

TABLE 2. d/n RANGES FOR TERMATREX CARDS
CONTAINING POWDER DATA (Cont'd)

50X1

DECK B (Cont'd)

<u>Card No.</u>	<u>d/n Range</u>	<u>Card No.</u>	<u>d/n Range</u>
Black/06	3.020 - 3.099	Purple/18	5.100 - 5.299
" 14	3.100 - 3.169	" 39	5.300 - 5.499
" 21	3.170 - 3.239	" 57	5.500 - 5.699
" 28	3.240 - 3.319	" 81	5.700 - 5.899
" 36	3.320 - 3.399		
" 44	3.400 - 3.479	Purple/60	5.900 - 6.149
" 52	3.480 - 3.559	" 64	6.150 - 6.499
" 60	3.560 - 3.639	" 67	6.500 - 6.849
" 68	3.640 - 3.719	" 69	6.850 - 7.199
" 76	3.720 - 3.799		
" 84	3.800 - 3.879	Orange/75	7.200 - 7.599
" 92	3.880 - 3.959	" 78	7.600 - 8.199
" 99	3.960 - 4.049	" 85	8.200 - 8.999
		" 95	9.000 - 9.999
		Sand/05	10.000 -11.199

TABLE 3. MICROGRAM SAMPLES

This table lists several compounds from which usable diffraction patterns were obtained using microgram (0.001 milligram) quantities of sample.

<u>Compound</u>	<u>Weight (milligrams)</u>
Uric Acid	0.0001
MgO	0.0003
Dimethylglyoxime	0.001
2-Naphthoic Acid	0.0002
Anthracene	0.001
Pyrazalone	0.0003
Diacetyl Benzidine	0.005
Sudan III CI 248	0.0003
No. 216 F-1	0.003

TABLE 4. COMPARISON OF POWDER DIFFRACTION DATA
 FOR GeO₂ (HEXAGONAL) WITH NBS DATA

50X1

 Data		NBS Data*	
<u>d/n</u>	<u>I/I₀</u>	<u>d/n</u>	<u>I/I₀</u>
10.83	97		
6.82	44		
4.61	12		
4.27	72	4.32	21
4.00	10		
3.78	28		
3.41	100	3.429	100
3.00	24		
2.73	56	2.496	11
2.36	30	2.366	22
2.27	16	2.283	13
2.16	26	2.159	18
1.99	15	2.018	02
1.88	34	1.884	08
		1.870	14

50X1

*H. E. Swanson and E. Tatge, Standard X-Ray Diffraction Powder Patterns, N. B. S. Circular 539, Vol. I, 1953, p. 51.

TABLE 5. TABULATION OF APPARENT ATOMIC PLANE SPACINGS
AND INTENSITY RATIOS FOR THE DIFFRACTION RINGS FROM
SEVERAL POWDERED SAMPLES

The upper row of figures in each case is apparent spacing (d/n). The lower row of figures is the intensity ratio, I/I_0 , taking the most intense ring as I_0 .

Anthracene	4.54	9.08	4.83	4.14	3.43	3.53	3.02
	1.00	0.42	0.35	0.32	0.29	0.20	0.19
Ethyl Cellulose	10.50	7.95	4.41				
	1.00	0.98	0.79				
Hemin (see SP1102)	8.98	5.32	4.23	3.71			
	1.00	0.92	0.82	0.75			
Disodium EDTA Calcium	10.33	8.19	17.90	5.77	5.12		
	1.00	0.88	0.87	0.77	0.75		
Carbanthrene Violet (see SP1105)	12.23	7.97	3.86				
	1.00	0.99	0.60				
Disodium EDTA Zinc	6.33	8.98	5.00	12.51	4.30	3.69	3.24
	1.00	0.95	0.90	0.88	0.80	0.75	0.70
Disodium EDTA	4.98	3.44	3.10	4.27	7.91		
	1.00	0.96	0.93	0.92	0.83		
Disodium EDTA Magnesium	6.28	5.16	4.38	11.56	3.74	3.52	
	1.00	0.69	0.62	0.60	0.60	0.60	
Magnesium Oxide	4.64	2.10	6.51	2.43	2.32	1.85	1.94
	1.00	0.83	0.82	0.45	0.34	0.22	0.15
8-Hydroxyquinoline	6.16	3.75	3.46	3.17	9.62	4.55	
	1.00	0.89	0.84	0.81	0.81	--	
Tetrasodium EDTA	12.30	7.44	5.53	3.70	4.76	3.28	
	1.00	0.61	0.59	0.53	0.51	0.39	
Isopropyl Jade Green	13.88	8.65	4.48	5.94	3.51	3.04	2.53
	1.00	0.99	0.92	0.91	0.87	0.66	--

TABLE 5. TABULATION OF APPARENT ATOMIC PLANE SPACINGS
AND INTENSITY RATIOS FOR THE DIFFRACTION RINGS FROM
SEVERAL POWDERED SAMPLES (Cont'd)

Paper (Beverly Bond)	3.76 1.00	4.02 0.94	5.49 0.80	3.01 0.49	2.48 0.49	2.26 0.45	6.88 --
Whatman No. 2 Filter Paper	3.78 1.00	4.17 0.76	5.50 0.76	2.53 0.45	3.07 0.40	2.27 --	2.11 --
Sulfite Paper	3.87 1.00	4.24 0.85	5.38 0.85	6.61 0.64	2.51 0.50	3.64 0.41	2.25 0.28
Dialysis Tubing	4.19 1.00	8.56 0.85	3.09 0.48	2.52 0.32	2.18 0.23		
216 F-1	4.65 1.00	14.59 0.88	5.73 0.65	3.95 0.65	7.05 0.43	3.29 0.35	
Sudan III CI 248	6.55 1.00	3.34 0.78	12.88 0.69	4.85 0.62	7.46 0.61	3.54 0.60	4.33 0.57
		5.62 0.56	4.03 0.56	10.97 0.52	3.10 0.48		
Mylar	8.41 1.00	5.34 0.63	3.49 0.29	2.68 0.21			
Uric Acid <i>see SPIII</i>	3.08 1.00	3.17 0.83	3.86 0.68	2.47 0.66	2.53 0.53	5.62 0.43	6.56 0.40
		4.89 0.40	5.21 0.34	4.47 0.30	2.86 0.28	2.61 0.28	2.28 0.28
	2.23 0.28	2.80 0.23		2.72 0.21	2.05 0.21	3.38 0.17	10.46 0.13
Sulfadiazine	5.32 1.00	6.78 0.96	4.27 0.95	4.09 0.86	11.60 0.77	3.79 0.55	3.36 --
Sulfapyridine	5.57 1.00	3.68 0.81	7.37 0.74	4.42 0.66	11.10 0.55	2.98 0.30	2.87 0.27
Versene	3.04 1.00	4.21 0.96	3.38 0.96	4.94 0.92	3.89 0.90	7.80 0.88	6.16 --
Corn Starch	5.65 1.00	7.68 0.92	4.94 0.84	3.77 --			

TABLE 5. TABULATIONS OF APPARENT ATOMIC PLANE SPACINGS
AND INTENSITY RATIOS FOR THE DIFFRACTION RINGS FROM
SEVERAL POWDERED SAMPLES (Cont'd)

Formvar	4.74	8.77					
	1.00	0.80					
Triphenylphosphate	8.09	5.40	3.96	4.32	4.63	6.68	3.75
	1.00	0.96	0.92	0.91	0.90	0.77	--
Talc ^a	8.25	5.65					
	1.00	0.90					
Talc ^b	9.10	4.86	2.77	2.59			
	1.00	0.92	0.80	0.72			
Talc ^c	8.72	5.61					
	1.00	0.90					
Talc ^d	8.66	5.34					
	1.00	0.79					
Dimethylglyoxime	5.77	5.06	3.60	3.29	3.43	2.56	6.34
	1.00	0.97	0.70	0.55	0.49	0.34	0.27
		2.91	10.93	2.33	2.42	2.14	
		0.18	0.15	0.14	0.13	0.10	
Pyrazalone	4.11	4.51	3.49	3.61	3.35	7.72	3.17
	1.00	0.72	0.55	0.48	0.37	0.36	0.30
		6.52	4.83	6.95	9.06	5.97	5.22
		0.27	0.27	0.21	0.18	0.15	0.15
	5.53	2.63					
	0.12	--					
Paraffin	4.09	3.66	16.34	11.42	7.92	2.94	2.47
	1.00	0.97	0.78	0.63	0.63	0.22	0.19
Diacetyl Benzidine	4.74	7.39	4.45	3.73	4.00	6.24	10.19
	1.00	0.87	0.55	0.45	0.40	0.35	0.30
		5.68	3.33	2.71			
		0.25	0.20	--			
Aspirin	9.11	11.34	4.51	5.64	2.62	3.28	3.41
	1.00	0.85	0.82	0.51	0.42	0.40	0.38
		4.25	3.12	3.91	4.96	2.90	2.44
		0.37	0.36	0.35	0.34	0.20	0.17
							0.14

a - Penaten - German b - Nivea - German

c - Creta Gallica - French d - PhanThom - Vietnam

TABLE 5. TABULATION OF APPARENT ATOMIC PLANE SPACINGS
AND INTENSITY RATIOS FOR THE DIFFRACTION RINGS FROM
SEVERAL POWDERED SAMPLES (Cont'd)

Sulfaguanidine (see SP 1103)	6.23	4.33	4.05	5.28	3.63	3.05	11.87	
	1.00	0.94	0.74	0.58	0.49	0.38	0.27	
		2.84	2.60	2.47				
		0.15	0.12	0.11				
2-Naphthoic Acid	5.60	3.26	3.43	15.46	5.08	3.60	4.79	
	1.00	0.52	0.35	0.30	0.22	0.20	0.17	
		3.90	4.52	4.24	3.08	7.81	2.27	
		0.16	0.10	0.09	0.03	--	--	
Lead Foil	2.84	2.47						
	1.00	0.60						
Diformylbenzidine see SP 1115	4.46	3.49		3.93	2.79		2.98	
	1.00	0.74		0.34	0.32		0.18	
		8.13	13.07					
		0.13	0.06					
Diphenylthiourea	4.47	3.91	12.45	5.41	8.03	3.14	3.67	
	1.00	0.45	0.43	0.35	0.30	0.22	0.14	
		2.89	3.38					
		0.11	0.10					
Aminopyrine	9.68	6.65	4.30	5.30	3.76	7.80	6.08	
	1.00	0.96	0.86	0.66	0.57	0.43	0.36	
		3.46	3.08	3.20	2.83			
		0.29	0.23	0.20	0.11			
Sulfanilamide	3.90	4.85	3.11	3.27	6.17	4.10	3.42	
	1.00	0.83	0.78	0.65	0.57	0.56	0.52	
		8.41	3.66	4.27	6.65		2.50	
		0.46	0.44	0.43	0.39		0.33	
			2.75	2.93	5.29	2.81	2.65	2.24
			0.22	0.20	0.19	0.17	0.15	0.11
Citric Acid	5.08	3.56	6.40	4.70	3.91	5.58	2.98	
	1.00	0.66	0.62	0.59	0.48	0.39	0.35	
		2.57	4.25	3.23	2.79			
		0.30	0.25	0.24	0.20			
Sodium Chloride	5.31	8.93	3.02	2.74				
	1.00	0.53	0.49	0.38				

TABLE 5. TABULATION OF APPARENT ATOMIC PLANE SPACINGS
AND INTENSITY RATIOS FOR THE DIFFRACTION RINGS FROM
SEVERAL POWDERED SAMPLES (Cont'd)

β -Naphthol	4.50	3.99	3.53	7.63	3.31	3.15	15.16
	1.00	0.91	0.73	0.72	0.67	0.30	0.20
		2.91	5.79	5.04	2.44	2.79	2.69
		0.19	0.18	0.17	0.15	0.10	0.09
		2.30					
		0.05					
Octylthiourea	17.58	3.40	4.18	3.69	9.50	7.37	4.60
	1.00	0.86	0.79	0.64	0.52	0.43	0.41
				5.98			
				0.16			
Hydroquinone	15.71	9.75	3.27	7.68	3.51	4.14	3.62
	1.00	0.73	0.62	0.57	0.52	0.48	0.47
		4.40	2.55	3.83	3.13	3.00	2.89
		0.44	0.43	0.42	0.34	0.27	0.22
		4.80	2.73	2.20	5.74		
		0.21	0.20	0.20	0.19		
Amylase	3.70	2.77	2.21	3.06	2.53	3.16	2.64
	1.00	0.97	0.87	0.63	0.58	0.55	0.47
		4.07					
		0.39					
o-Nitrobenzene arsonic acid lead salt	11.85	14.21	3.33	3.14	2.85	3.51	2.66
	1.00	0.86	0.53	0.52	0.48	0.47	0.42
		7.33	3.62	4.81	2.80	5.45	2.50
		0.39	0.38	0.36	0.36	0.34	0.33
		4.26	5.85				
		0.32	0.31				
Antipyrine	3.53	5.28	4.49	3.28	6.63	5.92	3.68
	1.00	0.72	0.66	0.65	0.63	0.60	0.55
		7.51	4.11	2.98	3.88	2.88	3.12
		0.54	0.42	0.37	0.34	0.33	0.26
		2.64	2.21	2.73	2.26		
		0.18	0.16	0.14	0.12		
Thiourea	3.49	3.53	4.30	3.08	4.45	3.81	2.78
	1.00	0.92	0.86	0.81	0.67	0.58	0.47
		2.27	2.35	2.18			
		0.31	0.28	0.25			

TABLE 5. TABULATION OF APPARENT ATOMIC PLANE SPACINGS
AND INTENSITY RATIOS FOR THE DIFFRACTION RINGS FROM
SEVERAL POWDERED SAMPLES (Cont'd)

Nickel Acetyl- acetate	8.34	10.37	9.05	7.09	4.28	3.45	4.63
	1.00	0.87	0.78	0.65	0.63	0.63	0.62
		3.81	5.39	4.76	3.66	3.37	3.02
		0.57	0.50	0.48	0.43	0.34	0.34
	2.79	2.72	2.38	2.43			
	0.31	0.23	0.18	0.17			
Dry Stabelite (Paper Resin)	16.28	4.65	6.41				
	1.00	0.57	0.28				
Lithium Carbonate	3.31	2.25	2.32	4.14	2.91	2.82	2.47
	1.00	0.75	0.71	0.67	0.60	0.50	0.46
		1.94	2.43	3.01	2.10	1.85	2.63
		0.46	0.44	0.38	0.35	0.33	0.31
	1.99	3.64	2.56	3.79			
	0.31	0.27	0.25	0.21			
CI635 Sudan III Red	5.69	7.20	8.14	6.46	5.01	3.34	2.68
	1.00	0.84	0.83	0.81	0.56	0.47	0.43
		2.80	3.12	2.43	2.25		
		0.40	0.34	0.22	0.13		
CI636 Tartrazine	8.01	10.07	8.78	15.68	6.97	5.40	4.30
	1.00	0.85	0.74	0.64	0.49	0.41	0.40
		2.24	2.82	3.95	3.81	4.75	3.22
		0.40	0.39	0.37	0.37	0.36	0.36
	3.34	2.67	2.58	1.99			
	0.35	0.34	0.30	0.24			
16 Cinnamic Acid	3.82	9.06	7.18	7.89	3.08	2.79	4.75
	1.00	0.83	0.83	0.75	0.69	0.63	0.60
		3.42	3.51	4.18	5.98	3.26	2.42
		0.52	0.48	0.44	0.40	0.40	0.35
	2.62	2.32					
	0.23	0.17					
14 diformylbenzidine	3.59	2.80	4.53	3.97	3.08	3.28	
	1.00	0.64	0.55	0.41	0.26	0.16	

TABLE 5. TABULATION OF APPARENT ATOMIC PLANE SPACINGS
AND INTENSITY RATIOS FOR THE DIFFRACTION RINGS FROM
SEVERAL POWDERED SAMPLES (Cont'd)

SP-1102 <i>Hemin</i>	10.26	7.18	8.95	7.93	6.12	4.29	5.41
	1.00	0.92	0.88	0.86	0.62	0.59	0.53
	2.94	4.00	3.82	4.77	3.66	3.25	3.40
	0.47	0.44	0.44	0.42	0.42	0.38	0.36
SP-1103 <i>Sulfaguanidine</i>	3.06	2.39	2.21				
	0.27	0.12	0.12				
	5.09	9.88	3.51	3.26	6.39	4.32	5.56
	1.00	0.91	0.80	0.64	0.61	0.61	0.50
SP-1105 <i>Carbamazepine violet</i>	4.08	3.83	2.98	4.76	2.86	3.11	2.45
	0.41	0.41	0.41	0.39	0.36	0.34	0.27
	2.70	2.61	2.31	2.26	2.09		
	0.18	0.14	0.14	0.14	0.11		
SP-1107 (<i>calcium acetate tetrahydrate</i>)	11.70	14.48	4.53	3.38	3.67	3.82	4.20
	1.00	0.76	0.42	0.34	0.33	0.32	0.29
	5.74	3.14	4.96	2.91	2.78	2.64	2.47
SP-1108 <i>PAID</i>	0.27	0.26	0.22	0.22	0.18	0.18	0.11
	12.19	6.82	6.18	5.27	4.06	3.18	
SP-1107	1.00	0.76	0.67	0.60	0.50	0.38	
	9.97	6.26	4.94	5.64	2.76		
SP-1110 <i>Pepsin</i>	1.00	0.61	0.57	0.41	0.23		
	No Sharp Rings						
SP-1111 <i>uric acid</i>	2.47	3.07	5.21	2.53	6.60	3.88	5.73
	1.00	0.68	0.67	0.64	0.61	0.61	0.55
	4.45	4.91	2.56	3.18	2.71	2.28	3.38
	0.48	0.45	0.42	0.41	0.39	0.35	0.32
SP-1112 <i>TPAP</i>	2.95	2.82	2.23	2.05			
	0.32	0.27	0.21	0.21			
	4.91	3.48	6.18	5.37	7.11	4.37	3.83
SP-1112	1.00	0.91	0.52	0.51	0.47	0.46	0.44
	3.14	2.60	3.29	2.22	2.09	1.88	
	0.32	0.23	0.19	0.16	0.16	0.11	

TABLE 5. TABULATION OF APPARENT ATOMIC PLANE SPACINGS
AND INTENSITY RATIOS FOR THE DIFFRACTION RINGS FROM
SEVERAL POWDERED SAMPLES (Cont'd)

SP-1113	DFB	3.61	3.96	4.53	2.81	3.09		
		1.00	0.62	0.59	0.49	0.38		
SP-1114	*	3.58	3.29					
		1.00	0.79					
SP-1115	* sulfazoximide	12.91	3.59	4.51	3.95	2.59	2.53	2.44
		1.00	0.27	0.22	0.20	0.11	0.11	0.09
SP-1116	* sulfazoximide	8.12	4.93	3.20	4.40	2.66	2.59	3.54
		1.00	0.80	0.57	0.50	0.48	0.43	0.35
		2.70	2.48	2.31	2.27			
		0.30	0.22	0.15	0.15			
SP-1117	PAN (light)	11.99	13.01	15.01	7.95	18.21	10.08	8.81
		1.00	0.79	0.76	0.61	0.57	0.51	0.45
		4.40	7.26	2.26	3.96	4.86	2.70	2.60
		0.44	0.39	0.28	0.27	0.26	0.24	0.24
		5.54	5.88	3.76	6.55	3.55	2.99	2.35
		0.23	0.22	0.21	0.18	0.16	0.16	0.16
		3.37	3.11	4.13	3.29	2.09	1.96	
		0.15	0.15	0.12	0.11	0.07	0.06	
SP-1118	PAN (Fisher)	7.91	10.08	8.80	6.16	6.75	5.22	4.78
		1.00	0.93	0.84	0.67	0.57	0.47	0.47
		4.37	3.90	2.86	3.61	3.45	2.91	2.74
		0.45	0.38	0.34	0.31	0.31	0.31	0.31
		3.14	3.26	2.59	2.53	2.25		
		0.29	0.28	0.24	0.16	0.16		
SP-1119	PAN (EKC)	8.84	4.35	7.64	6.15	6.75	5.02	5.55
		1.00	0.85	0.83	0.77	0.68	0.57	0.55
		4.78	3.91	2.93	2.74	3.73	3.45	3.04
		0.53	0.49	0.45	0.45	0.42	0.42	0.42
		3.23	2.63	2.54				
		0.38	0.36	0.36				

* Note Final Report on Contract 648, T.O. 22, says SP-1114 and -150X1 were respectively the pure ingredients carbonylmethyl cellulose and benzel. It further identifies SP-1112 thru SP-1120 as various kinds of PAN. (They were almost surely samples of PAN as stated here.)

TABLE 5. TABULATION OF APPARENT ATOMIC PLANE SPACINGS
AND INTENSITY RATIOS FOR THE DIFFRACTION RINGS FROM
SEVERAL POWDERED SAMPLES (Cont'd)

SP-1120	11.91	7.95	10.15	8.87	7.20	4.39	5.98
DAN(K+K)	1.00	0.62	0.61	0.58	0.44	0.43	0.28
	5.51	4.85	3.95	3.77	2.70	2.70	2.60
	0.27	0.24	0.23	0.23	0.23	0.23	0.19
	3.56	3.37	3.29	3.11	2.98	2.43	2.36
	0.16	0.13	0.13	0.13	0.12	0.12	0.11

TABLE 6. RESULTS OF SEARCHING THE TERMATREX ASTM FILE
USING d/n DATA OBTAINED FROM UNKNOWNNS

The compounds listed herein have been extracted from the Termatrex file utilizing at least the three most intense d/n values for each unknown. These compounds are listed without screening. Obviously many can be eliminated simply by logic.

Sample Number	Compound	A. S. T. M. -Number
SP-1102	Sodium Magnesium Phosphate Hydrate	12-0747
	Sodium Aluminosilicate Taujasite	11-0672
	Uranyl Molybdate Hydrate Umohoite	12-0208
	Sodium Nickel Triphosphate Hydrate	11-0381
	Zinc Sodium Phosphate Hydrate	07-0083
	Montmorillonite	07-0027
	Manganese Ortho Phosphate Hexahydrate	03-0020
SP-1103	Metakirchheimerite	12-0586
	Barium Uranyl Arsenate Heinrichite	11-0299
	Saleeite	06-0024
	Manganese Phosphate Hydrate Stewartite	05-0110
	Potassium Pyrophosphate Trihydrate	01-0945
SP-1105	Montmorillonite	12-0232
	Magnesium Aluminum Silicate Hydrate Pilolite	02-0034
	Barium Borotungstate	01-0036
SP-1107	Magnesium Uranyl Arsenate Hydrate Novacekite	08-0286
	Tyuyamunite	06-0017
	Manganese Ortho Phosphate Hexa Hydrate	03-0020
SP-1108	Uranium Chloride Phosphorous Oxide Chloride	12-0644
	Nickel Carbonate Hydrate Hellyerite	12-0276
	Sodium Metaphosphate Hydrate	11-0390
	Aluminum Sulfate Hydrate Aluminite	08-0055
SP-1110	No data obtained	
SP-1111	Titanium Oxide	11-0431
	Rubidium Fluoberyllate	10-0146
	Copper Sulfite Hydrate	11-0240
	Ammonium Chlorotellurate	09-0392
SP-1112	Uranium Chloride Phosphorous Oxide Chloride	12-0644
	Ammonium Persulfate	11-0551
	Ammonium Uranyl Arsenate Hydrate	10-0122

TABLE 6. RESULTS OF SEARCHING THE TERMATREX ASTM FILE
USING d/n DATA OBTAINED FROM UNKNOWNNS (Cont'd)

Sample Number	Compound	A. S. T. M. Number
SP-1113	Lithium Metaborate Hydrate	11-0535
	Potassium Sodium Sulfate Aphthitalite	06-0641
	Lead Phosphate	02-0750
SP-1114	Insufficient Data for Termatrex Search	
SP-1115	Magnesium Aluminum Silicate Zebedassite	10-0426
	Molybdenum Oxide	12-0517
	Copper Arsenate Hydrate	11-0164
SP-1116	Potassium Tantalate	12-0090
	Myerhofferite	06-0032
	Barrium Copper Silicate	12-0510
	Silicon Fluordide Diammine	09-0019
SP-1117	Sodium Aluminum Silicate Hydrate Faujisite	12-0426
	" " " " "	12-0228
	Aluminum Sulfate Hydrate	11-0467
	Sodium Zinc Triphosphate Hydrate	11-0382
	Kusjeardute	11-0146
	Iron Hydrogen Sulfate Hydrate	09-0006
	Zinc Sodium Phosphate Hydrate	07-0083
SP-1118	(Same as 1117 above)	
SP-1119	Sodium Aluminum Silicate Hydrate Faujisite	12-0228
	Iron Phosphate Sulfate Hydrate Diadochite	12-0209
	Polonium Tetrachloride	09-0083
	Aluminum Copper Sulfate Hydrate Chalcoalumite	08-0142
SP-1120	(Same as 1117 above)	
216-F1	Sodium Nickel Triphosphate Hydrate	11-0381
	Calcium Aluminum Silicate Scolecite	11-0171
	Copper Arsenate Lindackerite	11-0166
	Copper Arsenate Hydrate	11-0164

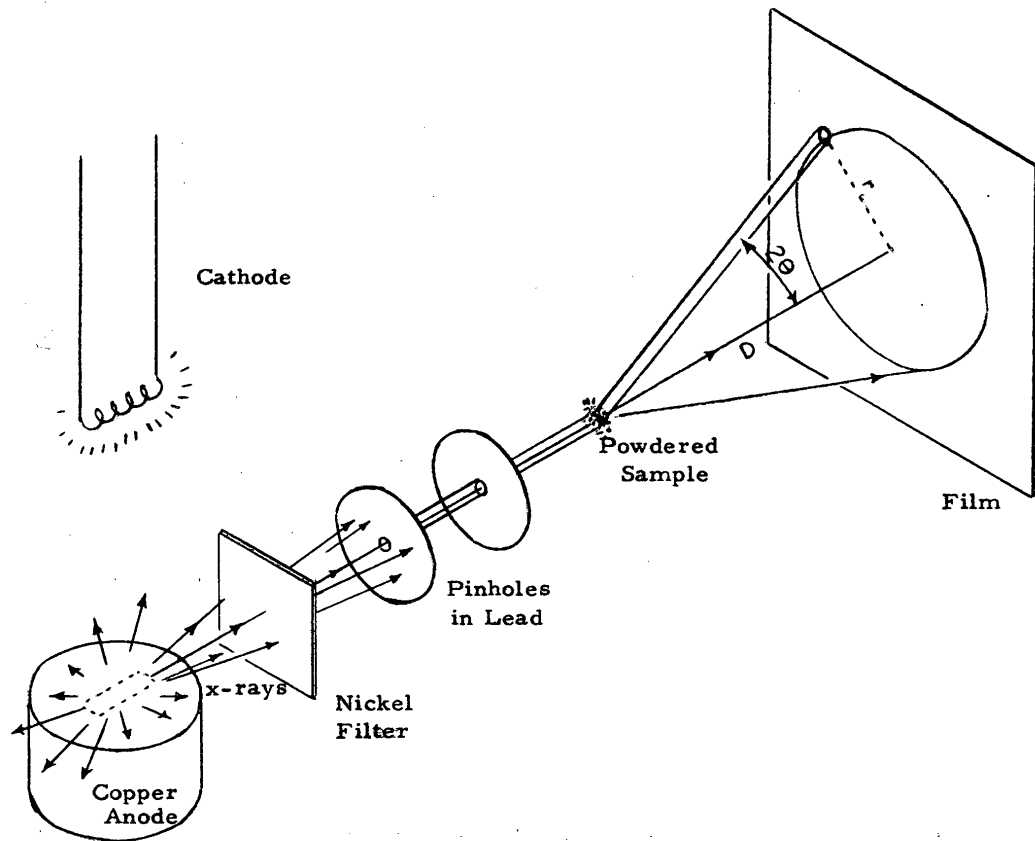


FIGURE 1. PRODUCTION OF DIFFRACTION PATTERNS BY POWDERED SAMPLES

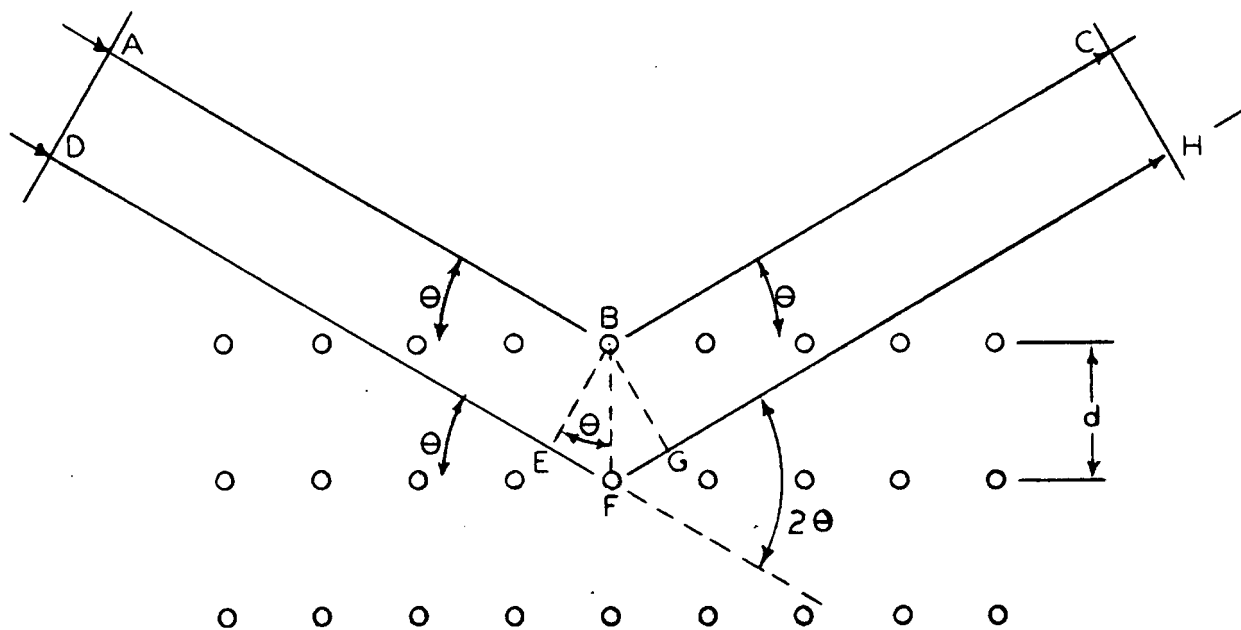


FIGURE 2. DIFFRACTION OF X-RAYS BY ATOMS IN A CRYSTAL LATTICE - BRAGG'S LAW

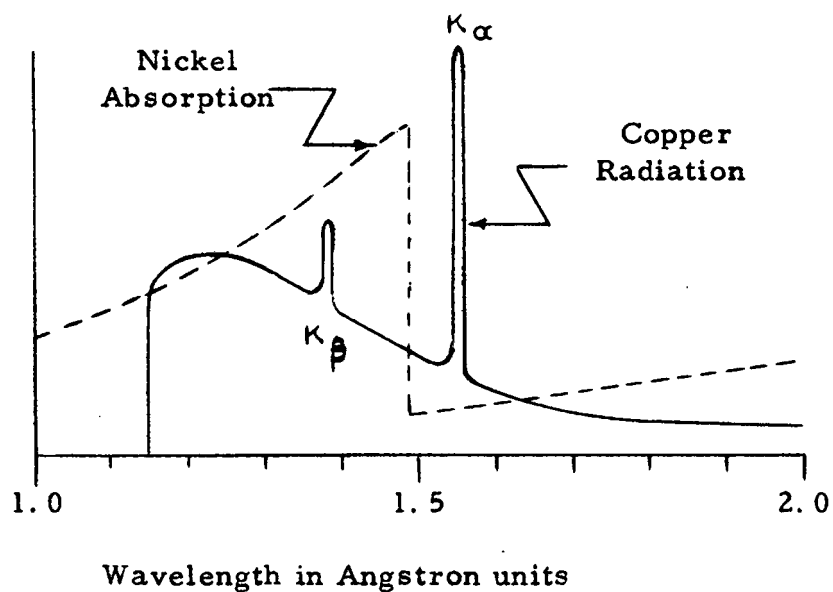
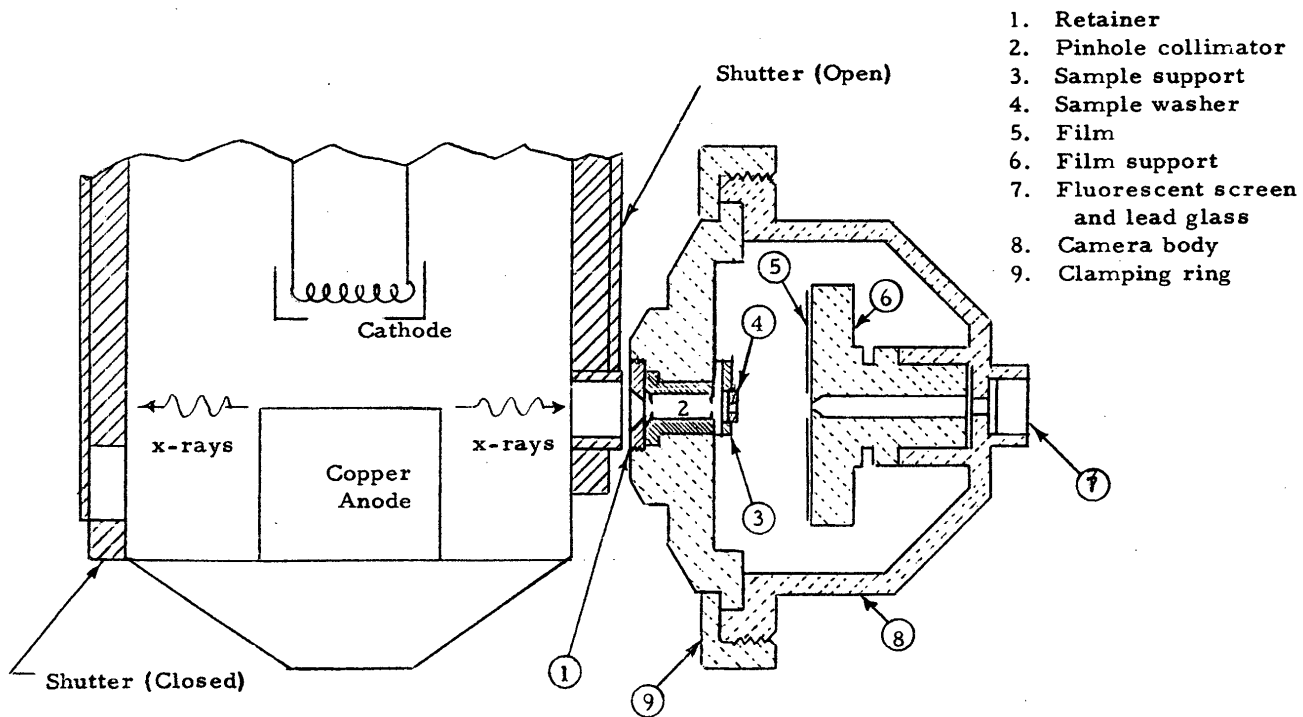


FIGURE 3. FILTERED RADIATION. CHARACTERISTIC COPPER RADIATION AND NICKEL ABSORPTION. RELATIVE INTENSITY AND ABSORPTION VERSUS WAVELENGTH. (Note: Intensity and absorption are not to scale.)



G. E. Type CA-7 X-ray Tube

Philips Micro Camera No. 52055

FIGURE 4. DETAILS OF DIFFRACTION MICRO CAMERA IN POSITION NEXT TO THE X-RAY TUBE

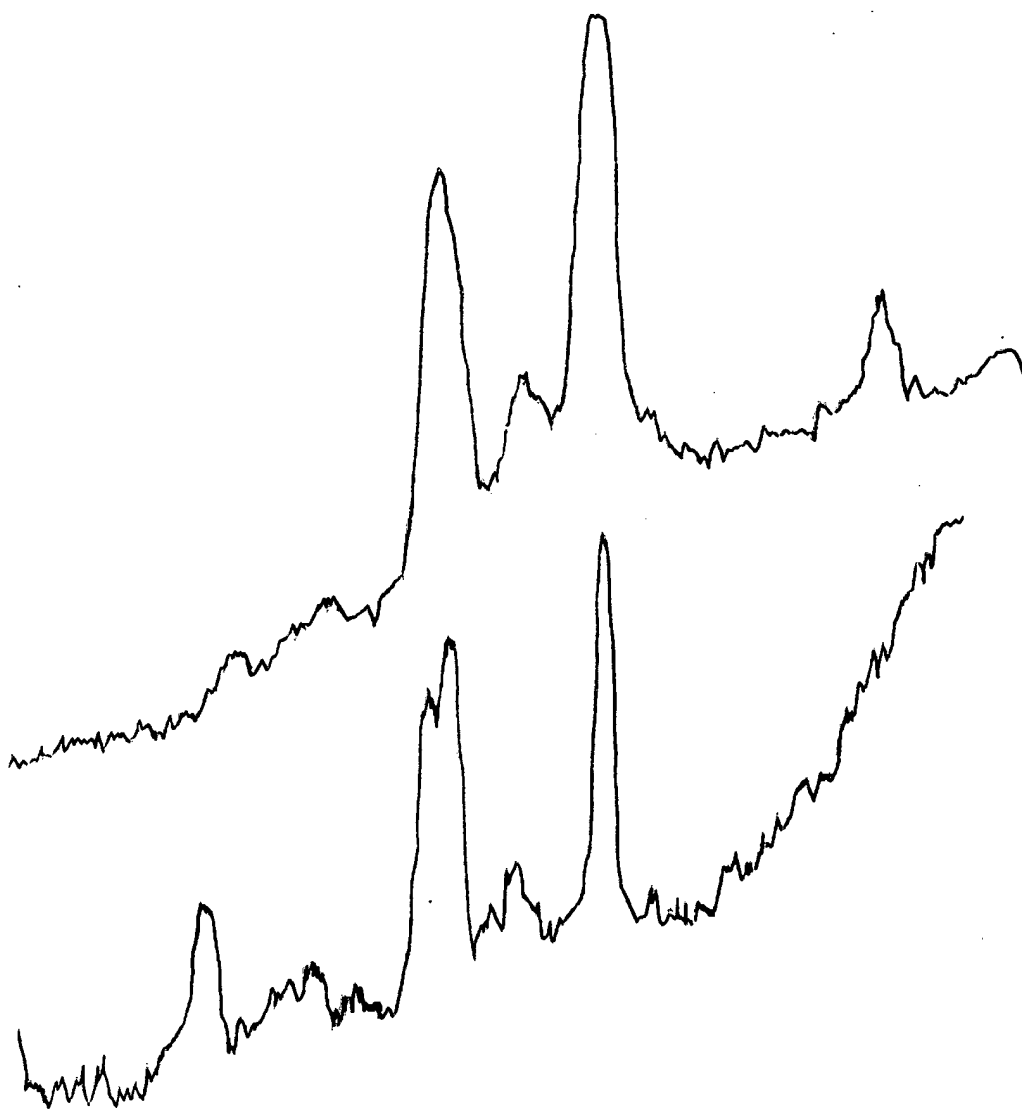
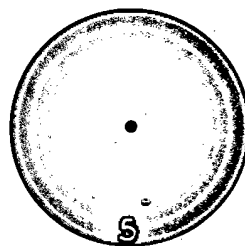
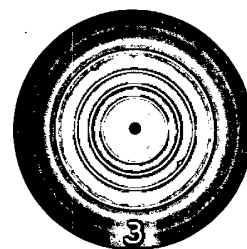
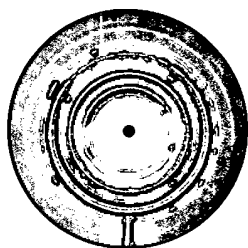


Figure 5. Effect of Sample Size on Diffraction Ring Resolution.
Densitometer scans of Powder Patterns from diformyl-
benzidine. A - sample size - 1 mm. dia. by 0.7 mm.
thick. B - sample size - 0.2 mm. dia. by 0.1 mm. thick.

FIGURE 6. THE EFFECT OF PARTICLE SIZE

1. Unground
2. After Grinding
3. After Further Grinding
4. Magnesium Oxide Added
5. Further Grinding with MgO Added

(Diffraction Patterns from Sample No. SP-1111).



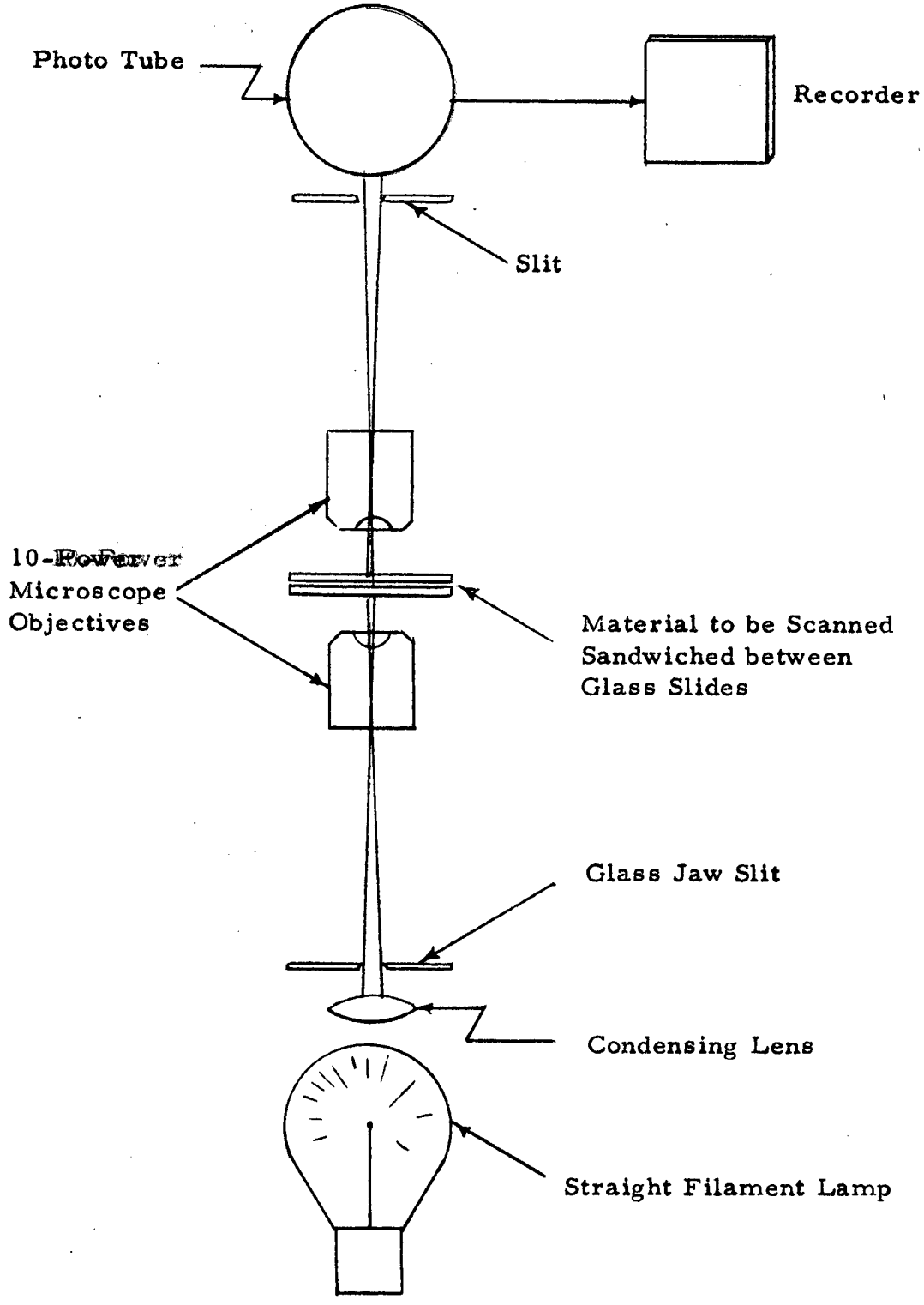


FIGURE 7. DENSITOMETER

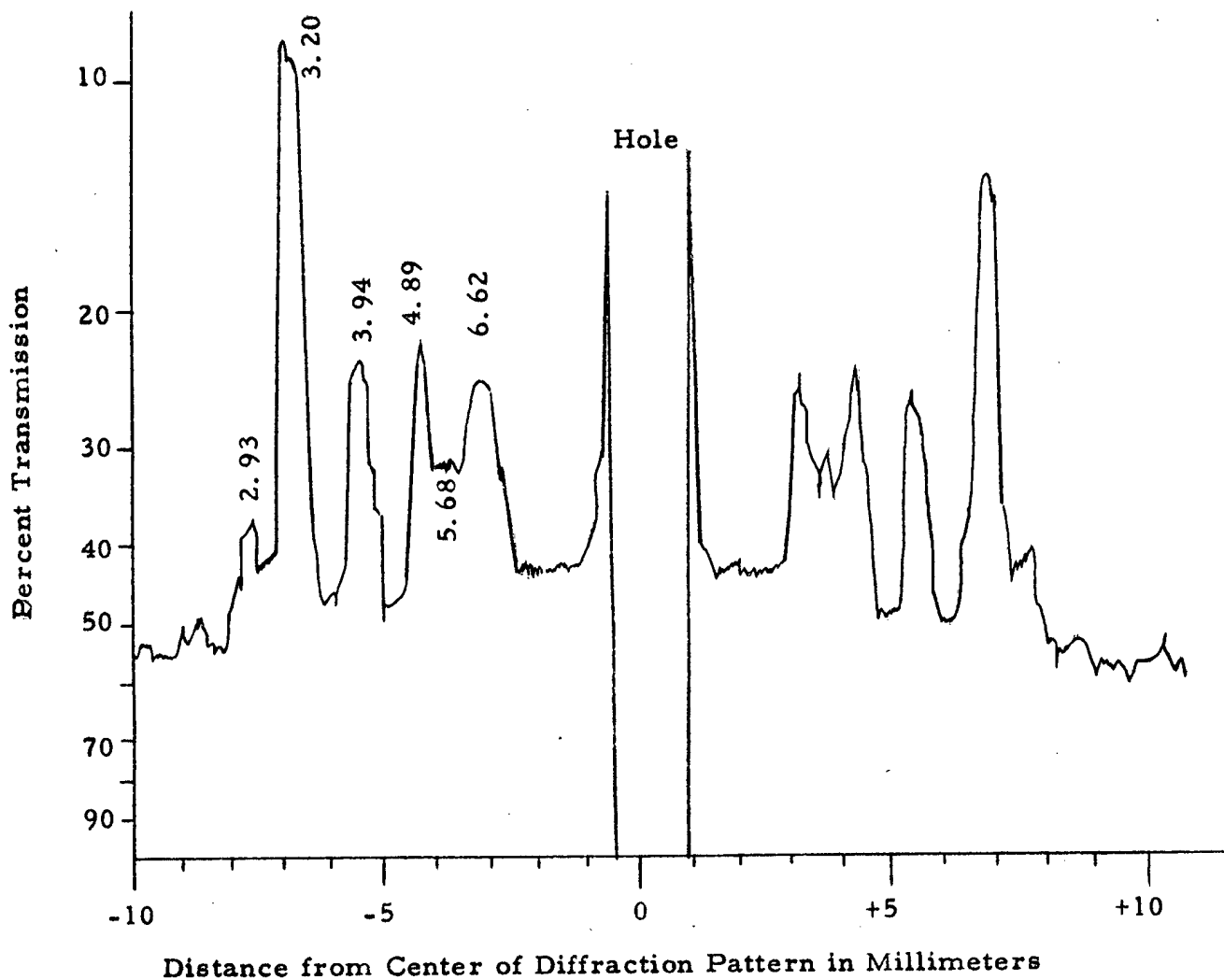


FIGURE 8. REPRESENTATIVE DENSITOMETER SCAN OF X-RAY DIFFRACTION PATTERN OF POWDERED URIC ACID (The numbers by the peaks are the d/n values)

FIGURE 9. X-RAY DIFFRACTION PATTERN
OF MICROGRAM SAMPLE

1. Uric acid (about 100 micrograms).
2. Uric acid (about one microgram).
3. Lead foil (about 3/1000-inch thick).

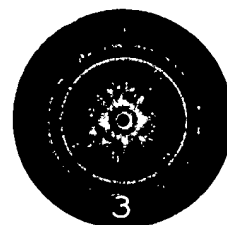
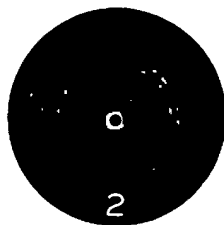
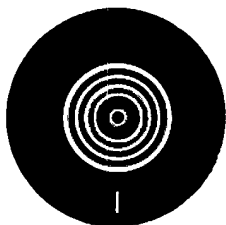


FIGURE 10. DIFFRACTION PATTERNS FROM
CATALOGUE COMPOUNDS

1. Anthracene
2. Ethyl Cellulose
3. Hemin
4. Disodium EDTA Calcium
5. Carbanthrene Violet
6. Xylenol Orange
7. Disodium EDTA Zinc
8. Disodium EDTA
9. Disodium EDTA Magnesium
10. Magnesium Oxide
11. 8-Hydroxyquinoline
12. Tetrasodium EDTA

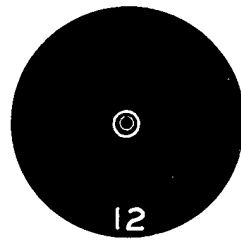
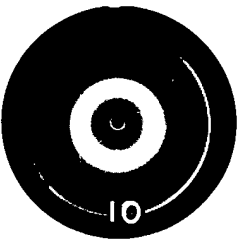
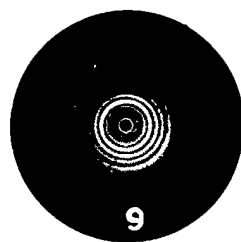
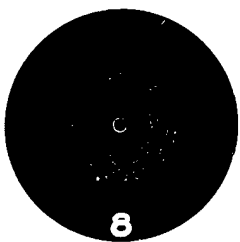
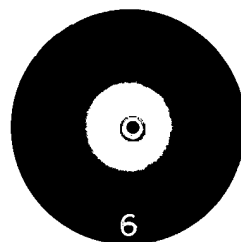
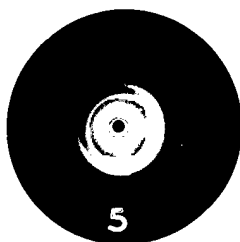
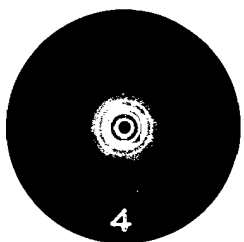
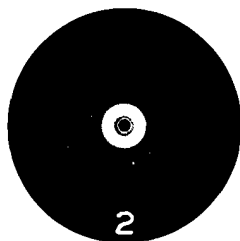
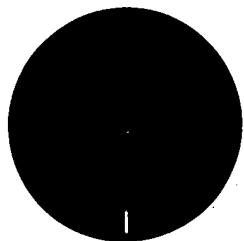


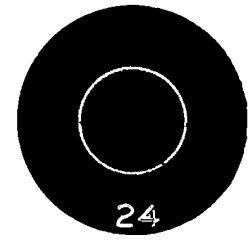
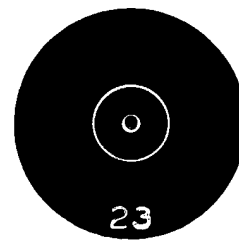
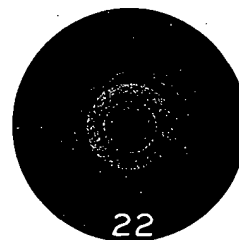
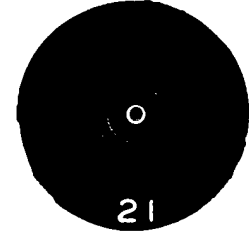
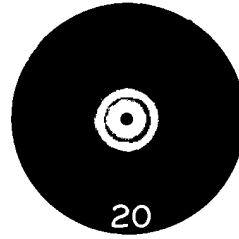
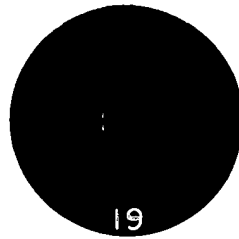
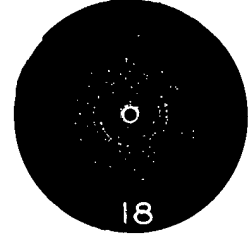
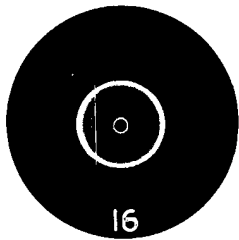
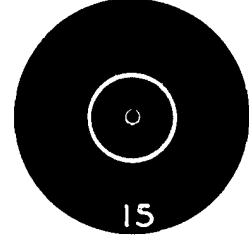
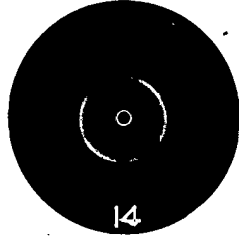
FIGURE 11. DIFFRACTION PATTERNS FROM
CATALOGUE COMPOUNDS

13. Isopropyl Jade Green
14. Paper (Beverly Bond)
15. Whatman No. 2 Filter Paper
16. Sulfite Paper
17. Dialysis Tubing
18. 216 F-1
19. Sudan III CI 248
20. Mylar
21. Dry Stabelite (Paper Resin)
22. Sulfanilamide
23. Octylthiourea
24. Uric Acid

FIGURE 12. . DIFFRACTION PATTERNS FROM
CATALOGUE COMPOUNDS

25. Sulfadiazine
26. Sulfapyridine
27. Versene
28. Formvar Film
29. Corn Starch
30. Triphenyl Phosphate
31. Talc^a
32. Talc^b
33. Talc^c
34. Talc^d
35. Dimethylglyoxime
36. Dimethylglyoxime (showing lead rings)

a - Penaten - German
b - Nivea - German
c - Creta Gallica - French
d - PhanThom - Vietnam



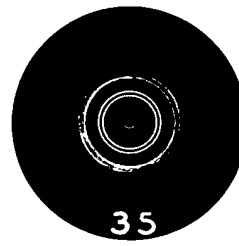
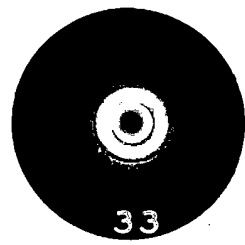
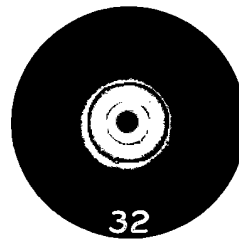
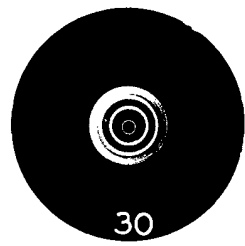
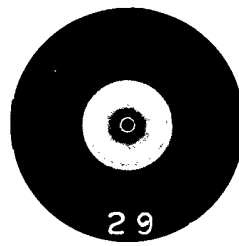
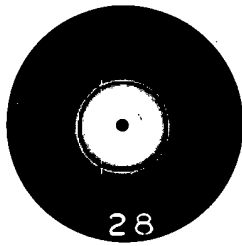
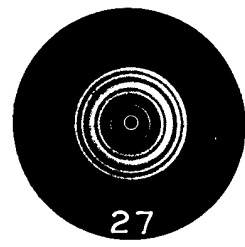
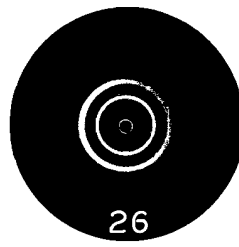


FIGURE 13. DIFFRACTION PATTERNS FROM
CATALOGUE COMPOUNDS

37. Paraffin Wax
38. Diacetylbenzidine
39. Aspirin
40. Sulfaguanidine
41. Antipyrine
42. Hydroquinone
43. Citric Acid
44. Diformylbenzidine (showing lead rings)
45. Diformylbenzidine
46. β -Naphthol
47. 2-Naphthoic Acid
48. Aminopyrine

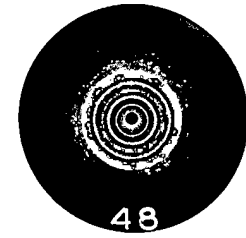
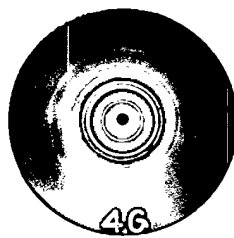
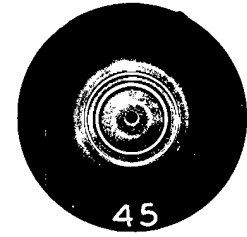
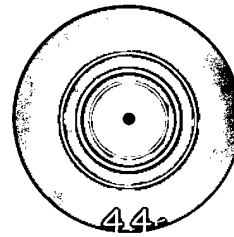
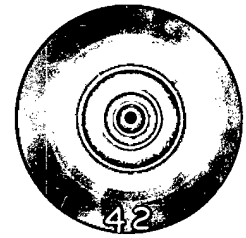
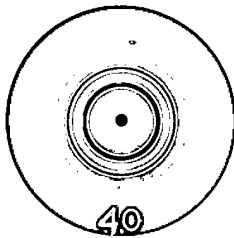
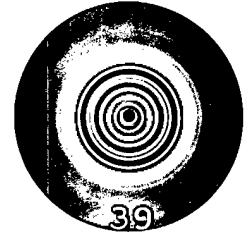
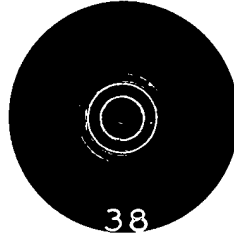


FIGURE 14. DIFFRACTION PATTERNS FROM
CATALOGUE COMPOUNDS

49. SP-1107
50. SP-1116
51. SP-1114
52. SP-1104
53. SP-1110
54. Mica
55. Tin (foil)
56. Aluminum (foil)
57. Sodium Chloride (powdered)
58. Sodium Chloride (single grain)
59. o-Nitrobenzenearsonic Acid Lead Salt (unground)
60. o-Nitrobenzenearsonic Acid Lead Salt (ground)

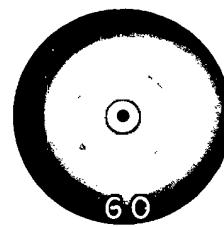
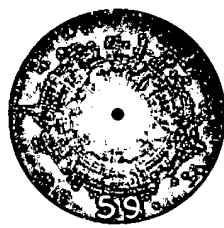
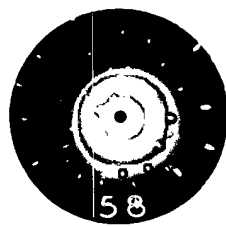
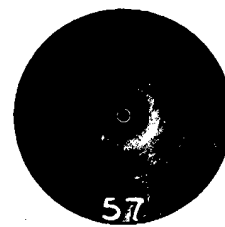
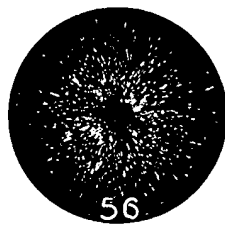
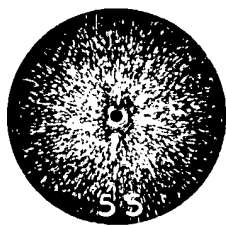
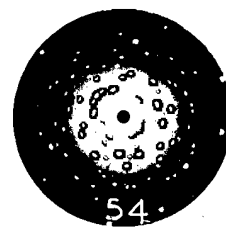
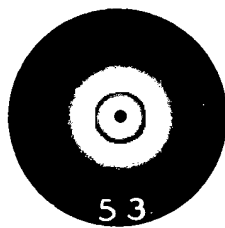
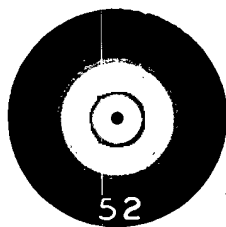
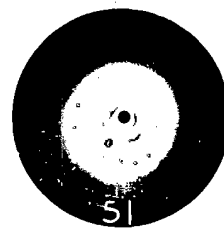
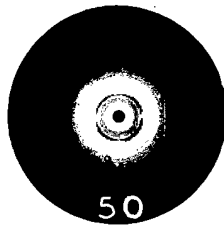
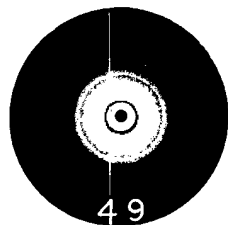


FIGURE 15. DIFFRACTION PATTERNS FROM
CATALOGUE COMPOUNDS

61. Pyrazalone
62. Thiourea
63. Sudan III Red CI 635
64. Lithium Carbonate
65. Lithium Carbonate plus Sulfaguanidine
66. Tartrazine CI 636
67. Cinnamic Acid
68. SP-1108
69. SP-1113
70. SP-1105
71. SP-1115
72. SP-1106

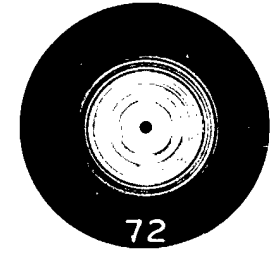
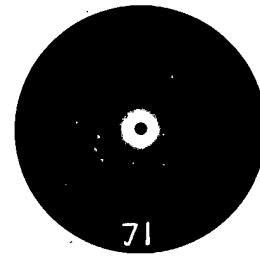
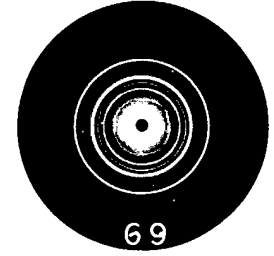
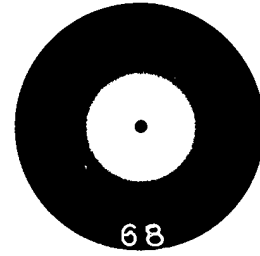
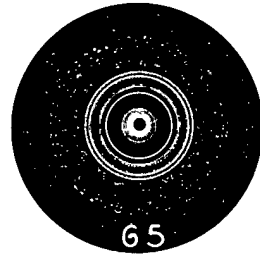
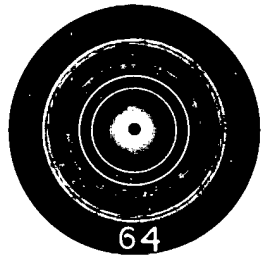
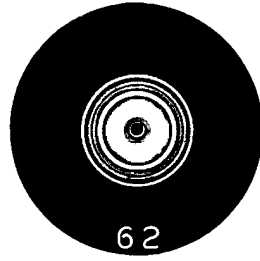
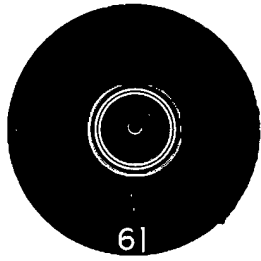


FIGURE 16. DIFFRACTION PATTERNS FROM
CATALOGUE COMPOUNDS

73. Magnesium Oxide plus Germanium Dioxide
74. Magnesium Oxide plus Amylase
75. Nickel Acetylacetonate
76. Diphenylthiourea
77. Magnesium Oxide plus lead
78. SP-1103
79. SP-1102
80. SP-1112
81. SP-1118
82. SP-1117
83. SP-1119
84. SP-1120

