Notes 1918/9

E. B.'s cream

P. 99 and

P. 110 – 116

Laboratory Book

Experiments of Emile Berliner (EB) are on pg 99 and 110-116. All other entries appear to be by Edgar M. Berliner (EMB) in Montreal.

(OB) Oliver Berliner

4 oz. Graphite
7 grms. Nitrate Silver
6 oz. Distilled Water

Dissolve Silver Nitrate in water and add Graphite. Mix well. Evaporate water and heat in crucible to a dull red, then sift with very fine screen.

4 oz. Graphite
7 grms. Nitrate Silver
6 oz. Distilled Water

Dissolve Silver Nitrate in water and add Graphite. Mix well. Evaporate water and heat in crucible to a dull red, then sift with very fine screen.

4 oz Graphite

7 gms. Nitrate Silver

6 oz distilled Water

Dissolve Silver Nitrate in Water and add Graphite. Mix well. Evaporate water and heat in crucible to dull red. Then sift with very fine screen

Hold the plate face upwards in a bath or zinc tray made for the purpose, slightly raise one end and freely pour the ground upon it, tilting it so that it may flow quickly and evenly all over the surface; immediately raise it to the perpendicular and let it drain.

Pour back into the bottle the superfluous liquid, through a glass funnel with a piece of cotton wool lightly pressed into the neck. This will filter it bright and clear from any specks of dust that may have got into it. The quantity used will be found to be very little.

The plate will be dry in a few minutes, when it should be smoked with a wax taper, taking care not to allow the flame to rest on any part, then gently heat it till the surface shines all over.

In frosty weather the plate is better kept in a warm room. If the ground gets thick from being frequently used, dilute it with chloroform. If dust or specks have got into it, filter as above.

MS 24 H. B. Brinkley mch 20/47 L. Straubin.
R. E. Gordon.
R. DeMott ←

Shipment of Carnauba wax — has now been received.

Feb. 2 - 1912

1. Made way of reg. dubbing and Vaseline ten parts reg. to one Vaseline. #1060 Tried it in Epstein bath with Epstein anodes, reg graphite, contact in centre Promising, try again.

2. Also made way regular formula using white ozokerite (ceresine) instead of american ozokerite #1061 Tried in Epstein bath, Epstein anodes, gold graphite, 1 part gold to 13 graphite, contact in centre, 3 volts. Very quick but peeled. Try again with contact on edge and a little less current

Feb 3, 1912

#1. Repeated #2 made Feb. 2 with contact on edge. Disc cracked, coating very fast with 2¼ Volts. Evidently ozkerite do is ?. g. for softening. Will do it with vaseline or beeswax in the future.

#2 Made wax as follows.

6 amer. Ozokerite
9 carnauba
15 Dixons 64% Electrolypus polishing graphite
22½ Stearine
50 Plaster Paris
9 Vaseline.

#1063

Has a very peculiar appearance with lots of white spots (small). graphited with gold graphite 1 part gold, 3 graphite
Sealed in 15 minutes.

#3 Repeated #1 made Feb. 2 using outside ~~contact~~ and gold graphite. flowed with wood alcohol which seemed to kelk nickel solution from entering lines.
Try again Failure probably due to alcohol would not coat.

#4 Made wax #1064

12 beeswax
9 carnauba
5 black
22½ stearine
50 plaster
6 American Ozokerite

Feb. 8, 1912

made wax #1065, as follows

2	american ozok.	5	Black
12	white ozok	22½	Stearine
9	Carnauba	50	Plaster

Melted very thin, am Ozo can be reduced. used gold graphite 1:13 and washed 3 X with phosphorus solution. used 1½ Volts and dummy in Epstein bath and anodes. Temperature of bath 65°
Would not coat
Bath slightly acid.

Feb 9

Repeated Experiment of Feb 8 without phosphorus solution. Would not coat

Feb. 10, 1912

#1. Repeated experiment of Feb 9 using reg graphite. started at 1½ Volt, then 2. Neutralized bath. Went 1/3 across + scales

#2 made wax #1066 as follows

6 Am ozo.	5 Black
9 Carnauba	22½ Stearine

Cracked.

#3 ~~Try~~ Tried wax 1065 in Hanson + Van Winkle bath ordinary graphite, no phosphorus at 2 Volts. Bath 58° Fahr. Pretty good but scaled

Feb. 12, 1912

Tried wax 1065 in Epstein bath, dust with reg. graphite last. nearly coated but scaled at bottom. 3½ to 4½ Volt. This lead looks promising. 18" between electrodes

Feb. 13, 1912

#1. Repeated experiment of Feb. 12 3½ to 4 Volts. Most promising, coated 1/8 in 50 minutes. Try next time with several contacts.

Sept. 15, 1912

made wax # 1067

9 oz Am. ozok.	
13½ oz carnauba	
18 oz. Dixons polishing graphite	#649
33¾ oz. stearine.	

Koehler bath — 3-3¾ Volts
Electrodes 18" apart
Coated in 25 minutes. Sorts O.K.
Went thro cutting press O.K. but is a little scratchier than our regular.

Sept. 16, 1912

Made wax #1068 same as 1067 but 5 oz. more stearine.
acts same as 1067

Sept. 16, 1912
Made Wax # 1069
9 oz Am Ozo.
13 ½ Carnauba
50 oz Stearine.

Sept 16, 1912
Made wax #1070
9 oz Am Ozo
13 ½ Carnauba
18 oz Dixons #4 graphite
60 ¾ oz stearine
shrinks too much
Should be followed up

Sept. 17, 1912
Made Wax 1071
6 oz. Am Oz o.k.
9 oz Carnauba
22 ½ Stearine
35 — 1045 Lucas
Cast O.K. graphited a little warm
coated 18" between electrodes @ 3½ Volt
Best result yet. Record sounds 99% as
smooth as our reg. Will try graphiting cold.

This wax was difficult to recast. We finally did it O.K. at 220° F but disc cracked

Sept. 19, 1912
Made wax # 1072
6 oz. Am Oz o.k.
9 oz Carnauba
22 ½ oz stearine
35 oz - 1045 Lucas
1 oz. pure white resin
Cast at 200° F.
(bath cold)

Graphited too cold and could not coat all the way. coated part perfect and records sounds O.K.

Sept. 20, 1912
Added 2 oz white resin to #1072.
Warmed bath to 90° F.
Cast same way as Sept. 19.

Sept. 21, 1912
Made wax 1073
6 oz Am Oz o.k.
9 oz Carnauba
22 ½ oz Stearine
32 g. Dixons #400 graphite
Cast at 300° F
O.K. Shrinks very much.

Sept. 24, 1912
Made wax #1074
6 oz Am Ozok
9 oz Carnauba
22½ " stearine
32 oz Dixon #400 graphite
17⅜ oz. plaster Paris
Keeps cracking added 17⅜ oz plaster
still crack - laid aside

Sept. 25, 1912
made wax #1075.
6 oz. Am. Ozok
22½ oz stearine
24 oz. Dixons #400 graphite
Seems good - does not coat as readily as 1073

Sept. 26. 1912
made wax 1076
22½ stearine
19 Dixons 400 graphite
Cast OK first time
but could not recast.

Sept 30, 1912
Made wax # 1077
6 oz Am ozok
4½ Carnauba
14 Dixon polishing graphite # 649
11¼ stearine
25 plaster
Went thro process OK but is somewhat scratchier than regular
Evidently graphite # 649 is not fine enough for our purpose.

Oct 1, 1912
Made wax # 1078
4 lbs of #1074
4 oz. plaster - cracked -
cooled without water 2nd time & did not crack but had somewhat fuzzy appearance in places.
Coated in 30 minutes - well. Consistent
Record good.

Oct. 2, 1912
Made wax # 1079
4 lb. 1 oz of #1078
5 oz Am. Ozok.
16 oz Plaster
Seems OK.

This makes the real 1079 formula as follows
14¾ Am Ozok
9 Carnauba
22½ stearine
32 graphite
69 Plaster

Oct. 7, 1912
Made wax #1080
(see 1073)
6 oz. Cun Ozok
9 — Carnauba
22½ Stearine
32 Atchison fine graphite

Oct 8, 1912
Made wax #1081
3 Cun Ozok
4½ Carnauba
11¼ stearine
25 Plaster
8½ Atchison fine graphite

see (1079) Oct. 9, 1912
Wax 1082
10½ Cun Ozok
4½ Carnauba
11¼ Stearine
16 Atchison fine graphite.
34½ Plaster
Cast OK: cooled without water
coated in 10 minutes

Oct 9, 1912

Made wax #1083
3 Cun Ozok. goes thro Brocs
4½ Carnauba OK but some
11¼ stearine trouble in cracking
25 plaster
5 Atchison fine graphite

Oct 11
Cast #1083 wax in my way cracked twice, cast again Let stand 1½ hours before turning water on bake good coated in 25 min 2¾ volts edges not crimped, left in bath 15 min. after coating record good

Oct 12 Made wax #1084
4 lbs of 1083
2 oz rosin would not coat in nickel bath the nickel splits bfor coating to lines in center

Oct 12 #1085
4 lbs 1084 coats better
5 oz graphite (Atchisons fine)

Oct 12, 1912 - Made wax #~~6~~ #1086
6 4/3 Cun Ozok
9 [illegible] Carnauba cracked and not
22½ [illegible] Stearine very good finish
50 [illegible] oz Plaster laid aside
10 [illegible] Atchison fine graphite.
3¼ [illegible] fine white resin

Oct 13, 1912
Made Wax # 1087
6 oz Am Ozok
9 Carnauba
22½ Stearin
50 Plaster
8 Oz. Dixons 400 graphite.
O.K.

Oct 13, 1912
Made Wax # 1088
6 oz. Am Ozok
9 Carnauba
22½ Stearin
50 Plaster
10 oz Dixons #400 graphite
O.K.

only cast once.

Oct 15, 1912
Made Wax # 1089
6 oz Am Ozok
9 carnauba
22½ stearine
50 Plaster
5 Dixons #400 graphite
O.K.

Nov 7 - 12
Wax # 1090
6 oz Am. ozok
9 carnauba
22½ stearin
32 Atchison fine graphite
coated in nickel bath in 3 min. left in 16 min.
after coated mould very noisy try again

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nov 17
Wax 1080
6 oz Am. ozok
9 " carnauba
22½ " stearine
32 " Atchisons fine graphite

April 4
Wax 1091 — 3 oz Am. ozok
4½ oz Wash recording wax
11¼ oz Stearine cost at 7.20
25 " Plaster
5 " Atcheson fine graphite

May 13, 1913 #1092

6 oz Am Ozo
9 oz Carnauba
22 1/2 Stearine
24 Atchison fine
5 Gutta Percha

June 17 #1093

22 1/2	European ozo	# 50 min
20	Atchison's fine	
2	Gutta Percha	
3	Carnauba	cast 340 F

Coats in nickel very fast but cast looks a little rough will add one oz carnauba making #7 in all shell looks rough fair polish record sound about 95/00 perfect

June 18 #1094

22 1/2	E. ozo	
20	Atch graphite	
2	gutta percha	
4	carnauba	

Made a better looking cast in fact looked perfect was in nickel bath 70 min looked very good but the nickel was loose and split in one place in the center the whole nickel surface pulled off will try in steel bath

Striped 1094 of nickel, wet graphited the lines and put in steel bath for 45 min 3 Volts fussing sounds fair will try again no good was burnt.

June 20

#1095	22 1/2	E ozo	cast 340 F
	20	Atchesons fine	
	2	gutta percha	
	4	Am ozo	

given 1 hr in nickel steel 2 1/2 Volts looks fair sounds perfect

1096 June 23

22 1/2	ozo	E.
20	Atchesons fine	
2	gutta percha	
4	carnauba	

Cast made with wax at 300 F shell oiled with coal oil and wiped very dry in steel bath 5'5" min at 3 volts looks good & nickel blistered.

June 25 cast #1096 at 310 F. oiled shell coal oil given 50 min in steel bath 2 1/2 Volts fussing sounds about 99/100 perfect

June 27

#1097 16½ E. 030.
20 Atchisons fine
2 gutta percha
10 Am. Azo.

Very hard to get good cast looks rough + full of streaks cast at 310

#1098 16½ E 030
water in 10 min 25 Atchisons fine
Cast at 280 F 2 gutta percha
still full streaks 10 Am 030
cast 270 F

streak in small place shows improvement water 10 min

Cast 250 F shows streaks water 10 min

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cast 250 F water two min shows streaks no holes get graphite on shell no oil

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Cast 250 F with pan + shell cold and water on one min shows holes. was cast under conditions like above with temperture as high as 310 still has holes in cast

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June 30
Cast 280 F pan cold shell graphited thick cast holes
Cast 300 F pan hot shell same as above not so thick shows streaks no holes.
cast 320 F
cast 350 F (best yet) shell cleaned with gasolin (no oil) graphite brushed on lines and dusted off looks perfect takes good polish

June 30

#1099 16½ E. 030
10 Am 030
25 Atchisons fine

cast at 320 F with oil of camphor full of streaks

#1098 Recast at 350 F the shell oiled in the regular way with oil of camphor and pan hot water 10 min N.S. will try to cast same as good one would not recast full of streaks: cast in cold pan N.S. full of holes cast with pan warm wax 350 stuck N.S.

#1100 16½ Stearine
25 Atchisons pure
2 gutta percha
10 Am 030.
2 Carnauba

#1101 – July 3 – 1913

European Ozok. 16½ – ~~Montan (Boston)~~
Montan 10
Atcheson fine 25
gutta percha. 2

cast at 350 F pulled out, one half of cast looks good
recast at 350 pan not so hot cracked + stuck.

This is to improve #1078

#1102 – July 3 – 1913

16½ European.
10 – American.
25 – Atcheson fines.
2 – Gutta Percha.
2 – Carnauba – Flora.

cast at 315° F shell cleaned with gasoline & graphited pan about same heat as usual

1103 – July 3 – '13

.16½ European
.10 American Ozok
.25 Atcheson fine
.2 Gutta Percha
.2 Carnauba
.4 – lamp black

1 Cast at 315 F pan hot shell cleaned with gasoline and then graphited cast OK coated in nickel OK ½ hr.

2 cast 1103 with oil in reg way 315 F water 10 min in nickel steel 45 min 2¾ volts pressing strands good. polish good

3 cast 1103 in reg way in white Nickel coated very good in for 2½ min most perfect yet fine (17324a)

cast 1103 in reg way 310 F
cast reg taken off warm cast good. perfect smooth
" " " " " " " " 17339 "

1104

(see 1094)

22½ European
25 Atcheson final
2 – Gutta Percha
4 – Carnauba

Cast 320 F ~~water~~ 10 min cast cracked cast 320 F
no water cast not good will try again with water
cast 310 F water 8 min looks good - OK. 99½% Perfect

1105 July 7

·16½ European
·10 am ozo
·25 – Atcheson fine
·2 carnauba
·4 lamp black

cast at 315

Cast with pan hot shell oiled with campton
let stand until cold (no water) looks good
given 48 min in white nickel holds nickel ok
shell looks good, pressing sounds good little sticky
cast again 4th above shell stained a little pressing
sounds good cast again same as above second
not so good sounds hard + noisy will try again
cast 315 F cast looks good 100% Perfect HB
Cast 315 F by Lynch taken off a little warm — O.K. a little noisy – HB
" " F " " " wet leaded – not enough

1106

·16½ European
12 · ~~X~~ Rewading Si added 2 g
·25 – Atchesons
·2 Carnauba
·4 lamp black
·2 gutta percha

Cast 350 F runs to thick will add more reading
wax very hard to get good cast. – N G.

1107

·4½ – American +
·6¾ – – Carnauba
·3¾ – Lampblack
·17 – European
·25 – Atcheson
Gutta Percha if necessary.

Cast 320 F Water 10 min N.G. stuck lines pulled
out try again cast 320 water 8 min seems much
thiner at second cast stuck again – HB

1105 continued 6/12/20
cast again taken off warm O.K. coated O.K. Baked
black lead again
noisy

1105
63 - regular dub wax
4 - Gutta Percha
11 - Atcheson fine

(see 1105) 1109
22½ Stearine
13 - European Ozok.
25 - Atcheson
2 - Carnauba
4 - lamp-black

not liquid enough with 16½ + 10 - Stearin + 03 ok respectively

cast regular OK, sealed. will try in cobalt bath.

(see 1103 + 1105 combination) 1110
16½ - European
10 - American
25 - Atcheson
2 - carnauba
4 - lamp black
1 - gutta percha.

cast reg. taken off warm O.K. a little noisy slight sweat

1111 see 1103.
16½ European.
10 American.
25 Atcheson.
2 Gutta Percha.
3 Carnauba.
4½ lamp black (as much as possible

Cast in reg way mold sounds 95/00 perfect good enough for stock - ditto 2nd time

2nd cast looks fine had trouble coating in steel with

1112
16½ European. 1st Cast Reg way
10 - American. looks good one stain
25 - Dixons best. on edge sounds
2 - gutta percha. perfect nickel had air bubbles
3 carnauba.

Perfect HB

Current page

1113 see 1095

22½ European.
20 - Atcheson fine.
2 - gutta percha.
4 American Ozok.
5 lamp black.

cast 340F

Went thro process O K - a little noisy - try again cast looks very good

1114 – see 1111 and 1103

16 1/2 European
10 American
20 Aitchison fine
2 Gutta percha
3 carnauba
4 lamp black

cast 340 Fair way has a few stains but lines look good

noisy – due to Aitchison graphite

dropped this
HB

1115 – see 1112
16 1/2 – European
10 – new American for test
25 – Dixon #00
2 gutta percha
3 carnauba

Cast 320 pressing sounds perfect
Cast 260 cast good pressing perfect

1112 ~~to~~ 2 lbs 9 1/2 oz's of this add 2 oz's black

Ff 1116

4 1/2 a. ozo.
6 3/4 carnauba
3 3/4 black
16 3/4 stearine
cast 320 37 1/2 whiting

This is our reg. except for plastic and it shows big improvement over reg wax, pressing sounds more even and quite clean reg.

1117

16 1/2 European
10 new American
25 Dixons # 0436
2 gutta percha
3 carnauba

1st cast 320 looks good 30 min white nickel spoiled in copper bath
2nd cast 320 one spot about 1/4" dia looks bad other wise cast good
3rd cast 320 reg way looks perfect pressing noisy
4 cast 320 " " " " " improved

1118

Acid not bright

16½ European
10 Stearine
25 graphite
2 Gutta Percha
3 carnauba
2 Camp Black

1119 Aug 27

16 ½ European
10 New American
25 Acheson 1310
2 gutta Percha
3 carnauba

1st casting was 320 F lines leak this one was cast 6 times conditions the same and results were about the same

Aug 31 - 15
one oz of white pulv. Alum to 5 gals. of copper solution
this work's very good and the bath deposits more finely than when glue is used
metal is hard and has a good ring to it

(a good thing to know) 386 amp's deposits 1 lb of copper per hour

Schutte & Koerting
30 Church St N.Y.
Air acid pumps.

Raisbeck Electro Co
27 Vanderwater St N.Y..

Electro Platers.

W R King
J Hanson Van Winkle Co
Newark N.J.

Sept 7-15
1 Bbl. Blue stone 450 net From
Watson Jack & Son.
City

HANSON & VAN WINKLE CO. NICKEL STEEL SOLUTION?

FORMULA

Double Nickel Salts	6 ozs.
C.P. Sulphate of iron	4 ozs.
Salamonia	4 ozs.
Boracic acid crystals	1 oz.
Water	1 gallon.

After dissolving the above chemicals add water until the solution is reduced to 3° Baume. Use regular white nickel anodes, which contain enough iron. Use a voltage 2-2-1/2 or so that the work does not burn on the edges. The wax moulds are prepared in the regular way.

VANADIUM CLORIDE BATH

double salts only to 6° Baume

100 Gallons of Water	) Solution should be
8 Oz. Iron Sulphate	) kept between 6 and 7
1 " Vanadium Cloride	) Baume and about 90
	) degree

Dissolve one oz. Vanadium cloride in quart of water and stir solution well when adding the above to prepared solution.

Keep one oz. Vanadium cloride diluted in quart of distilled water and add one oz. of this when strengthening solution with nickel salts.

FORMULA FOR KOEHLER NICKEL COBALT BATH.

Bring distilled water up to 2 degrees baume, with double nickel salts.

Then bring solution up to 6 degrees with single nickel salts.

Add 2 ounces of Chloride of Cobalt, to one hundred gallons ~~to one hundred gallons~~ solution.

And then add 4 ounces concentrated Ammonia to one hundred gallons of solution.

Solution should be kept neutral at all times. By adding Boracic Acid if the bath is Alkaline, and concentrated Ammonia in case the bath is acid.

Copper sulphate bath 15 x 3 —

1.6 lbs of copper sulphate } to one U.S. gal water
0.46 lbs of sulphuric acid }

To make smooth copper deposit

copper sulphate — 17 degrees Be. — 2 lbs to the gal.
sulphuric acid (24 degrees) — 2.6 " " " "
Phenol sulphuric acid — one third of an oz to the gal.

Cyanide copper bath

Cyanide copper — 3 oz
" Sodium — 3 1/8 "
Soda — 1/4 "
Water — 1 gal

Made new nickel bath Oct. 28–18

N. N. Salts — 4 oz
S. N. " — 4 "
Rock salt — 1 oz.
Boric acid — 1 oz
Water — 1 gal
Neutral solution
Iron sulphate 8 ozs per 100 Gals solution

June 27 – 1916 Copper plating on Glass

Use a film of the following mixture Benzole 4 oz asphaltum 1 Gramm mix well & filter, then add 25 c.c. of concentrated rosin solution. flow over piece of glass to be plated when dry graphite.

Experiments with Capitol Salts (Nickel)

Aug 24
Mon bath 80° — gave child 40 min 2 Volts
started to peel on edge #17564a in work looks ok after 500 previous

Aug 24 — 92° — gave child 2 Volts peeled in
15 min. no good

Aug 24 — 90° — gave child 1½ Volts 30 min started
to peel #17558B mother no good could not use

Aug 24 — 90° — gave child 1¼ Volts 2 hours looks
good no sign of peeling #17408B sounds good in work

aug 25 — 95° gave child 1¼ Volts. for 2 hrs has air
holes or gas bubbles #64376 in work

aug 25 — 95° gave child 1¼ Volts for 1½ hrs gas streaks
just commenced to show. #17603a passing sounds very fine
in work

Aug 26 — 90° gave child 1¼ Volts 1¼ hrs #17603a in work

aug 26 — 88° gave child 1¼ Volts 40 min. #87194 in work

Aug 27 — 90° gave child 1¼ Volts — 1½ hrs #17620a in work

aug 27 — 90° gave child 1¼ Volts 1½ hrs 17621a in work

Aug 28 — 90° gave child 1¼ Volts 1½ hrs. #17625a

Aug 28 — 90° gave child 1¼ Volts 1½ hrs #17622B
spoiled in backing

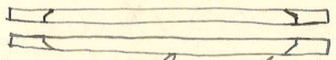
~~Aug.~~ Sept 2 — 85° gave child 1¼ Volts 1½ hrs
87194 spoiled in backing

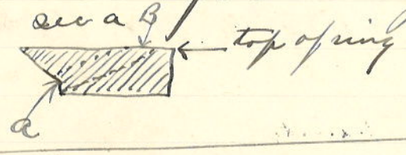
Sept 4. — 85° gave child 1¼ Volts 1½ hrs
#100057 ok

Sept 9-14 — bath 85° the following number were given 2 hrs at 1¼ Volts
in Capitol nickel all those with line drawn through N.G.

17408a	16393B	gas spots show up in most of these matrices
170B	~~17356~~	
415B	162a	after backing due to to much current or solution
390B	913a	to dense
268a	586a	

Sept 10 ~~120007~~ 120007B conditions same
16967a in work
17374a in work
4030a in work

Sept 3-14  rings made like this, give a more even deposit of copper but the top of ring forms a pocket which will not allow the nickel to deposit and on the finished shell it leaves a large spot on the border showing copper, which we over come by drilling a 1/8" hole through the ring on an angle from a to B sec. a



the ~~hole~~ in the top of ring don't seem to quite do the trick as the nickel will deposit ok but the copper don't seem to get as thick in that particular spot as the rest of the shell so have decided to reduce the angle at the top to about 1/2 like sketch

Capitol salto experiments continued

Sept 14 120246a
276 B
16913a

Sept 15 — 17362a ✓
033 B ✓
16162a ✓

Oct 12 (Oxidize) #1 did not brush after oxidizing
1/4 oz corrosive Sublimate 17639 9
2 oz Washing Soda (Separates very good shell looks clean
1 pt warm water and smooth will try again)

#2
Oxidize Would not Separate
5 c.c. creosote
6 oz alcohol

#2
Will try #1 again Oct 14
120284 B Same as #1 except brushed before putting in
17537 B nickel struck a little lt. gs

17536 a & B Making children in capitol nickel 85° — 8 1/2 Baume look ok

#3 will go back to #1 again 16414 B & 17470 a
struck very hard think the oxidize solution spoils will try with new solution.

~~496 a m 28 b 29 + ⊙~~ f 31 ✓
~~496 B m 28 b 29 × ⊙~~ f 30 ✓

17476 a ~~m 24~~ and Vic b 29)
~~476 B m 28 b 29 × ⊙~~ f 31 ✓
~~494 a m 30 b 31~~ f 2
~~494 B m 30 b 31~~ f 2
~~497 a m 28 b 29 + ⊙~~ f 30 ✓
~~497 B m 28 b 29 + ⊙~~ f 31 ✓
~~578 a m 27 b 28 +~~ f 29 ✓
~~578 B m 30 b 2~~ f 3
~~579 a b 27~~ f 28 ✓
~~579 B b 27~~ f 28 ✓
~~521 a m 28 b 29 + ⊙~~ f 30 ✓
~~521 B m 28 b 29 × ⊙~~ f 30 ✓
~~522 a m 28 b 29 + ⊙~~ f 30 ✓
~~522 B m 28 b 29 ×~~ f 30 ✓
~~523 a m 28 b 29 + ⊙~~ f 30 ✓
~~523 B m 28 b 29 + ⊙~~ f 30 ✓
~~524 a m 30 b 31~~ f 31 ✓
~~524 B m 30 b 31~~ f 2
~~525 a m 30 b 31~~ f 2
~~525 B m 30 b 31~~ f 31 ✓
~~527 a m 30 b 31~~ f 31 ✓
~~527 B m 26 b 28~~ m 30 b 2 f 2
~~529 a m 30 b 31~~ f 31 ✓
~~529 B m 26 b 28 ×~~ f 29 ✓
~~530 a b 27~~ f 28 ✓
~~530 B b 27~~ f 28 ✓
~~531 a b 27~~ f 28 ✓
~~531 B (b 27 3) m 30 b~~ b 3 f 3
~~532 a b 27~~ f 28 ✓
~~532 B b 27~~ f 28 ✓

#4

Oct 16 new solution same as #1
16357a

Oct 16 1/4 oz corrosive sublimate one ~~pt~~ 1603 water.
17302B

July 24 – 16

Etching ground

#Gutta - Spircha chips + opt's turpentine make concentrated solution.

Kiran etching ground – 1 c.c.
com. gasoline – 2 c.c.
#1 rubber solution – 1 c.c.
used this as etching ground find it cuts free + clean + is of just the right hardness for recording

July 24 – 16

Glass plate experiments

Had Standard Engraving Co make a plate with their celluloid solution which gave me a good opaque; this coating would take + cut rough on the edge of line, flowed rubber solution over plate + let dry, cuts fine, will try recording on glass plate with this coating. (the rubber solution used on this experiment is opts turpentine + gutta pureha chips)

aug 8. 18

5 lbs = 2280 grams

140 oz dist water — ~~400 grams~~ dist water.

1 oz acid + 7 oz bichrom

2 oz wax to ~~1 Quart~~ (19) gasolene

aug 15/18

first copper record

10 oz water + 165 grams perchloride iron

etched 40 min. in bottom of refrigerator — later ascertained 60° F

groove not wide enough

---

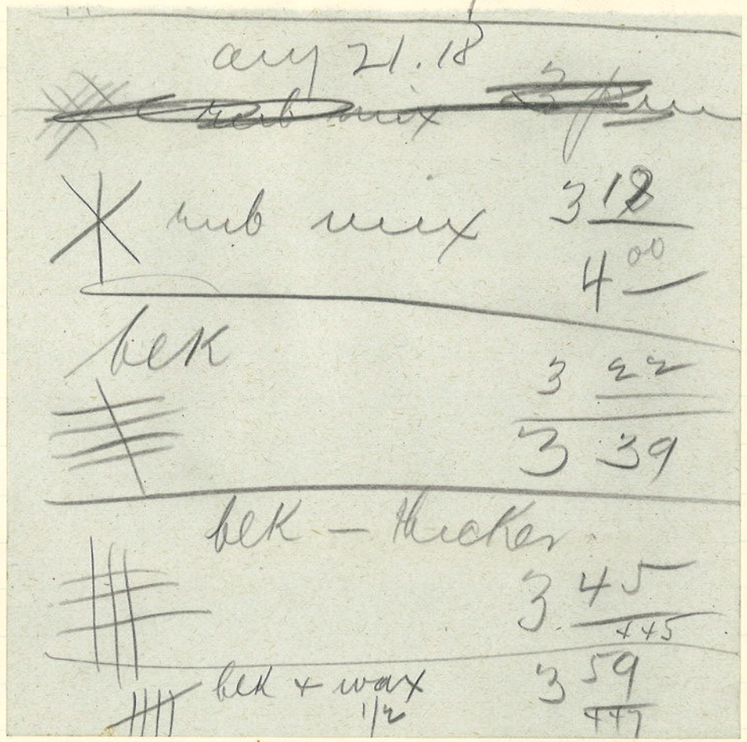
aug 16/18

whistle in recording. New soundbox holder (rigid) Solution 1/16 (89°) first 20 min in Refrig^{r} (89°) then in open (Room Temp 74°) — 32 more min. — 52 min begins to etch thro, — out solution now 71°

(12.83)

Copper

aug 21. 18
etched with full strength perchloride



aug 22. 18

EB. 1. Coating — blk and on top
1/2 strength wax
regular Etchg. solution
Etched thro 1 hour

EB 2 Coating 1/2 (diluted) 1/2
mixed blk & fat as
above used
regular Etching Sol.
to be put through
1 h 10 m. Etching in ferric

EB 3 aug 22/18
same coating as last
new sound box
600 D adapted

aug 22/18

// 1/2 blk 1/2 wax 1/2 } mixed
10 44
11 44

plate — 11 08
12 08

plate pretty good. 12 50
2

// annealed Copper
same Etch as 2 36
// above

X same as // 2 46
but 2/3 blk 4
1/3 Yellow 3 34

plate X 20
615 3

EB4 aug 2 '3. B
Zinc discs; same
Etchg ground as
EB 3. (bichromate)
Etched 33 min - noisy

EB5 same as EB4
bichrom 2/3.

Dissolved beeswax in
chloroform in small bottle
tried on copper

aug 24. 18
trying - adding drops of nitric acid
to etchg fluid. Make it 6 drops p/ounce

aug 29/18
EB6. film 1/2 blk & 1/2 yellow full strength
the whole diluted
with Chlorof.
Etching fluid 30/24 Perchl.

? slow dep.

EB7 same as 6x
but back celluloid van
Etching solution slightly
weaker
aug 30/18

EB8
same as 7 but
Etchg solution agitated
by moving & tapping
pan
final result
good
etchg 30/24

Dissolved beeswax

EB9 same as 8
but film 2/3 yellow 1/3 blk
acid 30/24 (pan agitated)

30/24 bath

Aug 31, 18

EB 10 — same as 9
but slow copper.
bath agitated
freshly sharpd styles

EB 11
double coating (1st Exp w gas)
slow copper
bath agitated
styles left underneath, still appar
ently sharp

EB 12
same as 10. Inclination
in coating reduced to
make coat thicker
Styles touched up but
want fully perfect.

Sep 3/18

30/24

EB 13
freshly sharp styles
same as 12
2 rubber rings on styles
time 40 min. bath agitated slow copper

Copper disc was full of tiny blisters

EB 14
freshly shpd styles
same as 13 but
disc film dried before
fair (20 mins) after treating
before etching
Etching cold in refrig r
without agitating
40 min
using 12 oz instead of 10 oz as heretofore

Sep 4/18

EB 15
same as 14 but no
alcohol used
styles not touched up

Cont'd D. 110

5-7½

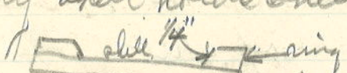
Jan 25 New circular agitating device (circular movement of cathode without agitation of solution)
Make matter 100061 — weight 5 lbs 7½ oz.
15 amp 2¼ Volts

condition of bath ½ F — 15 Baume copper sulphate 3 Baume Sulphuric (6" from top of bath) hard & smooth shell made in 12 hrs weight 8 oz. quite thin in center

Jan 26 weight 6-1¼ ——
condition of bath no — 18 Baume
30 Amps. would not stand this current reduced to 22 amps - 3 Vts
Made 7 oz shell 7½ hrs very thin in center and little rough on edge ring was 5/8" thick edge straight

Jan 27 bath same as above Made shell 12 hrs 11 amps.
very hard still little thin in center the ring on this shell was 5/8" thick & edge straight
looks like this ring is not good

Jan 28 have bath the same as above current strong 20 amps 4 Volts not turning in center very likely on account of ring which is only ½" thick & edge is little tapped
thus 

Feb 15
bath same as before ring that holds shell down ¼" thick and a little taper thus 

deposit very hard & brittle but little rough 3 Volts 20 amps.
9 hrs for 8 oz shell

Feb 16 dissolved ½ gramm glue in water and added to bath as above shell so hard that it separated after 3½ hrs. in copper (pulled) #1 speed 300

Feb 22 Made new solution 16 + 3 — changed speed of machine to 200
No dope 20 amps shell little rough but more even in thickness than before .009 taper
#2 ¼" ring

Feb 23 dope solution 1 gramm glue 1 oz water
Feb 23 added one oz. dope condition same very smooth shell taper about the same as before metal very hard & tough
#3 ¼" ring

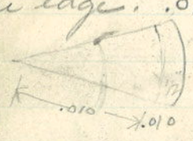
Feb 24 repeat the above results same
#4 ¼" ring

Feb 25 condition 12 13 30 8 a same as above except ring; instead of using the ¼" ring used the 7/16" thick one which brings me back to thin shell in the center again
#5 7/16" (thick ring makes thin center)

#6
Feb 27 same as Feb 25 except speed changed to 150 R.P.M. 7/16" ring shell smooth but result same in regards to thickness of shell thin in center

Mar 1-15
Used lead anode with 2" hole in center anode oxidized & insulated itself in bath which caused the current to drop from 20 —— to 3 amps could not result anode clean. & in this way for 2 hrs only deposited 1/4 oz. including 45 min of nickel (will by carbon anode)

#7
Mar 9 Reduced speed to 60 R.P.M. deposit very good & hard used 1/4" ring still seems to be very flaky deposit on the edge. .010 taper in last half inch of dia of shell and only .010 taper from the center to within 1/2" of outer edge. or in 4 1/2" inches



#8 1/4" ring
60 R.P.M
Mar 10 - same as above except ring, which was changed on edge this [rectangle] 70 5. taper same as above, edge of shell is little more smooth

#9
60 R.P.M.
Mar 11 same as above except used dull ring shell very fine & smooth center .014 edge .025

#10

#11
Mar 12 Same as #10 except speed reduced to 40 R.P.M. good deposit hard shell

edge			center
.014	.018	.015	.011

Mar 15 — dropping 40 R.P.M. thin center caused by air gathering in the center of shell deposit good shell hard

Mar 16 — 1/4" ring 40 R.P.M. thin center same as above (Mar. 15)

Mar 18 Made hole in center of anode (1 1/4") shell looks good. from the center to within 1 1/2" of edge .008 taper the last 1 1/2" has .013 taper making .021 taper all told the thin spot so noticable in the other shells did not show up in this one used thin ring 40 R.P.M.

40 R.P.M.
Mar 19 same as above except used dull ring from center to edge .021 taper, under these conditions the shell is better than (Mar 18) as the taper is gradual not so great at the edge 40 R.P.M.
dull ring

Mar 22 same as above except 60 R.P.M. Results are the same dull ring

Mar 23 same as 22 except added one oz dope very fine shell 60 R.P.M. dep any

Mar 24 same as above except 40 R.P.M. added one more oz of dope made a fine shell very close grain tapt about the same — .011

Mar 25 added one more oz dope taper coarse grain very fine but thin Spot in center of shell looks very much like it is caused by the dope

Mar 26 Made New solution 18 + 2 carbon anode could not keep amp. up.

April 22 used carbon anodes in the corners of bath also hung 3 bags copper sulphate in used 7 amps all the current I could get started with solution 20 Baume after 19 hrs solution showed 22 Baume shell weight was 5½ oz the carbon dont seem to be pure as it dissolves and makes a rough deposit

Made shell with lead anode, 3 bags copper sulphate hung in bath Started with solution at 20 ran 22½ hrs at 8 to 10 Amps. then solution measured 22 shell was very thin weight 4¼ oz deposit Good shell thin in center

18—4

60 R.P.M.

May 5. Made shell with lead anode bath 2 2-2 bags 2½ lbs each copper sulphate weight of shell 8 oz 17 hrs 12 amps bath measured 24 when shell was fin. the only change was holes filed in side of ring which held the shell down thus

and — 2 points acid

Made new solution no acid bath measured 20 could get only 4 amps

#0X

Made new solution 16 + 4 acid — Bath 75 F to bags copper sulphate to hang in weight 6 lbs 3 oz. ran 13 hrs. at 12 Amps weight of shell 6¾ oz weight of copper sulphate left 14 oz solution measured 24 Baume when shell was finished I figure in this case we used 1½ ozs of sulphate to every oz of copper deposited on the cathode

Used #0X solution conditions same except used motion on agitator to prevent thin center which it did except in one spot about ¾" in dia shell very heavy ran 19 hrs 17 amps weight 15 3/4 oz deposit hard & fair for smoothness

Chromic acid as a separator

Chromic acid 1/2 gram Water 16 oz. } #1 solution

Feb 22

this solution is to strong nickel failed nickel bath 85 F

#3

Feb 23 – 5 parts of #1 solution + 5 parts water under same conditions as above still peels

#4

Feb 24 – 2 parts #1 solution 12 Water same as above still peels not as much as before and looks better

#5. 85 F

Feb 25 – same as #5 except Nickel bath at 88 F shows improvement but still peels

#6.

Feb 26 – 2 parts #1 solution + 30 Water same conditions as #6 still peels. (improving all the time)

Feb 27 – one part #1 solution + 25 Water Nickel bath 95 F Left in Nickel 40 min 1½ Hrs to take up solution little to weak had to separate but not bad enough to spoil the shell

Mar 1 used brush with this solution in Cu one part solution 20 water still little hard to separate

Mar 2 one part solution 15 water brushed in the lines still sticks a little

Mar 3 – 2 parts solution 10 of water not brushed just flowed over surface – bath to cold peeled 90 to 95 F

Mar 15 – 2 parts #1 sol. 12 water bath 95 F went through fine separated fine could not be better

Mar 16 same as Mar 15 except bath 90 F peeled

Mar 17 same as Mar 16 except bath 95 F same shell conditions are to exacting drop this

April 14 – 5 C.C. Sol. Ammon sulphide 20 C.C. Water flowed over shell after the usual cleaning looks ok in nickel 55 min condition of bath if normal (85-90) in copper 1 hr. separated fine will dry making shell

April 14 Made Shell with baths at normal conditions using Sol. Aminom. sulphide for separator 5 parts S.A.S. / 20 parts water separates fine will try again

April 15 — same as above except made two shells & used 1 part S.A.S. 5 parts water stripped fine used for regular work, compared with orig. under microscope very favorable.

April 16 used 1 part S.A.S. to 6 parts water works fine stripped fine & clean

April 19 — one part S.A.S. to 8 parts water Separated fine

April 20 one part S.A.S. to 12 parts water stripped very fine

April 21 one part S.A.S to 16 parts water stripped fine

April 22 one part S.A.S. 20 parts water stripped very clean little inclined to stick not enough to spoil shells will continue to reduce solution

April 23 — 25 parts water to one part S.A.S. stripped fine

April 26 — 30 parts water 1 part S.A.S. Stripped fine

April 27 — 35 parts water 1 S.A.S. Stripped fine

April 28 — 50 parts water 1 S.A.S. Stripped fine

May 3 — 75 parts water one S.A.S. stripped ok & very clean

May 4 Made 2 copper mothers in reg ring with sulphide solution for stripper & it works fine

May 6 — 100 parts water 1 part S.A.S. stripped very fine clean & easy to separate

Continued from P. 99

arrived in Montreal May 20/1919 8 am

May 21

Coated Copper disc with whirling Table (Henry) with 2 Ta + 1 No (Levy) (A.)

May 22

recorder and Etched above — acid 30° B perchl. — in Refrig — occasionally moving foam to this — Etched 40 min. after which is was plainly wide. record quiet but lack of quality.

(E B '19/1)

May 23/19

'19

Same as yesterday except plate was warmer which was forgotten yesterday. new peak in drum paint

Will etch without shaking alcohol (denatured) was watery and did not properly soak thro Etching ground. Skylus stumbled.

— spoiled —

May 24. 19

E B '19/3

Same as yesterday — (in ice bath) Etching ground accumulated on Skylus — so should be well dried or disc more heated when coating.

showed "pickles" but was quiet where there were none

May 26/19 E B '19/4

Coating with 2 No + 1 Ta

heating disc to 115°

using Henrys recorder

Etched 50 min. — pickly

May 27/19 E B '19/5

Henry recorder changed to return spring. Too stiff — whistling now & then

E B '19/6

holes put in end of recording blade to increase Elasticity — 2 narrow rubber tubes to eliminate any whistling — coating as in '19/4, same soundbox — Etched 65 min in ice bath.

EB 19/7

May 28. 19

diaphragm now (13/1000)
same soundbox. same as
19/6 — etched 52 min — too long.
coat put on not so hot.
— no shaking of Etching pan

Same day

EB 19/8

same except Etchg grd
(3 ML + 1 ja.) no shaking pan
70 min in ice bath.

May 29/19 EB 19/9

(diaphr 11-12)
new soundbox EB — tubular bar
otherwise coating solution as in 19/6
pan not moved. — etched 38 min.

EB 19/10

Same as 19/9 except coating made
of M.L diluted 1/2 + 1/2 ja. ground
was not porous (tacky) enough
to hold alcohol well. (3)
Spoiled on acct of alcohol
not soaking in.

All previous to #12 exp unreliable as
knife edge was loosely held & often jumped out

May 30/19 EB/19/11

Same as #10 but Etch grd
contained only 10% ja. — it
was enough to allow
alcohol to soak but not
so much as to make surface
so tacky as to hold dust fibers

EB 19/12

same as #11 but soundbox
held rigid & stylus worked
down to more flexibility.
3 "bumps" in disc

May 31/19 EB 19/13

Heavy coating otherwise
same as #12 — coated at
about 68° (hand temperat.) after
coated warmed in oven
for about 10 min.
freshly pointed stylus

Etched slightly through
on top.

June 2. 1919 EB '19/14

Same as #13 but ground solution a little denser. — Record dried (and warmed) in oven prior to Etching. (ice bath)

June 3/19 EB '19/15

facing steel spatter — using just backing plate. Same as #14. adjustable tuned box — relay style on pivots

June 4/19 EB '19/16

Repeating the '19/6 experiment — Sandbox & little changes — heating probably not more than 110°. — Stylus less pressure sounded smooth when recording

This turned out well.

June 5/19

Experiments show that our present Etchg ground must not be heated over (say) 115° F or it will consolidate (melt) and will be impervious to alcohol (present ground 1½ 2 Ta 1 diluted 50/50 Chlorf & benzole

The etching ground should be thoroughly "dry" before Etching — may be warmed or stand say ½ hr an hour — protected.

EB 19/17

Same as #16 but Etchg ground container not Ja — ML diluted 50/50 hot weather. Ja. low voltage (Lachine) Copper

June 6/19 EB 19/18

again back to #6 & 16 — heated (cooled down) to about 100.

Lachine copper (?) dried record after Etching under fan.

June 6. 19 EB 19/19

Same as last Except using diluted MI-HAB — coated mild —

point of stylus broke toward end, drying with fan

front rubber band was pushed back further — same louder noise. ——

Note

It will be worth while to dry dilute the Etching ground used in #19 still more because it ought to be as thin as possible & stand the long acid etching in ice cold Etching.

Perfect discs of slow copper and a spiral, filled with brine kept cold, would be the right way to etch cold & get results.

Next a harder bronze minus of copper to reduce resistance of stylus which now digs into disc.

June 6, 1919

June 2 #1 Mother
#5850, shell slightly oxidized by flame put in black nickel for 30 min. and given 12 hrs copper separated good looks 90% perfect

June 2 #2 mother
shell #16344 B oxidized in black nickel (about 10 seconds) given 25 minutes in white nickel and 12 hrs copper separated good but not as good as 5850 lines look better than those of 5850

June 3 #3 mother
shell #17082 a slightly oxidized by flame put in steel bath for 30 minutes and then in copper 12 hrs shell separated extra good, except in the center where the copper on the dag nick was exposed lines look very good

June 3 #4 mother
shell #16344 B oxidized in black nickel (1/2 minute) given 35 minutes in white nickel and 12 hrs in copper separates much better than #2 and lines look just as perfect.

June 4 #5
#3 + 4 were mounted and ~~pass~~ separated and (children) results were very good record rounded ~~sk~~ little clicky one rounded as good as the other

June 5 used 2 1/2 Volts
#6 – 17344 B oxidized by flame given 35 min. in Kochler bath and then copper bath stuck in lines a little
17344 a oxidized by black nickel given 30 min in coat of white nickel (2 Volts) and started to peel on edges, taken out and put in copper separated good except in one place on rim about 2" long which spoiled the original + mother

June 6 (#7) used 3 Volts
17344 B oxidized by flame by laying on hot plate and getting a straw color on shell (Kochler bath 30 min, started to peel on the rim of shell separated very fine in fact almost droped off after edges were loose and lines look good except in the place where it started to peel
6 #8 oxidized by black nickel in for two min and given 30 min in white nickel 2 Volts separated about the same as other exp[e]riments with black nickel, stuck in one place

June 7 #9 oxidized on shell with lime of sulphur no good looks like the solution was to strong try again

June 7 #10 oxidized shell by flame same way as in #7 except was not oxidized as much as #7 in Kochler bath 30 min. looks very good

10" shells given 40 amps. 6 hrs 17353a
346a
3553B

June 9 #11
shell #5757 oxidized in steel bath (10 min) then current turned on for 30 min 2½ volts copper bath 12 hrs separated great mother look perfect (best yet)

June 9 #12
#16285B oxidized in black nickel bath warmed a little by plating first and then record put in for 1 minm. then given 30 min in white nickel made a perfect shell but stuck in one place try this one again

June 10 #13
mother shell #5757 - to make child oxidized in Koehler bath 8 minutes then 2½ volts for 30 min. separated very good but not as good as the one left in for 10 min, fussing is perfect will try again

June 10 #14
Oxidized 17015a in steel bath 5 min was on edge don't seem to hold the nickel, patched the edge and put through process, made a good mother but looks a little fuzzy.

June 11 #15 Mother #5757 oxidized in steel bath 10 min under conditions like #13 still separates a little hard will try again.

June 11 #16 mother #17015a oxidized in S. bath 8 min. 2½ Volts little to hard to separate but child looks good

June 12.
#15 making child from record fussed from special material given 30 minutes in nickel (steel) looks a little rough

#16 oxidized shell #16699a with sulphur solution 30 min in nickel 2 Volts (Koehlers) looks a little rough think the oxide solution is a little strong separated fine looks perfect will make child

#18 oxidized mother #17015a in (steel bath) 15 min in nickel 1 hr 10 min 2 volts. looked at this one twice think it was dry on one side as the nickel pulled showing another coat of nickel separated good much better than before

June 13
#19 record made special material coated in white nickel like a flash left in 30 min looks dull record very noisy

Special material | 12 lbs graphite
7" n.l.
1 " pitch 1 lb more added
1 " flock

June 13 #20

Mounted mother #16699a oxidized sulphur solution in white nickel for 50 min 2 volts hard to separate shells child this is steel mother and nickel child

#21

mother #17015 oxidized in steel bath 15 min nickeled in same bath 2½ volts 80 min separates just right not to hard but sums to stick tight enough to prevent solution from getting between the two shells

#mother #5757 oxidized sulphur solution put in white nickel bath for 45 min with 2 volts sticks very badly looks like white nickel on steel won't do

June 15 #22

Shell #17015 oxidized in steel bath 15 min given 3 volts with anodes back as far as can get them for 40 min separates hard

#23

#16699a oxidized in white nickel bath 15 min given 2 volts 40 min very hard to separate no good

June 16 #24

Mother #17015 oxidized in steel bath 15 min given 3 volts for 1 hr 20 minutes with anodes back as far as possible given 350 amp hrs in copper separated fair shell very heavy

June 16
#25 Shell #60040 oxidized in steel bath 15 min and given 2½ volts for 1 hr 20 min anodes moved up within 4" of cathode 240 amp hrs copper bath shell stuck a little sums to thin

June 17 #26

60040 oxidized in steel bath 15 min given 4 volts for about 1 minn and then reduced to 2½ volts for 1 hr 20 min 240 amp hrs copper bath shell separated a little better than #25 but still to hard will try again

June 18 #27 1 hr 20 min

60040 oxidized in steel bath 15 min given 4 ½ Volts for 5 min and then reduced to 3 volts with anodes 3½ in from record showed a big improvement in separating although not perfect

June 19 #28

#60040 removed from rubber back and cleaned heated with flame on face and remounted given 10 min to oxidize in bath and 2½ volts with anodes close (3") for 50 minutes started to peel on edges still separates a little to hard will try again.

June 19 #29
Shell #17001a heated with flame and mounted oxidized in steel bath 15 min then given 4 volts for 5 min reduced to 3 volts let stay in bath for 1 hr 20 min nickel peeled by again.
#17001a leband and remounted given 5 minutes in steel bath to oxidize and then 2½ volts for 1 hr 20 min stuck very bad edges were not waxed properly will try again

Very Good

June 20 #30
Shell #17001a heated with flame on face oxidized in steel bath 5 minutes given 3 volts for one hour looks good separated fine will make child

June 20 #31
Shell #6000 heated with flame on face give 15 min to oxidize in steel bath and then 2½ volts for 1 hr - 20 min nickel peeled no good

Very Good

June 20 #32
Shell #17189B heated on face by flame mounted and given 10 minutes in steel bath to oxidize nickeled with 2½ volts 50 min separated fine except in center where copper was exposed on original, shell very thin

June 21 Shell #1718913
#33 Same as #32 except will silver center where copper is exposed. (2½ volts 50 min) was not oxidized again by flame looks very good the edges of original seem to have been exposed allowing the deposit to hug the edge and making separation hard

good

June 21
#34
Mother #17001a oxidized with flame on face and given 10 min in steel bath. given 5'5 min at 2½ child good separated good

June 23
#35
Shell #17189B oxidized in steel bath 15 min given 5 Volts for 5 min and then 2½ volts 50 minutes given 350 amp hrs in copper made very heavy shell still separates a little hard

Good

#36
Shell #3836 oxidized by flame given 15 min in steel bath without current then 2½ Volts for 1 hr. separated very good will make child from this one

#37
mother 5836

38
16011 a given about 5 seconds in nickel bath 2 Volts and then alowed to stand exposed to the air 1½ min

hard to separate

39
16010 a given about 1 second in copper bath then washed in weak solution of lime of sulphur and put in nickel for ½ hr

hard to separate

40 this one separates a little better but not right yet
Shell #5830 given coat of wax solution let dry

#41
Shell #17292 a (not oxidized by carbon)
given about separated as I expected by filing heavy but a little rough on part as shown

#42
Shell #17292 B oxidized by carbon (gas)
given 30 min in nickel then copper flashed across and returned to nickel bath for 30 min more at 1 to 1½ Volts. copy very heavy separated fine made good shell

#43
17288 a coated with copper by using iron filings then oxidized by sulphur solution. This one is hard to separate

Very good
17288 B given just time enough in copper bath to show the slightest change of colour on surface then oxidized with sulphur this one looks fine and would not separate better

May 28-17

48 parts Pathe
1 part Vaseline
can stand more Vaseline

#1101
Nov 1-17
48 Pathe
2 Vaseline
this one works good

---

48 Pathe
3 Vaseline
too much Vaseline

June 24 – 18
3 parts Parowax
1 – " – New York –
Looks like we can make this one a little harder with the
Equal parts Parowax
1 " New York

June 24 – 18
48 Parts New York
2 " Vaseline

Finished Vic. record moulds

Finished and put in work

1 & 2 - Oct 21. 12

~~3~~ & 4 - Nov. 5-12 #3 new rings nov. 18

5 & ~~6~~ - Nov 8

~~7~~ & ~~8~~

~~9~~ & ~~10~~

11 & 12

6 & 7 Nov 12 #6 new rings Nov ~~28~~

8 " 15

9 " 18

10 " 20

11 " 23

4 New welded rings in use Jan 13

Victor Model Molds

Mould No.	In work	Repair
1 + 2	Oct 21 - 12	
3 + 4	Nov 4 - 12	
5	" 8 - 12	
6 + 7 Vic	" 11 - "	
8	" 15 - "	
9	" 18 "	
10	" 20 "	
11	" 23 "	
12	" 28 "	
13 + 14	" 30 "	
15 + 16	Dec 3	
17	06	
18	17	
19	18	
20	19	
2	20	
22 + 23	Jan 13 - 13	
24	Feb 8	
25	" 11	

April 8 - 15 -

New Rings 10" child 10" matter

#		
	a 1	B 1
	a 2	B 2

Vet 12 Backed with acid

17125 B	16392 B
157 a	64260
167 a	181
020 a	100016
091 B	
140 B	

Vet 14

17112 a	16394 B
117 B	438 a
168 B	446 B
167 B	154 B
165 B	5532 B
033 B	5517
60076	2896
	31788
	88103 —

Vet 15

169543 B	17110 B
676 B	109 a
154 a	082 a
	124 a
	030 a
	0953 B
	068 B
	169 B
	081 a

oct 9

#16730 B mounted on hanger with ring backed well

#16384 a used acid to ~~solder~~ reg shell looks fine

17162 a
163 a
167 B
165 B
} ring around outside dia.

oct 10

17171 a & B backed

oct 11

17125 B
157 a
167 a
168 B
} Ring on outside dia backed with acid

oct 12

7924
16154 a
6763
17082 a
095 B
} Ring on outside dia backed with acid

Nickel Vanadium bath

Dissolve 1 oz Vanadium Chloride in 1 qt distilled water, stir solution well when adding the above to prepared solution,

Use double nickel salts only bring up to #6

Keep one oz Va Chloride diluted in one qt of distilled water & add one oz of this solution when strengthing bath with nickel salts

100 gals dist water
8 oz iron sulphas
1 oz Va Chloride

Solution should be kept between 6 & 7 and about 90°

In making copper sulphate bath of 120 gals. (U S) use

30 lbs sulphuric acid
180 lbs copper salts.

Oct 16

60050 74 x Wauk iron Scrish
17117 B

Oct 19
Backed with 75% tin

16903 B 17075 B
786a 157 B
818a 35753 B
8978 B 3547
765a
537a
561a
934a
995 B
934a
3213
440a

SOLUTION I B.

Cobalt-ammonium-sulphate, $CoSO_4 (NH_4)_2SO_4.6H_2O$, 200 grammes to the liter of water, which is the equivalent of 145 grammes of anhydrous cobalt-ammonium-sulphate, $CoSO_4 (NH_4)_2SO_4$, to the liter of water. Specific gravity - 1.053 at 15 deg. Cent.

SOLUTION XIII B.

Cobalt sulphate $CoSO_4$	312 grammes
Sodium chloride NaCl	19.6 "
Boric acid	nearly to saturation
Water	1000 c.c.

Specific gravity - 1.25 at 15 deg. Cent

SOLUTION I B.

Cobalt-ammonium-sulphate, $CoSO_4 (NH_4)_2SO_4.6H_2O$, 200 grammes to the liter of water, which is the equivalent of 145 grammes of anhydrous cobalt-ammonium-sulphate, $CoSO_4 (NH_4)_2SO_4$, to the liter of water. Specific gravity - 1.053 at 15 deg. Cent.

SOLUTION XIII B.

Cobalt sulphate $CoSO_4$	312 grammes
Sodium chloride NaCl	19.6 "
Boric acid	nearly to saturation
Water	1000 c.c.

Specific gravity - 1.25 at 15 deg. Cent