FILE DESCRIPTION

PHILADELPHIA FILE

SUBJECT HARRY Gold

FILE NO. 65-4307

VOLUME NO. 1B12

SERIALS (1)

Inventory Worksheet
FD-5a/b (2-16-77)

VOLUME 1-12

PHILADELPHIA FILES

REVIEWED BY SJS

File No. 65-11307 Re: HAROLD [illegible] (DECEASED)

Dated 6/78 (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
1-B-12-1	6-6-50	COVER LETTR TO DALLIN ENCLOSURE	1	1	
1-B-12-1	7-7-50	SA MEMO TO SAC	1	1	
1-B-12-1	6-6-50	AL DEPOSITION ON PAPERS	1	1	
1-B-12-1	6-6-50	ENCLOSURE ENVELOPE EVIDENCE #1	1	1	
1-B-12-1	6-6-50	CHART - VAPOR PRESSURE OF DIETHYL PHTHALATE	1	1	
1-B-12-1	6-6-50	CHART - VAPOR PRESSURE OF ALUMINUM	1	1	
1-B-12-1	6-6-50	CHART - VAPOR PRESSURE OF GOLD	1	1	
1-B-12-1	6-6-50	ROUGH NOTES - RAVITATION FROM CRUCIBLE	1	1	
1-B-12-1	6-6-50	ROUGH NOTES - HEAT OF VAPORIZATION OF AL	2	2	
1-B-12-1	6-6-50	ALUMINUM CHART	1	1	
1-B-12-1	6-6-50	AL COATING PROCESS	1	1	
1-B-12-1	6-6-50	ROUGH NOTES - EA21(1927) - CA30(1936)	1	1	

Inventory Worksheet
FD-5a (3-10-77)

VOLUME 1-B-12

PHILADELPHIA FILES

REVIEWED BY SSS

File Nos. 62-HQ-[illegible]

Re: HACKER COLE [illegible] (HQ FILE)

Date 6/78 (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
		ROUGH NOTES			
1-B-12-1	6-6-50	CA 36 5-490' (1932)	1	1	
1-B-12-1	6-6-50	AL COATING PROCESS CA 31 (1932)	1	1	
1-B-12-1	6-6-50	AL COATING PROCESS CA 33 (1938)	1	1	
1-B-12-1	6-6-50	ROUGH NOTES CA 33 3141 (1938)	1	1	
1-B-12-1	6-6-50	ROUGH NOTES CA 33 3141 (1938) (2)	1	1	
1-B-12-1	6-6-50	ROUGH NOTES CA 33 [illegible]-6 (1938)	2	2	
1-B-12-1	6-6-50	ROUGH NOTES CA 33 (1939)	1	1	
1-B-12-1	6-6-50	ROUGH NOTES CA 33 3880 (1939)	1	1	
1-B-12-1	6-6-50	ROUGH NOTES CA 34 (1940)	1	1	
1-B-12-1	6-6-50	ROUGH NOTES CA 21 (1932) - CA 30 (1936)	1	1	
1-B-12-1	6-6-50	ROUGH NOTES FOLDER #2	1	1	
1-B-12-1	6-6-50	GOLD COATING PROCESS CA 31 (1932)	1	1	

FBI/DOJ

Inventory Worksheet
FD-340a (3-10-77)

VOLUME 10/2

PHILADELPHIA FILES

REVIEWED BY SJS

File No. 62-7207 Re: HARRY [illegible] (62-4164-4)

Date: 6/78 (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
1-B-R-1	6-6-50	ROUGH NOTES CA21-2765 (1932)(1)	4	4	
1-B-R-1	6-6-50	ROUGH NOTES CA21 2722 (1932)	1	1	
1-B-R-1	6-6-50	ROUGH NOTES CA33 (1938)	1	1	
1-B-R-1	6-6-50	ROUGH NOTES CA33 (1939)	1	1	
1-B-R-1	6-6-50	ROUGH NOTES CA33 & 37 (1939)	1	1	
1-B-R-1	6-6-50	ROUGH NOTES CA34 (1940)	1	1	
1-B-R-1	6-6-50	ROUGH NOTES CA34 1470 (1940)	1	1	
1-B-R-1	6-6-50	ROUGH NOTES CA35 (1941)	1	1	
1-B-R-1	6-6-50	ROUGH NOTES CA36 (1942)	1	1	
1-B-R-1	6-6-50	ROUGH NOTES CA37 (1943)	1	1	
1-B-R-1	6-6-50	ROUGH NOTES CA38 (1944)	1	1	
1-B-R-1	6-6-50	ROUGH NOTES CA39 (1945)	1	1	

FD-340a

Inventory Worksheet
F.D.-5(a) (2-16-77)

VOLUME 162 | PHILADELPHIA FILES | REVIEWED BY SJS

File No. 62-4307 Re: HARRY GOLDMAN, ESQUIRE Date: 6/78 (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
1-B-12-1	6-6-50	ROUGH NOTES CA40 (1946)	1	1	
1-B-12-1	6-6-50	ROUGH NOTES CA21(1933) TO CA30(1936)	1	1	
1-B-12-1	6-6-50	ROUGH NOTES TEMP OF CATHODE	1	1	
1-B-12-1	6-6-50	ROUGH NOTES 21 EN COMPARISON	1	1	
1-B-12-1	6-6-50	ROUGH NOTES CATHODE SPUTTERING	1	1	
1-B-12-1	6-6-50	ROUGH NOTES THERMAL FLUCT.	1	1	
1-B-12-1	6-6-50	ROUGH NOTES CATHODE EMISSION	1	1	
1-B-12-1	6-6-50	ROUGH NOTES ELECT PROPERTIES	1	1	
1-B-12-1	6-6-50	ROUGH NOTES CATHODE DISINTEGRATION	1	1	
1-B-12-1	6-6-50	ROUGH NOTES CA30 1620 (1936)	1	1	
1-B-12-1	6-6-50	ROUGH NOTES CA31 4543 (1937)	1	1	
1-B-12-1	6-6-50	ROUGH NOTES PATH SEPT 18, 1941	1	1	

FD-5(Rev.)

Inventory Worksheet
FBI-DOJ 12-10-77

VOLUME 1B12 | PHILADELPHIA FILES | REVIEWED BY SJS

File No. 62-[illegible]-2 Ref. HARRY SINKOV

Date [illegible] (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
1-B-12-1	6-6-50	MATH EQUATION	1	1	
1-B-12-1	6-6-50	ROUGH NOTES DATED 8-16-47	2	2	
1-B-12-1	6-6-50	ROUGH NOTES DATED 8-20-47	5	5	
1-B-12-1	6-6-50	ROUGH NOTES DATED 8-15-47	3	3	
1-B-12-1	6-6-50	MATH NOTES	1	1	
1-B-12-1	6-6-50	FOLDER #3	1	1	
1-B-12-1	6-6-50	SA MEMO TO SAC	1	1	
1-B-12-1	6-6-50	FOLDER #3 MISCELLANEOUS	1	1	
1-B-12-1	6-6-50	LETTER FROM MARCH COMPANY DATED APRIL 2, 1941	1	1	
1-B-12-1	6-6-50	ROUGH NOTES DATED 4-5-41	1	1	
1-B-12-1	6-6-50	ROUGH NOTES HANDRY PROCESS	3	3	
1-B-12-1	6-6-50	FOLDER NO. 4	1	1	

Inventory Worksheet
(1-84) (2-28-77)

VOLUME 1312

PHILADELPHIA FILES

REVIEWED BY

File No. [illegible]307 Re: [illegible]

Date [illegible]
(month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
1-B-12-1	6-6-50	ROUGH NOTES VOL 29 1935	1	1	
1-B-12-1	6-6-50	ROUGH NOTES VOL 28 1934	1	1	
1-B-12-1	6-6-50	ROUGH NOTES MARKED CBP	1	1	
1-B-12-1	6-6-50	ROUGH NOTES RE. CO2 RECOVERY	1	1	
1-B-12-1	6-6-50	ROUGH NOTES DATED JUNE 1941	1	1	
1-B-12-1	6-6-50	ROUGH NOTES B-ATAMINE	1	1	
1-B-12-1	6-6-50	ROUGH NOTES - DESTRUCTION OF PANTOTHENIC ACID	1	1	
1-B-12-1	UNDATED	ROUGH NOTES 10-7100	1	1	
1-B-12-1	6-6-50	CHEMICAL NOTES 61 1421 (1939)	1	1	
1-B-12-1	6-6-50	PRODUCTION OF PANTOTHENIC ACID EN YEAST	1	1	
1-B-12-1	6-6-50	ROUGH NOTES DATED 8/11/41	1	1	
1-B-12-1	6-6-50	ROUGH NOTES SIGNED BY HARRY GOLD	1	1	

FBI/DOJ

Inventory Worksheet
FD-340 (3-10-77)

VOLUME 1813

PHILADELPHIA FILES

REVIEWED BY CTC

File No. 65-9193 Re: [illegible]

Date: 11/2/78 (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
1-A-R-1	6-6-50	ROUGH NOTES S-08 Iam = 62 [illegible] white	1	1	
1-B-R-1	6-6-50	ROUGH NOTES DATED 8-11-41	1	1	
1-B-R-1	6-6-50	ROUGH NOTES RE. DEALKSES OF MOLASSES	1	1	
1-B-R-1	6-6-50	ORGANIC ACIDS OF SUGAR CANE MOLASSES	1	1	
1-B-R-1	6-6-50	ROUGH NOTES RE. MOLASSES	1	1	
1-B-R-1	6-6-50	ELECTRODEALKSES OF EXHAUSTED MOLASSES	1	1	
1-B-R-1	6-6-50	ROUGH NOTES DATED 8-15-41	1	1	
1-B-R-1	6-6-50	ROUGH NOTES - NICOTINE ACID	1	1	
1-B-R-1	6-6-50	ROUGH NOTES HCS 62 195 (1940)	1	1	
1-B-R-1	6-6-50	ROUGH NOTES NICOTINE ACID	2	2	
1-B-R-1	6-6-50	ROUGH NOTES - ACID HYDROLYZED CASIN	1	1	
1-B-R-1	6-6-50	ROUGH NOTES NICOTENE ACID	1	1	

FBI/DOJ

Inventory Worksheet
(Revised 12-16-77)

VOLUME 1B12

PHILADELPHIA FILES

REVIEWED BY STC

File Nos. 1-[illegible]

Box 1-A [illegible] (FILED)

Dated [illegible]
(month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
1-B-12-1	6-6-50	ROUGH NOTES RE. THERMONE	1	1	
1-B-12-1	6-6-50	ROUGH NOTES RE THERMONE	1	1	
1-B-12-1	6-6-50	ROUGH NOTES CHEM. EQUATIONS	1	1	
1-B-12-1	6-6-50	ROUGH NOTES BUDGET MATTERS	1	1	
1-B-12-1	6-6-50	ROUGH NOTES RE. TIME COSTS	1	1	
1-B-12-1	6-6-50	ROUGH NOTES VOL 139 P 471-6 (1939)	1	1	
1-B-12-1	6-6-50	ROUGH NOTES RE TEST PROCESS	4	4	
1-B-12-1	6-6-50	ROUGH NOTES (JACP 59, 245-7)	1	1	
1-B-12-1	6-6-50	LETTER TO DR. LAWRENCE ATKIN	1	1	
1-B-12-1	6-6-50	THERMAL DIFFUSION OF GASES	1	1	
1-B-12-1	6-6-50	ROUGH NOTES C A 34 3552	1	1	
1-B-12-1	6-6-50	FOLDER #4	1	1	

FBI/DOJ

Inventory Worksheet
FD-340 (2-10-77)

VOLUME 12 M

PHILADELPHIA FILES

REVIEWED BY STS

File No. [illegible]

Box [illegible]

Date [illegible] (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
1-B-12-1	6-6-50	FOLDER # 7	1	1	
1-BR-1	7-7-50	SA MEMO TO SAC	1	1	
1-B-12-1	7-7-50	SA MEMO TO SAC.	1	1	
1-B-12-1	6-6-50	TYPED NOTES RE. AUTONOMIC NERVES	5	5	
1-B-12-1	6-6-50	TYPED NOTES RE AUTONOMIC PHARMACOLOGY	9	9	
1-B-12-1	6-6-50	FOLDER # 6	1	1	
1-B-12-1	7-7-50	SA MEMO TO SAC.	1	1	
1-B-12-1	6-6-50	TYPED NOTES RE AUTONOMIC PHARMACOLOGY	9	9	
1-B-12-1	6-6-50	NOTES RE. SYNTHETIC ANESTHETIC AGENT	1	1	
1-B-12-1	6-6-50	MEDICAL NOTES	1	1	
1-B-12-1	6-6-50	MEDICAL NOTES	1	1	
1-B-12-1	6-6-50	MEDICAL NOTES	1	1	

FBI/DOJ

Inventory Worksheet
F1-0(4) (2-10-77)

VOLUME 1 R 17

PHILADELPHIA FILES

REVIEWED BY CTC

File No. [illegible]

Re: HAROLD [illegible]

Date: 11/[illegible]/78 (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
1-B-R-1	6-6-50	MEDICAL NOTES	1	1	
1-B-R-1	6-6-50	MEDICAL NOTES	1	1	
1-B-R-1	6-6-50	MEDICAL NOTES	1	1	
1-B-R-1	6-6-50	ENLOSE #7	1	1	
1-B-R-1	7-7-50	SAN ANTONIO TO SAC	1	1	
1-B-R-1	6-6-50	ROUGH NOTES STILL	1	1	
1-B-R-1	6-6-50	ROUGH NOTES 1-1907	1	1	
1-B-R-1	6-6-50	ROUGH NOTES 1-1907 K3 C03 4	4	4	
1-B-R-1	6-6-50	ROUGH NOTES 2-1908 K3 C03	1	1	
1-B-R-1	6-6-50	ROUGH NOTES 2-1908 K3 C03 1509	1	1	
1-B-R-1	6-6-50	ROUGH NOTES 2-1909 2 4 4	2	2	
1-B-R-1	6-6-50	ROUGH NOTES 4-1910	2	2	

FBI/DOJ

Inventory Worksheet
(10-CFR (3-16-77))

VOLUME 1B12

PHILADELPHIA FILES

REVIEWED BY STS

File No. [illegible]

Re: [illegible]

Date 6/78 (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
1-B-R-1	6-6-50	ROUGH NOTES 4-1910 1565	2	2	
1-B-R-1	6-6-50	ROUGH NOTES 5-1911	2	2	
1-B-R-1	6-6-50	ROUGH NOTES 6-1912	2	2	
1-B-R-1	6-6-50	ROUGH NOTES 7-1913	1	1	
1-B-R-1	6-6-50	ROUGH NOTES 8-1914	1	1	
1-B-R-1	6-6-50	ROUGH NOTES 9-1915	1	1	
1-B-R-1	6-6-50	ROUGH NOTES 10-1916	1	1	
1-B-R-1	6-6-50	ROUGH NOTES 11-1917	1	1	
1-B-R-1	6-6-50	ROUGH NOTES 12-1918	3	3	
1-B-R-1	6-6-50	ROUGH NOTES 13-1919	1	1	
1-B-R-1	6-6-50	ROUGH NOTES 14-1920	1	1	
1-B-R-1	6-6-50	ROUGH NOTES 15-1921	1	1	

Pg/Bks

Inventory Worksheet
FD-340a (3-10-77)

VOLUME 1 of 2

PHILADELPHIA FILES

REVIEWED BY CTS

File No. [illegible]

Re: [illegible]

Date 6/78 (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
1-B-12-1	6-6-50	ROUGH NOTES 24-1930	1	1	
1-B-12-1	6-6-50	ROUGH NOTES 1--1971	1	1	
1-B-12-1	6-6-50	ROUGH NOTES 16-1972	1	1	
1-B-12-1	6-6-50	ROUGH NOTES 16-1972 - 994	1	1	
1-B-12-1	6-6-50	ROUGH NOTES 16-1972 - 3176	1	1	
1-B-12-1	6-6-50	ROUGH NOTES 16-1972 - 3179	1	1	
1-B-12-1	6-6-50	ROUGH NOTES 17-1972	1	1	
1-B-12-1	6-6-50	ROUGH NOTES 17-1972 - 1576	1	1	
1-B-12-1	6-6-50	ROUGH NOTES 18-1974	1	1	
1-B-12-1	6-6-50	ROUGH NOTES 18-1974 [illegible]	1	1	
1-B-12-1	6-6-50	ROUGH NOTES 18-1911-1973	1	1	
1-B-12-1	6-6-50	ROUGH NOTES 19-1972	1	1	

FBI/DOJ

Inventory Worksheet
FD-340 (2-10-77)

VOLUME 1 R12

PHILADELPHIA FILES

REVIEWED BY STS

File No. [illegible] Re: HARRY EDWARD [illegible]

Date 11/28/78 (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
1-B-12-1	6-6-50	ROUGH NOTES 19-1925 - 170	1	1	
1-B-12-1	6-6-50	ROUGH NOTES 20-1926	1	1	
1-A-12-1	6-6-50	ROUGH NOTES 21-1927	1	1	
1-B-12-1	6-6-50	ROUGH NOTES 22-1928	1	1	
1-B-12-1	6-6-50	ROUGH NOTES 22-1928 - 1868	1	1	
1-A-12-1	6-6-50	ROUGH NOTES 23-1928-2640	2	2	
1-A-12-1	6-6-50	ROUGH NOTES 23-1929	1	1	
1-A-12-1	6-6-50	ROUGH NOTES 24-1930	1	1	
1-B-12-1	6-6-50	ROUGH NOTES 24-1930 5096	1	1	
1-B-12-1	6-6-50	ROUGH NOTES 24-1930 4193	1	1	
1-B-12-1	6-6-50	ROUGH NOTES [illegible]-1931	1	1	
1-B-12-1	6-6-50	ROUGH NOTES 2[illegible]-1931 781	1	1	

FD-340a

Inventory Worksheet
FOIPOW (2-10-77)

VOLUME 1012

PHILADELPHIA FILES

REVIEWED BY SJS

File No. 5[illegible]

Re: HARVEY [illegible]

Dated 11/28/78
(month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
1-A-12-1	6-6-50	ROUGH NOTES 25-1931 4767	1	1	
1-A-12-1	6-6-50	ROUGH NOTES 26-1957	1	1	
1-A-12-1	6-6-50	ROUGH NOTES 24-1970 4761	1	1	
1-A-12-1	6-6-50	ROUGH NOTES 27-1977	1	1	
1-A-12-1	6-6-50	ROUGH NOTES 27-1977	1	1	
1-A-12-1	6-6-50	ROUGH NOTES 27-1977 4752	1	1	
1-A-12-1	6-6-50	ROUGH NOTES 27-1977 2-79	1	1	
1-A-12-1	6-6-50	ROUGH NOTES 27-1977 5-154	1	1	
1-A-12-1	6-6-50	ROUGH NOTES 27-1977 5-157	1	1	
1-A-12-1	6-6-50	ROUGH NOTES 25-1954	1	1	
1-A-12-1	6-6-50	ROUGH NOTES 25-1974 4182	1	1	
1-A-12-1	6-6-50	ROUGH NOTES 25-1974 1149	1	1	

FBI/DOJ

Inventory Worksheet
FD-340a (3-10-77)

VOLUME 1B12

PHILADELPHIA FILES

REVIEWED BY CTS

File No. [illegible]

Re: HARRY [illegible]

Date 6/78
(month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
1-A-1-1	6-6-50	ROUGH NOTES 28-1934-6255	1	1	
1-A-1-1	6-6-50	ROUGH NOTES 29-1935	1	1	
1-A-1-1	6-6-50	ROUGH NOTES 29-1935 5246	1	1	
1-A-1-1	6-6-50	ROUGH NOTES 29-1935 [illegible]	1	1	
1-B-1-1	6-6-50	ROUGH NOTES 30-1935	1	1	
1-C-1-1	6-6-50	FOLDER MARKED [illegible]	1	1	
1-A-1-1	6-6-50	[illegible]	1	1	
1-A-1-1	6-6-50	[illegible]	1	1	
1-A-1-1	7-7-50	[illegible] TO SAC	1	1	
1-B-1-1	6-6-50	MATERIALS LEFT 1 DOZ HEARTSTATIONS	4	4	
1-B-12-1	6-6-50	DIAGRAM OF MEINET STATION [illegible]	1	1	
1-B-12-1	6-6-50	ROUGH CALCULATIONS	1	1	

FD-340a

Inventory Work sheet
FD-340 (2-10-77)

VOLUME 1/12

PHILADELPHIA FILES

REVIEWED BY STS

File No. 1-PH-1183 Re: KAPLAN [illegible]

Date 11/78
(month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
1-PH-1	6-6-50	ROUGH NOTES J.A.C 137 20 1-00 9/14/	1	1	
1-PH-1	6-6-50	ROUGH NOTES RE MTG 9-7-50	1	1	
1-PH-1	6-6-50	ROUGH NOTES - STIMULANTS OF NARCOTIC [illegible]	1	1	
1-PH-1	6-6-50	ROUGH NOTES DATED 11-5-49 PG 8 -	2	2	
1-PH-1	6-6-50	ROUGH NOTES - [illegible]	1	1	
1-PH-1	6-6-50	ROUGH NOTES [illegible]	1	1	
1-PH-1	6-6-50	ROUGH NOTES - C-N.S	1	1	
1-PH-1	6-6-50	ROUGH NOTES DATED 11-15-49	1	1	
1-PH-1	6-6-50	ROUGH NOTES DATED 10-7-49 PG 1 [illegible]	6	6	
1-PH-1	6-6-50	ROUGH NOTES RE. [illegible]	1	1	
1-PH-1	6-6-50	ROUGH NOTES MEDICAL MATTERS	1	1	
1-PH-1	6-6-50	ROUGH NOTES MEDICAL MATTERS	3	3	

FD-340a

Inventory Worksheet
FD-340 (6-16-77)

VOLUME 1 of 12

PHILADELPHIA FILES

REVIEWED BY STS

File No. 6[illegible]-5

Re: HARVEY ROSS [illegible]

Date: 11/28/78 (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
1-A-12-1	6-6-50	ROUGH NOTES RE CONTROL OF CIRCUL- [illegible]	1	1	
1-A-A-1	6-6-50	ROUGH NOTES DATED 9-15-47	1	1	
1-A-A-1	6-6-50	ROUGH NOTES RE, [illegible]	1	1	
1-B-12-1	6-6-50	ROUGH NOTES RE [illegible]	1	1	
1-B-12-1	6-6-50	ROUGH NOTES MATH FIGURES	1	1	
1-B-12-1	6-6-50	ROUGH NOTES [illegible] (HW)	1	1	
1-B-12-1	6-6-50	ROUGH NOTES MATH FIGURES	1	1	
1-A-12-1	6-6-50	ROUGH NOTES DATED 11-5-48	1	1	
1-A-12-1	6-6-50	ROUGH NOTES [illegible]	1	1	
1-B-12-1	6-6-50	ROUGH NOTES RE [illegible]	2	2	
1-A-12-1	6-6-50	ROUGH NOTES RE [illegible]	1	1	
1-A-12-1	6-6-50	CHEMICAL FORMULAS	1	1	

FD-340a

Inventory Worksheet
(Form 10-1771)

VOLUME 1 of 2

PHILADELPHIA FILES

REVIEWED BY STS

File No. 1-[illegible]-1057 Re: [illegible]

Dated [illegible] (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
1-A-1-1	6-6-50	FOUNTAIN PEN ENVELOPE	1	1	
1-A-1-1	6-6-50	ROUGH NOTES DATED 10-16-48	1	1	
1-A-1-1	6-6-50	ACTION OF DRUGS ON RESPIRATORY SYSTEM	1	1	
1-A-1-1	6-6-50	ROUGH NOTES RE [illegible]	1	1	
1-A-1-1	6-6-50	ROUGH NOTES DATED 11-8-48	3	3	
1-A-1-1	6-6-50	ROUGH NOTES MATH EQUATIONS	1	1	
1-A-1-1	6-6-50	MATERIALS FOR [illegible] STATION	6	6	
1-A-1-1	6-6-50	ENVELOPE ADDRESSED TO [illegible]	1	1	
1-A-1-1	6-6-50	SEMINAR ANNOUNCEMENT	2	2	
1-A-1-1	6-6-50	ROOM ORDER FORMS	1	1	
1-A-1-1	6-6-50	ORDER LETTER TO [illegible]	1	1	
1-A-1-1	6-6-50	BLANK INCOME TAX FORMS	4	4	

Previous

Inventory Worksheet
FORM (2-16-77)

VOLUME 1 OF 1

PHILADELPHIA FILES

REVIEWED BY CTC

File No. [illegible]

Re: LEAVEY CO [illegible]

Date: 6/78
(month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
1-A-1-1	6-6-50	FOLDER # 9	1	1	
1-A-1-1	7-2-50	SAN FRAN TOSAC	1	1	
1-A-1-1	1-6-50	TYPED NOTES RE CHEMOTHERAPY	8	8	
1-A-1-1	6-6-50	THERAPEUTIC VALUE OF MAJOR ANTIBIOTICS	1	1	
1-A-1-1	6-6-50	MAJOR ANTIBIOTIC AGENTS	1	1	
1-A-1-1	6-6-50	REP. DRUGS USED IN MALIGNANCY SURVEY	1	1	
1-A-1-1	6-6-50	ROUGH NOTES DATED 11-29-49 [illegible]	6	6	
1-A-1-1	6-6-50	ROUGH NOTES DATED 11-[illegible]-49	9	9	
1-A-1-1	6-6-50	STATIONARY - [illegible] HOSPITAL	1	1	
1-A-1-1	6-6-50	ROUGH NOTES DATED [illegible]-1-49	3	3	
1-A-1-1	6-6-50	ROUGH NOTES DATED 11-29-49	8	8	
1-A-1-1	6-6-50	ROUGH NOTES DATED 11-29-49	2	2	

FBI/DOJ

Inventory Worksheet
FORM 12-16-77

VOLUME 1C12

PHILADELPHIA FILES

REVIEWED BY [illegible]

File Nos. [illegible]

Box [illegible]

Dated [illegible] (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
1-A-12-1	6-6-50	TYPED NOTES RE, SECRETARIAL	5	5	
1-B-R-1	6-6-50	RE: DRUGS AFFECTING CONCENTRATION	2	2	
1-R-12-1	6-6-50	ROUGH NOTES DATED 1-17-48	3	3	
1-A-R-1	6-6-50	ENCLOSED N/A	1	1	
1-B-R-1	7-7-50	SA MEMO TO SAC	1	1	
1-B-R-1	6-6-50	EMPLOYMENT APPLICATION	1	1	
1-B-R-1	6-6-50	ENVELOPE FROM CHEMICAL ASSIGNACTS TO [illegible]	1	1	
1-A-R-1	UNDATED	ROUGH NOTES	1	1	
1-B-12-1	6-6-50	ROUGH NOTES CHEMICAL [illegible]	1	1	
1-A-R-1	6-6-50	ROUGH NOTES DATED [illegible] 1940	1	1	
1-A-R-1	6-6-50	ROUGH NOTES [illegible]	1	1	
1-B-R-1	6-6-50	ROUGH NOTES SA 21-30 (10-14-1936)	2	2	

FBI/DOJ

Inventory Worksheet
FD-340 (3-24-77)

VOLUME 1A17

PHILADELPHIA FILES

REVIEWED BY S+C

File No. 1-PH-1153

Re: LUCAS [illegible]

Date 11/22/77

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
1-A-1-1	6-6-50	ROUGH NOTES CA 37 1206 (1947)	1	1	
1-B-1-1	6-6-50	ROUGH NOTES DATED 3-27-47	2	2	
1-B-1-1	6-6-50	ROUGH NOTES CA 7-1-2977 (1977)	1	1	
1-B-1-1	6-6-50	ROUGH NOTES CA 4-1-114 (1977)	1	1	
1-B-1-1	6-6-50	ROUGH NOTES CA 29 1127 (1935)	1	1	
1-B-1-1	6-6-50	ROUGH NOTES CA 33 244 (1936)	1	1	
1-B-1-1	6-6-50	ROUGH NOTES CA 34 302 (1940)	1	1	
1-B-1-1	6-6-50	ROUGH NOTES CA 40 810 (1977)	1	1	
1-B-1-1	6-6-50	ROUGH NOTES CA 37 4231-(1977)	1	1	
1-B-1-1	6-6-50	ROUGH NOTES CA 34 4077 (1977)	1	1	
1-B-1-1	6-6-50	ROUGH NOTES CA 32 [illegible] (1932)	1	1	
1-B-1-1	6-6-50	ROUGH NOTES CA 37 8745-(1942)	1	1	

FBI/DOJ

Inventory Worksheet
F(1-OMB 12-18-77)

VOLUME 1/12

PHILADELPHIA FILES

REVIEWED BY

File No. (1-[illegible]-55)

Re: [illegible]

Dated [illegible]
(month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
1-13-12-1	1-6-55	ROUGH DRAFT CA 32 (07)	1	1	
1-11-4-1	1-6-55	ROUGH DRAFT CA 34 (19)	1	1	
1-11-4-1	1-6-55	ROUGH DRAFT CA [illegible] (19)	1	1	
1-11-4-1	1-6-55	ROUGH DRAFT CA [illegible] (19)	1	1	
1-11-4-1	1-6-55	ROUGH DRAFT CA 35 [illegible] (19)	1	1	
1-11-4-1	1-6-55	ROUGH DRAFT CA [illegible] (19)	1	1	
1-11-4-1	1-6-55	ROUGH DRAFT CA [illegible] (19)	1	1	
1-11-4-1	1-6-55	ROUGH DRAFT CA [illegible] (19)	1	1	
1-11-4-1	1-6-55	ROUGH [illegible] CA [illegible] (19)	1	1	
1-13-12-1	1-6-55	ROUGH DRAFT CA 37 2372 (10)	11	11	
1-11-4-1	1-6-55	[illegible] SECT [illegible]	1	1	
1-11-4-1	1-6-55	ROUGH FIGURES [illegible]	1	1	

Inventory Worksheet
FBI/DOJ (3-16-77)

VOLUME 1B12

PHILADELPHIA FILES

REVIEWED BY STS

File No. 1-[illegible]

Re: HACKER [illegible]

Date 6/78 (month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages Actual	No. of Pages Released	Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
1-B-12-1	1-[illegible]-77	ROUGH NOTES MATH NOTES	2	2	
1-B-12-1	1-[illegible]-77	ROUGH NOTES DATED SEPT 9 1976	1	1	
1-B-12-1	1-[illegible]-77	ROUGH NOTES MATH STATISTICS	3	3	
1-B-12-1	1-[illegible]-77	LETTER TO MARKT ST SAND PLAN	1	1	
1-B-12-1	1-[illegible]-77	RALPH W II	1	1	
1-B-12-1	1-[illegible]-77	MISC REPORT DATA	18	18	
1-B-12-1	1-[illegible]-77	CHART FBI'S TH AUTOMATED	1	1	

FBI/DOJ

Retained 6/27/61 aa

BULKY EXHIBIT

Date received 6-6-50

HARRY GOLD

ESP-R

(Title of case)

Submitted by Special Agent Birkby

Source from which obtained Search of Residence of Subject

Address 6823 Kindred St., Phila.

Purpose for which acquired Aid in investigation--evidence

Location of bulky exhibit Bulky Exhibit Room

Estimated date of disposition 12-1-50

Ultimate disposition to be made of exhibit to be determined

RETYPED

List of contents:

1. Folders #1 thru #11 inclusive of material from bottom shelf of wooden cabinet in basement of Gold's home.
2. Manila Enveloped #1 thru #3 inclusive found in wooden box in basement of Gold's home.
3. Two envelopes of loose pages of miscellaneous papers found in wooden box in basement of Gold's home.
4. Folders #1 thru #17 invlusive of material found in wooden box in basement of Gold's home.

Exhibit 2 envelopes #1, 2, & 3 sent to NY 7-5-50 (2&3 returned.) 65-4307-1-B-12
Exhibit 4 folders #1, 6, 7, 8, 11, 15 & 16 sent to N. Y. 7-5-50.
Exhibit 5 one envelope sent NY 7-5-50.

Remaining portion of exhibit taken to NY 11-6-50 by SA Jensen. #1,2&3 all returned 11-21-51. #4 all but 2&5 returned 11-21-51.

Retain 11/18/57 aa
Retain 11-14-58 cs
Retain 5/3/68 cs
Retain 5/5/67 cs

SAC, PHILADELPHIA

July 7, 1950

T. SCOTT MILLER, SA

HARRY GOLD
ESP - R

65-4307-1B 12 (1) FOLDER No. 1

This folder which is labeled "Al Deposition on Paper" was shown to GOLD on June 24, 1950.

GOLD advised that this material was work he had done while with BROTHMAN and was concerned with a process involving the aluminum deposits on paper and was for EDDY QUICK of the Peacock Gold Leaf Company. GOLD stated that QUICK was also interested in depositing aluminum on paper, as well as GOLD.

TSM:DMC
65-4307

$$\frac{dP}{dt} = \frac{P^2}{\varepsilon_0 \varepsilon_r d}$$

Al Deposition on Paper

Date Received 6-17-50

From (Name of Contributor)

(Address of Contributor)

To Be Returned Yes ☐ No ☐

(Name and Signature of Person Making Request)

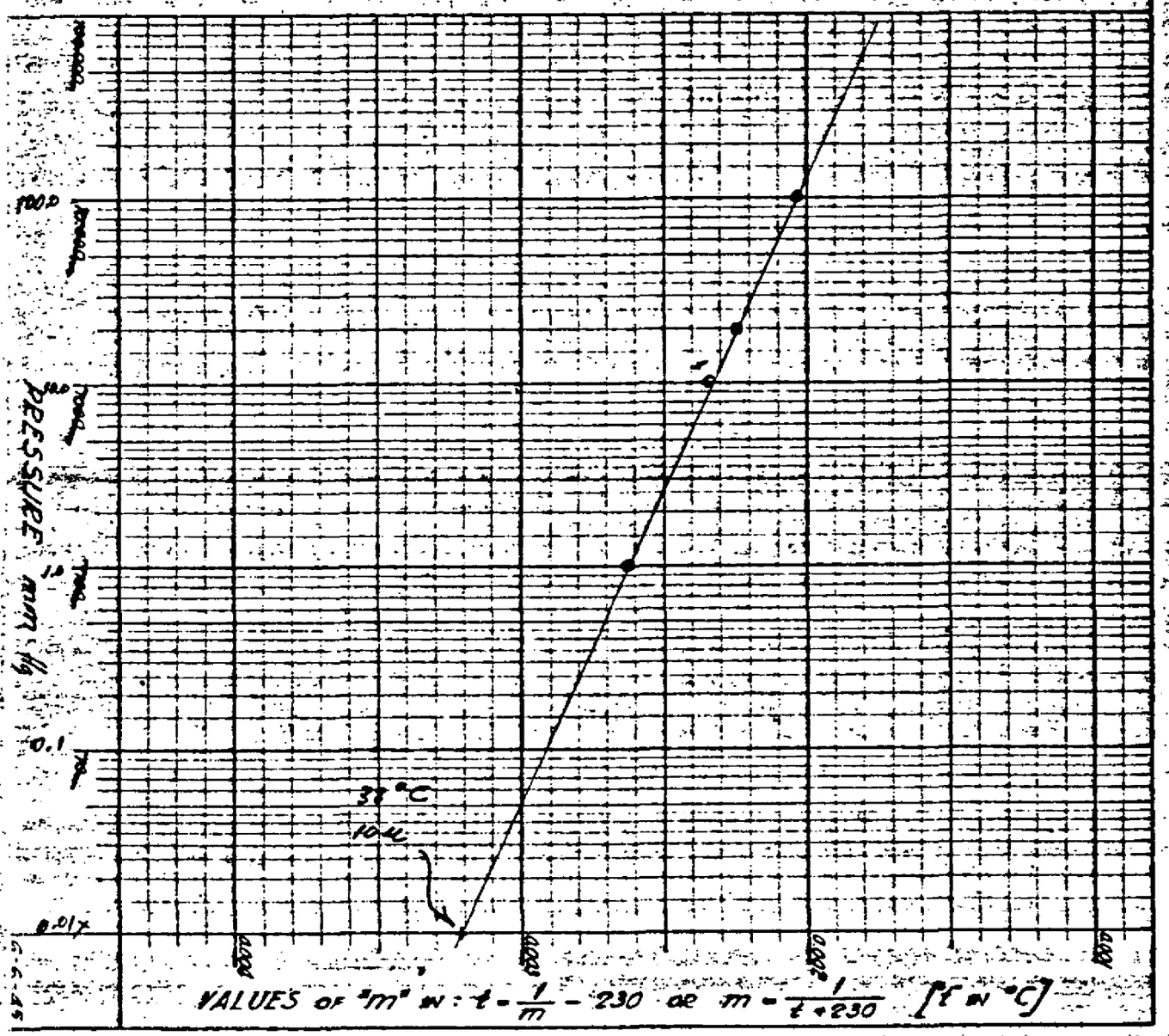
Description

65-43071-1-B-12(1)

6/6/50

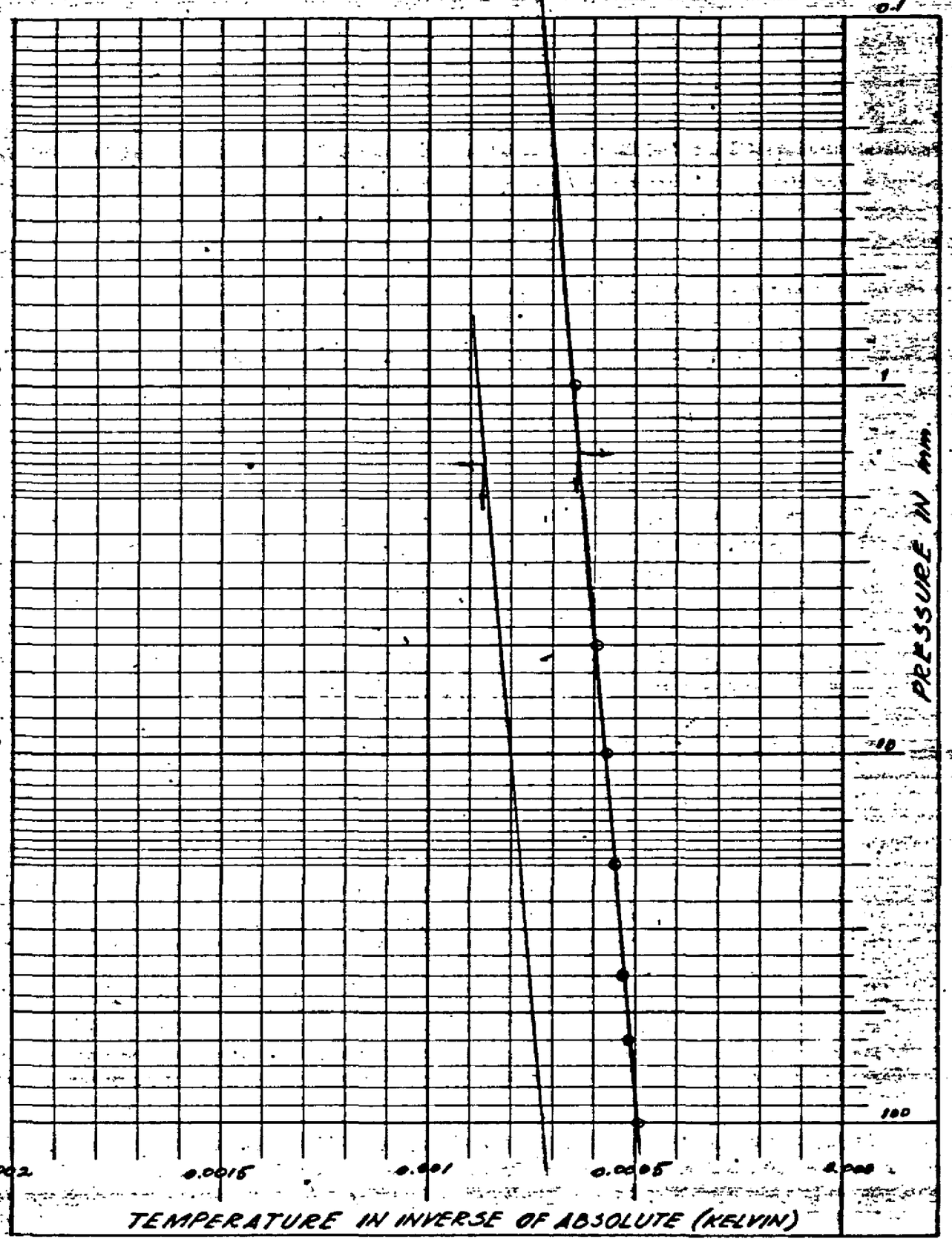
COX CHART

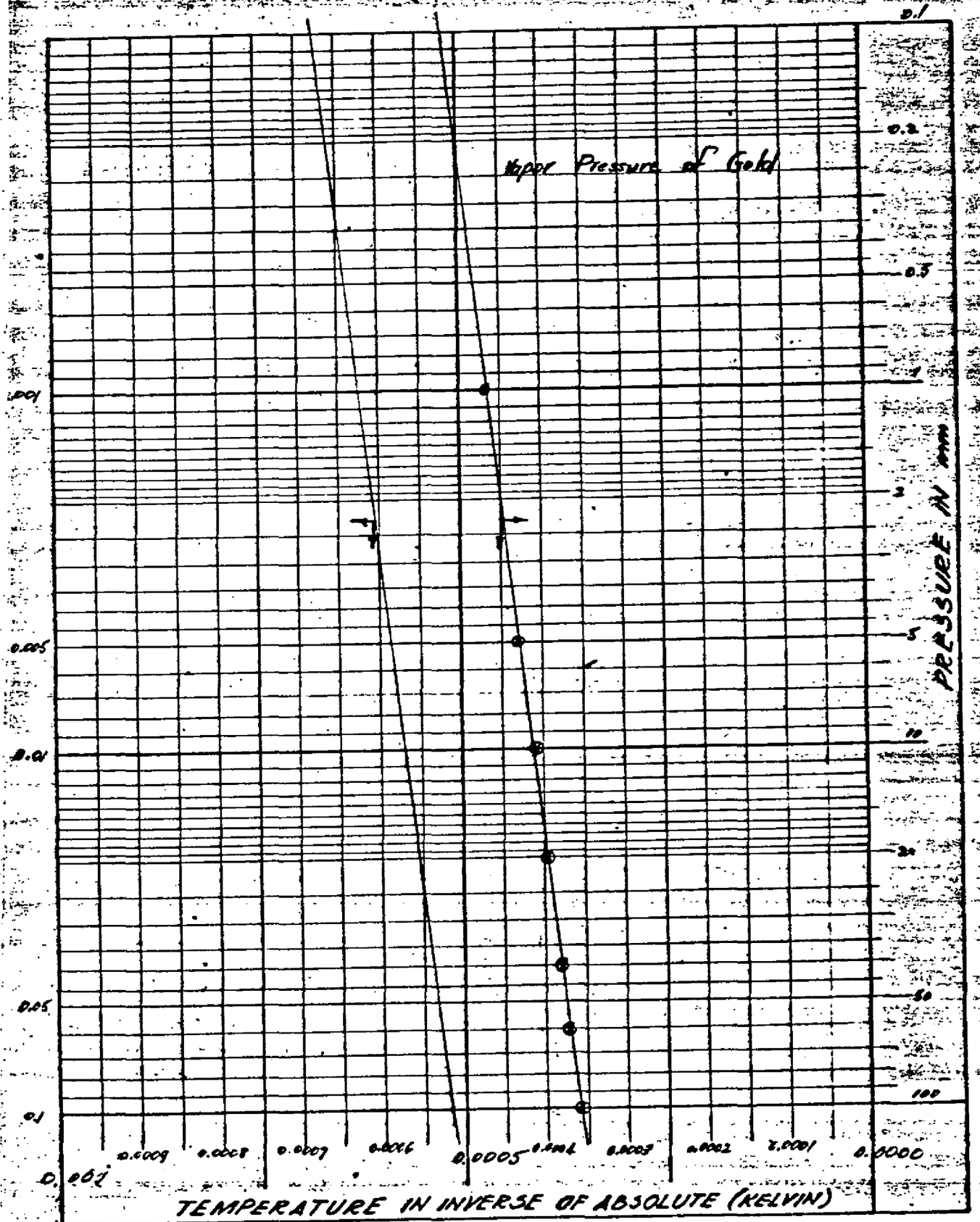
Vapor Pressure of Diethyl Phthalate



Vapor pressure of aluminum

6/6/50 JAR




Vapor Pressure of Gold
PRESSURE IN mm
0.1
0.2
0.5
1
2
5
10
20
50
100
0.001
0.005
0.01
0.05
0.1
0.0009
0.0008
0.0007
0.0006
0.0005
0.0004
0.0003
0.0002
0.0001
0.0000
TEMPERATURE IN INVERSE OF ABSOLUTE (KELVIN)

A. BROTHMAN & ASSOCIATES

JOB: Roll Leaf

SUBJECT: Radiation from Crucible

No. of

Date:

By: 4/6/50 JP

The temperature at which the vapor pressure of gold is 1 micron is 1327 °C or 2420 °F [2880 °R]. The black body radiation from a body at this temperature is

$$q = 0.173 \left(\frac{28.8}{100}\right)^4 = 169{,}000 \text{ BTU/hr ft}^2$$

Heat of gold condensation:

$$\ln \frac{100}{1} = \frac{\Delta H_m}{1.99} \left[0.000467 - 0.000358\right]$$

$$\frac{4.6\,(1.99)}{0.000109} = 84000 \text{ cal/g mol} = \Delta H_m$$

Per gram $\Delta h = \frac{84000}{197.2} = 426 \text{ cal/g}$

About 1 g of gold is used for 1200 sq in. of the paper is unrolled at a rate of 720 sq in/min. The hourly condensation heat load is

$$q = \frac{720\,(60)\,(1)\,(426)}{1200} = 15{,}350 \text{ cal/hr}$$

$$\text{or } 60.9 \text{ BTU/hr}$$

Heat of vaporization of Aluminum may be calculated from

$$\ln \frac{100}{1} = \frac{\Delta H_v}{R}\left[0.000644 - 0.000495\right]$$

$$\frac{4.6(1.99)}{0.000149} = \Delta H_v = 61,400 \text{ cal/mole}$$

$$\Delta h \text{ per gram} = \frac{61,400}{27} = 2275 \text{ cal/g}$$

Assume that the process can be run at 10 ft Hg: 1 Tk
Minimum temperature at this pressure is 1044°C or 1317°K
= 2370°R

Tc radiation heat is

$$q = 0.173 \left(237\right)^4 = 54,100 \text{ BTU/hr ft}^2$$

By working at 10 ft the temperature may be reduced to 1250°K or 2250°R
Radiation is then

$$q = 0.173 \left(225\right)^4 = 44400 \text{ BTU/hr ft}^2$$

Observations

Pressure	Temp °C	Temp °K	T
1 atm	15	288	0.003472
2 atm	15	288	0.003472
3 atm	15	288	0.003472
4 atm	15	288	0.003472
5 atm	15	288	0.003472
1 atm	20	293	0.003413
2 atm	20	293	0.003413
3 atm	20	293	0.003413
4 atm	20	293	0.003413
5 atm	20	293	0.003413
1 atm	25	298	0.003356
2 atm	25	298	0.003356
3 atm	25	298	0.003356
4 atm	25	298	0.003356
5 atm	25	298	0.003356
1 atm	30	303	0.003300
2 atm	30	303	0.003300
3 atm	30	303	0.003300
4 atm	30	303	0.003300
5 atm	30	303	0.003300

6/6/97

A2 cooling periods

A 21 (1927) & CA 30 (1936)

26, 5430 cathode emitting in He

Cooling

24, 180 2

26, 5532 2

29, 6791

21, 7911

21, P 221

21, P 5897

22, P 2352

23, P 3447

23, P 7773

23, P 3896

23, P 4321

24, P 2710

24 P 3748

24, P 5231

25, P 4831

28, P 2966

27, P 2151 2

27, P 4763

9 21 (1927) 4 (30 (1956))

contin (cont'd)

6/6/59

27, p 505

27, p 923

27, p 1014

27, p 1123

27, p 7242

27, p 111

27, p 1647

27, p 1648

27, p 6156

30, p 752

30, p 427

30, p 637

30, p 1670

30, p 2847

30, p 3731

30, p 3767

30, p 4147

30, p 4148

31, p 4176

A 26, 5490 (1932)

Rev. Sci. Instruments 3, 423-7 (1932)

6/6/56
90

D. Kuch and A. K. Brewer

Sputtering of Al in He (at low P)

1. Work was done to study the accuracy of intensity measurements in the He arc spectrum emitted in the visible and found to be seriously affected by a strong sputtering of the Al cathode.

2. He proved to be 10 times as desirable as Ar.

A-3 (1937) (Al coating number)

Foil cathodes of

P73442

coating

6602

P4442

Electrodeposition of Al

7762

7928

Film dried on glass

1273 ✓ mg.

Metal coating patents

A 32 (1933)

Coating of Al

2,3,4
2,3,4
3452 by CW process.
7141 coating on fabric
7780 patent review

Electrodeposition of

6160
5709 app for

Electron release from cathodes

5692

Films by cathode sputtering

9256

6/6/50 JD

1-2 Σ, 311-44 (1933)

abstract 60, 442-50, 242-9, 290-7, 342-9,
(1938) 390-7 (1937)

16/6/50

Aluminizing

Al Coated Paper

1. Gives a description and discussion of the recently developed method of metallizing paper by cathodic sprayings, which in effect is practically a dry electrolysis in a vacuum or in an inert atmosphere.

2. Recent new (1935 - 1937) applications of Al coated papers, are reviewed and discussed

Orig. article advances in the forming of Paper and metals (coating with Al) p. 145-165

Tap. Anti-negatives, the proper human

2. Deals with various channels made in the coating of papers with Ag, Au, and Al.

3. Deposition (of Ag) by cathodic sputtering

a. Gives the method consists essentially in the disintegration of a metallic electrode by a high voltage current.

b. Says the usual operating pressure is 1-2 mm Hg. (?)

c. Says 1.5 Kg of Ag will cover 5000 meters (square d?) of paper, and that this

(2)

9 32, 3141 (1938)

242-9

Deals with adhesives for coating Al foil to paper

240-7

Deals with various patents containing coated with Al.

242-7

Continuation of previous methods of coating paper with Al and related problems

---

241-7

Description of various coating machines — especially Al coatings for photographic purposes

---

A 32, 2256 (1938)

Indian J. Physics 13, p. 95-107 (1939)

J. K. Bose

6/6/39 gp

atodic Sputtering of Al

1. Sputtering of Ag with reversed polarity showing a max. below which it decreases rapidly and above which it changes hyperbolically

2. Zone formation was also studied and the sputtered particles form a pseudo-gas.

3. Data relating to the obtaining of films from Cu, Ni, Ag, Fe and Al were also collected.

orig. article

1. B. gives historical review

2. Investigated relationships between amount of sputtering and

a- Geometry of apparatus

b- Temperature of cathode

c- Current through tube

d. Voltage applied to tube and dark space

e- Pressure of residual gas

f- Time of sputtering

3. discussion (detailed) of apparatus

A-22, 3256 (1938)

and accessories — including electrical circuit.

4. Data obtained: (D. used in mixt of gas, only air).

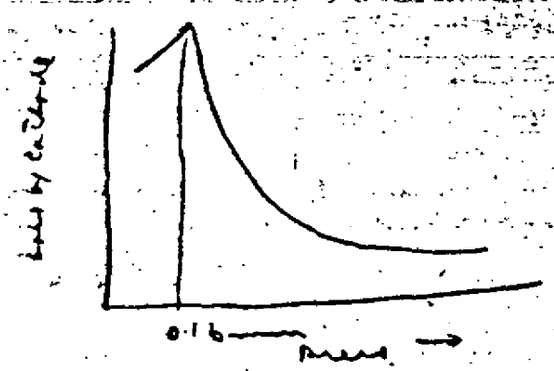
a- optimum distance between cathode (Ag) and plate (to be coated) and for

b- apparatus of different diameters

c- Variation of sputtering with pressure (Ag)

— max at 0.16 mm. Hg.

6/6/30



c- D. supports contention of others the the sputtered metals act as pseudo-gases

5. Results with other metals (Voltage = 2000)

metal	Pressure, mm Hg	Distance, cm	Current, mA	Time of exposure	Deposit
Cu	1-2	0.2-0.3	18	1-2½	very thin - 15 min.
	0.1	1		15	thick
			20	5	very thick
Ag	0.1	1			thick
Ni	—	—	21	120	
Fe	0.07	—	21	40	thin yellowish
Al	0.07	—	20	240	very thin

A.32 (1939)

continuation of A1

P 3325

P 2303 — plum

P 4956 — mint

✓ P 2880 — pool

continuation of A1

P 2917

4525

5296

6/6/50

A. 33 2330 (1939)

A. 2,443,723 June 20, 1939

Emil H. Walther and Charles Lyhes (Ex. A.L.) 6/6/50 JP

Coating Paper with Al (in a Vacuum)

1. Use metal heater of electrically heated Mo or Tungsten

2. Heat coating metal (Al) to its m.p. in the vacuum to bring (its vapor?) into intimate contact with the heater metal.

3. The quantity of Al used is so small that any alloy formed with the heater metal has a higher m.p. than the vapor or distillation temp. of the coating metal.

4. Raise the temp. to cause the coating metal to be vaporized or distilled on to the relatively cool surface to be coated

A-24 (74)

cathode emitting in magnetic field

4932

coating of Ag

P2731

P4317 with neutral salt in soln

electrodeposition of Ag

P337

4/6/50 JPB

Recirculation of Air

23, 4345 ✓m-9

24, 2954

24, 3443

29, 713

27, 4281

28, P3312

27, P4467

28, P7172

30, P1669

30, 5304

Exhaust from Air

22, 5372

23, 4391

25, 4667

30, 3390

30, 7025

Evap. from Heated Surface of

25, 4419 ✓m-9 - fluids

25, 5065 ✓m-9 - fluids

(11)

Read and Signed (5.5.)

(Planned Construction)

By (Applicant)

To Be Restored to Yes (1)

Demolished/Not No (2)

File No. 65-4307/B.13(1)#2

Gold Coating Process

C.A. 31 (1937)

6/6/50
200

✓ 7765[4] Cathodic sputtering of

Coatings

7710[5] on Metals & Cu ✓ see Amer. Inst. Min. Eng.

1171[3] on Glass ✓ m.g. - Firing method

P 2998[1] on Cloth articles ✓ m.g. Electroplating

Films

✓ 7722[3]

7722[4] Rev. ✓ m.g. From E 204 Edm.

Leaf

P 5989[1] ✓ m.g. Gold leaf to Book binding material

printing Glass Television mirrors

✓ P 4542[3]

C.A. 31, 7765⁴ (1937)

World Power 26, p. 176-7 (1936). 6/6/50 JP

A.L. D'ambrian and C.L. Fortescue.

Deposition of metals by Cathodic Sputtering

An app. is described for depositing a thin layer of Pt, Au, Ag, or Cu on a surface by cathodic sputtering.

Orig. article

1. O & F say that no published information to date gives data on
   a. Gas pressure
   b. Current density
   c. Relative positions of cathode, anode and object to be coated.
2. After lengthy trials, O & F evolved a process for depositing Pt, Au, Ag or Cu on any surface up to 10 cm. dia.
3. The process is intended primarily for the deposition of conducting films on insulating materials but can be used for the production of mirror surfaces.
4. Process
   a. Consists in maintaining a current between appropriately shaped electrodes

C-A. 31, 7765 (1937) 6/6/50 MD

in a rarified atmosphere. Under suitable conditions, the positive bombardment of the cathode causes the emission of minute particles, either molecules or atoms of the material of the cathode.

b. These particles are projected from the cathode along paths which are practically straight near the cathode but probably follow the distribution of the electric field at a greater distance.

c. Thus any object having surfaces presented to the cathode will have deposited upon them a layer of the cathode material. The uniformity of the deposited layer probably depends upon the relative positions of the electrodes and the surface. Also, these factors have an effect:

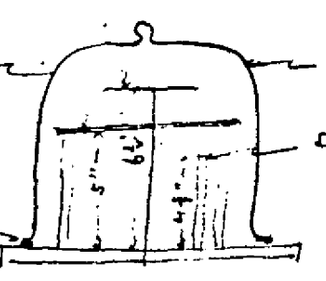
(1) The nature of the gas

(2) The pressure of the gas

(3) The current density of the discharge

5. Apparatus

a.



6/6/50

C-A. 31, 9765 (1937)

a. The anode, cathode and surface to be covered are all approximately of the same size. The surface to be coated is arranged in a plane parallel to the anode and the cathode but on the side of the latter remote from the anode.

c. The atmos. of Argon to give a cathode dark space of 1 to 2 cm. The voltage of the supply is adjusted so that the current is about 3 milliamperes per sq. cm. of cathode surface.

d. The surface to be covered should be about 1 cm. beyond the end of the cathode dark space.

e. With the apparatus cited, 1000 volts were required to discharge between the electrodes.

f. When surface to be coated is between electrodes the result is lack of uniformity of coating; but if the surface is on the far side cathode (remote from the anode) the uniformity is very good.

g. The deposits are closely adherent.

h. Rate of deposit [illegible] cm. in ten minutes with 1/2 millionths of a cm. in ten minutes with full vacuum & current density cited.

C A 31, 7764 (1937)

6/6/50
JAB

A_m - about $\frac{1}{5}$ of rate for I_m.

6. Detailed Procedure

a. The electrodes and surface to be coated are mounted in their appropriate related positions and the chamber rendered vacuum tight. Pump out to as high a vacuum as possible (no value given).

b. Then admit 8 cc of Argon.

c. Pump out Argon and repeat process three times.

d. Admit final supply of Argon and pump out till the discharge is of the required nature:

5 milliamps / sq. cm. cathode with a dark space of $1\frac{1}{2}$ cms.

e. Continue discharge as long as is required with the tube maintaining the vacuum (it will be more Argon is admitted)

7. The time required can be found only by trial.

C.A. 31, 7722³ (1937)

Ann. Phys. 7, p. 291-334 (1937)

6/6/50 AE

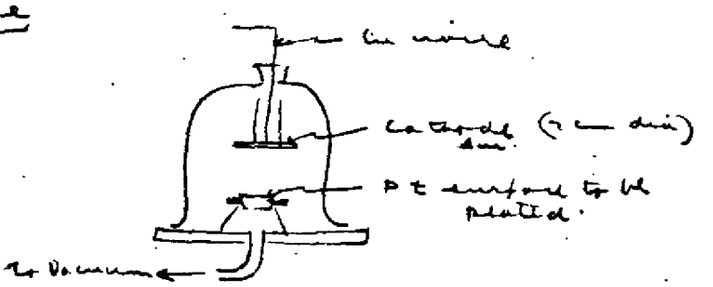
P. Rouard

optical properties of thin metallic films.

R. deposited films of Au, Pt and Ag on glass by cathodic projection in anthracene vapor. sets films of 1-40 mμ.

see orig article

1. apparatus



2. use anthracene vapor and 1 micron pressure.

3. use 110 Volt - 50 cycle current raised to 4000 Volts by a transformer.

4. use 100 milliamps during coating

Metal Coating Process

C.A. 32 (1938)

6/6/50
JDS

7782 coating with ✓

p 3275 electrodeposition of ✓

1944 evaporated films of, structure ✓

p 6221 alloy ✓

Gold coating process

C.A. 33 (1939)

6/6/60
JHD

Coating with Au.

A 37 534 ✓

A 67797 ✓

Deposition on Textiles

J 194 ✓

B 415 ✓

Fusion of Au

33 9 ✓

✓ P 8127 Electrodeposition of

Leaf

P 2097 9 ✓

P 2098 1 ✓

P 2128 ✓ dissolving to Powder ✓

P J 26 ✓

C.A. 33, 8272 (1939) 6/6/50 JCD

U.S. 2,164,010 June 27, 1939

William F. Amend (to Meaker Roll Co of Ill.)

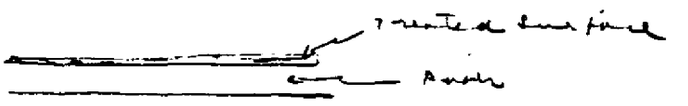
Electrodeposition of Au films on Paper

orig. Patent

1. Films as $\frac{1}{250,000}$ of an inch

2. Electroplate Au from cyanide on Ag-surfaced

3. Paper



4. Dissolve Ag with HNO_3 bath to recover Au.

C-A. 34 (1940)

6/4/50

C.A. 34, 1420⁶ (1940)

6/6/50

U.S. 2,175,492

Oct. 10, 1939.

Donald D. Swift (to M. Swift and Sons, Inc.).

Printing of leather with Au

1. Use bath strip of Au
2. Coat with Nitrocellulose and then with Au leaf or electrolytic Au deposit.
3. Then add yellow colored sizing
4. Then provide product with paper backing.

Solid Coating Dienes

6/6/50
GD

C.A. 35 (1941)

5049 Reaction of Emulsified Am with O_3 V.m.q. — Hydrolysable

3864 Tellurol a.m.f. of V.m.q.

Gold coating process

C.A 36 (1942)

6/6/50 DCH

Coating

✓ P 40 88[1] on cellulose esters

2211[2] by Heat & Electrodeposition ✓

Gold coating

6/6/50 JAM

C.A. 37 (1943)

1021[g] coating on ceramic tubes ✓

4107[g] structure of films; Electron microscope studies ✓

3710[i] Volatilization of Au ✓ (in Refining)

C.A. 32 (1944)

Gold Coasting Pictures

6/6/50
JCB

none

~~Gold coating Process~~

6/4/50
213

C-A. 39 (1945)

22786 Coating on non-conductors

Metal Finishing 43, No. 2, 61-3 76
No. 3, 103-6 (1945)

Au, Pb5, Ni, Sb films.
Cathode Sputtering not recommended.
Metal spraying described.

Gold Coating Process

C.A. 40 (1946)

6/6/50
JLO

[P 4165 41' Coating by Evaporation ✓]

P 3132' Thermal Evap.

US 2,387,970 · Oct 30, 1945

Paul Alexander

Au, Ni, Co, Fe, Cu, Al, Cr, Ag deposit in thin bright film on support after thermal evaporation in vacuo from metal mixture with Pt or Pd. Feed Rate = Volatilization Rate.

Metal coating Processes

6/6/50 gm

C.A. 21 (1927) to C.A. 30 (1936)

21 3164' anodes of ✓ inclosed

26 1509' anode sputtering of ✓ Gives Au anode sputtering very small.

23 1793' as cathode material ✓ (sputtering potential of electrode & composition)

✓ 27 6594 Gases from Cathodes

✓ 30 A 1671 Coating by cathodic disintegration

26 3967 Application of Cathodes ✓

30 7944 Thermoelectric properties of ✓

✓✓ 25 3921 Cathode sputtering

30 3292 Thermoelectric properties of films ✓ Films differ in solution & Emitted from massive deposit

Sputtered Films of Au

✓ 27 6174

29 1303 ✓ X-ray studies of sputtered films

29 4663 Ionization by Cathode rays ✓

✓ 23 712 Sputtering in Argon

Thermionic Emission of

✓ 23 4780'

Temp. of Cathode as Sputtering Process Factor

Phys. Rev., 32, 649-56 (1928)
Ingersoll & Sandahl

1. Sputtering in argon.
2. Au, Pt, Ni also increase sputtering rat w/ cathode temp >. Lower voltage → more pronounced effect.
3. Films from hot cathode have more definite crystal structure than from cold.
4. Results indicate sputtering essentially vaporization, not "explosion."
5. Evaporated films contain < gases than sputtered; points to gas excitation.

C C

I To get good mirror, heat glass to 200° C first in vacuo.

II 2 Al anodes necessary, or tubes are punctured by ion impact.

III may float mirror in low melting alloy for even heating.

IV Paraffin (small amt) driven off glass by heating.

V Quartz & glass films same. Adherion also to celluloid, fiber, gelatin

VI 1000 – 2000 V DC best. Expts. used 1500 V, 500 W, but found that low sputtering chamber resistance caused only 200 V drop.

VII 20 min. for opaque gold If current density is too high, plate gets hot.

VIII may circulate noble gas.

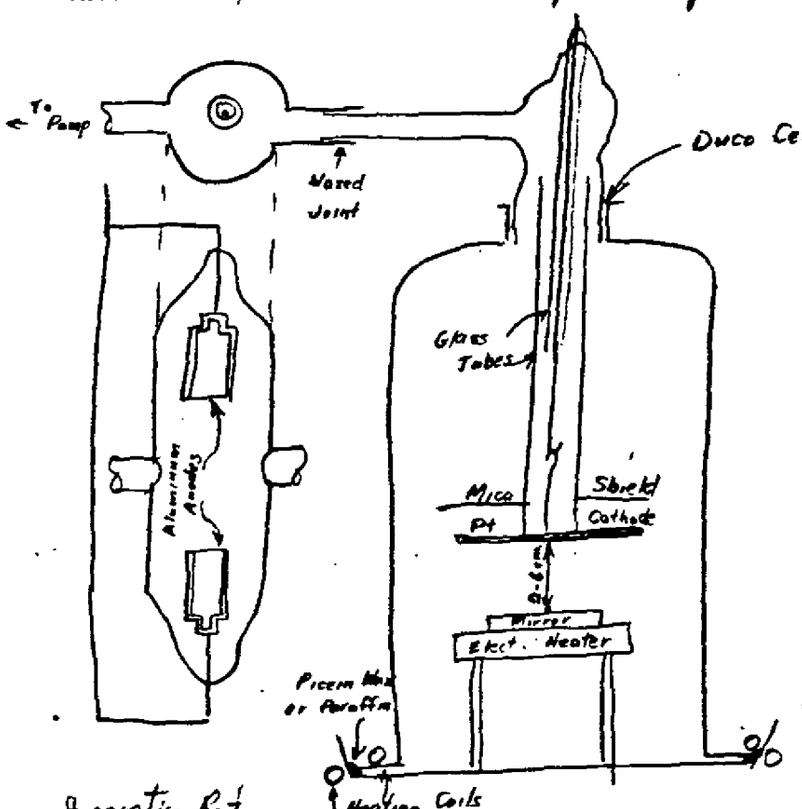
25 39219

Cathode Sputtering

Rev Sci Instruments [2], 1, 758-63 (1930)

C. H. Cartwright

The practical techn of sputtering & a suitable app. are described & discussed with special reference to Au & Pt.



I Deposition Rate

(1) Rate of deposition = $K(V-500)$, if $V > 500$ Volts.

(2) " " increases somewhat more than linearly w/ current

(3) " " decreases exponentially w/ mirror-cathode distance

(4) " " faster in heavy gas (Ar 5 x H_2)

(5) Au is 2x Pt, 9 x Ni. Al hardly sputters.

25 4780

Thermal fluctuations in cathode surface potential : effect on emission

6/6/50 JH

Phys Rev. 37 89-90 (1931)

K. H. Kingdon

1. Net effect of potential fluctuation to increase emission. Fluctuations due to thermal agitation.

2 Effects & assumption: [surface resistance ~ temp] possible explan. variations in thermionic const. & shot effect.

27 659

Cathodic Evaporation in a Magnetic Field

Bull. sci. acad. roy. Belg. 18, 412-18 (1932) 6/6/50 JP

Owen Roche

Because of the entrainment of atoms evapt'g. from a cathode by its cathode rays the cathode beams can be deflected & directed by magnetic fields. Beams from an anode metallic deposits w/ contours like cathode. Results w/ Au, Ag, Cu, Pt, Sb, Te, & Bi w/ potentials of 10 kv - 400 v & fields of 1500 gauss.

27 5617

Elect. Properties Thin metallic layers obtained by cathode sputter

J. Tech. Phys (USSR) 1, 401-27 (A31)

Yu MaclaKovetz

6/6/50

Elec. resistance & temp. effects are tabulated. [For the sputtering, pressures or for the film laid down already?]

3c 16706

6/6/52 JW

Metallic Tube by Cathode Disintegration

U S 2,028,853 Jan 28, 1936

Bosse & Richter { to La Quicksilver Corp. (+ assigns) }

To coat quickly in vacuum w/o X-ray heating of article being coated, adjust electrode size so that greatest cross sectional dimension of electrode is from 0.3 to 1.0 times the mean free path of the cathode material.

Orig. Patent

1. Example A
   a. pressure 0.1 mm Hg. (mean free path of Ar = 0.3 mm)
   b. uses long rod of Ar wire, 0.3 mm in dia., & spaced 2 mm apart
   c. uses Cl as filling gas
   d. optimum disintegration occurs at 1050 volts.
   e. At 0.03 mm Hg, the intensity of disintegration, at 1460 volts, is only ½ that originally obtained, although the current density remains the same.

2. Example B.
   a. Silver or cellulose filters using fine Ag wires 0.3 mm in dia
   b. uses 0.19 mm Hg. (mean free path of Ag

C.A. 20, 1670 (1926)

6/6/50 GAB

in 1 ———)

2. Voted in 1400 and the ——— 190—A.

a. Take 4 ——— to Court.

C A 21, 4542 (1927)

U.S. 2,079,784 — May 11, 1937.

Rowley C. Williams — 6/6/50

Deposition of Ainsley Thermal Evaporation

See orig Patent for Details

1. Method coating of reflectors and telescope mirrors.
2. Uses filaments which carry a coating of the solid to be plated & the filament melts above the temp. at which the material to be plated melts.
3. Has a whole arrangement of such filaments

36, P 4058'

Brit 539,621 Sept 18, 1941

6/6/50 JDD

Kodak Ltd & Anthony Manpiage

Ag, Cu, Au, Pt deposited on cellulose ester surface. Pretreat surface w/ stannous salt in 5% - 80% H_2O, H_2O - EtOH mixture.

6/6/50
[illegible]

1- [illegible]
2- [illegible]

(6) 9-16-47

Liebig's annalen der chemie

Vol. 561 p. 118 to 165

6/6/50 JWW

alfred Einhorn and Alexander Hamburger.

1. For condensation of C H-1 and monomethyl urea

   - 0 gms. Propionamide
   - 22 cc 37.4% Formaldehyde

2. Finally alkaline reaction with Tollen's Reagent.

3. The product develops on heating with Tollens Reagent (after some minutes)

4. The dimethylol product develops only after 35 minutes heating.

Berichte Vol. 41 p. 2424-27

alfred Einhorn and alexander Hamburger

monomethylurea

1. charge
   - 6.5 gms. C H-0 (37.4%)
   - 5 gms urea
   - 0.1 gms $Ba(OH)_2$ in 5 cc H O H

2. Cool a few min C 6°

3. after a few minutes the reaction with Tollens Reagent is no longer obtained

3-16-47

4. Filter off $BaCO_3$
5. Concentrate in a desiccator → crystals of monomethylol urea — m.p. 111°C
6. Recrystallize from EtOH — 6/6/50 gm

Dimethylolurea — 2 moles

1. Urea { 6.7 gms. CH_2O (37.4 gms)
   10 gms. NH_4Cl
   1.4 gm. $Ba(OH)_2$
2. Reflux at 72°C till an intermittent reduction of Tollen's Reagent by a sample withdrawn occurs. This takes from 5 to 15 mins.
3. The dimethylol urea obtained reduces Tollen's Reagent only after several times.

7-23-47

Prep of Acid $HS-CH_2-C^{\prime}_{OH}$ ("A")

1. "A" can be obtained by the reduction of dithioglycolic acid

E. Lenssen Zeitschr. Krist. Tridym. 40, 149 (1928) 6/6/50 JR

2. dithioglycolic acid "B"

P. Friedländer Ber. 29, 1066 (1916)

from

$Cl.CH_2.COOH$ & Na_2S_2 (aq)

3. "A" can also be prepared from

$Cl.CH_2.COOH$ + $NaSH$ (aq) → NaCl + A

and much less satisfactorily.

M Chemie 29, 931 (1916)

(3)

Assay

1. Pass H_2S into a solution of 10 g NaOH made up to 1 liter.
   to saturation
   The solution should not be acid to phenolphthalein
2. Take a definite amount of the H solution of acid (Vol 9 = 1.7 d.)
   gradually
   under acid.
3. Take some Cont. of H_2S solution.
4. Heat the mixt to a water bath for ½ to 1 hr till 95°C is reached
5. Let cool
6. and dilute with H_2O till the soln is slightly acid
7. Extract with Et$_2$O
8. Dry extract (Na_2SO_4)
9. Distill off Et$_2$O
10. Distill "A" over 109–118°C
    16
    yield 99 % of th.

Chem Ind. Vol. 33 (N) No. 2 p. 414, 415, 416

dark additives (w. thiosemicarb.).

1. 100 mg was used in 1944
   ⟹ 5,000,000 cells were
   in well. 6/6/50 JW

add 10% aq. CH$_2$O CO$_2$H to make pH
15% KOH adj.

heat for 15 min on water bath & cool
in ice bath

Klein & Taylor Soc. 3 733 (1906)

3. Sol 1 g in 20 ml with freshly prep.
   NaOH

"Further additions & results cannot be
obtained commercially."

4. Nitrosation of phenylglycine and
   in significant yield not for diff.
   to work

   Communicate Dr. Hans Lang 20
   104 Barclay St
   N.Y. C.

5. Mix & shake all thoroughly in water bath.

6. A reduction with S-S- bond
Klein Ber 19 410.
or with NaH
$CH_2-C^{=O}-H$
S
$CH_2-C^{=O}-OH$
Dithioether bond
6/6/50 gm

7. S-S bond can be split by
a. Zn Dust + acid
Ber 39 1666
b. Sn + HCl
ann. 353, 104
c. Zn + alkali
Ber. 17, 117
d. Na Hg + water
Z anorg chem 172, 379
e. catalytic hydrogenation polysulfide
by heating w CH_3COOH with (Ni + S) +
nascent H, 1111

Tollen's Reagent

6/6/50 JM

1. mix equal vol of 1% $AgNO_3$ and NaOH.
2. add ammonia dropwise till the Ag_2O is dissolved.
3. The reagent must be freshly prepared as it is liable to decompose with the deposition of fulminicating silver.
4. It yields with:

1% acetaldehyde → immediate Ag mirror

1:1000 acetaldehyde → ± minute

1:10,000 aldehyde → yellow brown mirror in 5 minutes

5. Allen's Commercial Organic analysis Vol. 1 p. 533.

[illegible] is usually recorded as
in 2N – 4 % by [illegible]

+ the strength of wool. dil acids tend
to dissolve by 7–10 %, within a few
weeks. One of the decomp products
is a analog of [illegible] cystine

Per. 37 23 r (1916)

Debarring action

cold working

R–S–S–R + A

eg. Thioglycollic

2 RSH + HOOC–CH–S–S–CH–COOH
NH₂ NH₂

new bond under alkaline, sulphite
mercaptan etc but these were
objectionable only in a few
NH₂
more than 9.5 % strength solution

@ pH 9.4

→ reduction by thio → more
Fair by application of dil oxidising agent
(neutralising was

6

[illegible] cold Acetone.

S.F. - 4 or 5 NH_4 thiocyanate

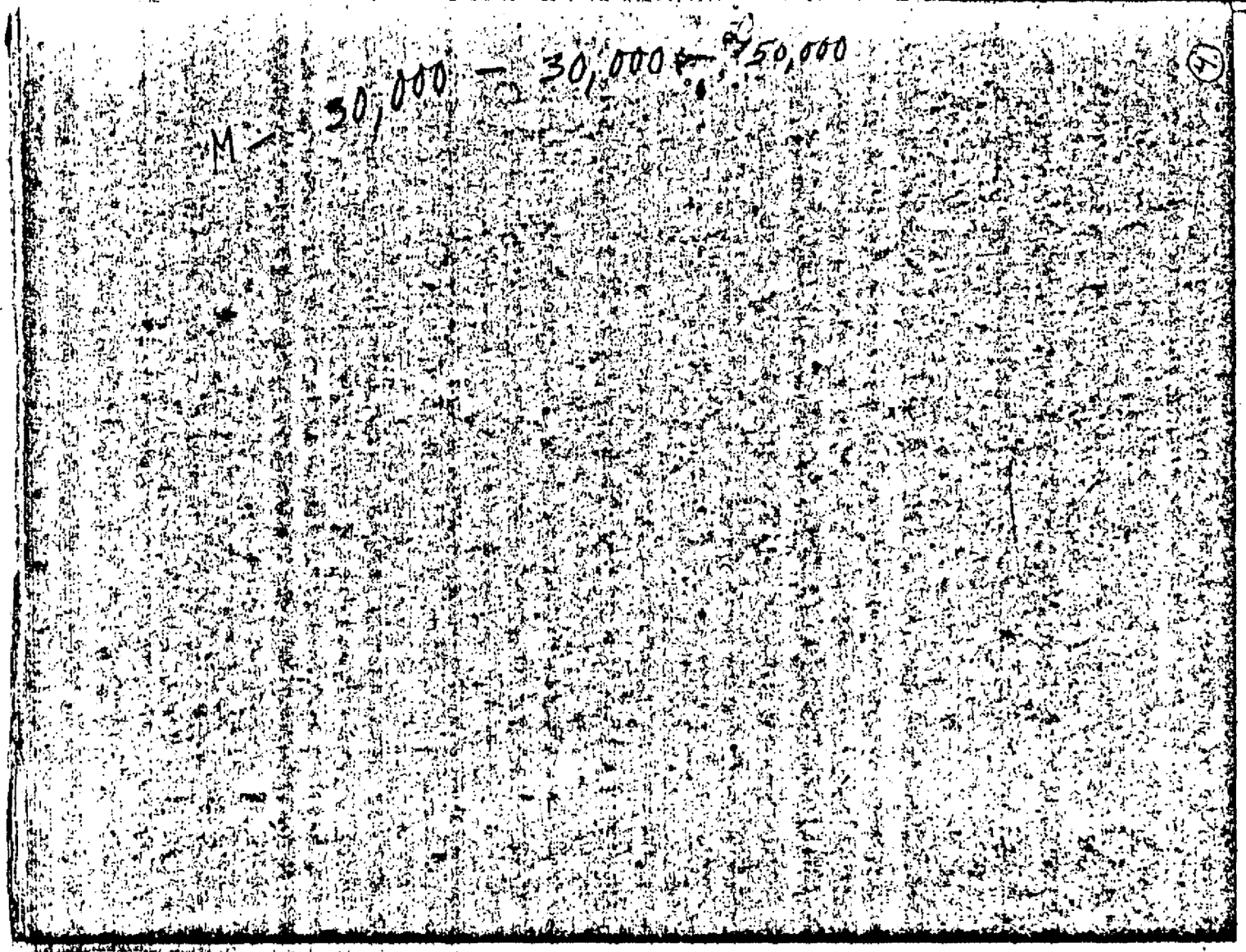
[illegible] cf. IT - 31

[illegible] nearly [illegible]

2 hrs shaking [illegible] NH_4A

as [illegible] attack [illegible]

11/6/50 pm


M ~ 30,000 ~ 30,000 ~ 750,000

US-H301-1B-P(D)3

SAC 6/27/50

SA T. SCOTT MILLER, JR.

HARRY GOLD, WAS.
ESPIONAGE - R

65-4307-1-B-12 (1) - Folder #3

MATERIAL FOUND ON BOTTOM SHELF OF CABINET IN GOLD'S HOME

The above exhibit was shown to GOLD on 6/24/50. This exhibit is a manila folder admittedly bearing GOLD's handprint, "Miscellaneous".

GOLD stated that the first three yellow pages of this folder, which are dated 4/5/41 and entitled "Houdry Process", contain an article on oil production and the Houdry Process. GOLD stated that he did this work at the Philadelphia Public Library for his Soviet contact SAM. GOLD said there was a possibility that a final draft of this material was never given to SAM in view of the date on the material, which was about the time that SAM discontinued contacting GOLD until later in 1941.

GOLD stated that in this three page outline are several initials identified as follows:

M. M. refers to Marcus Hook, Pa.

S. V. refers to Socony Vacuum

S. O. refers to Standard Oil

Mag. refers to Magnolia Petroleum Company

Attention is called to the fact that in this outline the name E. B. BADGER & SONS COMPANY is mentioned. During the time that SEMENOV was in this country, he was in the BADGER offices on numerous occasions.

tam/ac
65-4307

Folder #3
W-C 6/6/50 gw

Miscellaneous

4/6/50 ZK

Main Office:
RAHWAY, N.J.

NEW YORK
166 Sixth Avenue

PHILADELPHIA
2643 N. Broad Street

ST. LOUIS
4525 S. Broadway

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In Canada:
MERCK & CO. Limited
MONTREAL
TORONTO

PLEASE REPLY TO
RAHWAY, N.J.

April 2, 1941

Pennsylvania Sugar Company
1037 N. Delaware Ave.
Philadelphia, Pa.

Attention: Mr. John H. Dittmar

Gentlemen:

The enclosed booklet, entitled "Vitamins In Nutrition," provides authoritative information, presented in a simple, practical way.

This booklet was compiled in answer to numerous requests received from food manufacturers and processors. The paragraph headings provide easy reference to sections that bear directly on your interests.

We trust that you will find "Vitamins In Nutrition" interesting to read and valuable enough to put in your active files for reference. We shall be pleased to answer any further questions you may have, and shall appreciate your comments and suggestions for compiling future editions of this booklet.

Yours very truly,

MERCK & CO. INC.

H. H. Englander

HHE:CCN
Enc.

H. H. Englander
General Sales Division

P.S. Additional copies are available for distribution to your sales and production departments. Address your requests to General Sales Division, Merck & Co. Inc., Rahway, N. J.

Chemical Industries 42, 3, (1944) 216/50

P. 121-5

"Chemical Labor and the operation of the Draft Act"

Chemical Industries 42, 3, 420

Use of methacrylate resin emulsion finishing agents for textiles

---

H. S. Landis - Dept. of Research - An organized campaign against the unknown

Chem. Ind. 42, 3, 496

Cracking process

Present and World Petroleum
[Vol. 11, 1940]
Annual Refining Issue

World Petroleum
95 Pine St
New York, N.Y.

Refining and — C. B. Badger
and Soil Co.

Synthetic chemicals from petroleum
[illegible]

Reactions production of alkyl alcohol

Cracking Research Lubs Oxidation
of Sulfur Catalysts
Should find announced — 1933
and effect acid reaction [illegible]

14 plants now operating — including one in Naples, Italy

6/4/50 gjb

S.N. Pontelungo — Torre Annunziata

S.O. — m-H., Pa. — Oil Co.

Raff. di Napoli, Naples

Mag. Ipt. Co. of Rimini

S.O. m-H.

S-N Idroscalo

S-V Monteluce

S.O. Toledo, Ohio

m-p. Co. of Texas

S-V Methane

S.O. m-H.

S-V Elmwood

S-V Augusta Kansas

S-V Pontelungo

4. Produces 100 octane gasoline

5. Formerly used catalyst which had been produced from natural clays or zeolites — now uses synthetic product

1. Overhead possibility, the Diels-Alder determination of the catalytic mechanism lab — catalytic treatment of oil — hydrodesulfurization

2. Flow diagram showing the overall layout of the standing combination cracking - reforming - treating unit (known as the 1-2-3 plant) at the Linden oil refinery as shown

Name of Courthouse

Judge

Description

Case No.

Plaintiff's Exhibit

Defendant's Exhibit

65-4307-1-B12(D)#4

Vol. 29 1935

1747 3. Determination of CO_3 in cyanide.
A. Miłobędzka and Z. Stamirowska-Zawadzkaya [Lab. 3, 463 (1934)]—
Ppt. CO_3 in the cyanide soln. with $Ba(NO_3)_2$ of known concn.
dil. to a definite vol. with 1-1-0 HNO_3, filter an aliquot part of the soln. through a dry filter, det. Ba with 1-1-5 H_2SO_4 and calc. CO_3.

1934 6/6/50 gw

1947 standardization of thiosulfate solutions with $K_2Cr_2O_7$ as a standard. Zingiro nakai. Bull. Fisheries Cent. Sta. Gov. Gen Chosen, Ser O, no 3, 1-v4 (1933) (abstracts in English). — a study of the errors involved in the standardization of $Na_2S_2O_3$ against $K_2Cr_2O_7$ leads to the following conclusions; The wt. of KI used should be less than 11 x the wt. of $K_2Cr_2O_7$ taken and the wt. of HCl less than 51 x the wt. of $K_2Cr_2O_7$. The KI content should be at least 1.6% the HCl greater than 3% and the liberated I_2 about 0.03%. The titration should be taken place below 31° and in diffused sunlight.

A. R. Q. R. – Synthesis of malonic acid by a new and cheap method.

malonic acid → malonic acid ester

→ a whole host of pure org. compds. 11/11/50 gw

L. R. P. – The development of new intermediates for explosives (from sugars, possibly?). Due to the lack of tolnol this is going to be a big demand.

---

re: CO_2 recovery

1. Try use of $CH_3-C^{O}_{H}$ or a higher aliph. aldehyde to aid in absorption. Also investigate the possibilities of:

   a. Phenol

   b. 2,3-hydroxynaphthoic acid

   c. $CH_3-C^{O}_{ONa}$

2. Try to find a compd. which is which Na_2CO_3 is soluble and $NaHCO_3$ insoluble. This compd. when used in the absorption process will put the $NaHCO_3$ as fast as it is formed.

A microbiological method for the assay of nicotinic acid

Edmond E. Snell & Esmond E. Wright

J. Biol. Chem. June, 1941

p. 675 - 686.

J. Bact. 38, 293 (1939)

Snell, Strong, Peterson

Assay of pantothenic acid.

J. Biol. Chem. 135, 213 (1940.)

Pennington, Snell & Williams

C.A. 34, 5013

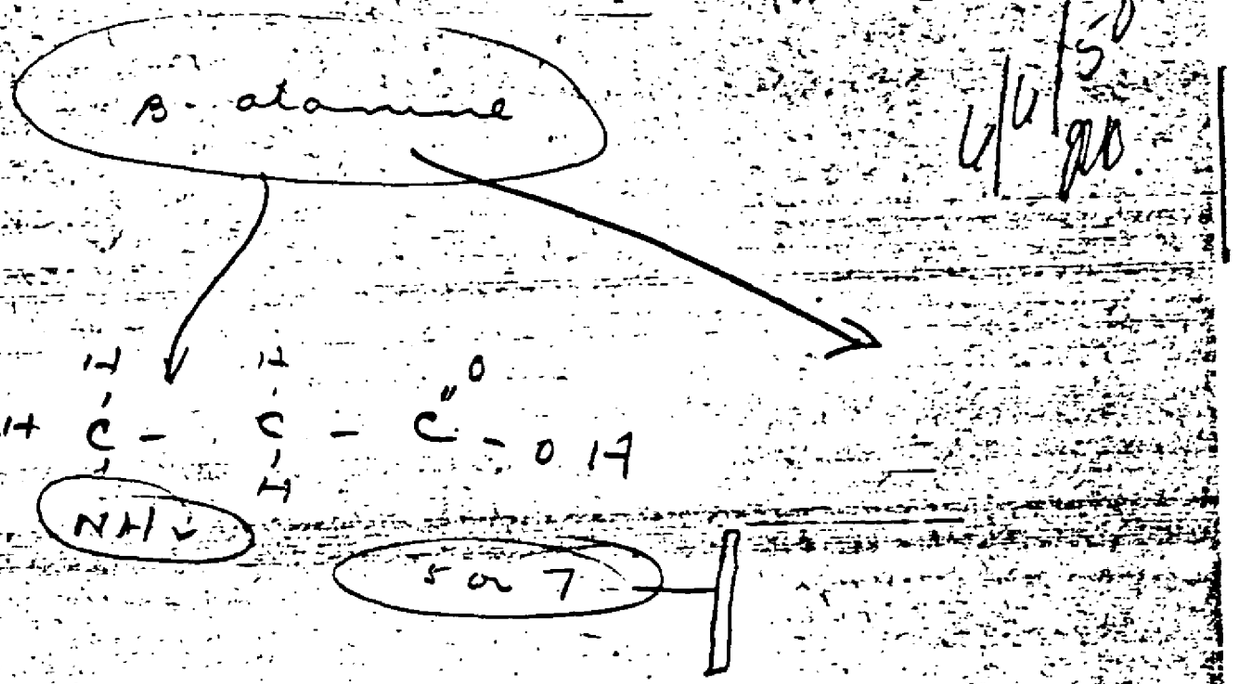
A quantitative test for biotin

→ J. Am. Chem. Soc. 62, 175-8. (1941)

J. Bact. 41, 1941, 243 Folic acid & Pantothenic acid

Microbiological assay employing Lactobacillus arabinosus

The Production



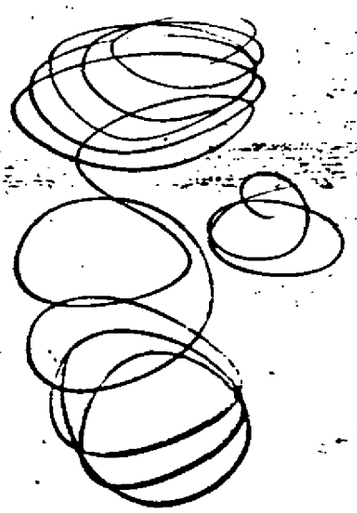
Destruction of Pantothenic acid
in alcoholic (acid) medium

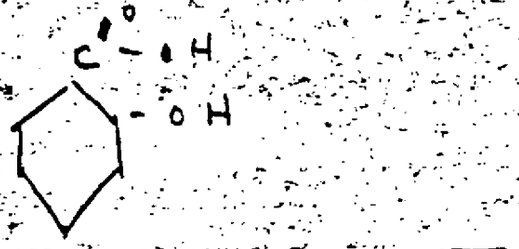
J. Am. Chem. Soc. 60, 1719 4/4/50 JB

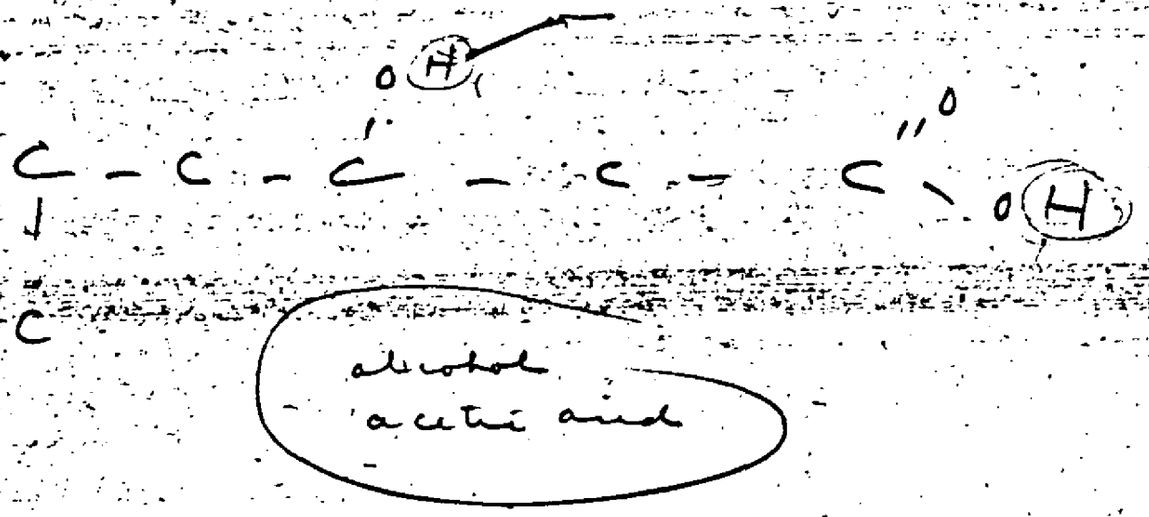
also

Biochem. J. 31, 1789 (1937)

10 → 100







concentrate

500 - 550 t/am

170°

350 t/am

Evolution of mg.-units

J. am. chem. Soc. 61; 1421 (1939)

The production of Pantothenic acid in our yeast

6/6/50 gp

Doz:

In the J. Amer. Chem. Soc. 61, 1142 (June, 1939) there is an article on pantothenic acid which seems like the answer to our problem of making a yeast high in pantothenic acid. It is stated that pantothenic acid is known to be synthesized by yeast if p. alanine is furnished in the culture medium.

"Pantothenic acid is destroyed by heating in either acid or alkaline solutions."

8/11/41

The production of pantothenic acid
in our yeast

4/4/50
jrs

the physiological potency of the vitamin is not completely destroyed.

6/6/50 JHB

In one of our meetings, Sam Fleming referred to β-alanine as the thread of life and at various other times has stressed its importance. Also, it seems to me that Walter Kachele once mentioned the relationship between pantothenic acid and β-alanine as a cleavage product.

Barry Gold

Each 5.0 ml. of = 6.25 mg. unit per cc.

1 cc. of filtered extract contains

= 0.625 mg. unit. 4/6/50 JAB

Then 8.0 ml. ⟶ 2.50 vol. flask

= 0.2 mg. unit / c c.

For each test add as follows, mix

1.0
3.0
and 5.0 } ml. of final soln.

---

3. For both std. curve and assay material mix 5 ml. of A. m. and make final vols. up to 10 cc.

---

4. Incubation — 5 ml. A.m. + 5 ml. H$_2$O + 0.7 ml. of aq. Carbenicillin soln.; centrifuge, stand & incubate at 37° for 24 hrs

8/4/41

The production of pantothenic acid in our yeast 4/4/50 NR

Doc:

In the J. Am. Chem. Soc. 61, 1421-5 (June, 1939), there is an article on pantothenic acid which sums up highly pertinent answers to our problem of producing a yeast high in this vitamin. It is stated that:

1. Pantothenic acid appears to be synthesized by yeast only when β-alanine is furnished in the culture medium; just minute quantities of β-alanine are needed.

2. Pantothenic acid is destroyed by heating in either acid or alkaline medium; however,

Electro-dialysis of Molasses. J. S. C. I. Japan 31 = 201 (1928)

Dil. mol. ss. dialyzed in center chamber of 3 chamb. dialyzer having Pt elect. immersed in water in outer chambers separated from center chamb. by parchment diaphragms in which $Cu_2Fe(CN)_6$ had been ppt.ed. Voltage was 70-100 V. 10 current 1 amp. per 100 g. mol. In 4 hrs. ash cont. of mol. was reduced from 10.06 to 1.61 - 1.86%, the alkali salts being removed more completely than alk. earths; sucrose cont. fell from 34.3 to 29.3%, & invert sug. rose from 16.5 to 17. The mol. became acid, but inversion was restricted by maintaining temp. below 40°. The chief loss of sugar was by transf. into acids, and of sugar passing thru membranes being small.

Antianemic potency of cane mol. Ohio Agri. Bull. 142, 182 (1930). The Cu & Fe found in cane mol. was very efficient in prev. anemia in rats. Cane mol. far better than beet mol.

Studies in Sludges. Biochem Z. 243 191 (1931)

Sludge cont. of mol. ranges from 5-13%. Material never contains less than 0.7% ash, 2 to C to 37.35%, N 6.51% + N 0.37%. The sludge is reducing.

Some organic acids of sugar-cane molasses J. A. C. S. 51 (7) 2005 (1929)

Acids of molasses found to be HCOOH, about 0.1%, H_2O_2 0.2%, aconitic acid, 0.8%, lactic acid 0.05% and small amt. of malic & citric acids. Citric and lactic not before previously reported.

Electrodialysis of extracted molasses. J. Soc. Chem. Ind. Japan 32, 674 (1929) For removal of mineral matter, cane molasses was electrodialyzed in a 3 compartment dialyzer, while CO_2 was passed into the cathode compartment. Cathodic diaphragm made of parchment paper on which colloidal $Cu_2Fe(CN)_6$ had been ppted. Several kinds of anodic membranes were tried. Best found to be silk soaked with bichromate-gelatin & exposed to sunlight.

Look up

Sep. of glyc. from glycerol-form. mol. J. S. C. Ind. Japan 32, 271, 2B (1929). Recovery of glyc. from mol. ferm. slops is difficult. Proposed to dist. slop & evap. to thick mass containing 19% H_2O, the ale., aldehyde & Na_2SO_3 being sep. during dist. & evap. The evap. mass contg. 30% glyc. is then extracted with 95% ale., sep. of ale. gives crude 80% glyc. which can be refined.

Look up

Suitable dil. of mol. was found advantageous, reduced elect. resist. Molasses became acidic during treatment, but inversion due to acidity could be greatly reduced by working at lower temp. below 40°C. Some losses of sugar occured. The loss due to sugar passing thru membrane into outside chambers was small, the greater loss seemed due to change of sugar into acid during treatment.

The following is some examples of the results.

	Orig. Mol.	Treated for 4 hrs. A	B
Sucrose	34.53%	29.37%	29.24%
Invert Sug.	16.57	17.16	17.6
Total ash	10.06	1.86	1.61
Sol. ash	6.54	0.3	0.27
Insol. ash	3.52	1.56	1.34

4/6/50 pm

Electrodialysis of Exhausted Mo Sugar

J. A. C. S. 1928 (32)

The obj. was to try the removal of ash ingred. from exhausted molasses from cane by electrodialysis. The diaphragm was parchment or colloidal Cu ferrocyanide was ppted. The molasses was put in middle chamber of 3 compartments, water in the 2 outside comps. in which each of 2 Pt. electrodes was placed. About 1 amp. was passed per 100 g molasses under 90-100 V potential.

As electrodialysis proceeded, the K ash was nearly completely removed in the early part of it afterwards the insol. ash ingred. i.e. $Ca_3(PO_4)_2$ was slowly removed. The following shows an example of 5 hr. treatment

	Ash ingred. corresp. to 100 g. of org. Mol.	Ash. found in		
	Ash present in orig. mol.	the treated molasses	the anode liquor	the cathode liquor
K_2O	2.76	0.14	—	2.49
Na_2O	0.13	0.03	—	0.06
CaO	1.51	0.86	—	1.13
MgO	0.99	0.34	—	0.67
$Al_2O_3 + Fe_2O_3$	6.42	0.32	—	0.17
Cl	0.77	— not	0.97	—
SO_3	2.10	1.06	0.79	—
P_2O_5	0.57	0.23	0.39	—
SiO_2	0.35	0.34	—	—

— = practically none

The Destruction of Pantothenic acid in our Fermentation

6/4/50

Doc:

I doubt whether we shall ever, under our present conditions of fermentation to produce alcohol, be able to make a yeast which contains pantothenic acid. In the J. Am. Chem. Soc. 60, bottom of p. 2719 to top of p. 2720, there is this statement, "Pantothenic acid is itself unstable and can handled safely only as a neutral salt. It is readily broken down by acids or bases and is particularly susceptible to destruction by acidic alcohol. (This article is one of a series I have quoted before on the synthesis of pantothenic acid.)

Having told

is removed, washed once with 5% sulfuric acid, and then decomposed in the usual manner with $Ba(OH)_2$. Excess Ba ion is removed with sulfuric acid. The final concentrate contains from 400 to 1000 γ of biotin per gm. The concentrate can be standardized by the method of Gyorgy (J. A. C. S. 63, 2025) and the recommended amt. added to the medium. Portions of the concentrate are diluted to contain 0.2 γ of biotin per c.c. for immediate use. In the absence of suitable biotin standards, the amt. to be added can be determined with the above medium & the organism by adding amounts (1 to 2 γ) of nicotinic acid per tube of medium and then determining the amt. of concentrate necessary to obtain maximum growth (as determined by acid titration after 3 days incubation). About 4 times this amt. are then added per tube of medium

Estimation of biotin concentrate

J. a.c.s 62, 195 (1940)

4/4/50
90

mixture and
5.0 cc. 2.50 cc. of C_4H_9OH are now added
and the ppt discarded. The methanol
is removed by evaporation. The extract
is diluted to 10 cc.; adjusted to
pH 5.5, and extracted with two
100 cc. portions of amyl alcohol.
The alcohol extract is discarded. The
aqueous phase is adjusted to pH 3.0
with sulfuric acid and extracted
four times with 200 cc. portions of
amyl alcohol. The aqueous phase is
discarded. The biotin is extracted
from the amyl alcohol by shaking
with portions of $Ba(OH)_2$ soln. until
the water layer remains alkaline.
Barium ion is removed from
the extract with sulfuric acid,
and the extract concentrated to
1.5 cc. 0.6 cc. of concentrated sulfuric
acid is now added, and a 50%
solution of phosphotungstic acid
in 5% sulfuric acid is added to
complete precipitation. The precipitate

6/6/50 gb

nicotinic acid
test in the refrigerator. Prolonged exposure to light should be avoided and a fresh solution prepared at frequent intervals.

Nicotinic acid - any liver concentrate which is free from significant amounts of nicotinic acid may be used. Several commercial concentrates have not been tested in this regard. Suitable concentrates can be obtained by following Kögl and Tönnis' original procedure {Kögl, F., and Tönnis, B., Z. physiol. Chem., 242, 43 (1936)} with fresh egg yolk through the final charcoal adsorption. We have found the following procedure, starting with egg yolk, to be convenient. Forty-eight eggs are boiled for 15 minutes; the yolks are removed, mashed, and then extracted twice by steaming in the autoclave with two 1000 cc. portions of water. The combined filtrates are concentrated in vacuo to 500 cc. 500 cc. of acetone are added, the precipitate filtered out, & the acetone removed by evap. to

acid-Hydrolyzed Casein - 50 gms of vitamin-free casein (Labco) are hydrolyzed with 250 cc. of 25% sulfuric acid. Ordinary technical casein (and some "vitamin-free" casein) contains considerable amts of nicotinic acid. The mixture is autoclaved for 1½ hours at 15 lbs pressure. The sulfuric acid is removed with $Ba(OH)_2$. Any excess barium ion is carefully removed with a minimum amt of H_2SO_4, and the soln is adjusted by dilution or evaporation to contain 100 mg. of dry matter per cc. It is preserved under toluene. Traces of nicotinic acid (and other vitamins) can be more completely removed from the casein hydrolysate by stirring the above soln at pH 3.0 with 10 mg. per cc. of active charcoal, & filtering, but this is not recommended as a routine

~~nicotinic acid~~

organism

Lactobacillus arabinosus 17-5

Temperature = 37° C

6/6/50 JD

Assay

Vitamin free Casein (Labco)

Cystine hydrochloride - add just enough HCl to cystine

1 mg/cc solution

adenine, guanine + uracil — a solution

containing 1 mg/cc. of each of these constituents. Solution is effected by

prolonged heating in the presence of a

few drops of hydrochloric acid. It is stored

in the refrigerator and renewed at

frequent intervals.

Thiamine, Ca Pantothenate + Vitamin B6 —

stock solns. are prepared containing 100 γ/cc

dissolved in distilled water. They are

stored in the refrigerator + renewed at

frequent intervals.

Riboflavin — a stock of riboflavin containing

100 γ/cc. is prepared in 0.02 N NaOH and

Thiamine by Mallory and ②

Thiamine std. soln.

6/6/50

20

Pipette 1 ml of the solution into a 100 ml vol. flask; add about ½ ml of distilled water & shake well so that the entire surface of the flask is wetted. Add 1 ml of the thiamine stock soln (1 mg/ml) & make up to volume. This soln is made up daily. All other solns are stabilized in cotton plugged Erlenmeyer flasks on autoclave steam for 30 min in flowing steam. When a flask has been opened for use it is then after kept in a refrigerator.

Warburg

Solutions —

6/6/50

1. Sugar + salts solution —

1 litre contains

- 10 gms. L.D. dextrose
- 2.2 gms. KH_2PO_4
- 1.7 gms. $CaCl_2 \cdot 2H_2O$
- 1.0 gms. $MgSO_4 \cdot 7H_2O$
- 0.067 gm. nicotinic acid
- 0.01 gm. $FeCl_3$
- 0.01 gm. $MnSO_4$

---

2. Citrate Acid Malate buffer Solution —

1 litre contains

- 7.0 gms. citric acid ($H_3 \cdot C_6H_5O_7 \cdot H_2O$)
- 11.9 gms. $K_2HPO_4 \cdot 3H_2O$

---

3. $(NH_4)_2SO_4$ — 1.5 gms / litre

---

4. yeast suspension —

100 ml. contains 2 gms of Commercial bakers' yeast (Fleischmann)

---

5. Glucose Soln. — 100 ml. contains 1 gm.

---

6. Thiamine Hydrochloride — 1 ml. contains 1 mgm.

19 hrs.

3

8 | 58 hrs.

7 days @ ₦10 / day

= ₦70 worth of labour

Time test for Assay

Complete B-Complex Factors

B1
B2
pantothenic acid
nicotinic acid

B6
pantothenic acid

B12

4/6/60
20

Ultramicrodetermination of Thiamine by the Fermentation method 4/6/50 JD

authors - Lawrence Atkin, A.S. Schultz and Chas. N. Frey.

Journal of Biological Chemistry, Vol. 139, p. 471-6 (1939).

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a microbiological method for the Determination of nicotinic acid

Esmond E. Snell & J. D. Wright.

Journal of Biological Chemistry Vol. 139; #2, pages 675 to 686 (June, 1941)

6/4/50

meeting
(starting of 1 lesson)

our work
- sugar
- alcohol
- yeast
- by products

---

sugar
- white
- soft

white - vitamins & such, tubes
can't have vitamins which color

tubes O.K. but for loss
with 6 cents

soft sugar
- dry after dinner
- wet before dinner

Time in the lamp
work out table (from time of day)
how much we need by sugar / day
other mineral matter & contributes to
how much
what role
how long
how much

Round 11 K. make yeast act → protein to
Have enzyme this on sugar
Lose 2 pounds
- sugar
- soft
- starch
- vitamins (in yeast)

can we call a pill sugar ~~pills~~ a good
food but has no nutrients
Vitamins a pill sugar
pills in flavor which may even contain
our yeast extract
contains milk for warning
can we develop a substitute (in ad.)
for nutrient aid
another millet for our yeast extract
breakfast lump, only state in table
did we put in yeast ext; must don't
specify how much nuts
1 lb. Lt 4 ea. yeast 2 ea. Lt 4 ea.
two lumps { breakfast lump
Honig substitute
alcohol nutrients
yeast Vitamins
Ronald Reed
1. red Fleischmann
Lt yeast nothing must el { 1 ea milk in yeast
2 ea yeast 1 ea alcohol

for yeast are used { rich yeast
rich wort.

For good grade of yeast + alcohol
Low conditions are needed.

In brewing & distilling industry yeast cells are used.

Types { strain of yeast
yeast Food
fermentation conditions.

Strains of yeast { Top
Bottom
Mixed

Bacteria - which synthesize vitamin B, B2

yeast Food { barley
malt
hops

Bacteria or hops etc ?
(chemicals such as P. alcohol, antiseptic
produced during fermentation)

Pure yeast ready
fermentation
Pure culture

Consult M.C.H. enter a agreed plan
to
a. supply non-perforated baskets
instead of detachable
b. eliminate need to sterilize and

16/4/50
JMB

would not have to declare on label of

yeast Vitamin
in mash

Re-ferment

produced
& extracted
synthetic
yeast

Program

which Vitamin yeast

2. mash mash mash
com Rice

with or without Hops

a copy of this paper. Also, in the microdetermination of thiamine, the medium which you describe differs from that originally given (J. A. C. S. 61, 2457) in that citric acid and gelatin have been added. Would you advise including these in the regular method (for 2 to 4 micrograms of thiamine)?

We thank you for any help that you shall be able to give us.

Very truly yours,

Mary Gold

6/16/50
JB

Research Laboratories,
Standard Brands Incorporated,
810 Grand Concourse,
New York, N.Y.

6/6/51

Dear Sir:

We are planning to use the yeast fermentation method (as developed by you and Drs. Schultz and Frey) for the determination of thiamine. It appears ideal for our purpose as it avoids the difficulties entailed in colorimetric and fluorometric methods.

In your paper delivered at the St. Louis meeting of the A.C.S., you describe a new fermentometer for use in the Dr. array. We would like very much to have

Thermal diffusion of gases

C.A. 24, 4196 — app. of Ha C.A.

C.A. 19, 2582 — app. of Elliot and Mason

Look up also, Chapman's logarithmic formula for

6/4/50

C.A. 34, 3252

Thermal diffusion separation of different gases of the same molecular weight. F. T. Hall and C. E. Holley, Jr.

J. Chem. Phys. 8, 348 (1940).

The thermal diffusion method was used to sep. the mixtures $CO_2 + C_3H_8$, $CO_2 + N_2O$, $CO + N_2$, $CO + C_2H_4$ and $N_2 + C_2H_4$. Substantial seps. were obtained, except for $CO + N_2$. The slight mass differences are not supposed to account for the obtained seps.; the seps. is attributed to difference in structure.

Field #4
W-C
6/6/50
JRS

Date
Signature of Contributor
By (Name)
To Be Retained
Description
File No.

#5
65-4309-1B-1041

SAC, PHILADELPHIA

July 7, 1950

T. SCOTT MILLER, SA

HARRY GOLD
ESP - R

65-4307-1B 12 (1) Folder No. 4

On June 24, 1950 GOLD advised that the material in this folder is notes in connection with his work at Pennsylvania Sugar. He said that most of it is in his handwriting but that that handwriting which is not his is probably that of Dr. GUSTAV REICH.

GOLD said that the majority of this work was done in about 1941.

The two pages clipped together and marked in red "1" contain notes in GOLD's handwriting pertaining to the theory of thermal diffusion. GOLD states that these notes were made while the employees at the Pennsylvania Sugar Company were on strike in 1941 and that GOLD spent this time working on his pet theory from material at the Franklin Institute in Philadelphia, Pa.

GOLD stated that he had tried to interest Dr. REICH in the possible application of the theory of thermal diffusion of gases to the recovery of CO-2 from flues at the Pennsylvania Sugar Company. Dr. REICH had also been working on CO-2 recovery by another method and GOLD participated in this work with him.

TSM:EIC
65-4307

4

SAC, PHILADELPHIA

July 7, 1950

T. SCOTT MILLER, SA

HARRY GOLD, was.,
ESP - R

65-4307-1B 12 (1) Folder No. 6

On June 24, 1950 GOLD advised that the material contained in this folder was concerned with his course on Pharmacology in 1948.

65-4307-1B 12 (1) Folder No. 5

On June 24, 1950 GOLD advised that the material in this folder was concerned with the course GOLD took on Pharmacology in 1948.

TSM:EAC
65-4307

Table of Principal Effects of Stimulation of Autonomic Nerves

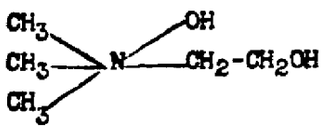
Tissue	Effect of stimulation of Sympathetic	Parasympathetic
Eye:-Pupil	Dilated	Constricted
Tension (tonus)	Increased	Decreased
Eyeball	Protruded	Withdrawn
Tears	Unchanged	Increased
Digestive glands		
Secretion	Slightly increased	Greatly increased
Blood flow	Decreased	Increased
Respiratory tract		
Muscle	Relaxed	Contracted (asthma)
Secretion	?	Increased
Circulation	Decreased	Increased
Heart		
Rate	Increased	Decreased
Force	Increased	Decreased (auricles)
A-V conduction	Increased	Decreased
Refractory period of auricles	Decreased	Decreased
Blood vessels		
Skin	Strongly constricted	Dilated*
Abdominal organs	Strongly constricted	Dilated*
Muscles	Weakly constricted	Dilated*
Brain	Very weakly constricted	Dilated*
Lungs	Very weakly constricted	Dilated*
Coronaries	Dilated	Dilated*
Involuntary muscle		
Stomach and intestines	Relaxed	Contracted
Urogenital tract	Variable	Variable
Sweat secretion	? *	Increased*

* Innervation anatomically sympathetic but physiologically and pharmacologically parasympathetic.

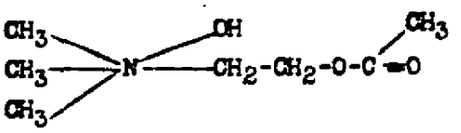
6/6/50 GP

Parasympathomimetic (Muscarinic) Drugs

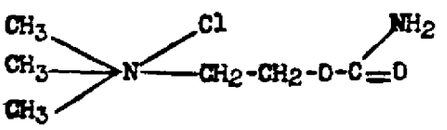
Choline NO



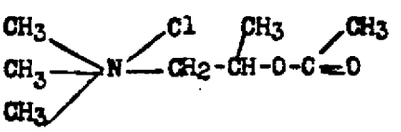
Acetylcholine NO



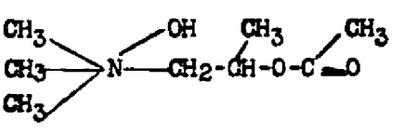
Carbachol USP
(Carbamylcholine Chloride)



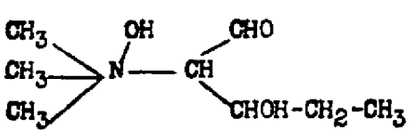
Methacholine Chloride USP
(Acetyl-B methylcholine chloride-"Mecholyl")



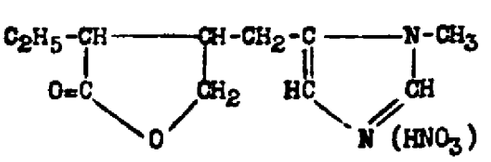
Urecholine NO
(Carbamyl-B methylcholine)



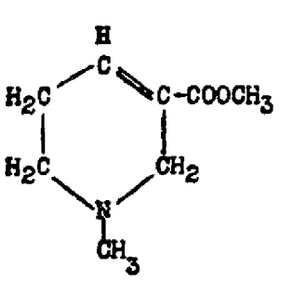
Muscarine NO



Pilocarpine Nitrate USP

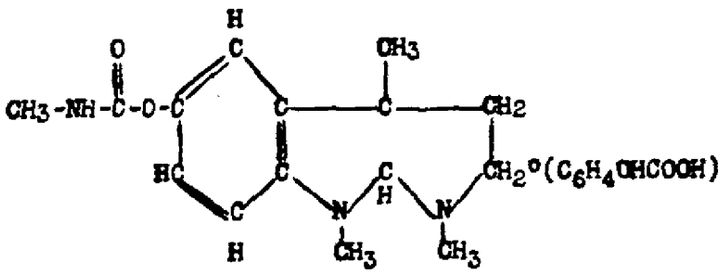


Arecoline NO

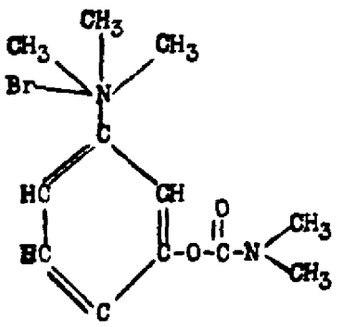


6/6/50 GD

Physostigmine (Eserine) Salicylate USP

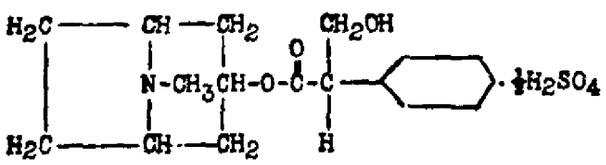


Neostigmine Bromide or ("Prostigmine") Methylsulfate USP

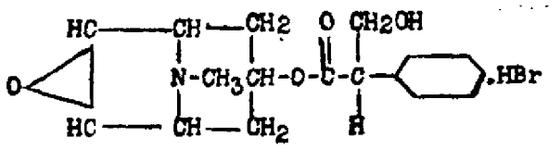


Parasympathetic Blocking (Antispasmodic) Agents

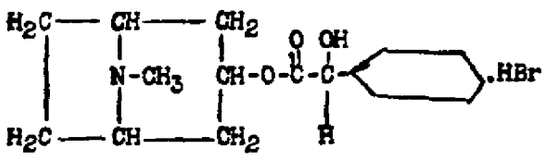
Atropine Sulfate USP



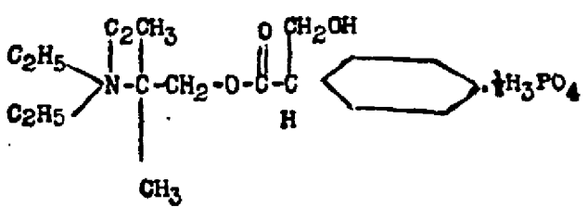
Hyoscine Hydrobromide (Scopolamine) USP



Homatropine Hydrobromide USP

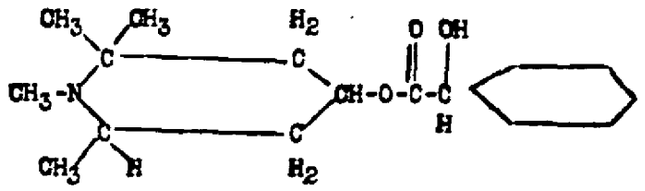


Amprotropine Phosphate ("Syntropan") NNR

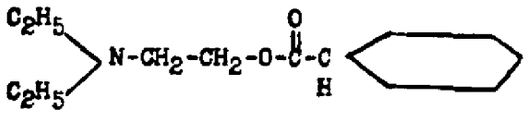


6/4/50 GD

Eucatropine Hydrochloride NNR
("Euphthalmine")



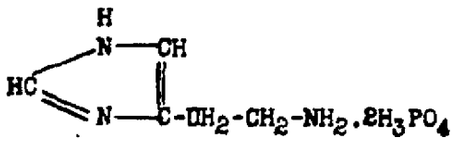
"Trasentin" NO



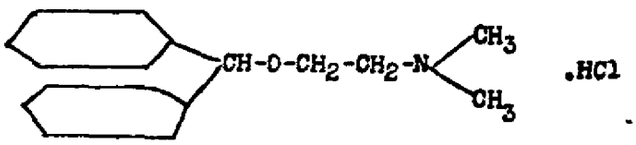
Merperidine NNR
(Isonipecaine, Pethidine, "Demerol")

HISTAMINE AND ANTIHISTAMINICS

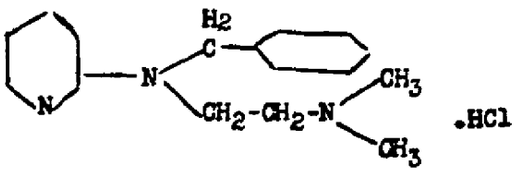
Histamine Phosphate USP



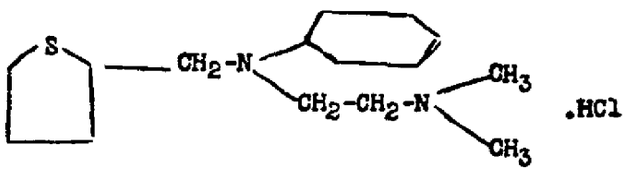
Diphenhydramine Hydrochloride
("Benadryl") NNR



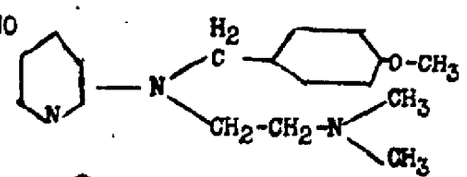
Tripelannamine Hydrochloride NNR
("Pyribenzamine")



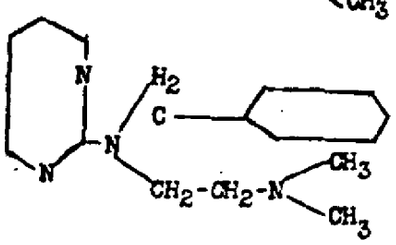
Pyridyl-thenyl-dimethylethylenediamine Hydrochloride NO
(Lilly 01013)



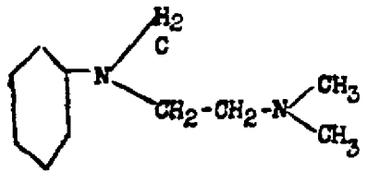
"Neoantergan" NO



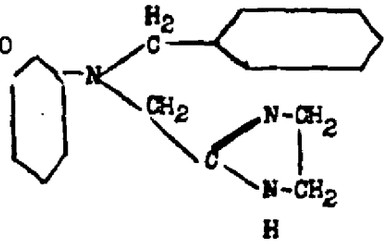
"Hetramine" NO



"Antergan" NO



"Antistisine" NO



Musculotropic Agents (Stimulants to involuntary muscle irrespective of innervation)

Posterior Pituitary USP
(Biologically standardized on isolated guinea pig uterus so that 0.1 cc of solution possesses activity equivalent to 0.5 mgm of USP posterior pituitary reference standard. Chemical composition of active principles unknown).' Does not affect involuntary muscle of bronchi, pupil of eye, or cerebral blood vessels.

Alpha Hypophamine NNR
("Pitocin") Contains uterine-stimulant principle(s) practically free from other activities. Standardized like USP solution of pituitary and of equal activity on uterus.

Beta Hypophamine NNR
("Pitressin") Contains all activities of Posterior Pituitary except that on uterus. Standardized (on ability to raise blood pressure of anesthetized dog) to equal USP solution of pituitary.

Barium salts (except sulfate, which is too insoluble in water).

Quinine salts (especially for action on uterus).

Histamine (stimulates involuntary muscles of bronchi gastrointestinal tract and uterus of nearly all species and that of blood vessels of rodents; relaxes that of uterus of white rat all blood vessels of man and monkey and some blood vessels of dog and cat; does not affect that of pupil of eye).

6/6/50

Autonomic Pharmacology

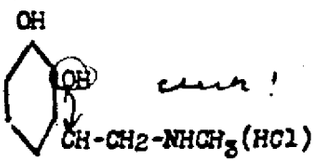
Most of autonomous structures (secreting glands, involuntary muscle of digestive, respiratory and genitourinary tracts, of cardiovascular system and of eyes) are regulated by nerves that are beyond voluntary control. These nerves are of two main systems:- Sympathetic (or thoracico-lumbar division of Autonomic Nervous System) and Parasympathetic (or cranio-sacral division of Autonomic Nervous System). In general each structure receives nerves from both divisions and effects of two are opposed. Both divisions have ganglia, which are diffusely and indiscriminately stimulated by small and paralyzed by large amounts of nicotine, lobeline and choline and its derivatives; they also are paralyzed, without preliminary stimulation, by tetraalkyl ammonium salts (like tetraethyl ammonium chloride-"Etamon") or locally injected local anesthetics. Such actions (except when due to local anesthetics) are designated stimulant or paralytic nicotinic actions. Since two antagonistic innervations are involved and result of stimulant action depends on relative strengths of the two, and end result of paralysis depends on extent to which each had previously affected activity; both of these vary from organ to organ. Nicotinic action also includes stimulation followed by depression of carotid and aortic bodies, of many if not all nerve cells in brain and spinal cord, and of neuromuscular junctions in skeletal muscle; such actions are elicited by nicotine and by choline and derivatives, but not by tetraalkyl ammonium salts.

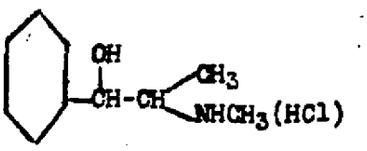
Of far greater practical importance is ability of one group of drugs (typified by epinephrine and known as sympathomimetic) to duplicate more or less exactly the effects of stimulation of sympathetic nerves, of another group (typified by muscarine and mecholyl and known as muscarinic or parasympathomimetic) to duplicate the effects of stimulation of parasympathetic nerves. Both sets of drugs act peripherally (i.e. on receptors located in gland or muscle cells receiving autonomic innervation). Each type is specific for its own nerve system and does not involve the other. Each is purely stimulant and does not (like a nicotinic action) have a paralytic phase. Each has specific antagonists (the sympathetic and parasympathetic blocking agents respectively) which do not affect the other system. Most probable explanation for these specificities is that autonomic nerve impulses lead to formation or liberation of a chemical transmitting agent ("sympathin" in sympathetic, acetylcholine in parasympathetic) combination of which with specific cell receptors is responsible for effects of stimulation of corresponding nerves. Sympathomimetic drugs duplicate effects of sympathetic nerve stimulation because they can combine with "sympathin receptors" and elicit corresponding changes in cell activity. Muscarinic drugs do likewise for "acetylcholine receptors" in autonomic organs (not however for "acetylcholine receptors" in carotid and aortic bodies, cells of central nervous system, and neuromyal junctions in skeletal muscle). Blocking agents supposedly act by combining with same receptors that are used by sympathomimetic or muscarinic drugs and thus preventing combination with latter, without however producing changes in cell functions characteristic of latter.

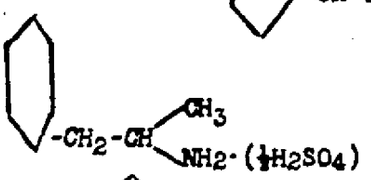
Effects of these drugs can be predicted from known effects of stimulation or blocking of corresponding autonomic innervations (see attached Table).

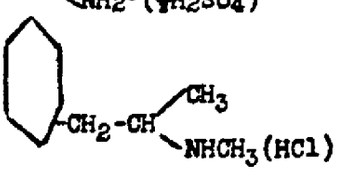
6/6/60 gp

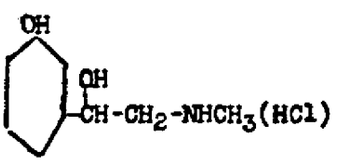
SYMPATHOMIMETIC DRUGS

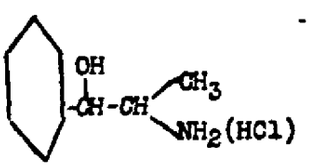
(1) Epinephrine Hydrochloride USP 

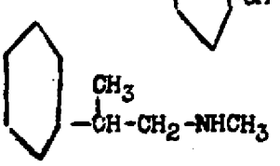
Ephedrine Hydrochloride (or Sulfate) USP
(Synthetic racemic form = "Ephetonin", "Racephedrine"). 

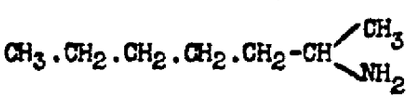
Amphetamine ("Benzedrine") Sulfate NNR
(d-rotatory form = "Dexedrine"). 

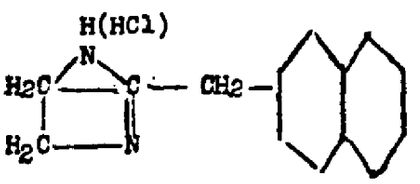
Desoxyephedrine Hydrochloride ("Norodin") NNR 

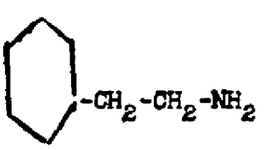
Phenylephrine Hydrochloride ("Neosynephrine") NNR 

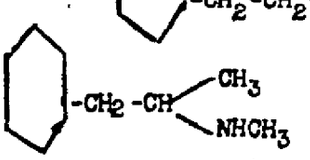
Phenylproponalamine Hydrochloride ("Propadrine") NNR 

Phenylpropylmethylamine ("Vonedrine") NNR 

"Tuamine" NNR 

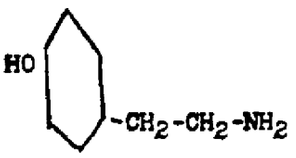
Naphazoline ("Privine") Hydrochloride NNR 

Phenylethylamine NO 

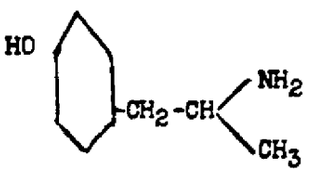
"Methedrine" NO
(Desoxyephedrine,
"Pervitin") 

6/6/50 GD

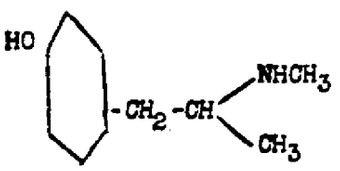
(6) Tyramine NO



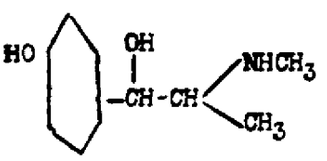
Paredrine NO



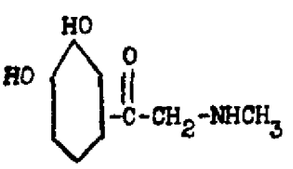
Paredrinol NO



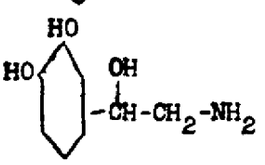
Suprifen NO



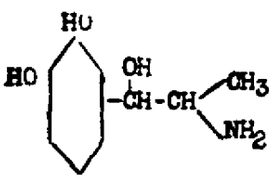
(5) Kephrine NO



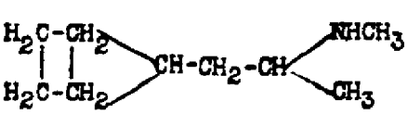
Arterenol NO



Cobefrine NO

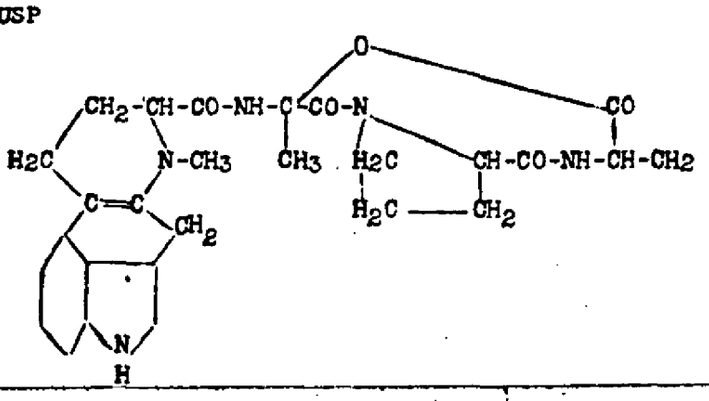


(4) Cyclopentyl Methylamino propane NO
(Lilly #02040)



SYMPATHETIC BLOCKING AGENTS

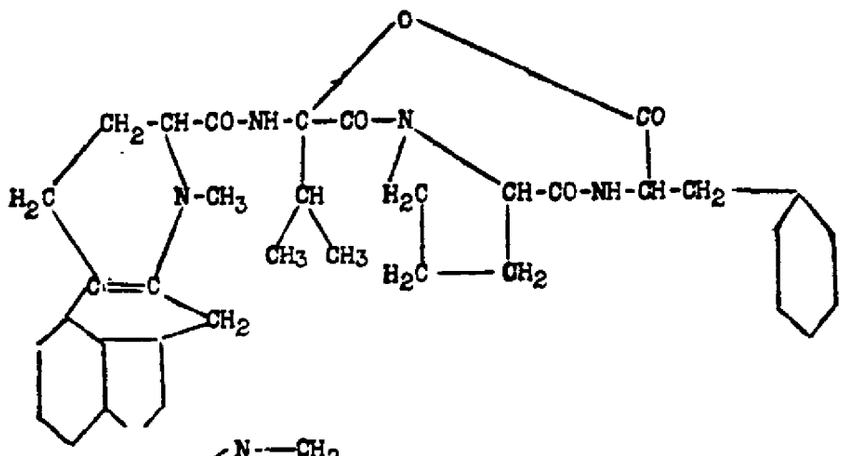
Ergotamine USP
($C_{33}H_{35}N_5O_2$)



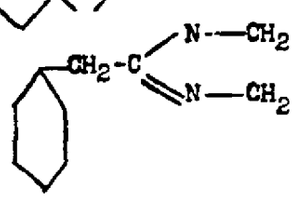
4/4/50 gm

Ergotoxine NO

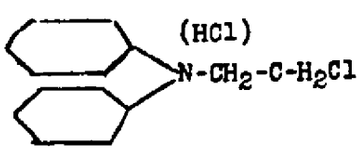
($C_{35}H_{39}N_5O_5$)



Priscol NO



Dibenamine NO



Benzodioxan derivatives (Fourneau)
Yohimbine; apocodeine

Table of Principal Effects of Stimulation of Autonomic Nerves

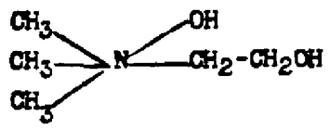
Tissue	Effect of stimulation of Sympathetic	Parasympathetic
Eye:-Pupil	Dilated	Constricted
Tension (tarsus)	Increased	Decreased
Eyeball	Protruded	Withdrawn
Tears	Unchanged	Increased
Digestive glands		
Secretion	Slightly increased	Greatly increased
Blood flow	Decreased	Increased
Respiratory tract		
Muscle	Relaxed	Contracted (asthma)
Secretion	?	Increased
Circulation	Decreased	Increased
Heart		
Rate	Increased	Decreased
Force	Increased	Decreased (auricles)
A-V conduction	Increased	Decreased
Refractory period of auricles	Decreased	Decreased
Blood vessels		
Skin	Strongly constricted	Dilated*
Abdominal organs	Strongly constricted	Dilated*
Muscles	Weakly constricted	Dilated*
Brain	Very weakly constricted	Dilated*
Lungs	Very weakly constricted	Dilated*
Coronaries	Dilated	Dilated*
Involuntary muscle		
Stomach and intestines	Relaxed	Contracted
Urogenital tract	Variable	Variable
Sweat secretion	? *	Increased*

* Innervation anatomically sympathetic but physiologically and pharmacologically parasympathetic.

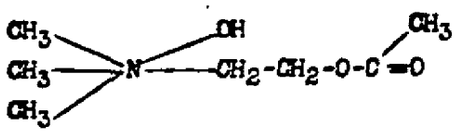
6/6/50 GP

Parasympathomimetic (Muscarinic) Drugs

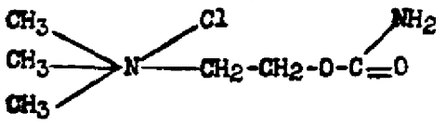
Choline NO



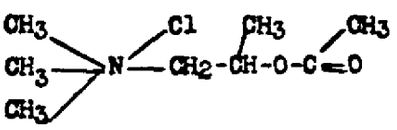
Acetylcholine NO



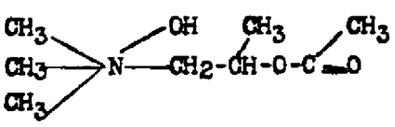
Carbachol USP
(Carbamylcholine Chloride)



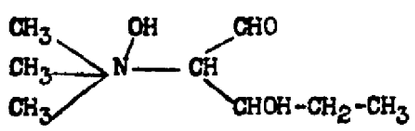
Methacholine Chloride USP
(Acetyl-B methylcholine chloride-"Mecholyl")



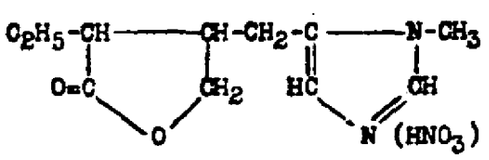
Urecholine NO
(Carbamyl-B methylcholine)



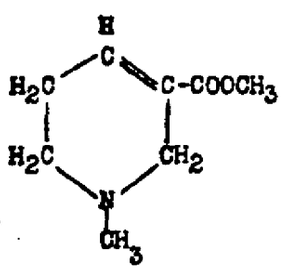
Muscarine NO



Pilocarpine Nitrate USP

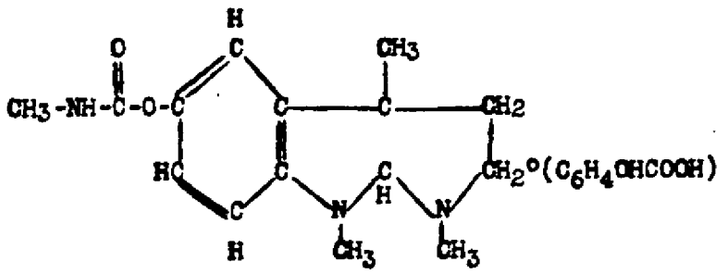


Arecoline NO

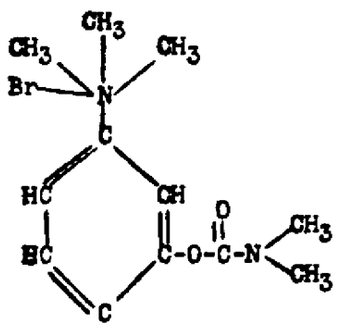


6/4/50 JD

Physostigmine (Eserine) Salicylate USP

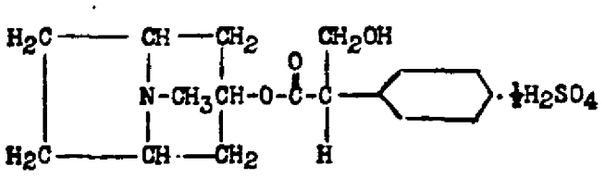


Neostigmine Bromide or ("Prostigmine") Methylsulfate USP

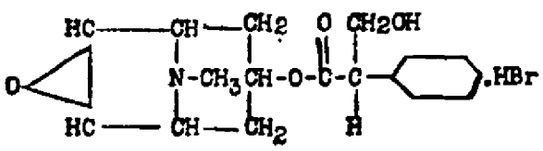


Parasympathetic Blocking (Antispasmodic) Agents

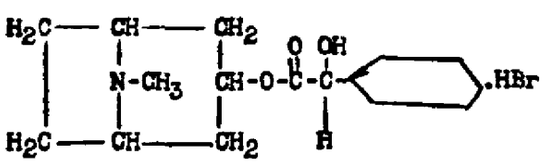
Atropine Sulfate USP



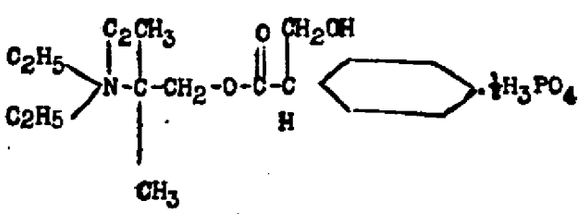
Hyoscine Hydrobromide (Scopolamine) USP



Homatropine Hydrobromide USP

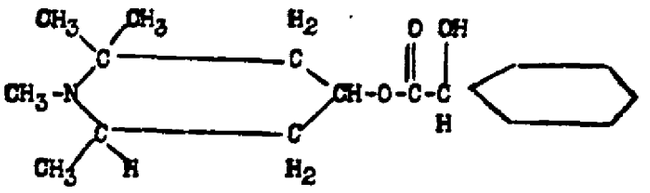


Amprotropine Phosphate ("Syntropan") NNR

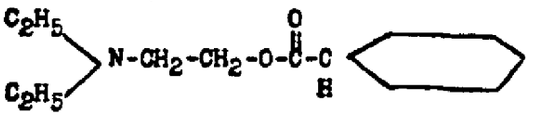


6/4/50 gdc

Eucatropine Hydrochloride NNR
("Euphthalmine")



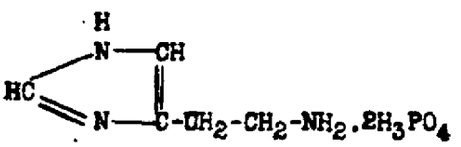
"Trasentin" NO



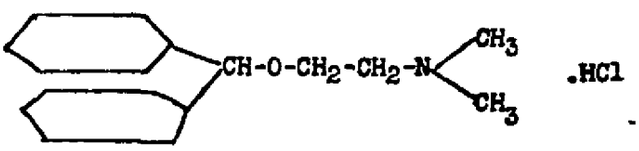
Merperidine NNR
(Isonipecaine, Pethidine, "Demerol")

HISTAMINE AND ANTIHISTAMINICS

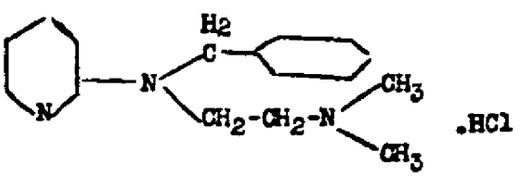
Histamine Phosphate USP



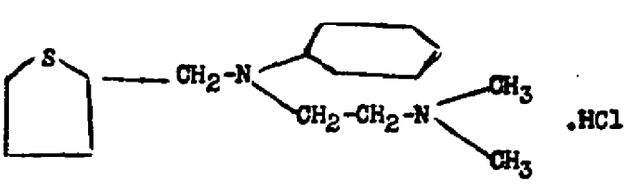
Diphenhydramine Hydrochloride
("Benadryl") NNR



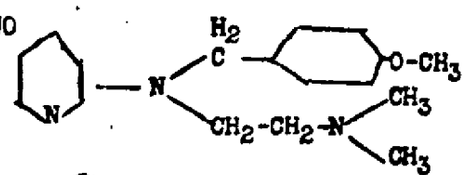
Tripelennamine Hydrochloride NNR
("Pyribenzamine")



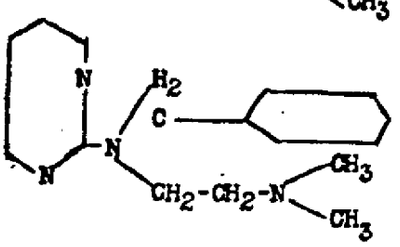
Pyridyl-thenyl-dimethylethylenediamine Hydrochloride NO
(Lilly 01013)



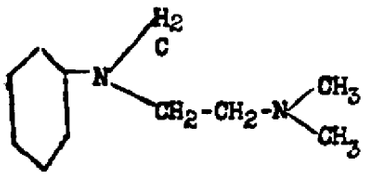
"Necantergan" NO



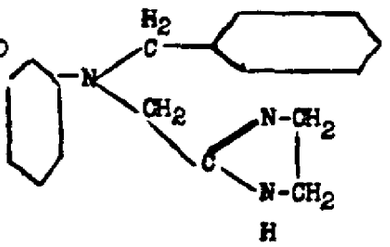
"Hetramine" NO



"Antergan" NO



"Antistisine" NO



Musculotropic Agents (Stimulants to involuntary muscle irrespective of innervation)

Posterior Pituitary USP
(Biologically standardized on isolated guinea pig uterus so that 0.1 cc of solution possesses activity equivalent to 0.5 mgm of USP posterior pituitary reference standard. Chemical composition of active principles unknown). Does not affect involuntary muscle of bronchi, pupil of eye, or cerebral blood vessels.

Alpha Hypophamine NNR
("Pitocin") Contains uterine-stimulant principle(s) practically free from other activities. Standardized like USP solution of pituitary and of equal activity on uterus.

Beta Hypophamine NNR
("Pitressin") Contains all activities of Posterior Pituitary except that on uterus. Standardized (on ability to raise blood pressure of anesthetized dog) to equal USP solution of pituitary.

Barium salts (except sulfate, which is too insoluble in water).

Quinine salts (especially for action on uterus).

Histamine (stimulates involuntary muscles of bronchi gastrointestinal tract and uterus of nearly all species and that of blood vessels of rodents; relaxes that of uterus of white rat all blood vessels of man and monkey and some blood vessels of dog and cat; does not affect that of pupil of eye).

Date Received 6/6/50

From _____
(Name of Contributor)

_____
(Address of Contributor)

By _____
(Name of Special Agent)

To Be Returned Yes ( )
No (X)

Description Letter dated June 1, 1950 from Federal Bureau of Investigation, Washington, D. C. re Communist Party, USA

File No. 65-50781-2

SAC, PHILADELPHIA

July 7, 1950

T. SCOTT MILLER, SA

HARRY GOLD, was.,
ESP - R

65-1307-1B 12 (1) Folder No. 6

On June 24, 1950 GOLD advised that the material contained in this folder was concerned with his course on Pharmacology in 1948.

65-1307-1B 12 (1) Folder No. 5

On June 24, 1950 GOLD advised that the material in this folder was concerned with the course GOLD took on Pharmacology in 1948.

TSM:EMC
65-1307

VI "/40

Autonomic Pharmacology

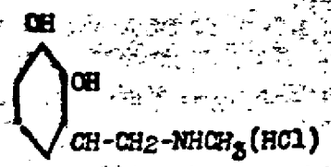
Most of autonomous structures (secreting glands, involuntary muscle of digestive, respiratory and genitourinary tracts, of cardiovascular system and of eyes) are regulated by nerves that are beyond voluntary control. These nerves are of two main systems:- Sympathetic (or thoracico-lumbar division of Autonomic Nervous System) and Parasympathetic (or cranio-sacral division of Autonomic Nervous System). In general each structure receives nerves from both divisions and effects of two are opposed. Both divisions have ganglia, which are diffusely and indiscriminately stimulated by small and paralyzed by large amounts of nicotine, lobeline and choline and its derivatives; they also are paralyzed, without preliminary stimulation, by tetraalkyl ammonium salts (like tetraethyl ammonium chloride-"Etamon") or locally injected local anesthetics. Such actions (except when due to local anesthetics) are designated stimulant or paralytic nicotinic actions. Since two antagonistic innervations are involved and result of stimulant action depends on relative strengths of the two, and and result of paralysis depends on extent to which each had previously affected activity; both of these vary from organ to organ. Nicotinic action also includes stimulation followed by depression of carotid and aortic bodies, of many if not all nerve cells in brain and spinal cord, and of neuromuscular junctions in skeletal muscle; such actions are elicited by nicotine and by choline and derivatives, but not by tetraalkyl ammonium salts.

Of far greater practical importance is ability of one group of drugs (typified by epinephrine and known as sympathomimetic) to duplicate more or less exactly the effects of stimulation of sympathetic nerves, of another group (typified by muscarine and mecholyl and known as muscarinic or parasympathomimetic) to duplicate the effects of stimulation of parasympathetic nerves. Both sets of drugs act peripherally (i.e. on receptors located in gland or muscle cells receiving autonomic innervation). Each type is specific for its own nerve system and does not involve the other. Each is purely stimulant and does not (like a nicotinic action) have a paralytic phase. Each has specific antagonists (the sympathetic and parasympathetic blocking agents respectively) which do not effect the other system. Most probable explanation for these specificities is that autonomic nerve impulses lead to formation or liberation of a chemical transmitting agent ("sympathin" in sympathetic, acetylcholine in parasympathetic) combination of which with specific cell receptors is responsible for effects of stimulation of corresponding nerves. Sympathomimetic drugs duplicate effects of sympathetic nerve stimulation because they can combine with "sympathin receptors" and elicit corresponding changes in cell activity. Muscarinic drugs do likewise for "acetylcholine receptors" in autonomic organs (not however for "acetylcholine receptors" in carotid and aortic bodies, cells of central nervous system, and neuromyal junctions in skeletal muscle). Blocking agents supposedly act by combining with same receptors that are used by sympathomimetic or muscarinic drugs and thus preventing combination with latter, without however producing changes in cell functions characteristic of latter.

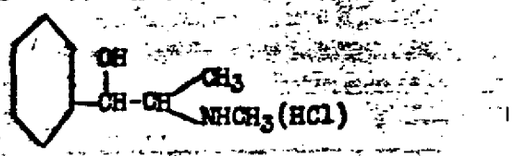
Effects of these drugs can be predicted from known effects of stimulation or blocking of corresponding autonomic innervations (see attached Table).

SYMPATHOMIMETIC DRUGS

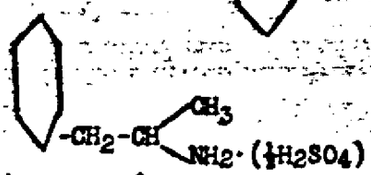
Epinephrine Hydrochloride USP



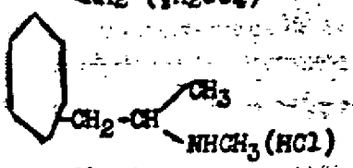
Ephedrine Hydrochloride (or Sulfate) USP
(Synthetic racemic form = "Ephetonin", "Racephedrine").



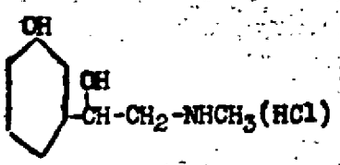
Amphetamine ("Benzedrine") Sulfate NNR
(d-rotatory form = "Dexedrine").



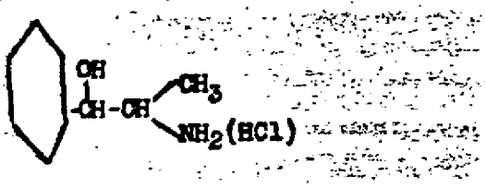
Desoxyephedrine Hydrochloride ("Norodin") NNR



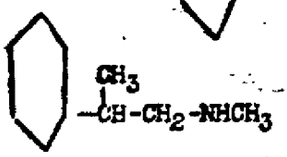
Phenylephrine Hydrochloride ("Neosynephrine") NNR



Phenylproponalamine Hydrochloride ("Propadrine") NNR

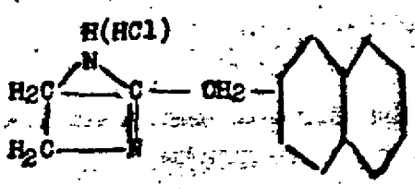


Phenylpropylmethylamine ("Vonedrine") NNR

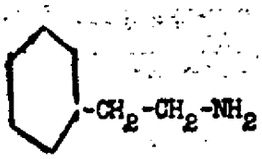


"Tuamine" NNR $CH_3.CH_2.CH_2.CH_2.CH_2-CH(CH_3)(NH_2)$

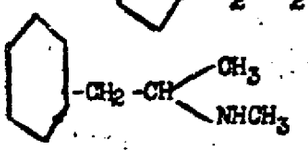
Naphazoline ("Privine") Hydrochloride NNR



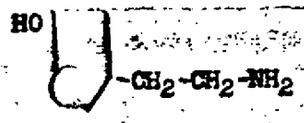
Phenylethylamine NO



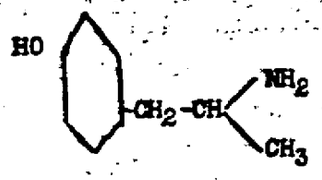
"Methedrine" NO
(Desoxyephedrine, "Pervitin")



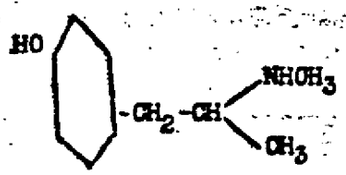
Tyramine NO



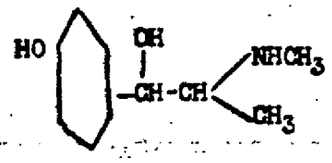
Paredrine NO



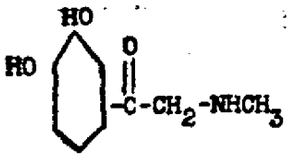
Paredrinol NO



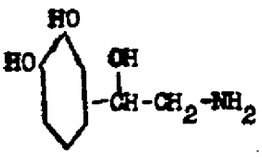
Suprifen NO



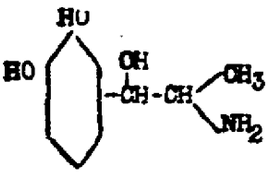
Kephrine NO



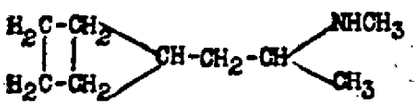
Arterenol NO



Cobefrine NO

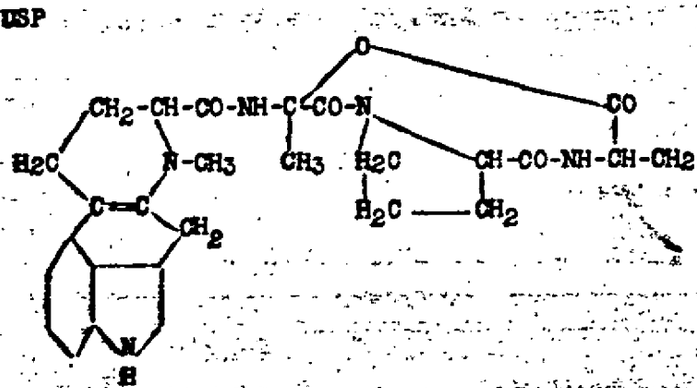


Cyclopentyl Methylamino propane NO
(Lilly #02040)



SYMPATHETIC BLOCKING AGENTS

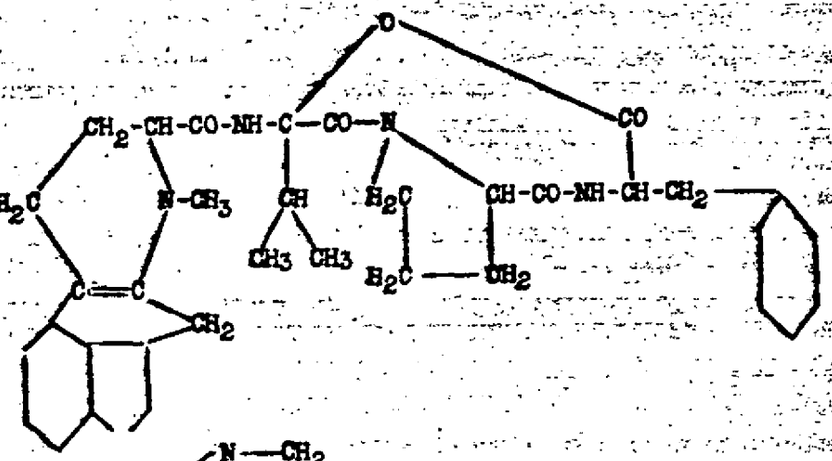
Ergotamine USP
($C_{33}H_{35}N_5O_2$)



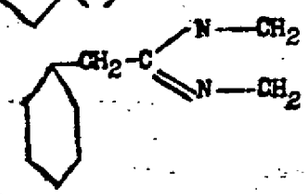
6/6/8 gm

Ergotoxine NO

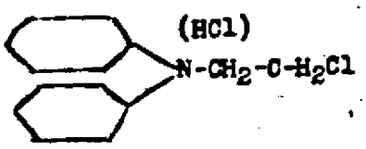
$(C_{35}H_{39}N_5O_5)$



Priscol NO



Dibenamine NO



Benzodioxan derivatives (Fourneau)

Yohimbine; apocodeine

6/6/1 [illegible]

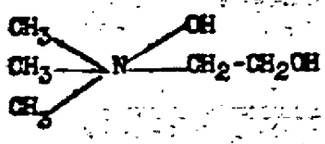
Table of Principal Effects of Stimulation of Autonomic Nerves

Tissue	Effect of stimulation of Sympathetic	Parasympathetic
Eye:-Pupil	Dilated	Constricted
Tension	Increased	Decreased
Eyeball	Protruded	Withdrawn
Tears	Unchanged	Increased
Digestive glands		
Secretion	Slightly increased	Greatly increased
Blood flow	Decreased	Increased
Respiratory tract		
Muscle	Relaxed	Contracted (asthma)
Secretion	?	Increased
Circulation	Decreased	Increased
Heart		
Rate	Increased	Decreased
Force	Increased	Decreased (auricles)
A-V conduction	Increased	Decreased
Refractory period of auricles	Decreased	Decreased
Blood vessels		
Skin	Strongly constructed	Dilated*
Abdominal organs	Strongly constructed	Dilated*
Muscles	Weakly constructed	Dilated*
Brain	Very weakly constructed	Dilated*
Lungs	Very weakly constructed	Dilated*
Coronaries	Dilated	Dilated*
Involuntary muscle		
Stomach and intestines	Relaxed	Contracted
Urogenital tract	Variable	Variable
Sweat secretion	?*	Increased*

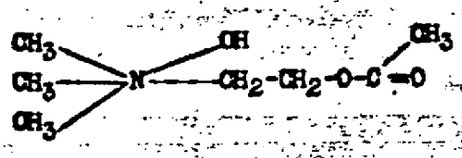
* Innervation anatomically sympathetic but physiologically and pharmacologically parasympathetic.

Parasympathomimetic (Muscarinic) Drugs

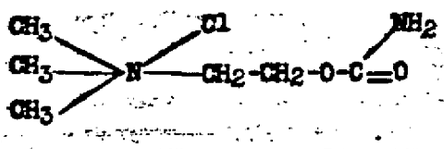
Choline NO



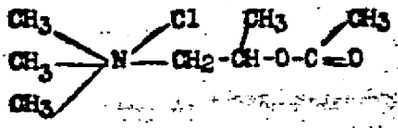
Acetylcholine NO



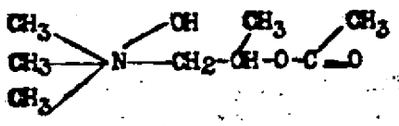
Carbachol USP
(Carbamylcholine Chloride)



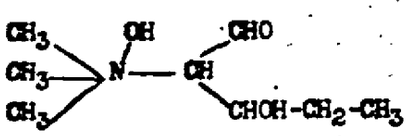
Methacholine Chloride USP
(Acetyl-B methylcholine chloride-"Mecholyl")



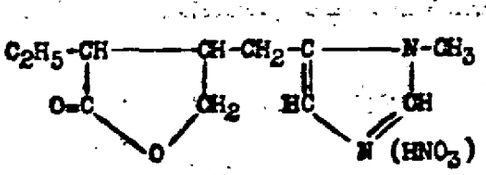
Urecholine NO
(Carbamyl-B methylcholine)



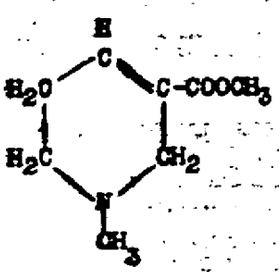
Muscarine NO



Pilocarpine Nitrate USP

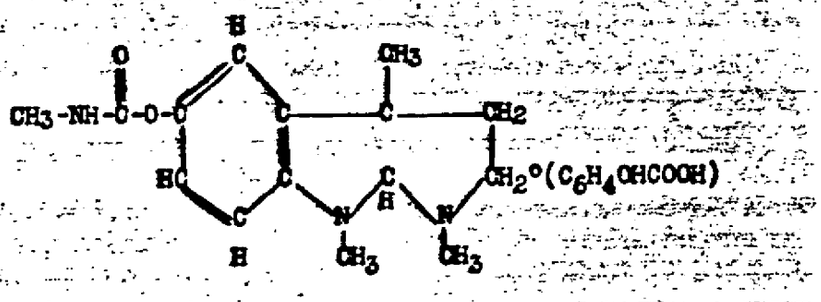


Arecoline NO

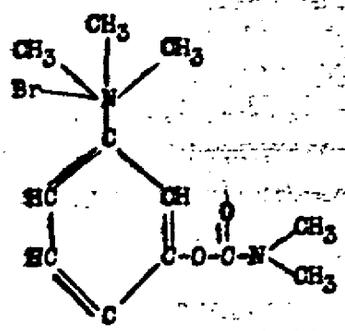


6/6/17 gm

Physostigmine (Eserine) Salicylate USP

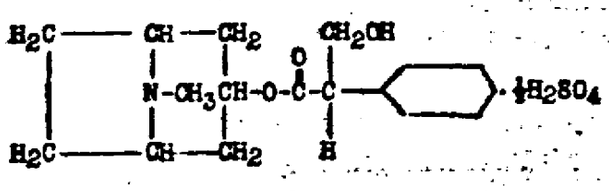


Neostigmine Bromide or ("Prostigmine") Methylsulfate USP

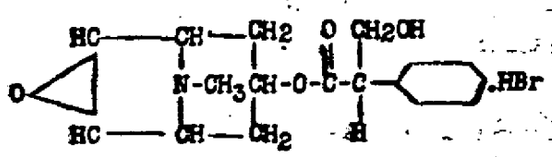


Parasympathetic Blocking (Antispasmodic) Agents

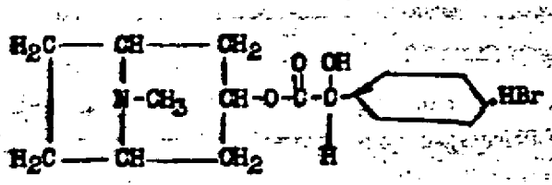
Atropine Sulfate USP



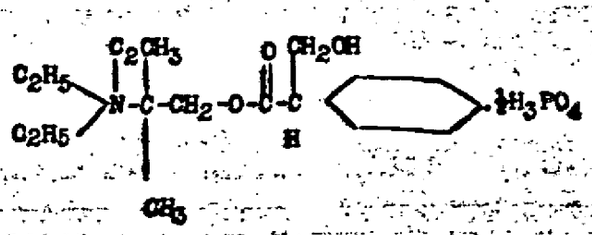
Hyoscine Hydrobromide USP (Scopolamine)



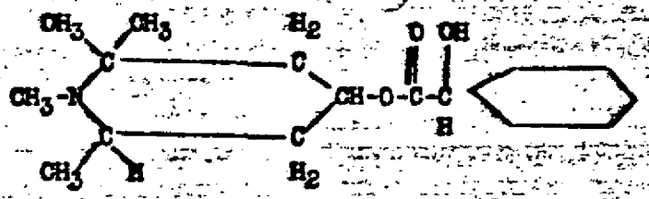
Homatropine Hydrobromide USP



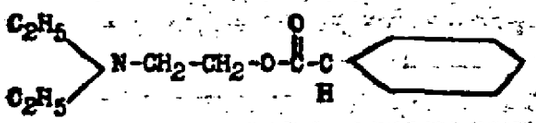
Amprotropine Phosphate NNR ("Syntropan")



Eucatropine Hydrochloride NNR ("Euphthalmine")



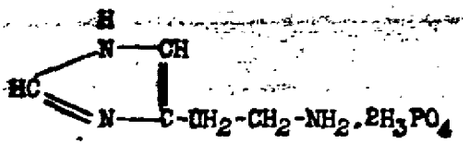
"Trasentin" NO



Meperidine NNR
(Isonipecaine, Pethidine, "Demerol")

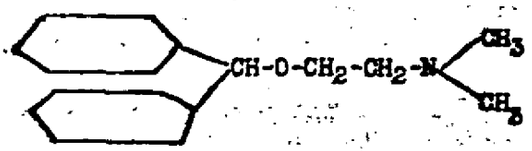
HISTAMINE AND ANTIHISTAMINICS

Histamine Phosphate USP

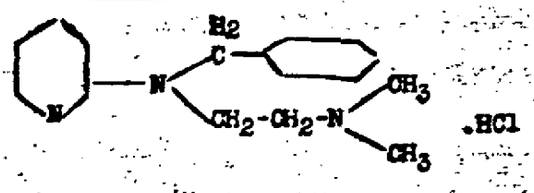


official as phosphate
methods as diagnostic
agent → sensitivity
of gastric extract

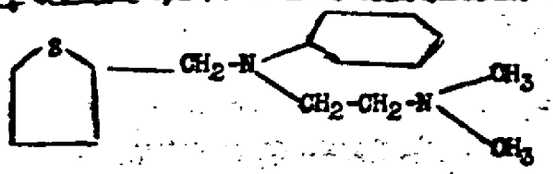
Diphenhydramine Hydrochloride ("Benadryl") NNR



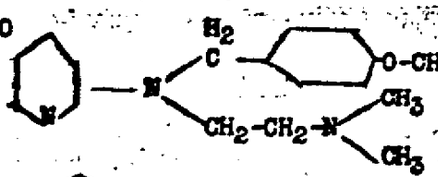
Tripelennamine Hydrochloride NNR ("Pyribenzamine")



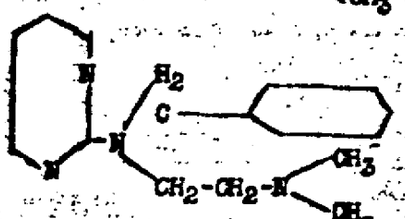
Pyridyl-thenyl-dimethylethylenediamine Hydrochloride NO
(Lilly 01013)



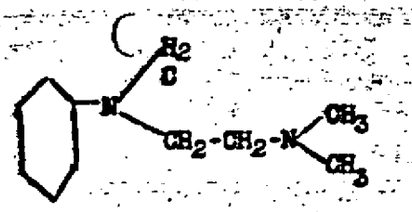
"Mecantergan" NO



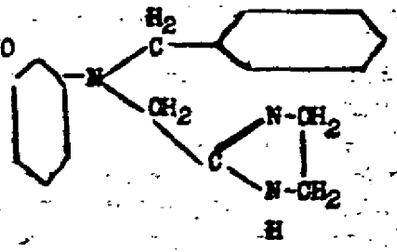
"Hetramine" NO



"Antergan" NO



"Antistisine" NO



Musculotropic Agents (Stimulants to involuntary muscle irrespective of innervation)

Posterior Pituitary USP
(Biologically standardized on isolated guinea pig uterus so that 0.1 cc of solution possesses activity equivalent to 0.5 mgm of USP posterior pituitary reference standard. Chemical composition of active principles unknown). Does not affect involuntary muscle of bronchi, pupil of eye, or cerebral blood vessels.

Alpha Hypophamine NNR
("Pitocin") Contains uterine-stimulant principle(s) practically free from other activities. Standardized like USP solution of pituitary and of equal activity on uterus.

Beta Hypophamine NNR
("Pitressin") Contains all activities of Posterior Pituitary except that on uterus. Standardized (on ability to raise blood pressure of anesthetized dog) to equal USP solution of pituitary.

Barium salts (except sulfate, which is too insoluble in water).

Quinine salts (especially for action on uterus).

Histamine (stimulates involuntary muscles of bronchi gastrointestinal tract and uterus of nearly all species and that of blood vessels of rodents; relaxes that of uterus of white rat all blood vessels of man and monkey and some blood vessels of dog and cat; does not affect that of pupil of eye).

6/12/50

1. Cocaine - Entered by denervation
2. Caffeine - [illegible]
3. N ? - not changed

cocaine { with chronic effect of Epi
" amount " " Epidrine
" not at either way on ?

Sympathectomy - do not [illegible] DK [illegible]

Tachyphylaxis - resistance to drug when dosage is repeated too often; organism has become refractory. Caused by repeatedly doses of Epidrine etc.

---

p. 3 Sympathetic Blocking Agents

p 4 structural formulas for ergotoxin missed.

motion page (4) Ergot — ? — too toxic for use.
yohimbin, ataraxia not used

→ Effects of this drugs are elicited on peripheral structures
" would depend on blocking effects on, epi etc function to tissue
ergotoxin, ergotamine.

1. Ergotoxine - B. a. not equally effective against all smooth muscles
2. " " not effective ?
3. can block motor effect on uterus
4. takes long amts to block effects of epi etc on heart, uterus etc.

---

5. Ergotoxin as cause of gangrene (caused by eating epidemic ergot — adhesion on grain rye → ergot)
common in middle ages.
↳ block adrenergic nerve impulse.

Any decrease of ergotoxin or ergotamine in combating migraine headache — acts on blood vessels of brain ?? not demonstrable.
↳ cerebral circulation.

Ergotoxin & Ergotamine practically exchangeable therapeutically
↳ used in clinic

action on others & is used to prevent hemorrhage after child(ren)

but does not block action of ergotoxin & ergotamine in blocking sympathetic nervous system. 6/6/50 gas

what adrenalin is used at to block sympathetic nerves which → essential hypertension -

→ extract of Dihydroergotamine (mesylate) - tried in hypertension but did not live up to early reports.

→ however, lately (from Switz) new drug Dihydroergotoxine - which is reported to look very favorable.

→ that was in preventing excessive activity of sympathetic nerve impulses & preventing storms in (many cells)

→ no means of correlating clinic. Common with effect for that substance.

→ parasympathomimetic or ? drugs.

p 6

3. categories.

Field see table p. 5 to tell what to expect from used drugs

↳ most constricted
substance with known
secretion of digestive glands ? etc
Long last - act!
dilatation will compensate all vasomotor
? of local stimulated
colon stimulated -

middle of p. 7

1 - 6 derivatives of choline (muscarinic drugs)

a. acetylcholine
b. carbamylcholine
c. methacholine
d. mecholyl
e. muscarine

} U.S.P.

4. nicotine

(Isolated

effects even about
chief use to (most parasympathetic blocks often contain atropine
use with carbamylcholine or methacholine
for retinal tears
6/6/50 JW
I.V. acetylcholine is very rapid as it is destroyed by
fatal - can aid
very unstable ester choline + AcOH
choline esterase
used in ophthalmology to constrict pupil.

---

2 not cat
{ Edrophonium tensilon (occurs in bottle unit)
methonium tetramethyl for long period of time
with stable vegetable alkaloids.
Effect like muscarine except do not have vasodilator action

3rd Group P7
{ Eserine
neostigmine (prostigmine bromide)
activity depends on ability to inactivate cholinesterase
DFP = diisopropylfluorophosphate (see Physostig)
at
& mildly acetylcholine — appropriate effect of
by parasympathetic stimulation
originally intended as a war gas { nausea vomiting
would induce muscarine effects
& will prolong effect of acetylcholine

DSi DSi HO
linear chain?
DFP differs from eserine + LIQUID petrolatum in that
effect is reversible - to effect on eye removed
by
to use in chronic glaucoma (to constrict pupil - but
well tolerated)

Parasympathetic (Physostigmine) and a
neuromuscular (succinylcholine) drugs (curare)

6/6/15 gv

Irreversible cholinesterase (first) was used to
our knowledge has been even more effective
but need frequent doses treatment
originally hoped that effects of DFP would be
even more prolonged in effect.

Lab exercise

These cholinesterase agents which tend to make it
possible to understand working of (one) parasympathetic
nervous system. To elicited action of acetylcholine
on (one) organ nervous system.
so far not possible to demonstrate action of acetylcholine
without use of these substances (except for Loewy's
pupils on frog eye).
Aerial expt to show acetylcholine without action
of these agents

Summary

1. Drug of great potency
2. Eye - pharmacologic interest
3. very little therapeutic value
   (because it does too many things)
   but has had a great

nerve impulse specificity
Found traces of specificity in the transmitter substance.
but both → parasympathetic
sweat secretion
action potential

one antidote for these drugs - atropine

End period

Parasympathetic blocking agent
Belladonna (Italian - interfered with ability to see close objects)
↳ used to poison

Beautiful blocking effect 1:10⁶
we should in dose sufficient → worst effect in
completely antagonized by atropine
But atropine does not block nicotinic effects
(of ganglia) derived effects

a- like atropine but does tend to quicken C.N.S. 41 910
c- synthetic ester related to atropine, used in ophthalmology but does not act for so long.
Can overcome glaucoma effect + seems best drug
atropine
C + d - see p 749.

Benzhexol - orig intended to be anti spasmodic + anti analgesic properties were discovered quite accidentally

Summary

Action of A.N.S. - adrenergic + cholinergic actions

a- adrenergic drug action - same as sympathomimetic
(most impulses liberate or produce "sympathin")
by
as like adrenaline.

b- cholinergic drug action (parasympathomimetic)

(1) muscarinic (atropine will completely prevent or abolish this action)

(2) nicotinic action { sympathetic N.S.
parasympathetic N.S.
C.N.S.

would be to lower B.P. accelerate heart dilate bronchi

(3) skeletal muscle
a- paralysis
then
b- depression (depressant action is like that of curare)

Histamine & antihistaminic substances

p 158 ... Histamine - use as diagnostic test as to whether circulation is adequate (for amputation)

(print distributed in class)

Intestinal plain muscle (see text p. 9)
a- stimulates

escape from blood vessels into tissues of body)
congest (rate → circulate) edema (swelling)
c - stimulate secretion of acid in stomach

6/6/50 gw

④ - part histamine held responsible for loss of fluid in surgical shock (→ low b.p. & death)
irreversible shock can result b.p. - but still retained in blood vessels
(lose fluid from vessels in tissues

⑤ - part histamine held responsible for loss of fluid in burns etc (skin)

(b) " " " " loss of fluid in

anaphylactic shock

by skin tissues by some foreign protein (egg albumin) & result with edema and later result → sudden death due to sudden closure of bronchi

for dog has system of blood vessels in liver (→ death when released.

other animals — all system of blood vessels → in b.p. & death.

and proof is not yet completely settled that histamine is responsible for all of symptoms of anaphylactic shock.

Co set antihistamines & a pt.

- also use reduction in outlook of victims of allergies (i.e. hay fever etc)

action of these drugs is not so ideal - however are widely used

a - stops running nose } w. q.
a - skin
c - but bronchial reactions have proved very disappointing
d - also have depressant effect on C.N.S. (alcoholic effect → accidents in factories)

- 8 b + 8 c (~ 9) - must count this more than two
effects at ( ) 11/15/50
the antihistamine muscle rather than bronchi-
these drugs not specific for histamine but also have
local anesthetic action.
and sensitive enzyme must be used for detecting histamine
(for evaluation of antihist).

---

p 9 musculotropic agents

a - used mainly in obstetrics - but therapeutic value
is really not so great.
usually
also good for essential polycythemia - (1.0 - 1.5 liters/day)
4 individuals very thirsty
urea and potassium & sol normal action
all a (but.

d - active principles

Ergot
now can write long list of ecbolics - now the
pharmacology of ecbolics has become greatly simplified
— Must talk with table Mg(4) - will date it again
when we have

ergot - Neurotherapeutic agents

Date Received 6/6/50

From _____
(Name of Contributor)

Address _____ Contributor)

By Fred C Barkley

To Be [illegible] Special [illegible]

No. (1)

Description: Glider #7 material found on bottom shelf of wooden cabinet in basement of Fred's home

File No. 65-4307-1-B-12 (1)

65-4307-1-B-12(1)#7

SAC, PHILADELPHIA

July 7, 1950

T. SCOTT MILLER, SA

HARRY GOLD, was.,
ESP - R

65-4307-1B 12 (1) Folder No. 7

This folder was shown GOLD on June 24, 1950.

GOLD stated that the name "Browning" on the front of the folder referred to the works of ROBERT BROWNING which had to do with a course in English which GOLD was taking at Xavier University in 1936. GOLD stated he merely used this folder for other purposes after he got out of College.

GOLD stated that the material in this folder concerned some of his work at Pennsylvania Sugar such as salt recovery from molasses distillery slop, which work was done between the time he knew he was going to work with Pennsylvania Sugar in 1940 and the time he actually commenced work. GOLD said he examined chemical abstracts in the library about June 1940 in preparation for his job at Pennsylvania Sugar.

TSM:EJC
65-4307

C 01

2 1933 K-104

5154. Preparation of potassium sulfate and ammonium chloride from potassium chloride and ammonium sulfate. S. K. Kirkar, N. V. Lo-

1 — 1907

K_2CO_3

rendering caustic by means of lime.
(Le Blanc, Nordhausen), 4-7-4.

KCl — zero.

K_2SO_4 — zero.

1 - 1907 K_2CO_3

4, 914

4, 914. Rendering sodium and potassium carbonate caustic by means of lime. — E. Blanc and K. Moeting. Z. anorg. chem., 51, 181-201. Institut. phys.-chem. Elektrochem. Techn. Hochschule, Karlsruhe. — Very few scientific investigations on this so important technical subject are to be found in the literature. An early paper of Lunge and Schmid (Ber., 12, 2076) without theoretical consideration recommended by Lunge (Z. Elektrochem., 11, 186, and Z. angew. chem., 12, 1137) treating the process from the physico-chemical standpoint. The authors first give the theoretical considerations bearing upon the determinations of the solubility and the hydrolytic dissociation of $CaCO_3$ at 18° and 100°, and then describe the methods adopted. Using mild ag. adaptation

0.74. of the electrical conductivity method of Bodmer and Braunmühl (Z. physik. Chem., 47, 379) and analytical gravimetric methods. The results are given as follows:

Temp	solubility of $CaCO_3$ in mg. in 100 cc. in pure $NaOH$		in $NaOH$	
		reduction from conductivity	direct data	conductivity and titr.
18°	12.8	2.7	4.2	70% 67%
		mean 2.5		
95-100°	20.7		5.7	... 72%

The equilibrium constants of the causticization of Na_2CO_3 and K_2CO_3 by means of lime were then calculated from the solubilities of CaO and $CaCO_3$ and the data put to experimental proof, under various conditions of concentration and temp., the results of which are given in a large no. of tables.

In the manuf. of caustic alkali the amount that has to be used in

1-1907 K-CO3 U.S.P.

474. concd. carbonate kept as possible
① in order to work out of troubles, but
with higher concn. the yields are
diminished. Parnell, Wells, Mennicke,
and others patented methods to
avoid this by using pressure. Ter-
wells patented both the use of pres-
sure and vacuum. Lunge and
Schmid then showed that pressure
had very little influence on
the yield. The authors' work shows
that neither the increased temp.
nor the relatively small pressure
of 4 atmos. influences the con-
dition of equilibrium. They deny
the possibility of Parnell's having
obtained 96% yield, as equili-
brium is reached at 93.37.4
will be possible to reach in prac-
tice the yields data by the author
only by making the velocity of

1-1907 K_2CO_3

474. the reaction as large as possible, which
④ will be favored by high temp., good agitation, large excess of lime. Small scale tests made with 2.5 N Na_2CO_3 soln. showed that with good agitation equilibrium was reached within half an hr. (yield 93-97%), and that, on the large scale, max. yields must be obtainable.

C

9

Z - 1908.

K_2CO_3

potash from cheese distillery waste

(patent) ; P. 1509.

KCl - [illegible]

K_2SO_4 - [illegible]

2 - 1988 K_2CO_3 4/4/90

1509. 191, 105, Dec. 2, 1906. Emil Raub, Basel (Switz.), Hungary. Process of producing a high percentage or technically pure potash from charred distillery waste and the like, depending upon the fact that by concentration between 95 - 50°, an H_2O containing K_2CO_3 separates which contains over 99% K_2CO_3, the impure salts remaining in the mother liquor. The practical operation is specified.

3 - 1909

K_2CO_3

... the saturation of (Farlend), 2.414 ...

KCl - wet

K_2SO_4 - wet

3 - 1919 K_2CO_3

2414. The Hydration of Potassium Carbonate. O. Forcand. Compt. rend., 168, 1731-4. — The ordinary hydrated K_2CO_3 formed at temps. from +10 to 75°, or by cooling to −5° a soln. which had been saturated at 15.0°, is not $K_2CO_3 \cdot 2H_2O$, but $K_2CO_3 \cdot 1.5H_2O$. This hydrate is very stable, losing its water of hydration at 100° in about 12 hrs. When K_2CO_3 is shaken up with a little water it is this stable hydrate which results. Since this is not a dehydrating agent, K_2CO_3 must be freed from water to be used for this purpose. The author believes that at lower temps. hydrates such as $K_2CO_3 \cdot 4H_2O$ and $K_2CO_3 \cdot 3H_2O$ exist, less stable than $K_2CO_3 \cdot 1.5H_2O$ and capable of forming the latter by efflorescence.

4-1910

6/4/10

K-CO3

the source of loss in production of, from wheat (Mumm), 1895.

KCl - yes

K-SO4

solubility of, in conc. aqueous solns of non-electrolytes (Fox, Mumm), 1913

4 — 1910 K_2CO_3 11/13/17

695. The losses of KCl in production of Potassium Carbonate from molasses. Chem. Trade Journ. Soc. Chem. Ind., 27, 589. — Intern. Congress of Applied Chem., London, May, 1909. The author shows that in the ignition of molasses a part of the K_2CO_3 is converted into K_2SO_4 through reaction with $CaSO_4$ and CaI_2; the K_2SO_4 is partly deposited as hard crust, incrustations and partly volatilized.

C d

1910. K_2SO_4 Hill

1565. The solubility of K_2SO_4 in concentrated aqueous solutions of non-electrolytes. J. H. Hill. For and a. J. H. Hauge. Coal London Coll., Univ. London, J. Chem. Soc., 97, 377-75; Proc., 26, 27. — The solubility was measured at 25° for solns. of EtOH, ethylene glycol, glycerol, mannitol, chloral hydrate, sucrose, acetone, and pyridine over a wide range of concn. for each. The solns. were examined from the point of view of the possible formation of definite hydrates, since it was thought possible that if any mixture a simple hydrate was formed, a change in the solubility curve would be found at this point. In the case of mannitol and sucrose the solubility curve

4 - 1910 K_2SO_4 6/6/5 gr

1.163. was a st. line; but in the other cases the decrease in solubility, while regular, is more rapid than the increase in conc. of the non-electrolyte. It was noted that increase in the no. of -OH groups in the mol. decreases the salting effect of the non-electrolyte. Several explanations of the curves, on the basis of Noyes' theory of hydrates, are proposed, but none are wholly satisfactory without assumptions of hydration of the ions of K_2SO_4 and the dependence of solubility upon comparative power of hydration of ions and non-electrolyte.

5 - 1911

K_2CO_3 4/4/50

converting sulfates of K into (Effluent),

P. 1691.

KCl - yes.

K_2SiO_4 - yes.

5 - 1911 K_2CO_3 6/6/[illegible]

1691. Fr. 407,127, July 16, 1909. J. Clifford, Belgium. Converting the sulfates of potassium into the carbonate by treating materials putrid fermented with sulphic ferments with lime and K_2SiO_4 (?). This process is particularly applicable to beet-root juices, and to the super-heated residues and turf. Details are specified.

6 - 1942

K_2CO_3 – alk. salt.

KCl – salt.

K_2SO_4

evaluation of (Howard, Hamilton), 2980.

C Q

6-1912 IC-504

2980. The Coagulation of Potassium Sulphate, A.P. David & L. Howard and J.A.P. Harrison. Pharm. J., 79, 151-1, 174-5, 1907. — The old, — solubility test (about 5:7, to be soluble in 9:5 E+OH) should be replaced by dets. of total S by the authors' method (C.A. 3, 1661). [The rest is missing.]

C O

8 - 1914

K_2CO_3 - גוש.

KCl - גוש.

K_2SO_4 - גוש.

9 - 1915

K_2CO_3 – xxx

KCl – xxx

K_2SiO_4 – xxx

10 - 1914

K_2CO_3 - ver

KCl - ver

KNO_3 - ver

C d

K_2CO_3 - ...

KCl - ...

K_2SO_4 - ...

C O

1-2-1918

K_2CO_3 - see.

KCl

see. of chlorides and sulfates of Na and K by fractional cryst., 11 c.s.

K_2SO_4 - see.

12-1918 Kcl

1153. The separation of the chlorides and sulfates of sodium and potassium by fractional crystallization. W. C. Blasdale. J. Ind. Eng. Chem., 10, 347-53; cf. preceding abstr. — The behavior on cooling of solns. containing various proportions of these salts is presented by means of diagrams based on the data of the preceding article. The following equns. are considered: KCl from K_2SO_4; KCl from NaCl; K_2SO_4 from Na_2SO_4; Na_2SO_4 from NaCl. Temp. control and limits of separation are deduced from the diagrams and calcns. of efficiencies are presented. The method of using the phase diagrams is then extended to more complex mixts. and applied to (1) the separation of potash from the ash of kelp; (2) separation of potash from a desert brine. The practical

12-1918 Ked

11-3. Use of the diagrams for control of
② cable sizes as illustrated and methods
for making necessary calculations simplified.

C

a

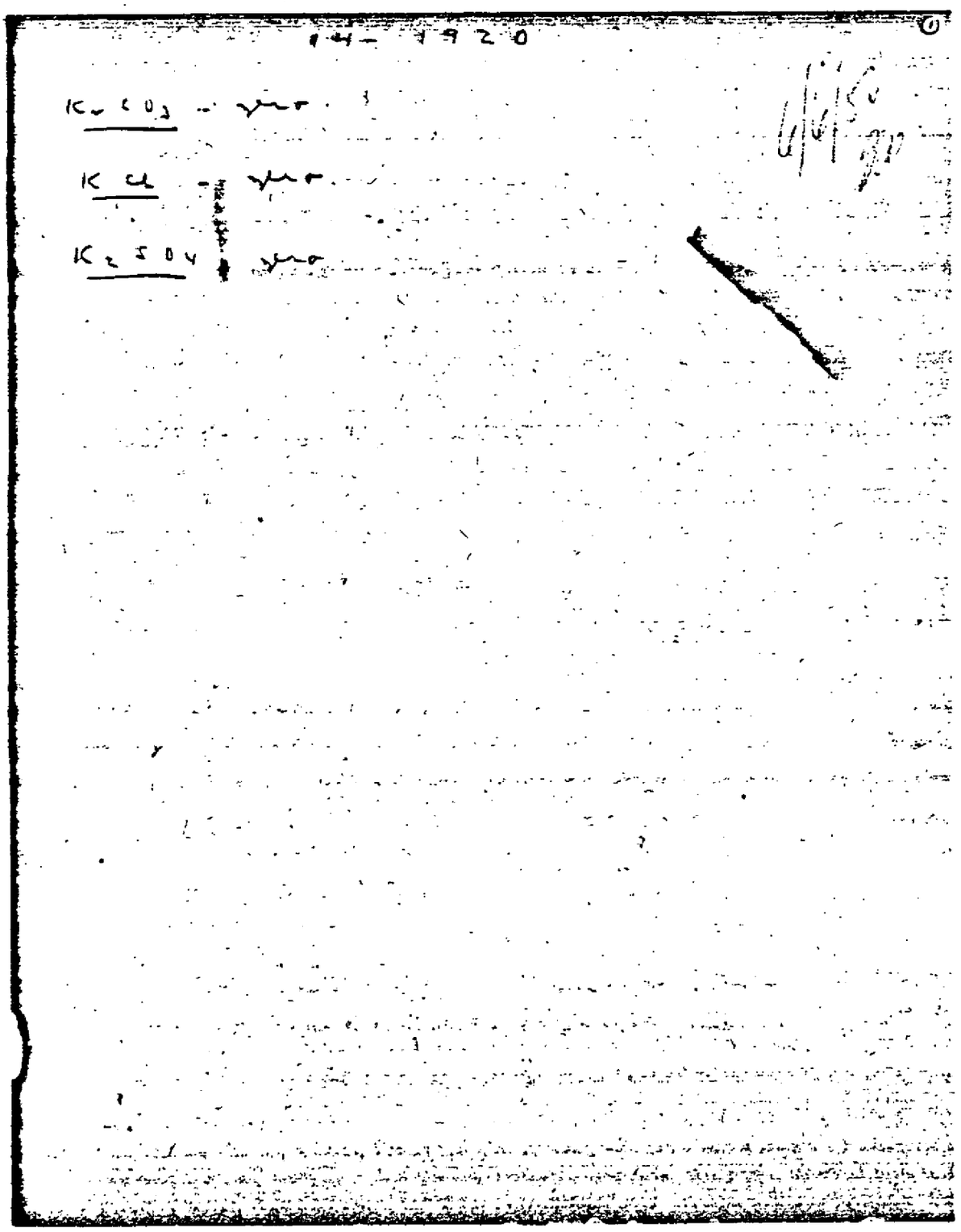
13 - 1919

K_2CO_3 - ...

KCl - ...

K_2SO_4 - ...

C



C D

15-1921

K_2CO_3 - yes

KCl -
from furnace dust, P 1.52

K_2SO_4 - yes.