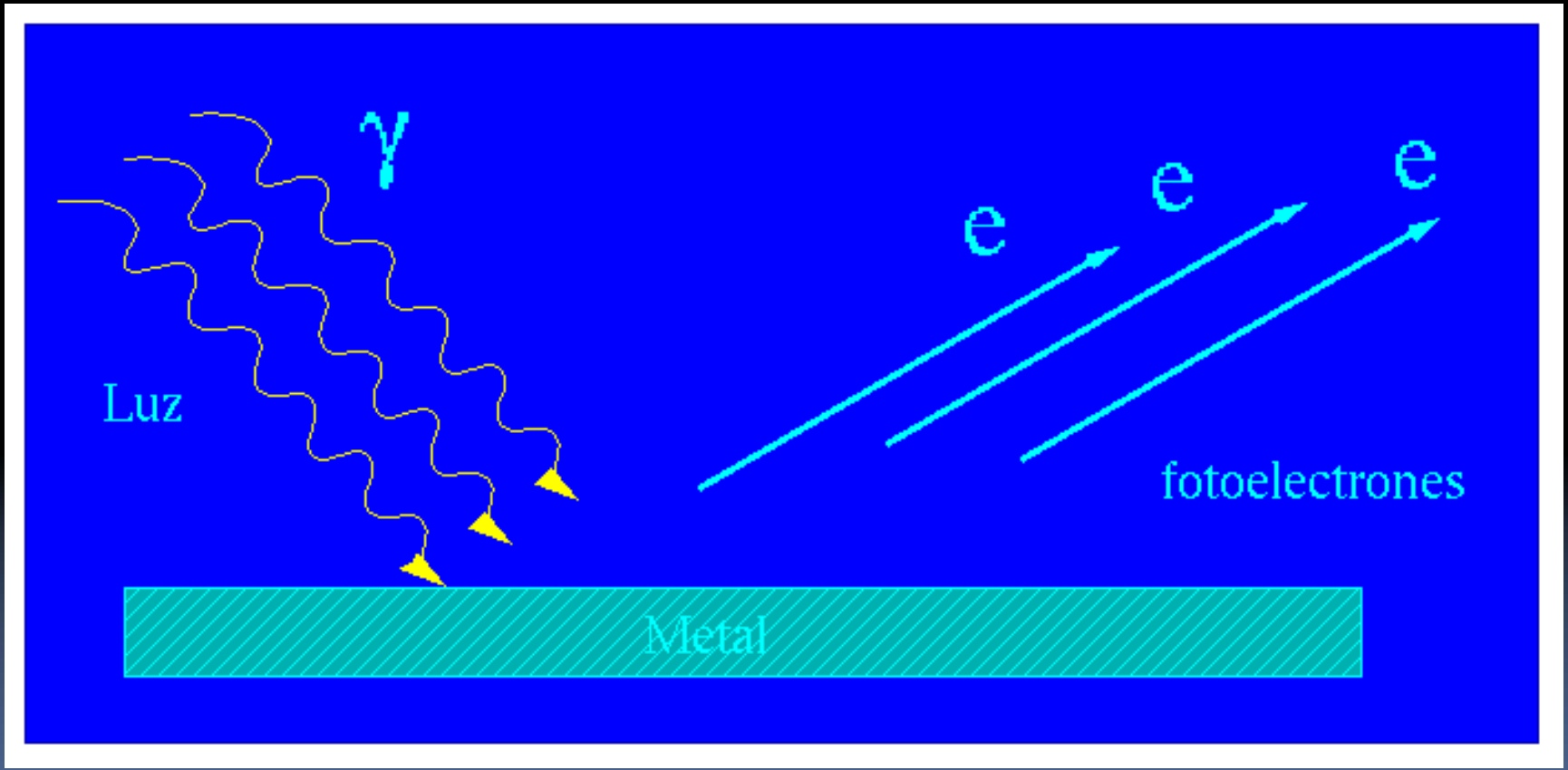


Niels Bohr (1885-1962)



Max Planck (1858-1947)

Efecto fotoeléctrico (Einstein, 1905)



THE

LONDON, EDINBURGH, AND DUBLIN

PHILOSOPHICAL MAGAZINE

AND

JOURNAL OF SCIENCE.

[SIXTH SERIES.]

JULY 1913.

I. *On the Constitution of Atoms and Molecules.*

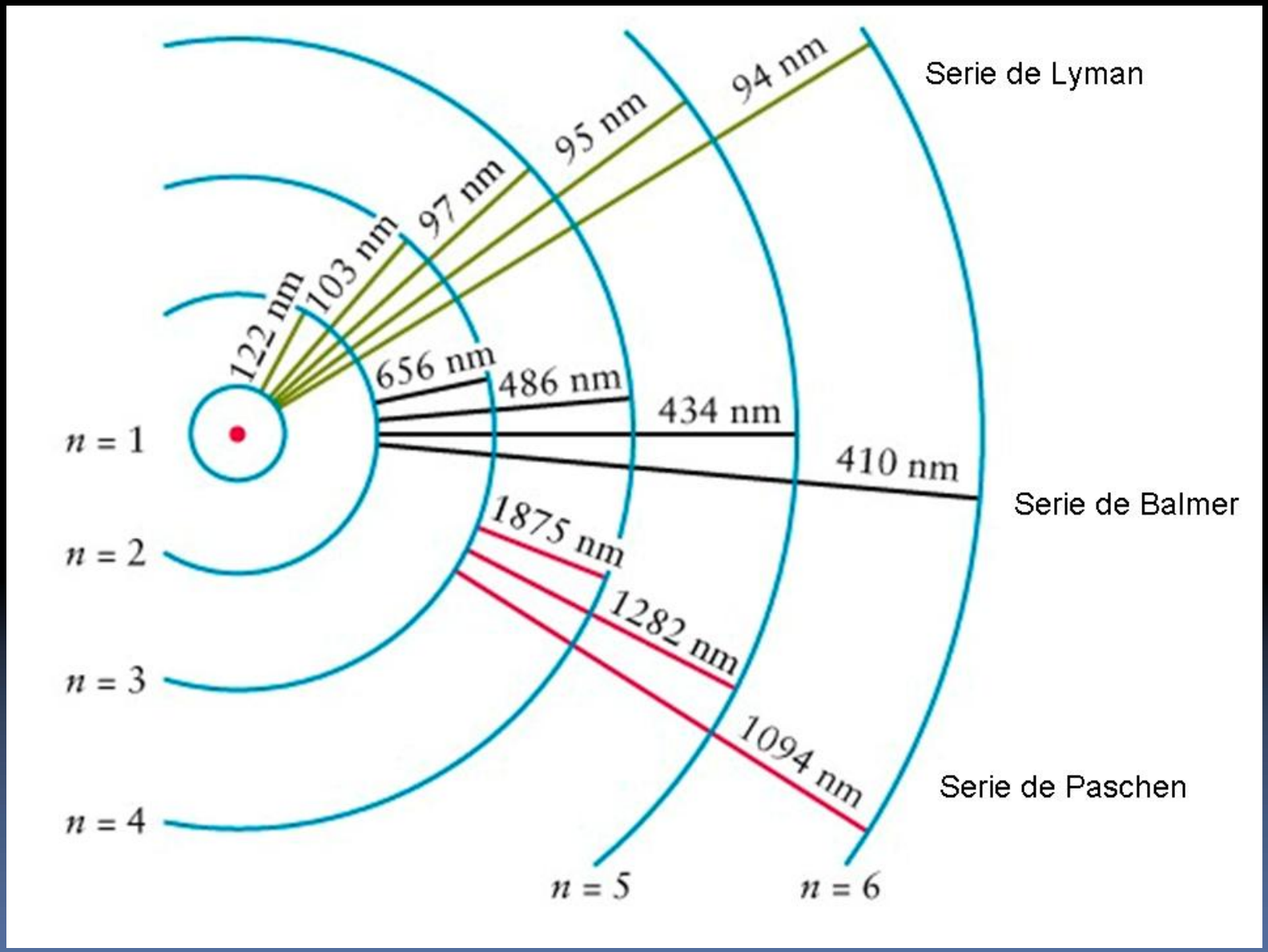
By N. BOHR, *Dr. phil. Copenhagen* *.

Introduction.

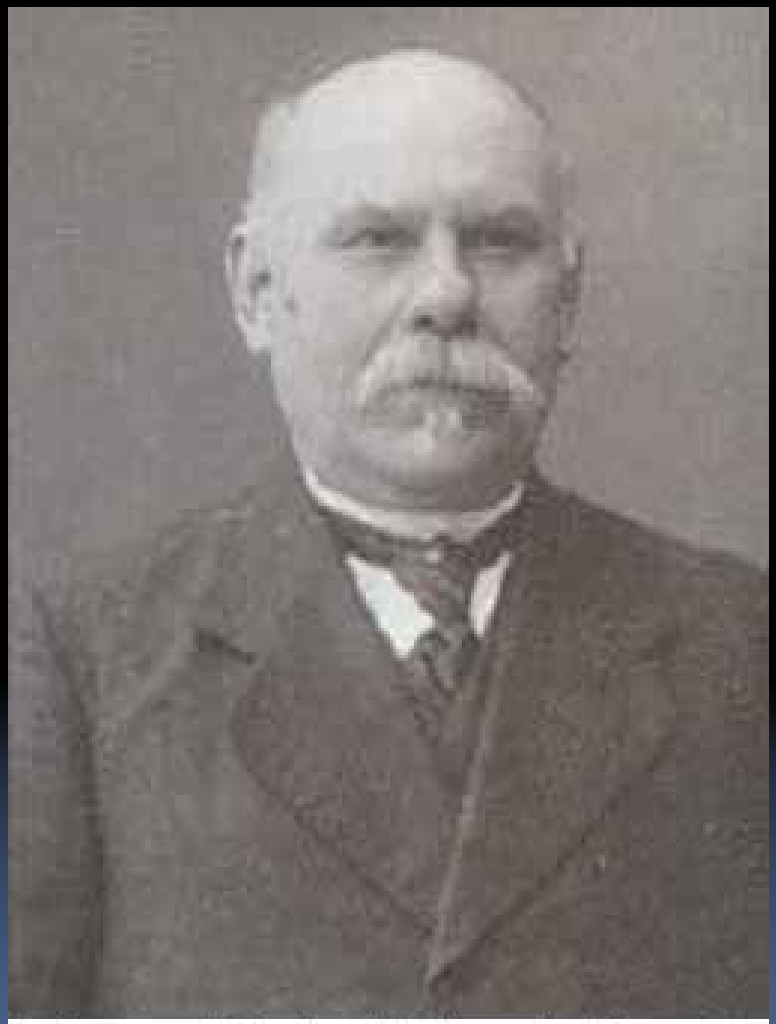
IN order to explain the results of experiments on scattering of α rays by matter Prof. Rutherford † has given a theory of the structure of atoms. According to this theory, the atoms consist of a positively charged nucleus surrounded by a system of electrons kept together by attractive forces from the nucleus; the total negative charge of the electrons is equal to the positive charge of the nucleus. Further, the

Balmer, Rydberg y la ley de Rydberg

$$\frac{1}{\lambda} = \frac{R_H}{hc}\left(\frac{1}{n_1^2} - \frac{1}{n_2^2}\right)$$

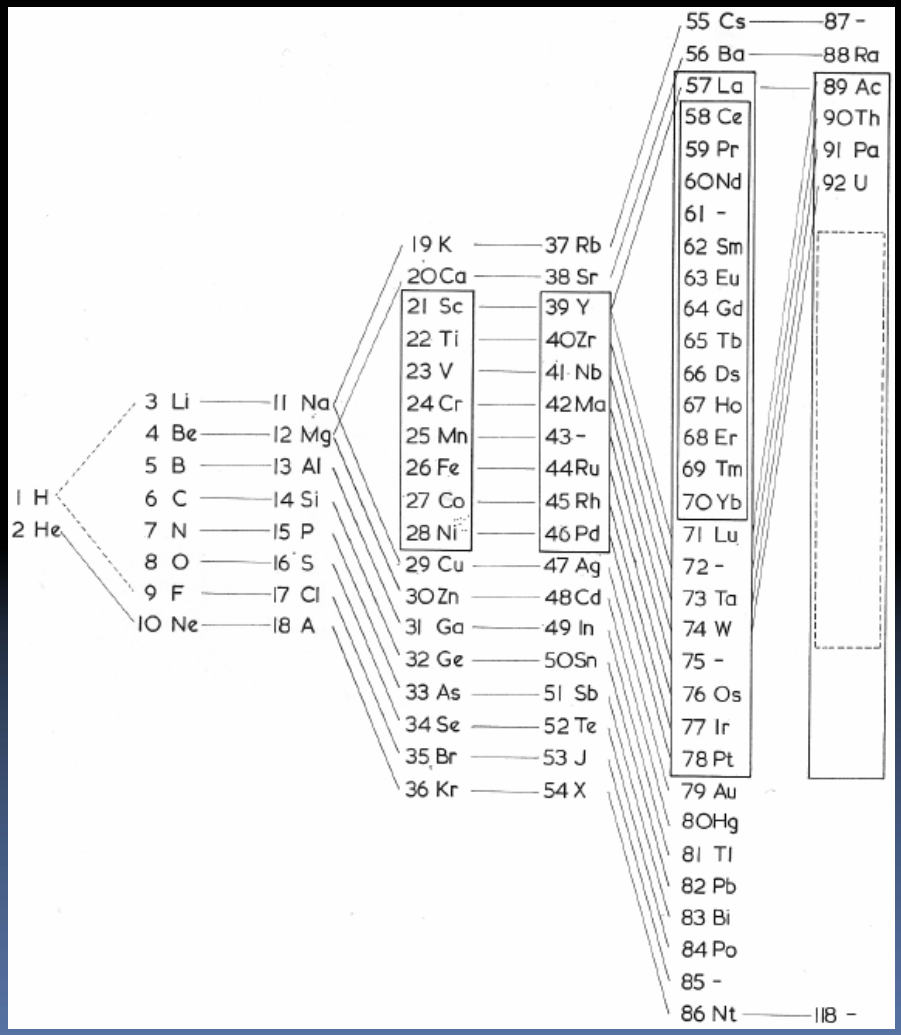

Serie de Lyman
94 nm
95 nm
97 nm
103 nm
122 nm
Serie de Balmer
656 nm
486 nm
434 nm
410 nm
Serie de Paschen
1875 nm
1282 nm
1094 nm
n = 1
n = 2
n = 3
n = 4
n = 5
n = 6

Henry Moseley

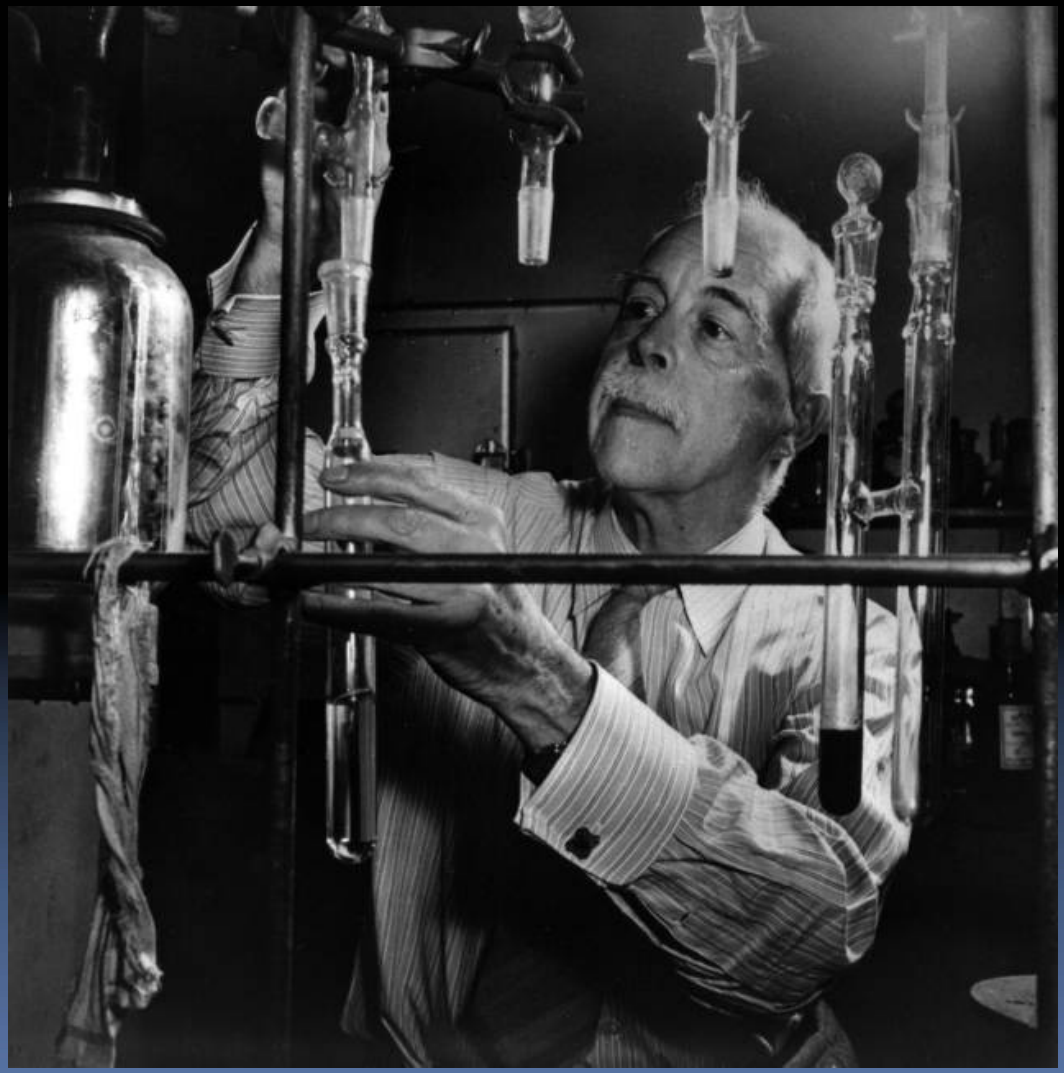


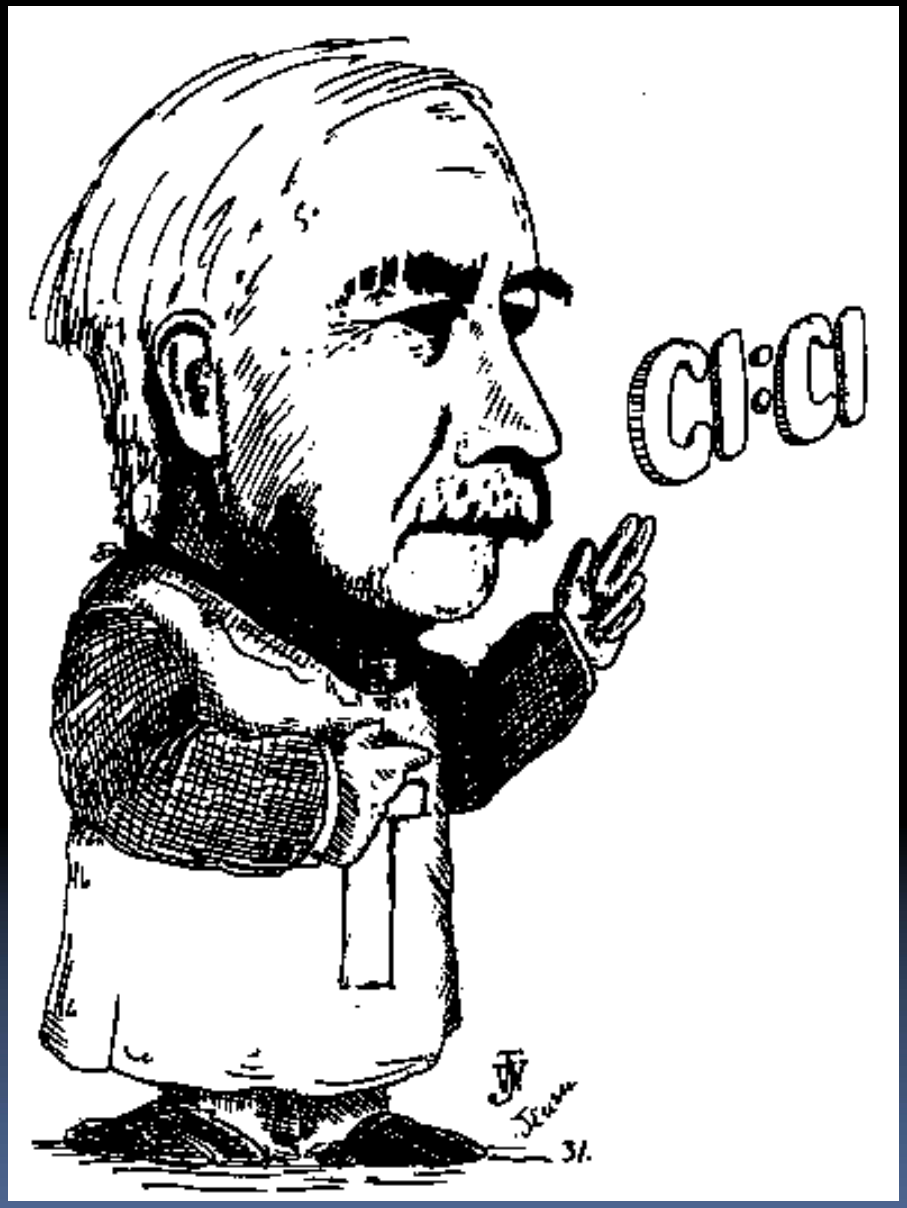
Johannes Antonius (Jan) van der Mee
(1858-1930)

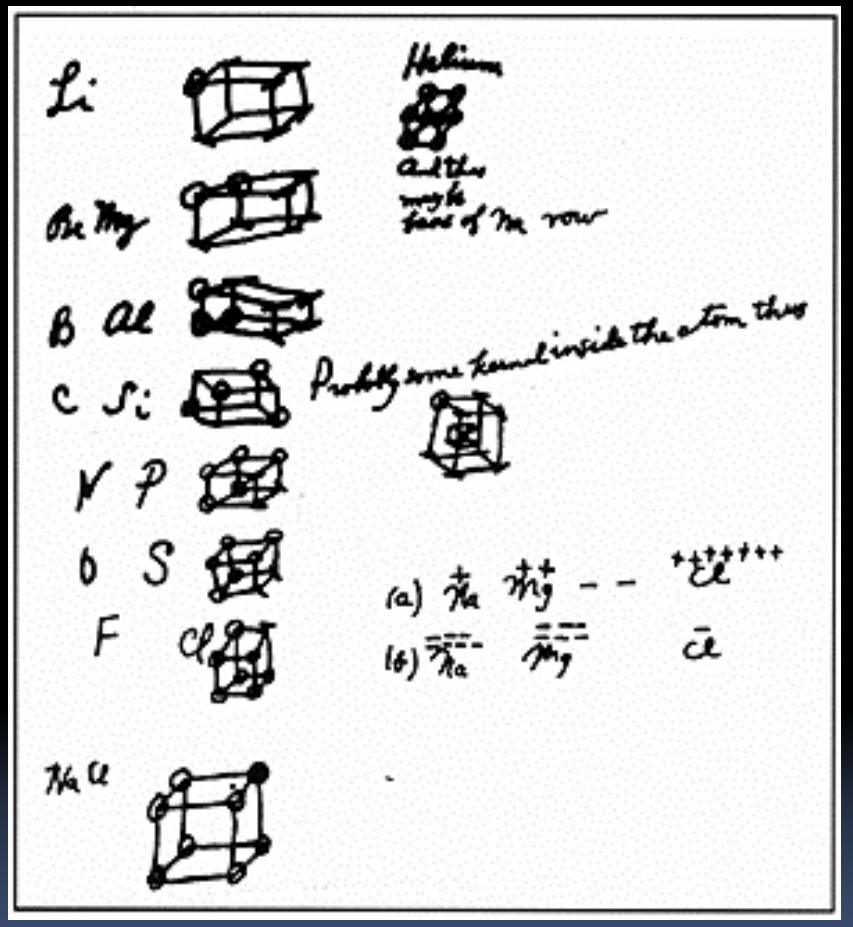
La tabla periódica: N. Bohr, *The Theory of Spectra and Atomic Constitution (1924)*

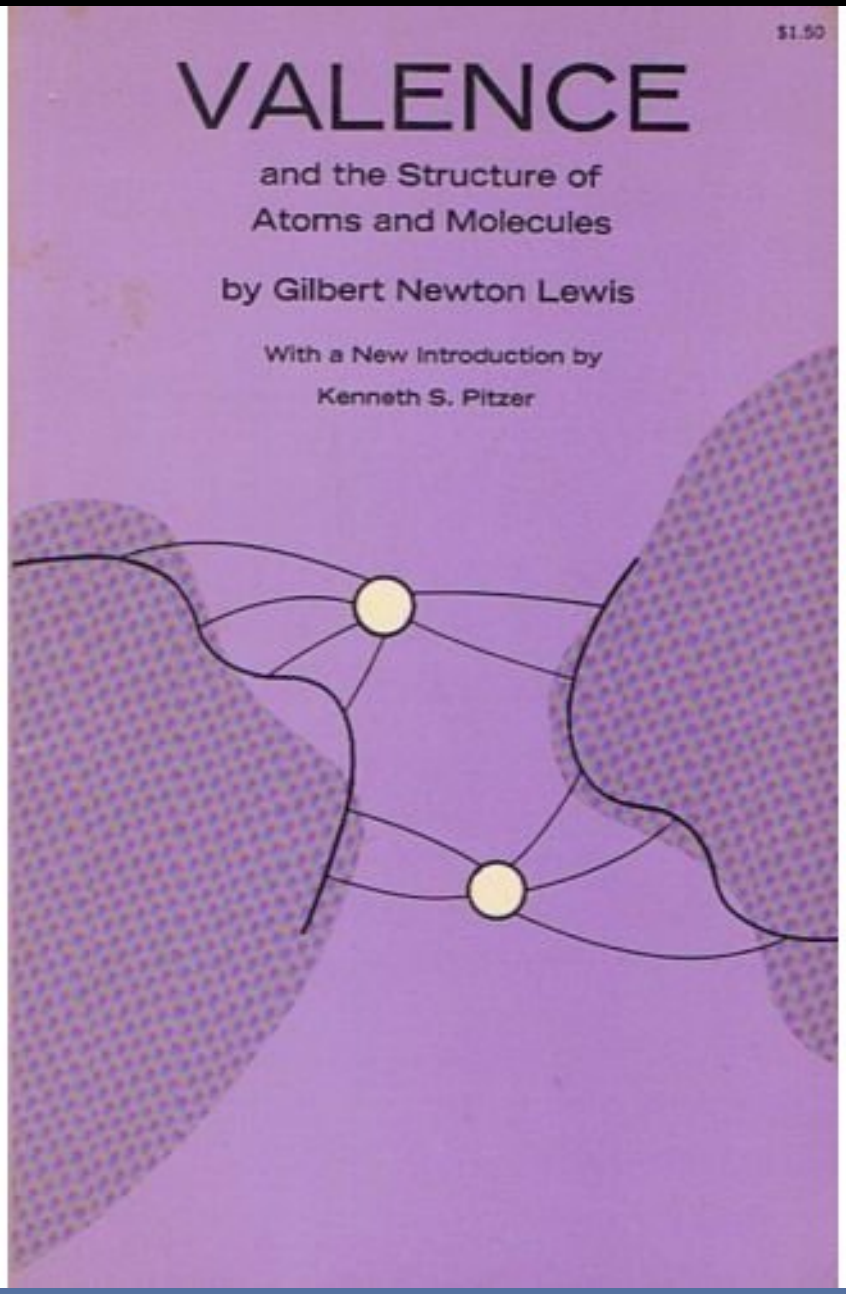


Gilbert N. Lewis (1875-1946)

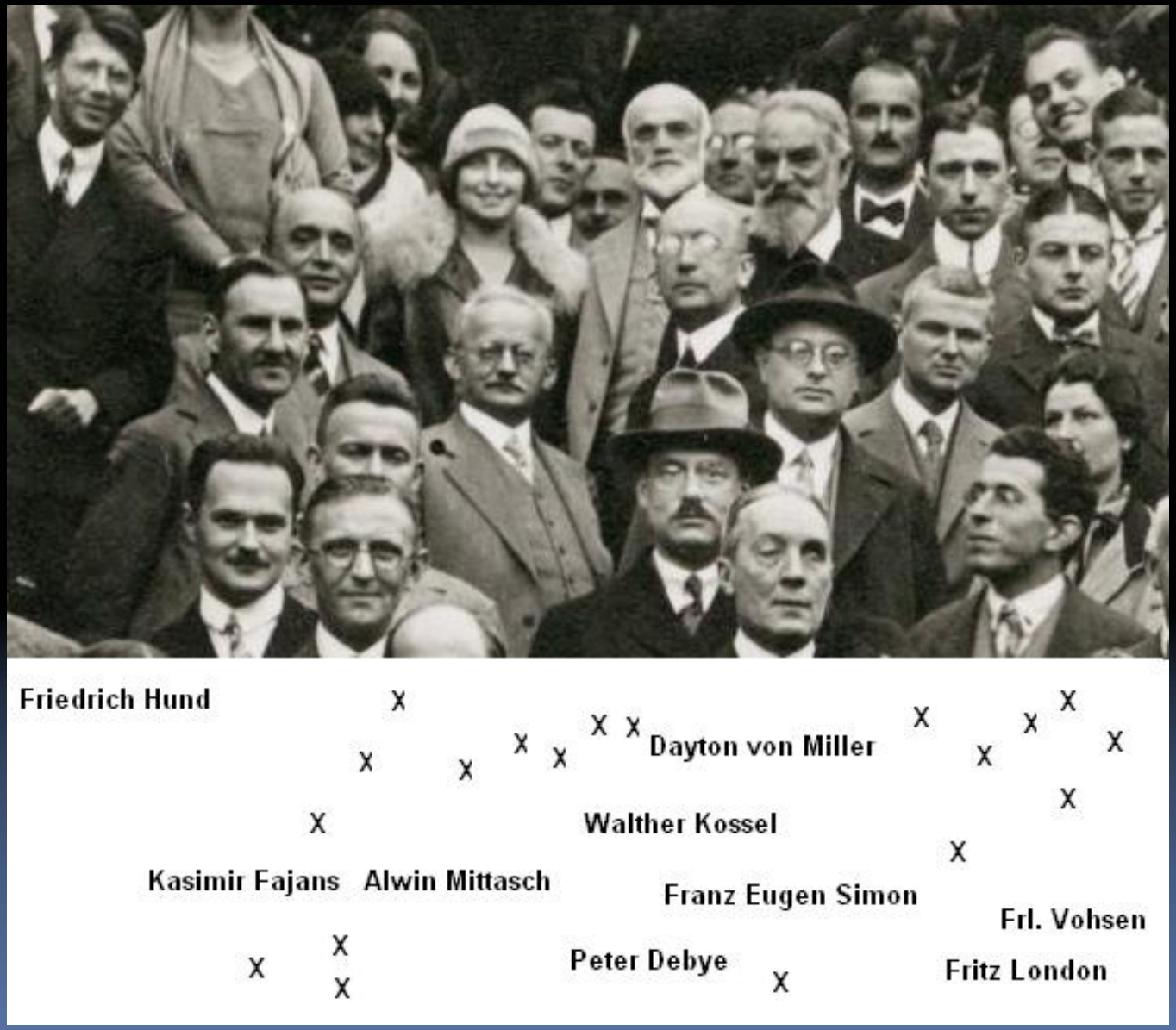



Cl:Cl

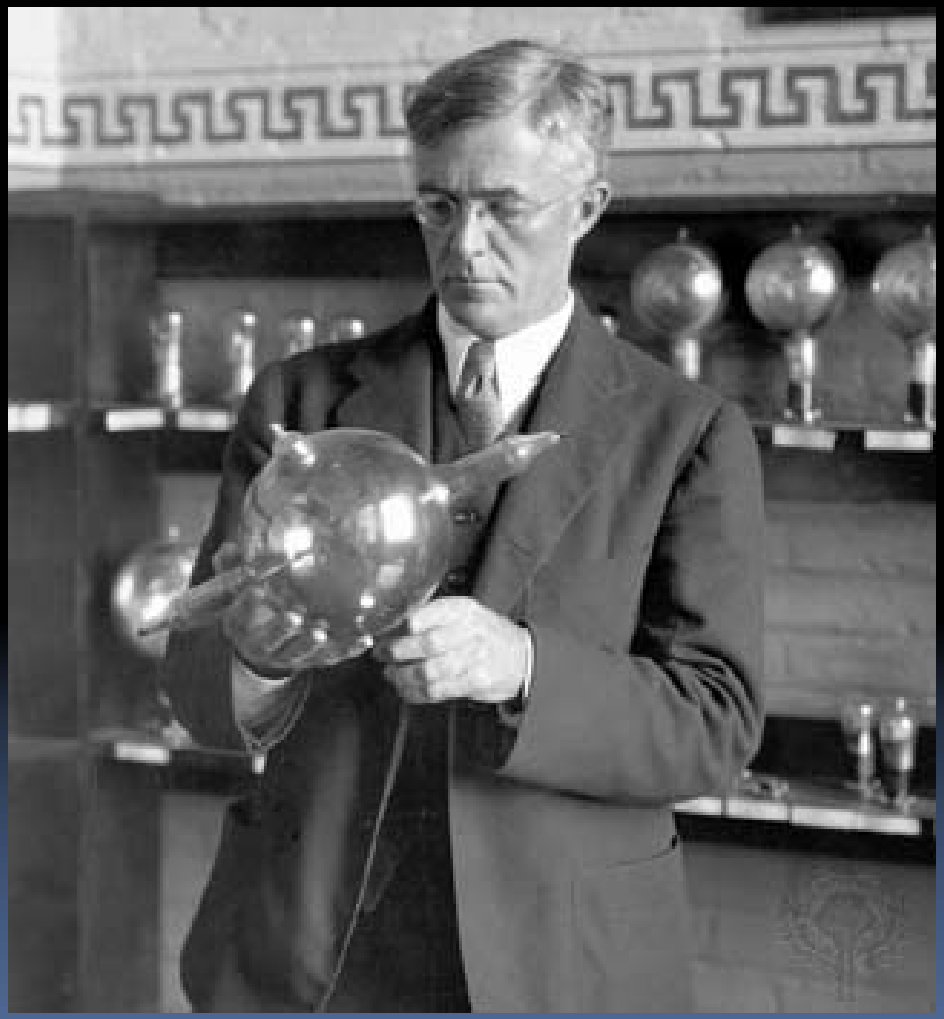

Li
Helium
Be Mg
B Al
C Si
Probably some kind inside the atom there
N P
O S
F Cl
(a)
(b)

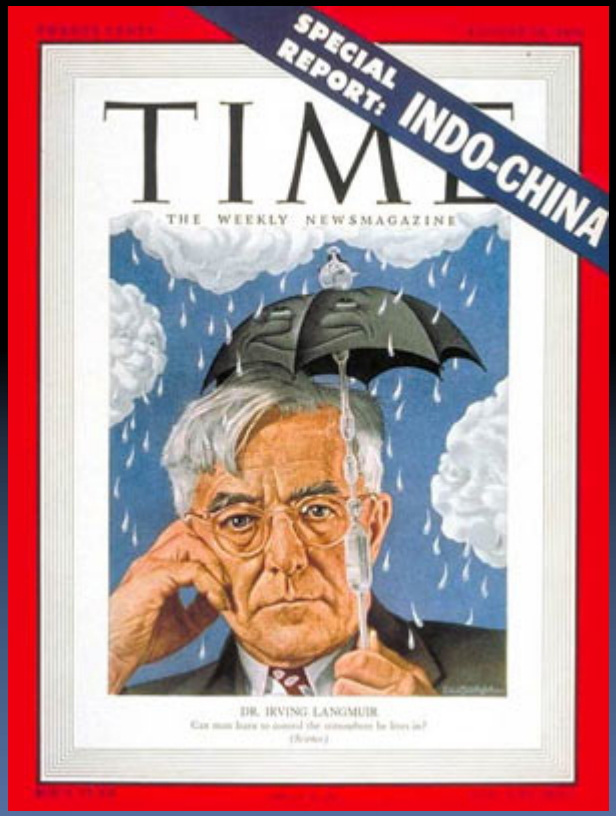

$1.50
VALENCE
and the Structure of
Atoms and Molecules
by Gilbert Newton Lewis
With a New Introduction by
Kenneth S. Pitzer

1928 Múnich


Friedrich Hund
Dayton von Miller
Walther Kossel
Kasimir Fajans
Alwin Mittasch
Franz Eugen Simon
Frl. Vohsen
Peter Debye
Fritz London

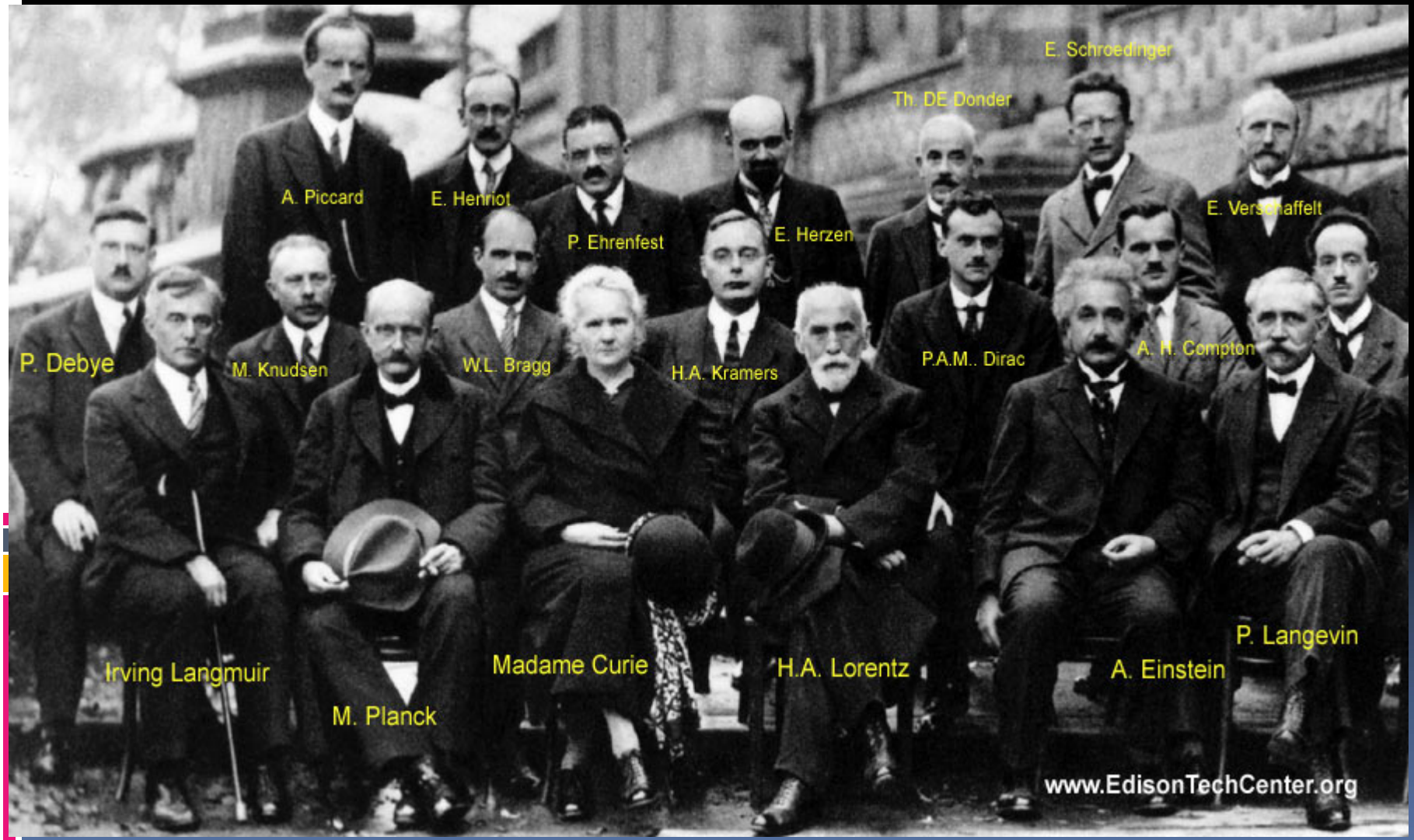
Irving Langmuir



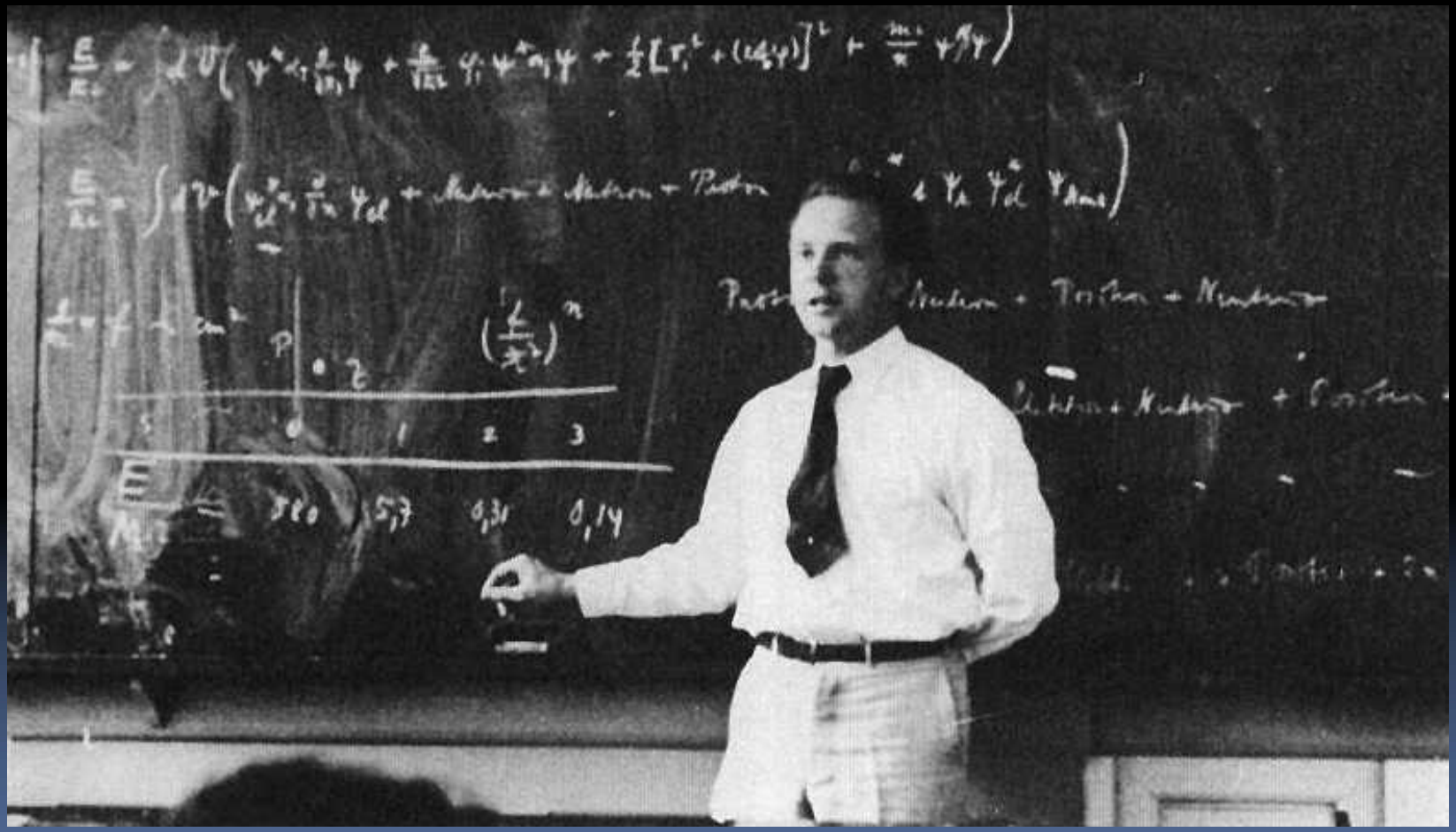



www.EdisonTechCenter.org
A.N. Goldsmith
Nikola Tesla
Ernst Alexanderson
(Unconfirmed)
Richard H. Ranger
Albert W. Hull
Ernst Julius Berg
Irving Langmuir
George A. Campbell
David Sarnoff
Albert Einstein
Saul Dushman
C.P. Steinmetz

Consejo Solvay (1927)



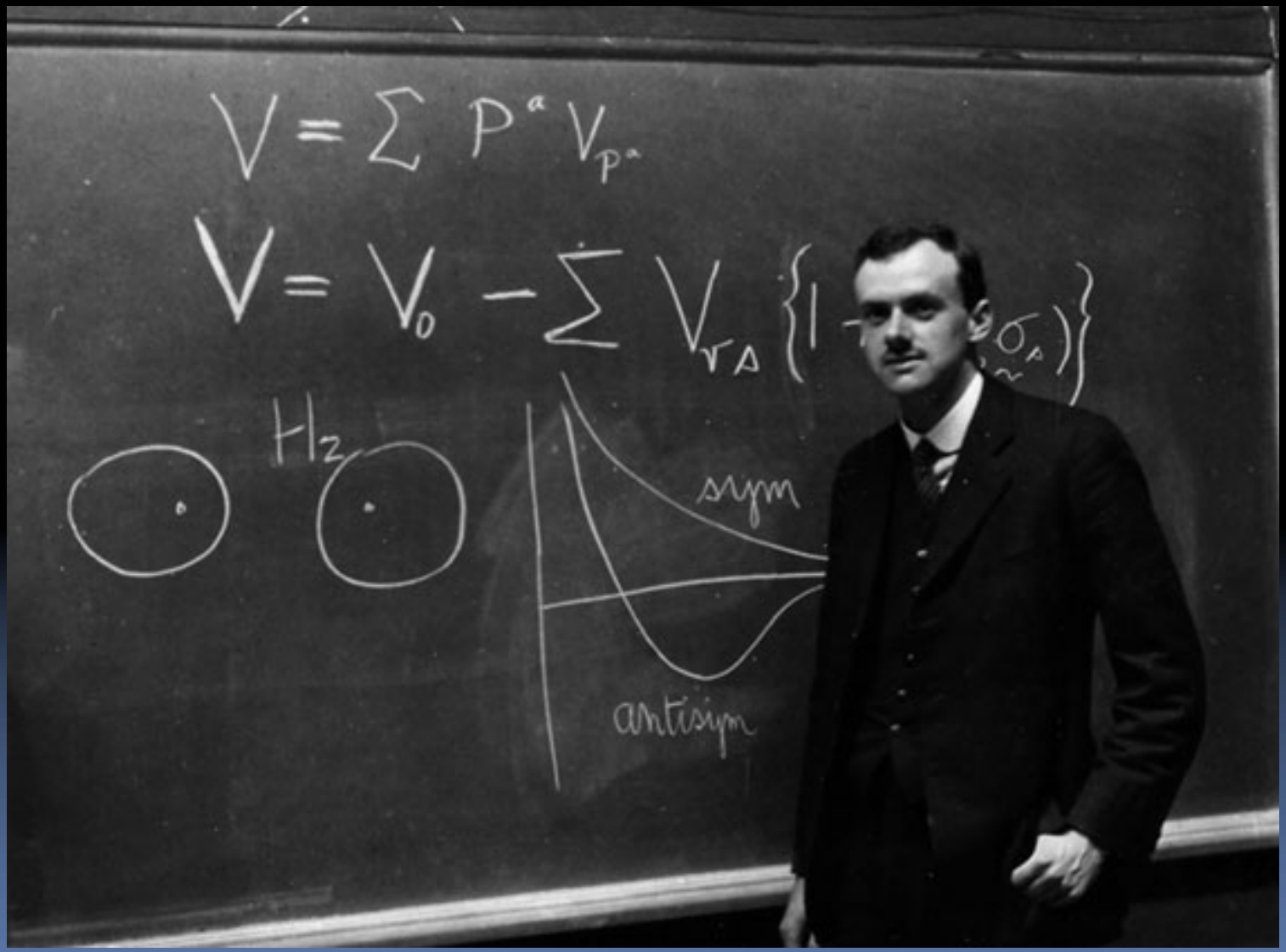
Werner Heisenberg (1901-1976)



Erwin Schrödinger (1887-1961)

$$i\hbar\frac{\partial\psi}{\partial t} = -\frac{\hbar^2}{2m}\frac{\partial^2\psi}{\partial x^2} + V(x)\psi(x,t) \equiv \mathrm{H}\,\psi(x,t),$$

Paul A. M. Dirac (1902-1984)



P. A. M. Dirac (1929):

"La teoría general de la mecánica cuántica está ahora casi completa, las imperfecciones que todavía existen tienen que ver con el encaje exacto de la teoría con las ideas relativistas […] Por consiguiente, las leyes físicas subyacentes para la teoría matemática de una gran parte de la física y de toda la química se conocen completamente, y la dificultad únicamente se encuentra en que la aplicación exacta de estas leyes conduce a ecuaciones demasiado complicadas para ser resueltas."

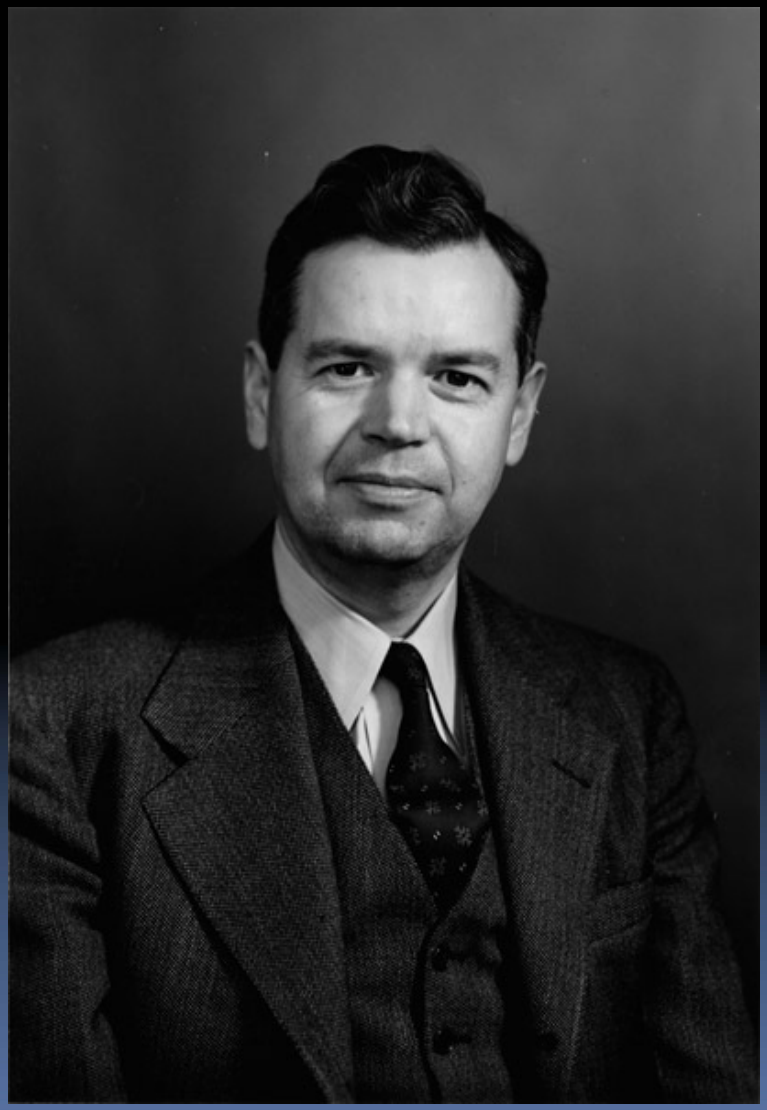
Linus y Ava Helen Pauling con Walter Heitler (izda) y Fritz London (dcha), Múnich, 1927


A.H Compton
Heisenberg
Monk
Dirac
Eckardt
Gale
Mülliken
Hund
Hoyt
Chicago 1929

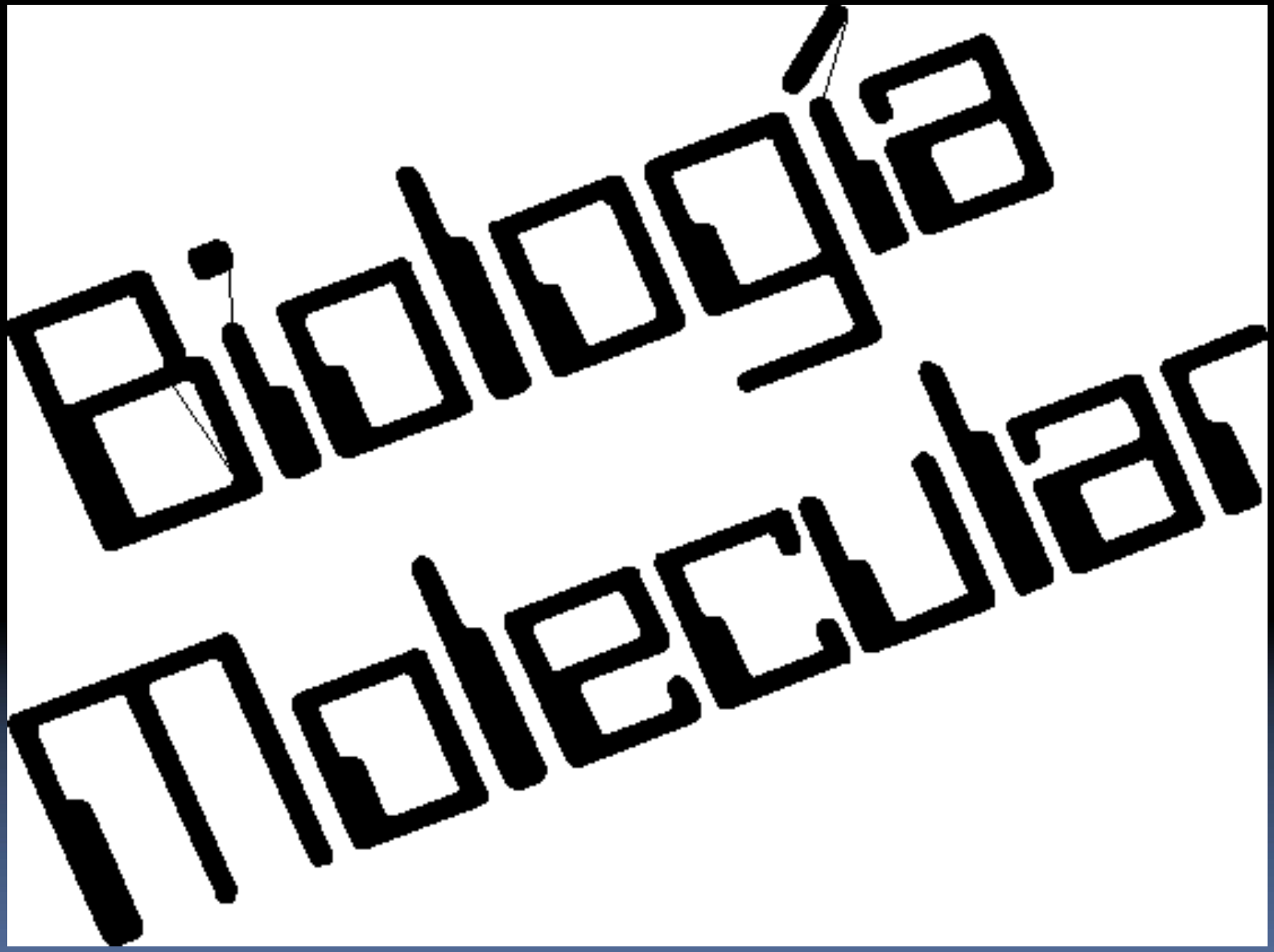
Linus Pauling, 1930

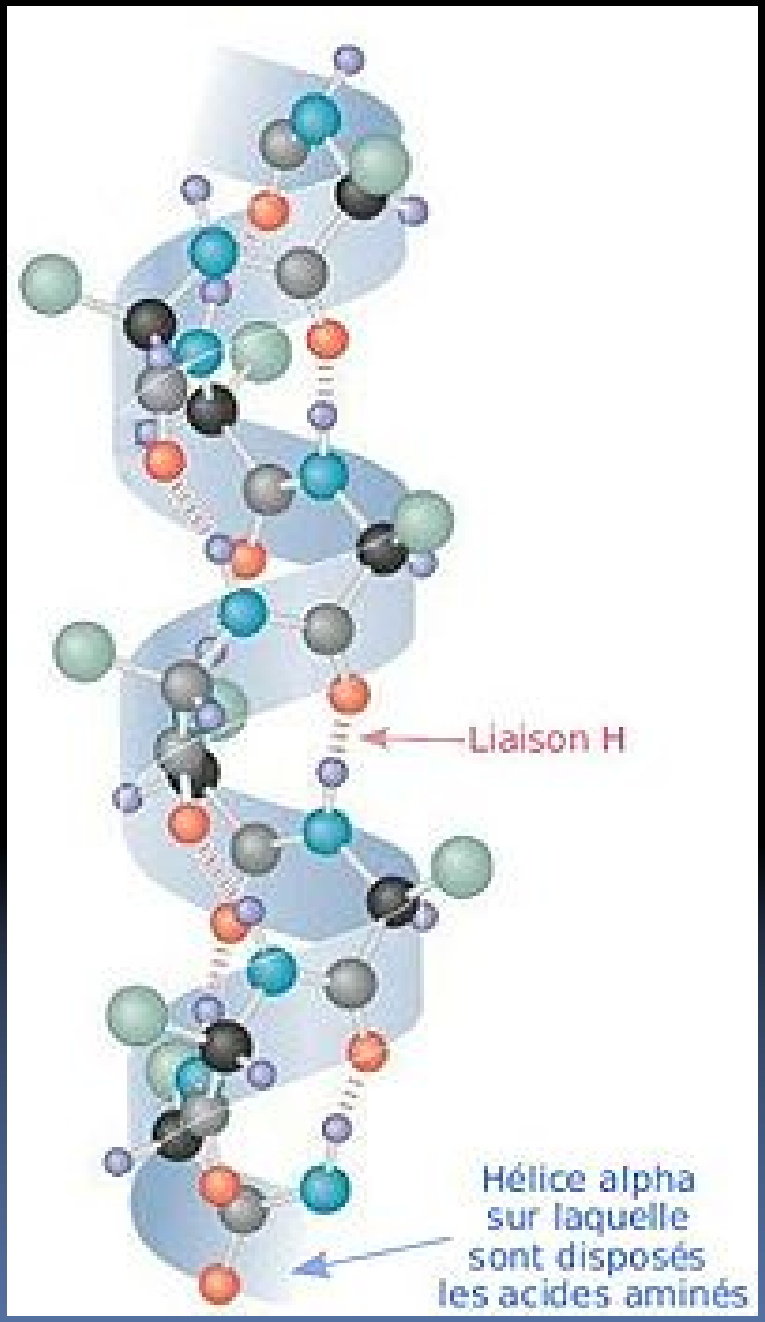

BAN
THE
BOMB
WALK
FOR
U-2
WILL DIE
IN
ANOTHER
WAR
Scientists:
ELIMINATE
WALK FOR
DIS-
ARMAMENT
PEA

John C. Slater (1900-1976)



Linus Pauling, dando clase en Caltech, 1935


Biología
Molecular


Liaison H
Hélice alpha
sur laquelle
sont disposés
les acides aminés

Linus Pauling, década de 1960