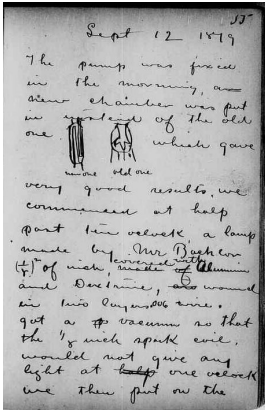


Notebook Entry:
Electric Lighting

The pump was fixed in the morning,¹ a new chamber was put in instead of the old one²



new one old one
which gave very good results. we commenced at half past ten oclock, a lamp made by Mr Bachlor ($\frac{1}{8}$)² of inch, ~~made of~~ covered with^a Aluminum^b and Dextrine, ~~and~~ wound in two layers .006 wire. got a \bar{p} vacuum so that the $\frac{1}{8}$ inch spark coil, would not give any light at half one oclock we then put on the large coil and got a kind of red illumination, a half^b an hour afterwards we got a white kind of light^c

we put one cell of the chromic cell³ battery on the bobbin at about half past one oclock, with two ohm resistance in the circuit. it turn black (bobbin owing to the organic matter (Dextrine)) which was mixed the the aluminum.^c

at about two oclock we got a bright white light, one of the electrodes had a yellow light on it. at two oclock I put a half an ohm out of the circuit.

At ten minutes past two Mr. Bachlor cut out another half an ohm. At twenty minutes of three Mr Bachlor \bar{p} cut out an half an ohm. This make one cell carbon on the lamp and half an ohm at ten minutes to three we put two cell on with two ohms resistance. It just heated it up to a very dark red. there was a little change in the light, the yellow was fainter, and a very light green spot was observed near the yellow. At 3.20 pm we made resistance $\frac{1}{2}$ ohm less. Thus it is:—

			Remarks
1½ pm.	1 cell	2 ohm res.	Blackened spool.
2 pm	1	1½ "	
2.10	1	1 "	
2.40	1	½ "	
2.50	2.	2 "	Very dark red
3.20	2	1½ "	Dark red but little brighter

Vacuum has not altered during last hour owing to gas coming out of spool^d

3-35 ^c	2. ^c	1 ohm.	
4. ^c	3 ^c	2 ohm	—red—
5-50 ^c	4 ^c	2 ohm	yellow
5-55	4 ^c	1 ohm	" white ^e

Some visitors came^b in the afternoon, (Mr. Banker & others)⁴ and the spool was brought up^b with seven cell then it bust, giving at the time about 4 candles.

At eight oclock .P.M. we put the pump again in operation, a new spool was put in ($\frac{1}{8}$)² of an inch covered with Alumina & Dextrine.

At quarter past nine we put one cell on the spool

~~9.15 .PM. — 1 cell. — Resistance.~~

			Remarks
9.15 P.M.	1 cell	3 ohms Res	Blackened it
9.45	1 "	2 "	
10.10	1 "	1	
10.15.	2 "	1	
10.30	2 "	0	cross. showed red only.
11 "	3	2	the spool began to get red.
			Dark
11.20	3.	1	Red. goes down & up
			owning to the cross
12			cross prevented from
			going any further The ^f
			spool away

Put in a new spool at about eleven oclock & commenced a vacuum. Stop the pump at dinner, sealed it at the bottom with Hg. commenced $\frac{3}{4}$ of an hour afterward again, vacuum no good. Stopped pump.

~~Commenced again at four oclock & got a pretty good vacuum at 6 oclock~~

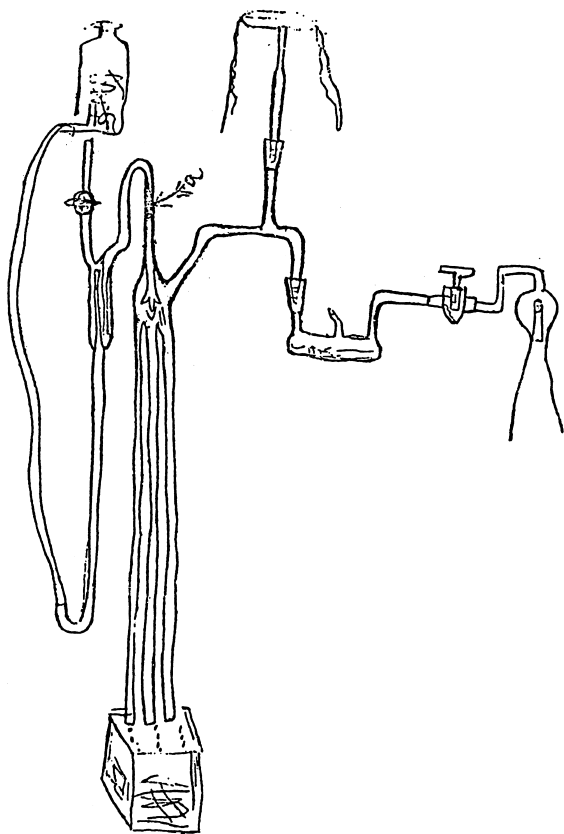
			Remarks
7.45.	2 cell	3 ohms	Light Red
8.	" "	2 "	Red in the middle cool on^b
			the ends^c

~~Mr Edison brought^e put on cells after this untill it busted (7 cells.)⁵~~

X, NjWOE, Lab., N-79-08-22:55 (*TAEM* 35:811; *TAED* No85:28). Written by Francis Jehl. ^a“covered with” interlined above. ^bObscured overwritten text. ^cFollowed by dividing mark. ^dSentence enclosed by horizontal lines above and below, and wavy lines at left and right. ^eFrom “Thus it is” to end of table written by Charles Batchelor; followed by dividing mark. ^fPaper damage before “The” may contain text. ^gPreviously canceled.

1. This was “Pump No. 2” (see Doc. 1801 n. 1). Jehl’s sketch of the pump as it stood on 12 September shows that the double “air catcher”

*Francis Jehl's drawing
of the pump used for the
experiments described
in this document.*



had been replaced by a trap and valve like that used in the first pump. Another departure was the addition of a slender contraction (labeled with an arrow in the drawing) in the supply tube immediately above the jets. This innovation became the subject of a patent interference between Böhm and Edison, in which Böhm testified that this method of regulating the mercury flow enabled him to use somewhat wider jets that were less prone to clogging. A further alteration is discussed in note 2. Böhm's testimony, pp. 3–4; Jehl's testimony, pp. 5–6; Edison's testimony, p. 32; *Böhm v. Edison* (TAED W100DEC002 [images 2–3], W100DED002 [images 4–5], W100DED032 [image 1]).

2. Jehl evidently was confused about the “new chamber.” His sketch of the “old one” depicts the mercury jets which characterized all of the triple Sprengel pumps. This could not have been replaced by the “new one” although another, unspecified, modification may have been made to the jets. The “new one” appears to be a system of baffle tubes like that shown in Jehl's 12 September drawing in place of the earlier “air catcher,” presumably for the same purpose.

3. A form of Bunsen cell, used widely on Gold and Stock Telegraph Co. lines in New York City. See *TAEB* 2:565 n. 3.

4. James Banker planned to visit with Tracy Edson. According to the later testimony of Ludwig Böhm, physicist Albert Michelson was also

among those present. Lowrey to TAE, 10 Sept. 1879, DF (*TAEM* 50:271; *TAED* D7920ZAY); Böhm's testimony, p. 11, *Böhm v. Edison* (*TAED* W100DEC002 [image 10]).

5. Jehl resumed these experiments with Edison on 14 September but late that evening "the pump busted being heated to much on[e] of the fall tubes broke." He returned to work after it was repaired the next morning and continued these experiments intermittently through September. N-79-08-22:67-91, Lab. (*TAEM* 35:817-18; *TAED* No85:34-45); see Doc. 1815.