#			A	hwp	B	hwp	Counts (30 seconds)	±
1	$\boldsymbol{a}$	$\boldsymbol{b}$	0	0	22.5	11.25		$+$
2	$\boldsymbol{a}_\perp$	$\boldsymbol{b}$	90	45	22.5	11.25		$-$
3	$\boldsymbol{a}$	$\boldsymbol{b}_\perp$	0	0	112.5	56.25		$-$
4	$\boldsymbol{a}_\perp$	$\boldsymbol{b}_\perp$	90	45	112.5	56.25		$+$
5	$\boldsymbol{a}$	$\boldsymbol{b}'$	0	0	67.5	33.75		$+$
6	$\boldsymbol{a}_\perp$	$\boldsymbol{b}'$	90	45	67.5	33.75		$-$
7	$\boldsymbol{a}$	$\boldsymbol{b}'_\perp$	0	0	157.5	78.75		$-$
8	$\boldsymbol{a}_\perp$	$\boldsymbol{b}'_\perp$	90	45	157.5	78.75		$+$
9	$\boldsymbol{a}'$	$\boldsymbol{b}'$	45	22.5	67.5	33.75		$+$
10	$\boldsymbol{a}'_\perp$	$\boldsymbol{b}'$	135	67.5	67.5	33.75		$-$
11	$\boldsymbol{a}'$	$\boldsymbol{b}'_\perp$	45	22.5	157.5	78.75		$-$
12	$\boldsymbol{a}'_\perp$	$\boldsymbol{b}'_\perp$	135	67.5	157.5	78.75		$+$
13	$\boldsymbol{a}'$	$\boldsymbol{b}$	45	22.5	22.5	11.25		$+$
14	$\boldsymbol{a}'_\perp$	$\boldsymbol{b}$	135	67.5	22.5	11.25		$-$
15	$\boldsymbol{a}'$	$\boldsymbol{b}_\perp$	45	22.5	112.5	56.25		$-$
16	$\boldsymbol{a}'_\perp$	$\boldsymbol{b}_\perp$	135	67.5	112.5	56.25		$+$

$$\begin{aligned} X &= Ne\left(\frac{1}{r^2} - \frac{r}{R^3}\right) \quad \text{[and]}^1 \\ V &= Ne\left(\frac{1}{r} - \frac{3}{2R} + \frac{r^2}{2R^3}\right). \end{aligned}$$

$$X = Ne\left(\frac{1}{r^2} - \frac{r}{R^3}\right)$$

[and][2]

$$V = Ne\left(\frac{1}{r} - \frac{3}{2R} + \frac{r^2}{2R^3}\right).$$

$$\Bigg\}\Bigg\{$$

[1] [To determine the electric potential we *integrate* the field strength X *over distance* (see Appendix II B, 269-71 below for a discussion of this), from $s = r$ to $s = R$ (it is not necessary to consider radii greater than R because, the atom as a whole being electrically neutral, there is no field beyond R). Thus Rutherford's expression for V is the result of having evaluated the integral $\int_r^R Ne(1/s^2 - s/R^3)\,ds$.]

[2] [To determine the electric potential we *integrate* the field strength X *over distance* (see Appendix II B, 269-71 below for a discussion of this), from $s = r$ to $s = R$ (it is not necessary to consider radii greater than R because, the atom as a whole being electrically neutral, there is no field beyond R). Thus Rutherford's expression for V is the result of having evaluated the integral $\int_r^R Ne(1/s^2 - s/R^3)\,ds$.]

#			A	hwp	B	hwp	Counts	(30 seconds)	±
1	$\boldsymbol{a}$	$\boldsymbol{b}$	0	0	22.5	11.25			$+$
2	$\boldsymbol{a}_\perp$	$\boldsymbol{b}$	90	45	22.5	11.25			$-$
3	$\boldsymbol{a}$	$\boldsymbol{b}_\perp$	0	0	112.5	56.25			$-$
4	$\boldsymbol{a}_\perp$	$\boldsymbol{b}_\perp$	90	45	112.5	56.25			$+$
5	$\boldsymbol{a}$	$\boldsymbol{b}'$	0	0	67.5	33.75			$+$
6	$\boldsymbol{a}_\perp$	$\boldsymbol{b}'$	90	45	67.5	33.75			$-$
7	$\boldsymbol{a}$	$\boldsymbol{b}'_\perp$	0	0	157.5	78.75			$-$
8	$\boldsymbol{a}_\perp$	$\boldsymbol{b}'_\perp$	90	45	157.5	78.75			$+$
9	$\boldsymbol{a}'$	$\boldsymbol{b}'$	45	22.5	67.5	33.75			$+$
10	$\boldsymbol{a}'_\perp$	$\boldsymbol{b}'$	135	67.5	67.5	33.75			$-$
11	$\boldsymbol{a}'$	$\boldsymbol{b}'_\perp$	45	22.5	157.5	78.75			$-$
12	$\boldsymbol{a}'_\perp$	$\boldsymbol{b}'_\perp$	135	67.5	157.5	78.75			$+$
13	$\boldsymbol{a}'$	$\boldsymbol{b}$	45	22.5	22.5	11.25			$+$
14	$\boldsymbol{a}'_\perp$	$\boldsymbol{b}$	135	67.5	22.5	11.25			$-$
15	$\boldsymbol{a}'$	$\boldsymbol{b}_\perp$	45	22.5	112.5	56.25			$-$
16	$\boldsymbol{a}'_\perp$	$\boldsymbol{b}_\perp$	135	67.5	112.5	56.25			$+$

CLASSICAL THEORY
Space-Time Description [and] Causality

QUANTUM THEORY

$$\begin{array}{c}\textit{Either}\\ \left.\begin{array}{c}\text{Space-Time Description}\\ \\ \textit{But}\\ \text{Indeterminacy Relations}\end{array}\right\}\end{array}\begin{array}{c}\text{Statistical}\\ \text{Correlations}\end{array}\begin{array}{c}\textit{Or}\\ \left\{\begin{array}{c}\text{Mathematical Model}\\ \text{Not in Space and Time}\\ \textit{But}\\ \text{Causality}\end{array}\right.\end{array}$$

CLASSICAL THEORY
Space-Time Description [and] Causality

QUANTUM THEORY

$$\begin{array}{c}\textit{Either}\\ \left.\begin{array}{c}\text{Space-Time Description}\\ \\ \textit{But}\\ \text{Indeterminacy Relations}\end{array}\right\}\end{array}\begin{array}{c}\text{Statistical}\\ \text{Correlations}\end{array}\begin{array}{c}\textit{Or}\\ \left\{\begin{array}{c}\text{Mathematical Model}\\ \text{Not in Space and Time}\\ \textit{But}\\ \text{Causality}\end{array}\right.\end{array}$$

TABLE VI[a]

t_g Sec.	t_F Sec.	$\frac{1}{t_F}$	$\frac{1}{t'_F} - \frac{1}{t_F}$	n'	$\frac{1}{n'}(\frac{1}{t'_F} - \frac{1}{t_F})$	$\frac{1}{t_g} + \frac{1}{t_F}$	n	$\frac{1}{n}(\frac{1}{t_g} + \frac{1}{t_F})$
11.848	80.708	.01236				.09655	18	.005366
11.890	22.366		.03234	6	.005390			
11.908	22.390	.04470				.12887	24	.005371
11.904	22.368		.03751	7	.005358			
11.882	140.565	.007192				.09138	17	.005375
			.005348	1	.005348			
11.906	79.600	.01254				.09673	18	.005374
11.838	34.748		.01616	3	.005387			
11.816	34.762	.02870				.11289	21	.005376
11.776	34.846							
11.840	29.286							
		.03414				.11833	22	.005379
11.904	29.236		.026872	5	.005375			
11.870	137.308	.007268				.09146	17	.005380
			.021572	4	.005393			
11.952	34.638	.02884				.11303	21	.005382
11.860			.01623	3	.005410			
11.846	22.104							
		.04507				.12926	24	.005386
11.912	22.268		.04307	8	.005384			
11.910	500.1	.002000				.08619	16	.005387
11.918	19.704		.04879	9	.005421			
		.05079				.13498	25	.005399
11.870	19.668							
			.03[79]4	7	.0054[20]			
11.888	77.630							
		.01285				.09704	18	.005390
11.894	77.806		.01079	2	.005395			
11.878	42.302	.02364				.10783	20	.005392
11.880			Means		.005386			.005384

Duration of exp.	= 45 min.	Pressure	= 75.62 cm.
Plate distance	= 16 mm.	Oil density	= .9199
Fall distance	= 10.21 mm.	Air viscosity	= $1,824 \times 10^{-7}$ [poise]
Initial volts	= 5,088.8	Radius (a)	= .[0]000276 cm.
Final volts	= 5,081.2	$\frac{l}{a}$ [mean free path $\div$ a]	= .034
Temperature	= 22.82°C.	Speed of fall	= .08584 cm./sec.

$e_i = 4.991 \times 10^{-10}$ [statcoulomb][b]

[a][The bracketed numbers are our corrections of errors in the original paper.]
[b][The value presently accepted is 4.802×10^{-10} statcoulombs.]