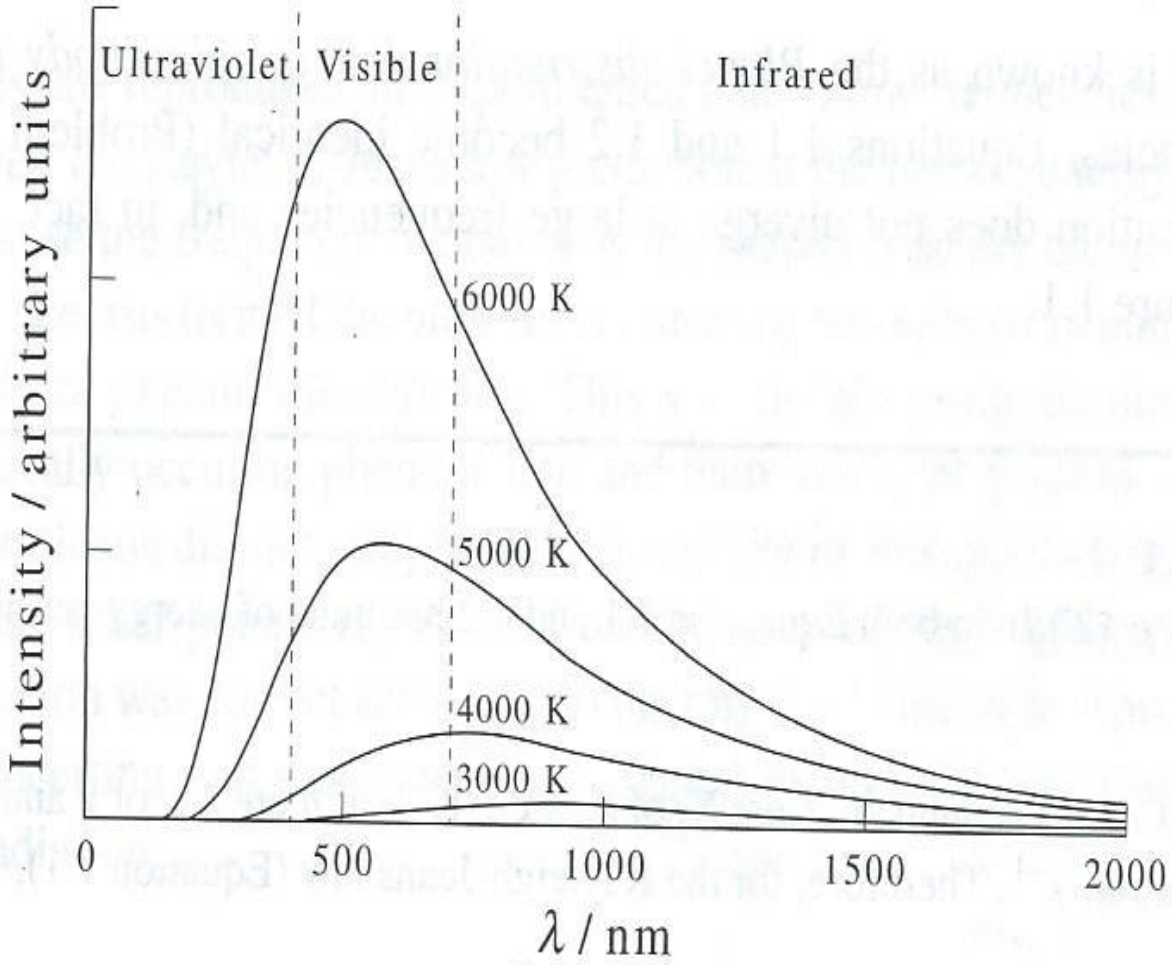


FIGURE 1.2

The distribution of the intensity of the radiation emitted by a blackbody versus wavelength for various temperatures. As the temperature increases, the total radiation emitted (the area under the curve) increases.

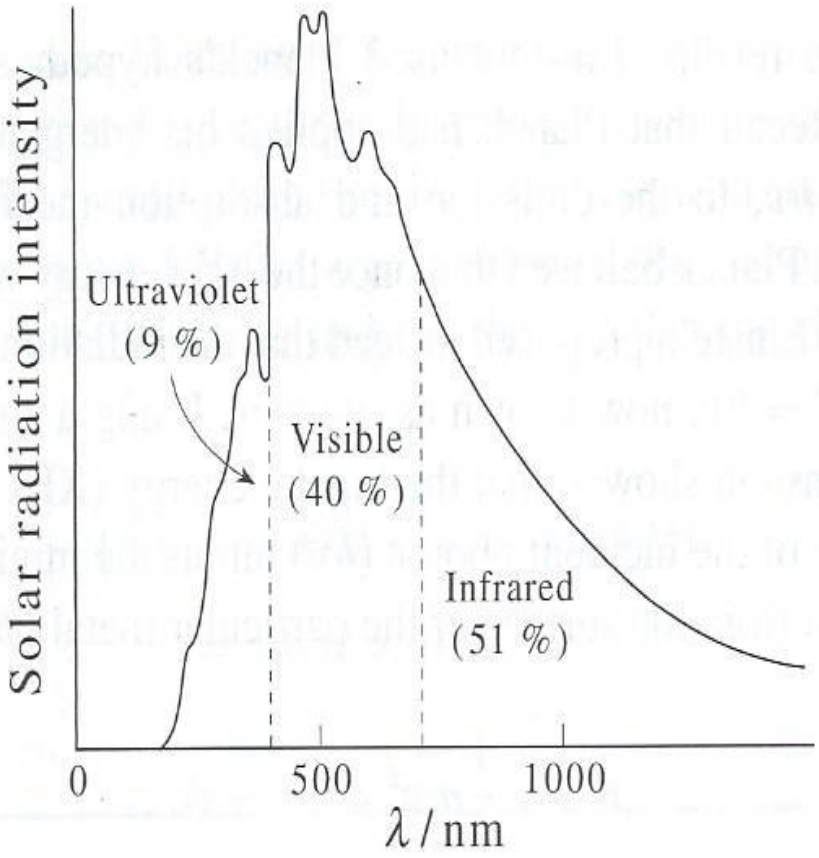


FIGURE 1.3
The electromagnetic spectrum of the sun as measured in the upper atmosphere of the earth. A comparison of this figure with Figure 1.2 shows that the sun's surface radiates as a blackbody at a temperature of about 6000 K.

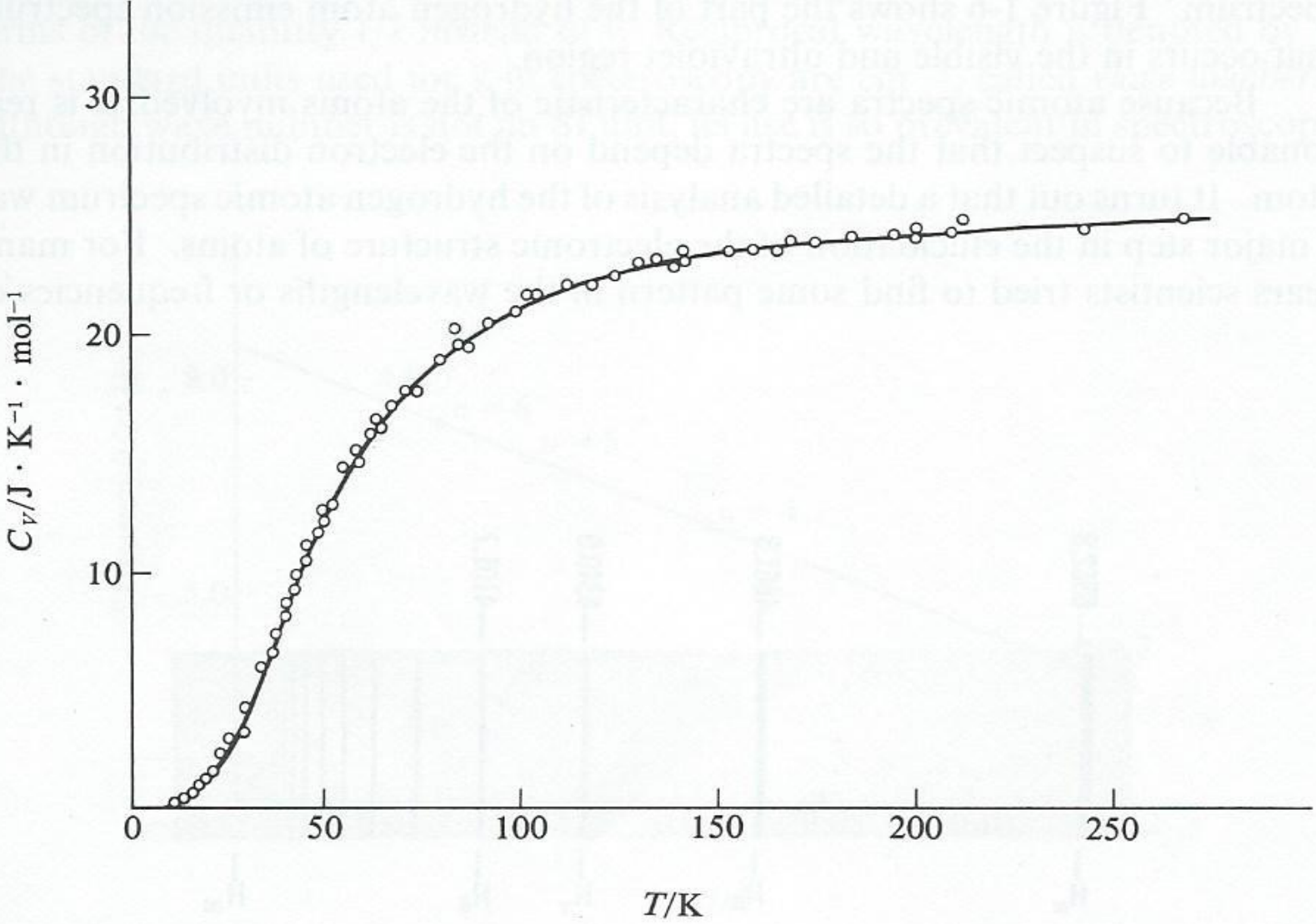
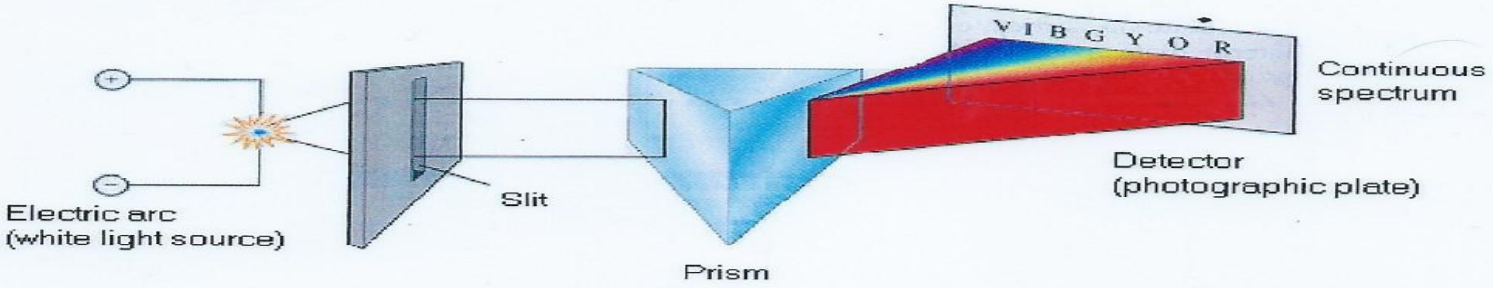
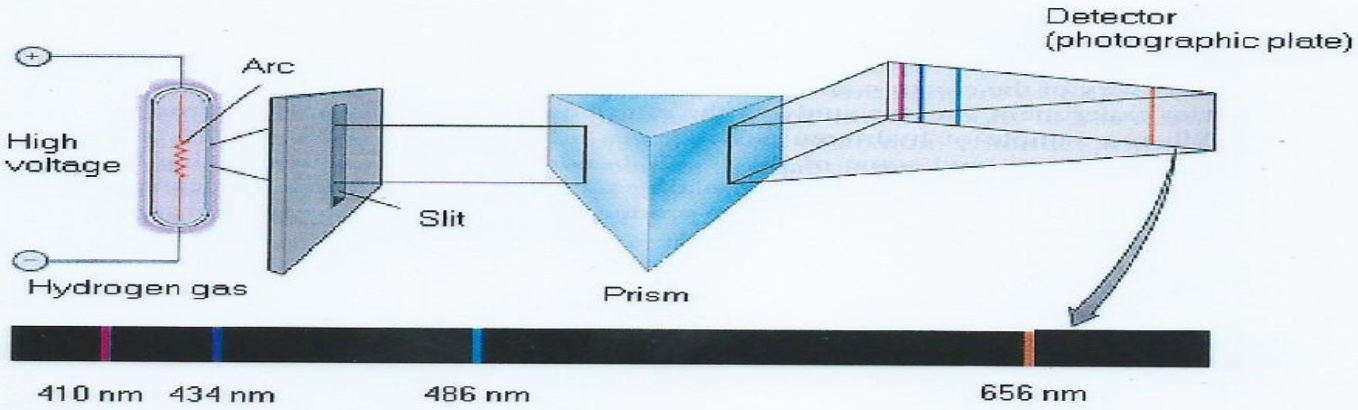
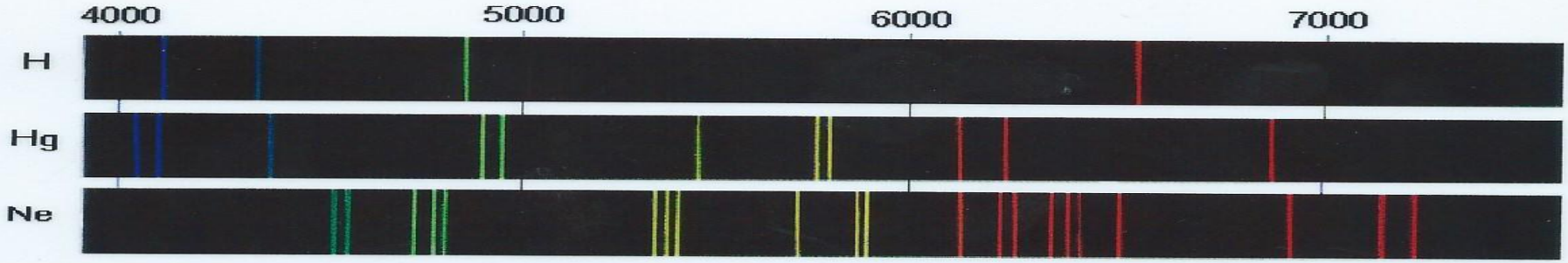
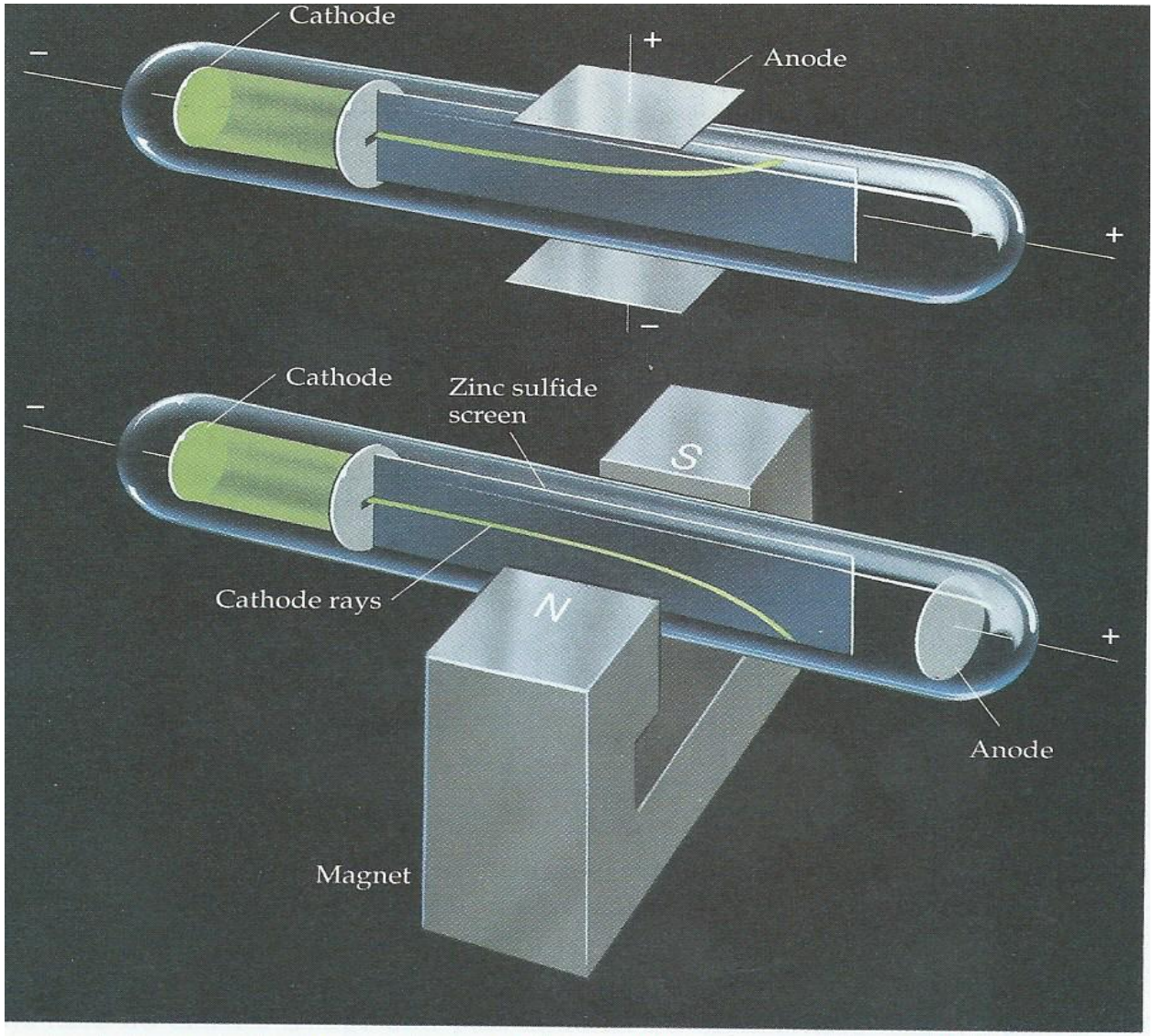


Figure 1-5. The molar heat capacity at constant volume of metallic silver as a function of temperature. Classical physics is unable to predict the shape of this curve and predicts that C_V is equal to 25 $J \cdot K^{-1} \cdot mol^{-1}$ at all temperatures. The decrease of C_V with decreasing temperature requires a quantum-theoretical explanation.

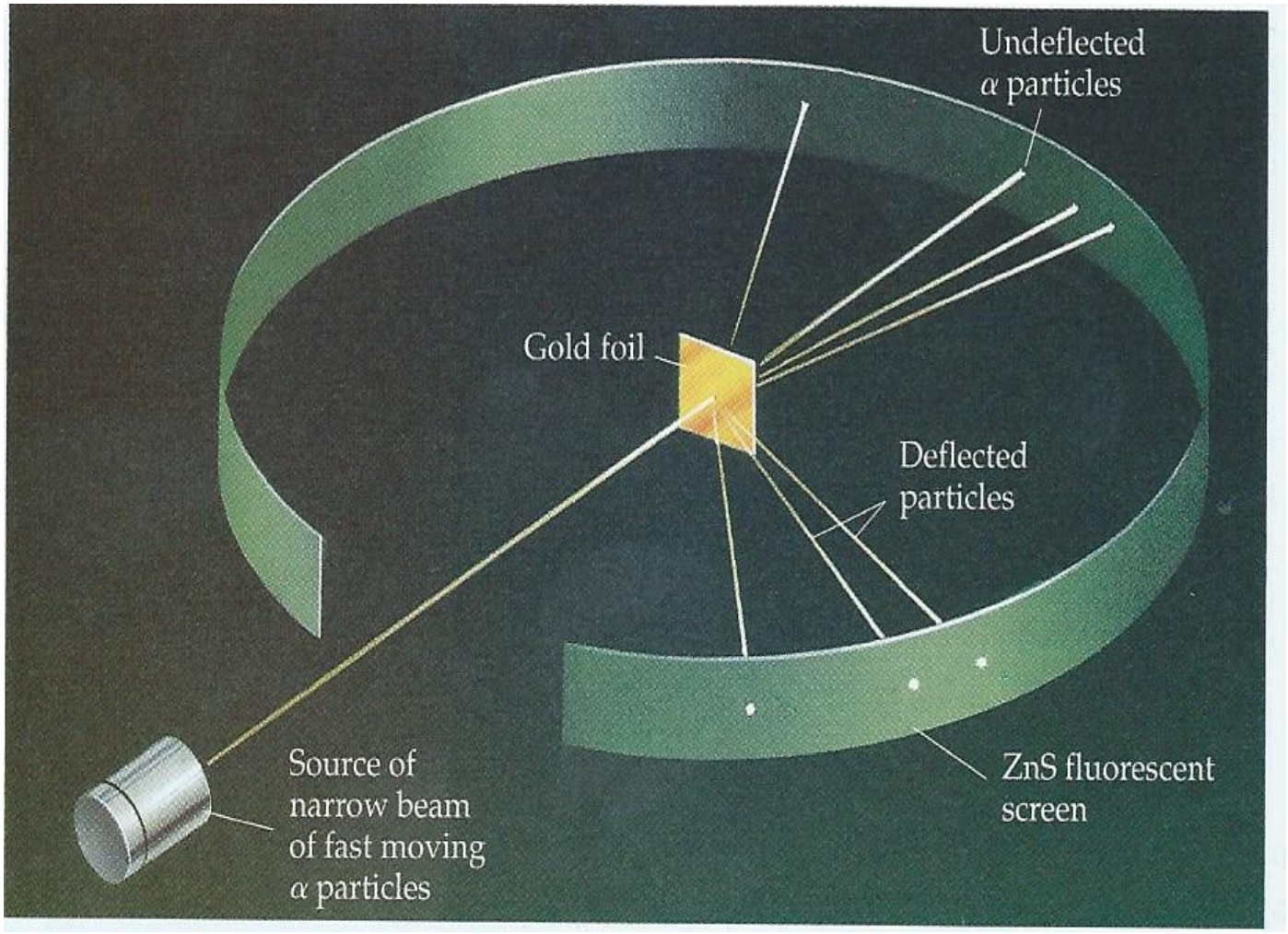

V I B G Y O R
Continuous spectrum
Detector (photographic plate)
Slit
Electric arc (white light source)
Prism


Detector (photographic plate)
Arc
High voltage
Slit
Hydrogen gas
Prism
410 nm
434 nm
486 nm
656 nm


4000
5000
6000
7000
H
Hg
Ne



Deflexão de raios catódicos (elétrons) por campos elétricos e magnéticos



Experiência de Rutherford – partículas α colidindo com uma folha de ouro

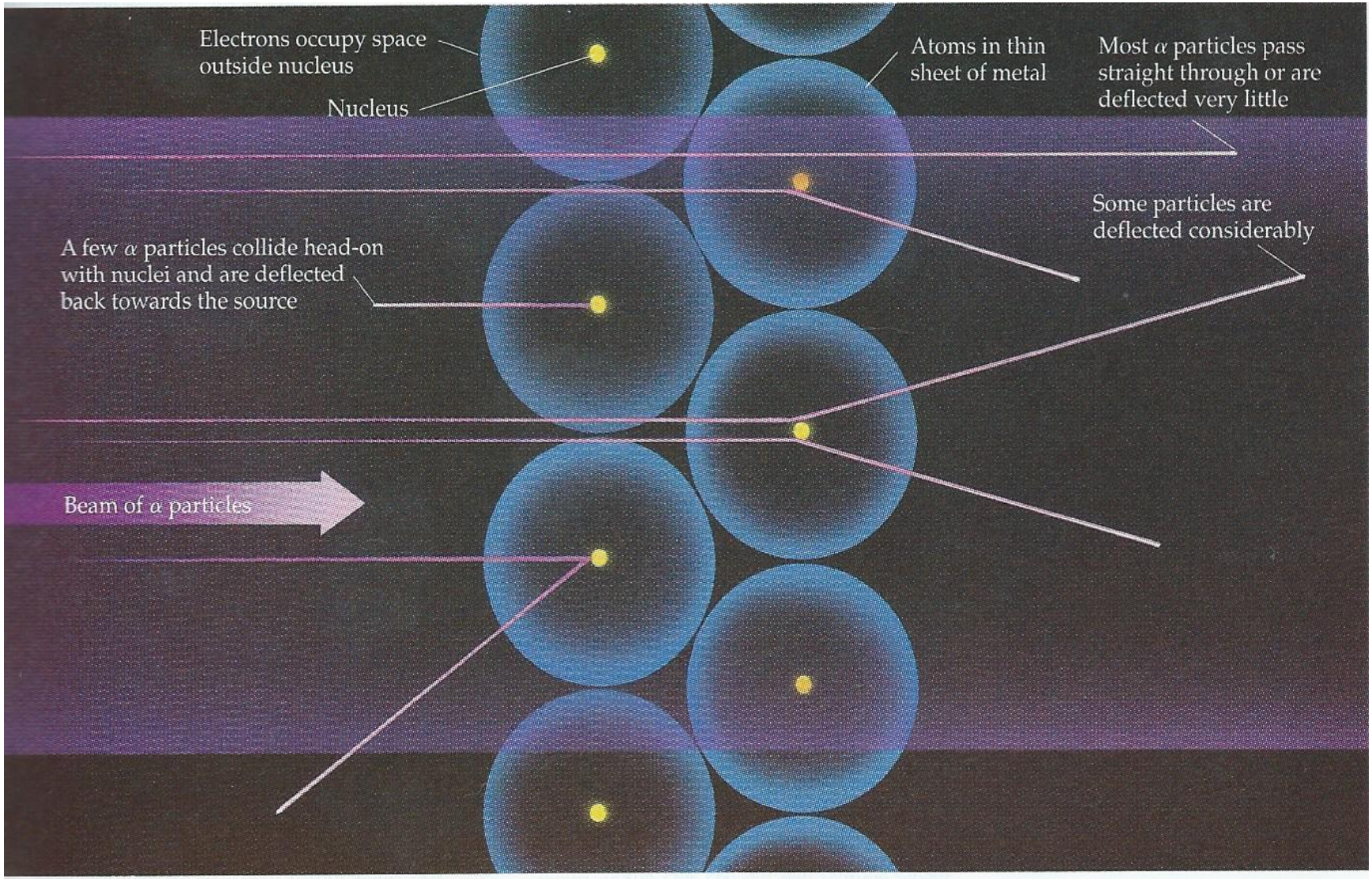
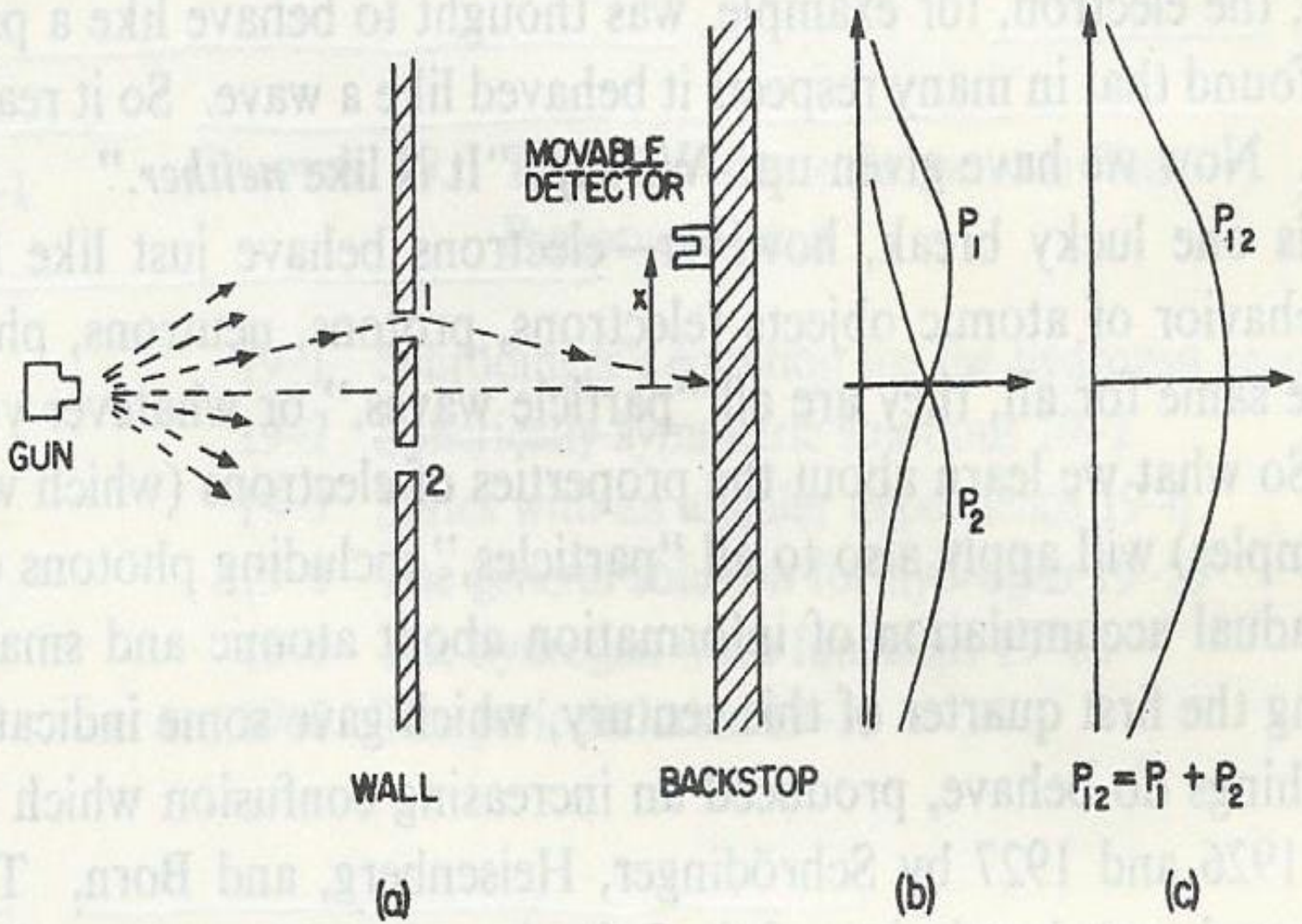
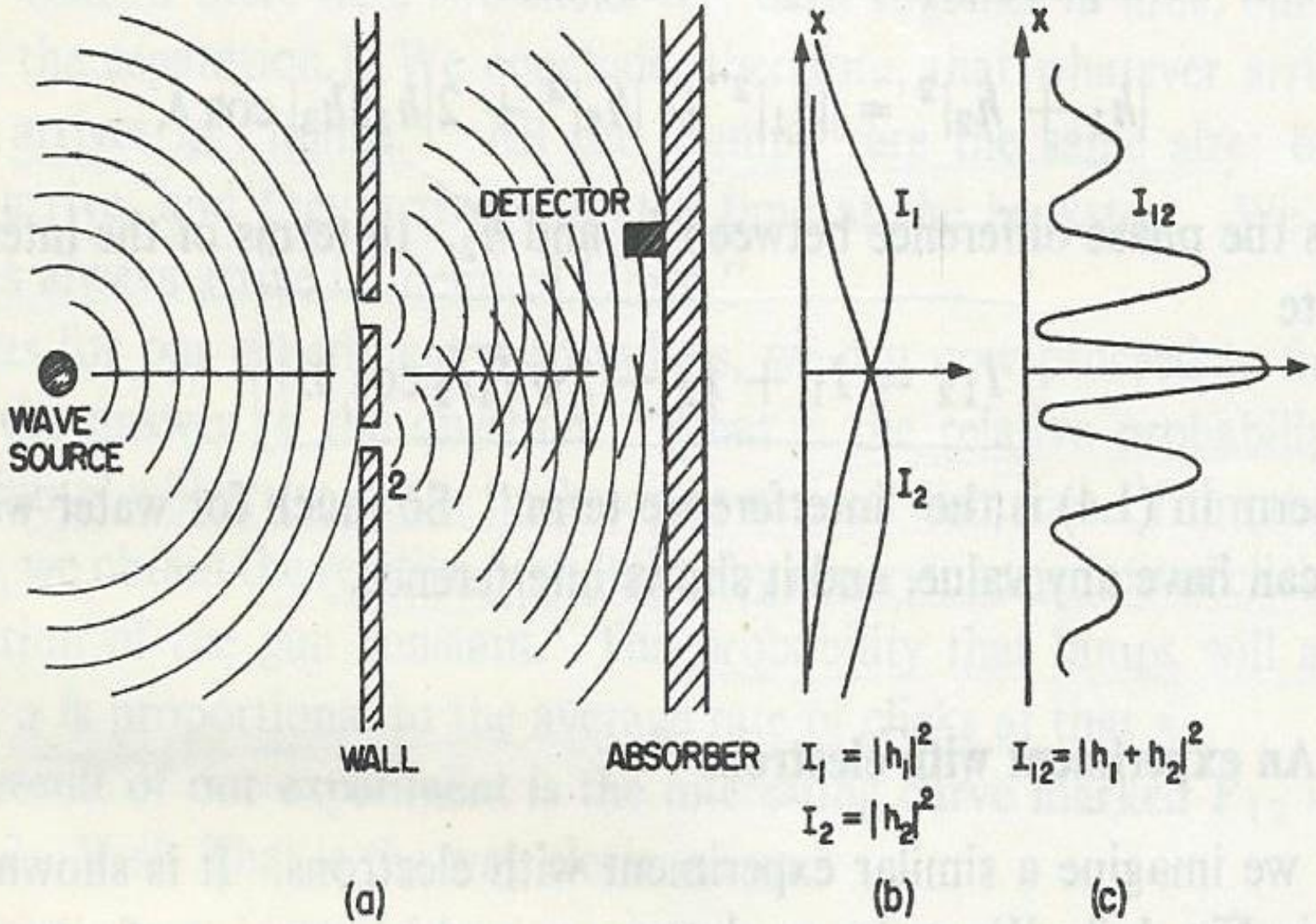


Figure 2.9 Rutherford's interpretation of the results of the experiment done by Geiger and Marsden.

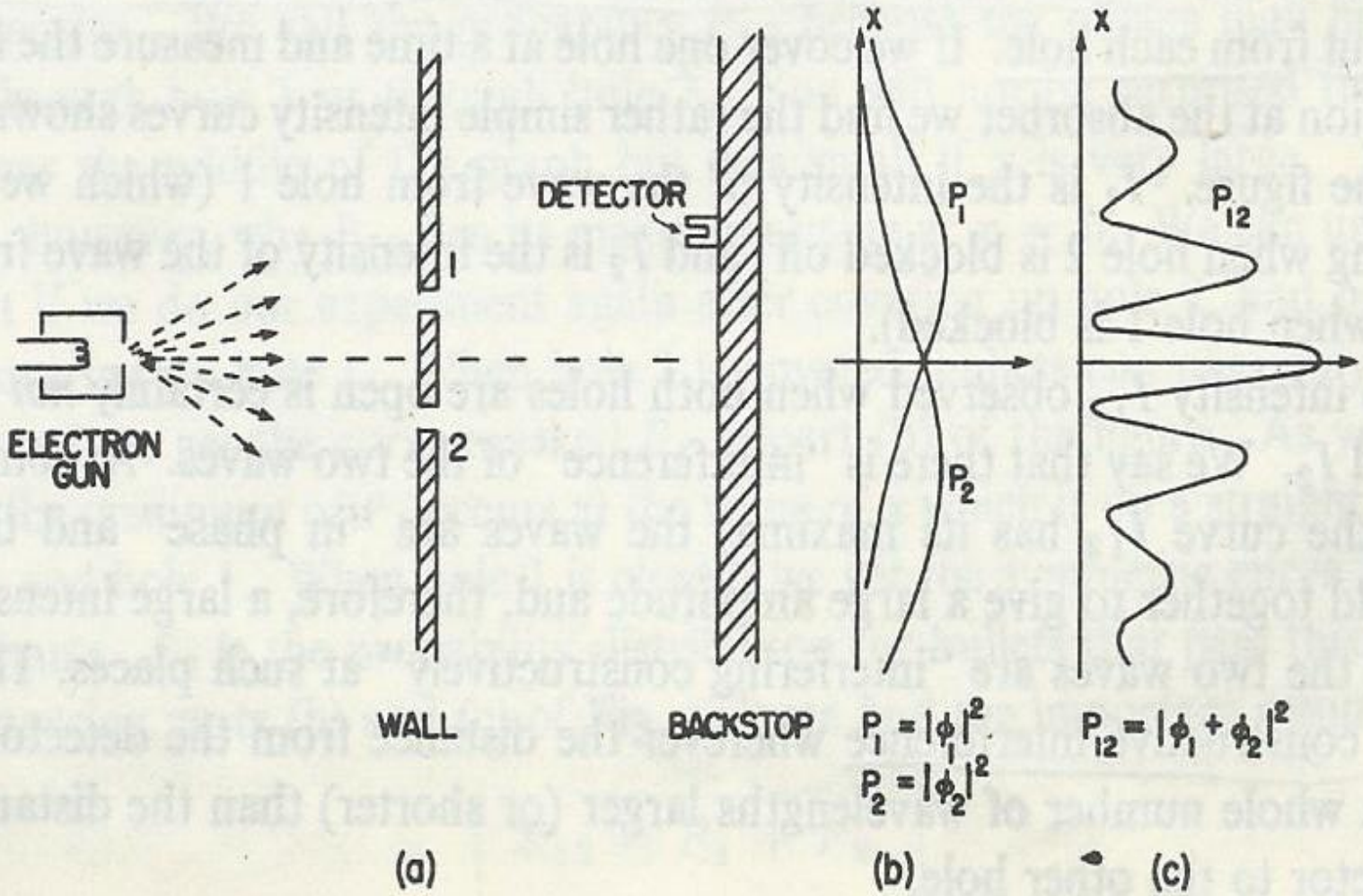
Laboratório de Rutherford



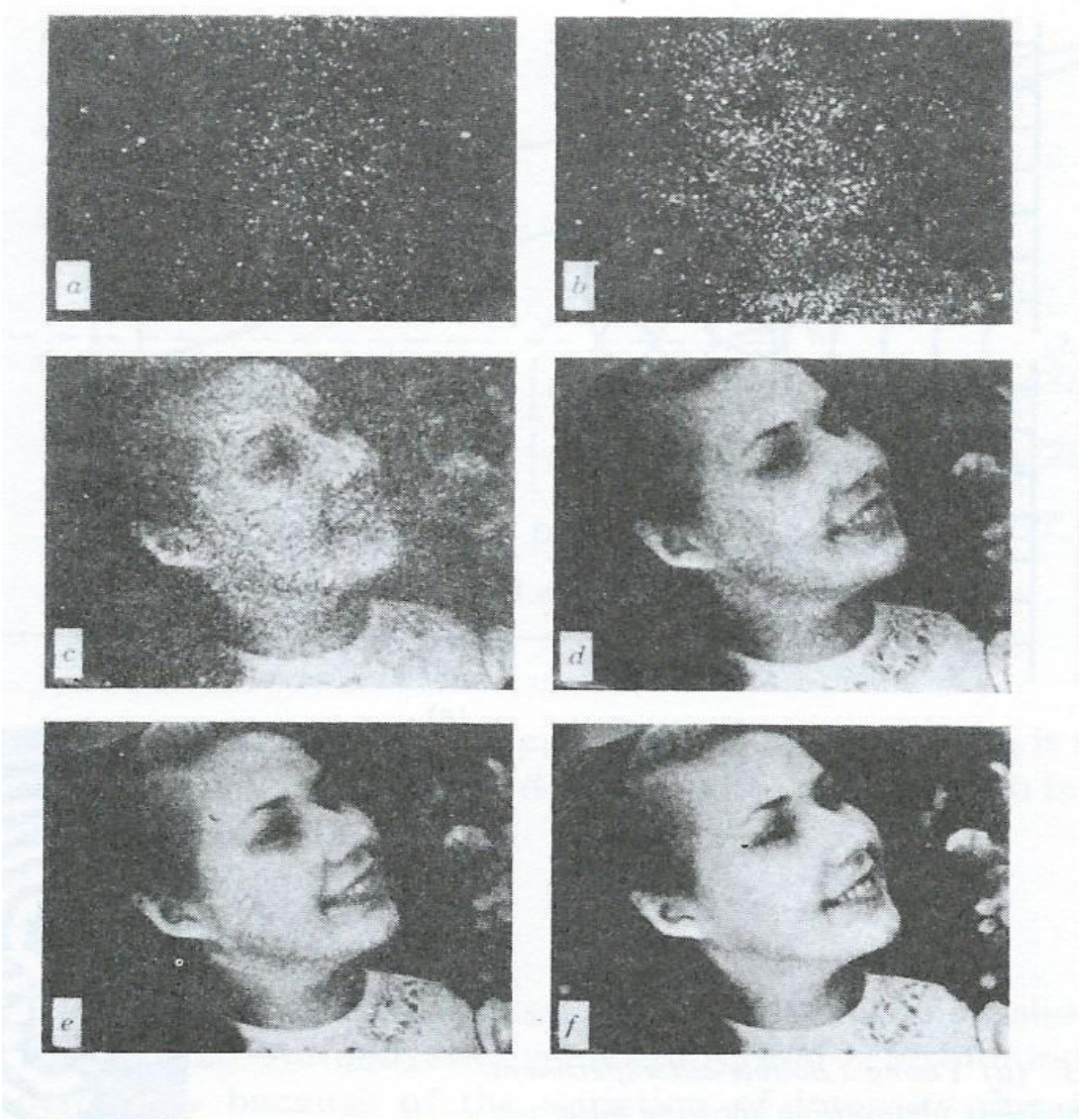
Experiência das duplas fendas – partículas



Experiência das duplas fendas - ondas

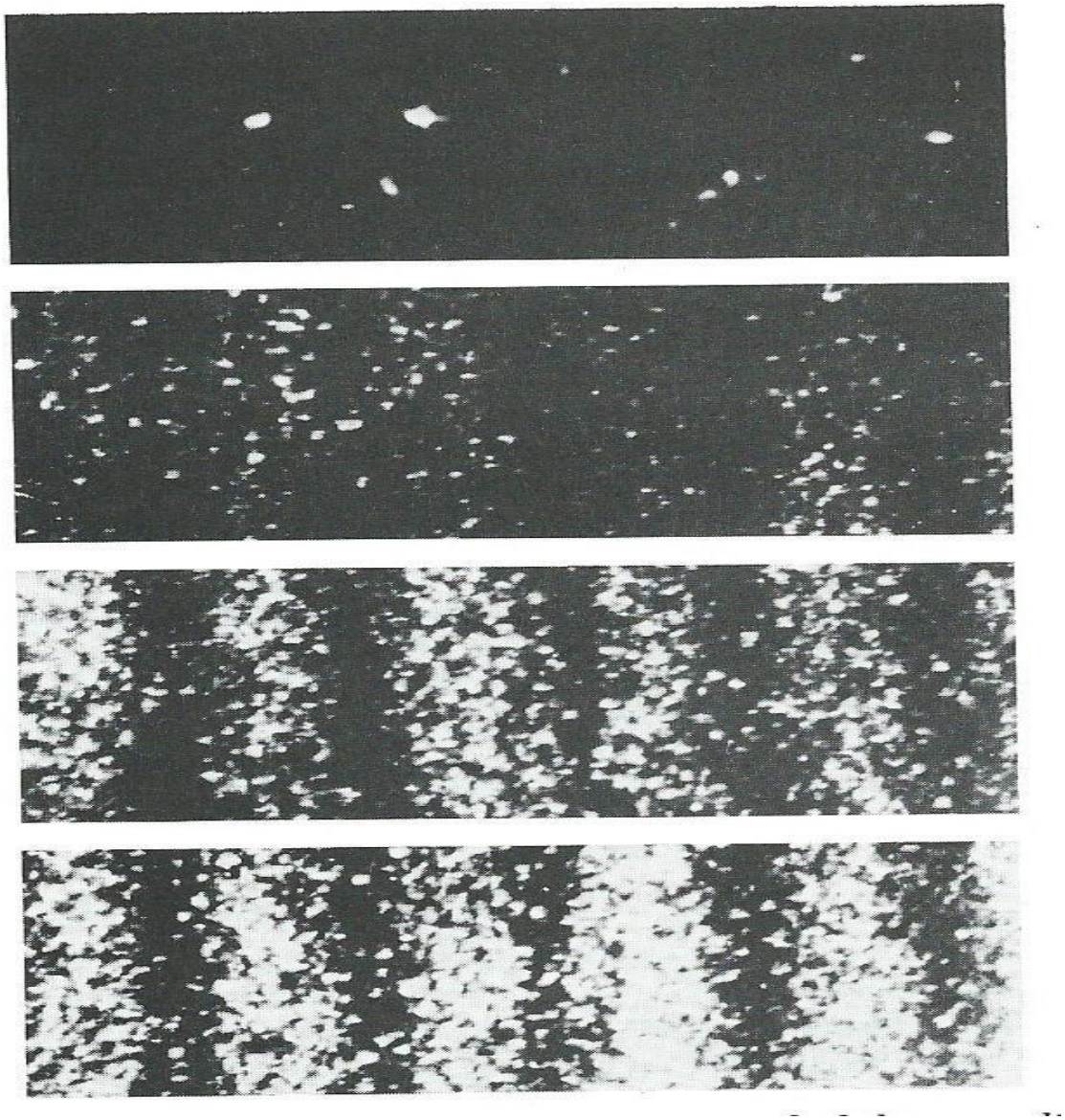


Experiência das duplas fendas – elétron

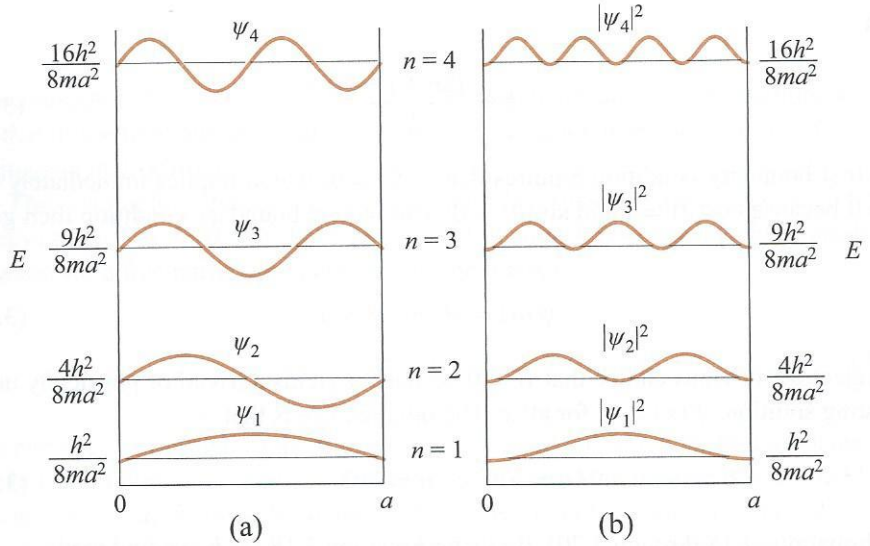


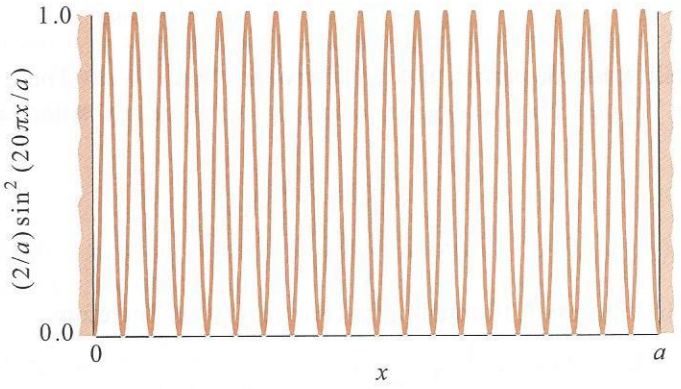
No. de fótons:

a) 3000 b)12.000 c)93.000 d) 760.000 e) 3.600.00 f) 28.000.000



Experiência das duas fendas - elétrons


ψ_4
$\frac{16h^2}{8ma^2}$
$n = 4$
$|\psi_4|^2$
$\frac{16h^2}{8ma^2}$
$|\psi_3|^2$
ψ_3
E
$\frac{9h^2}{8ma^2}$
$n = 3$
$\frac{9h^2}{8ma^2}$
E
$|\psi_2|^2$
ψ_2
$\frac{4h^2}{8ma^2}$
$n = 2$
$\frac{4h^2}{8ma^2}$
$|\psi_1|^2$
ψ_1
$\frac{h^2}{8ma^2}$
$n = 1$
$\frac{h^2}{8ma^2}$
0
a
(a)
0
a
(b)


1.0
0.0
$(2/a)\sin^2(20\pi x/a)$
0
a
x