TABLE 123

TLC R_F VALUES OF AROMATIC HYDROCARBONS
(A. PAWLOWSKA-MARZEC, *Chem. Anal.* (*Warsaw*), 13 (1968) 475–476)

Thin layer: Silica Gel G.
Solvent: Diisobutylene.
Detection: D_1 = Iodine vapour.
D_2 = U.V. light.

Compound	R_F
Hexadecylbenzene	0.74
Dodecylbenzene	0.70
Octylbenzene	0.69
Hexylbenzene	0.65
1,3,5-Triethylbenzene	0.65
Phenylcyclohexane	0.61
1,2,4-Trimethylbenzene	0.60
1-Propyl-2,4,6-trimethylbenzene	0.57
Pentamethylbenzene	0.53
1,2,4,5-Tetramethylbenzene	0.51
Tetrahydronaphthalene	0.49
2-Octadecylnaphthalene	0.65
Naphthalene	0.50
Acenaphthene	0.48
1,4-Dimethylnaphthalene	0.48
1,5-Dimethylnaphthalene	0.48
1,7-Dimethylnaphthalene	0.47
1,3-Dimethylnaphthalene	0.47
1,6-Dimethylnaphthalene	0.45
1-Methylnaphthalene	0.45
1-Ethylnaphthalene	0.45
2-Methylnaphthalene	0.44
2,4,6-Trimethylnaphthalene	0.43
4-Methyldiphenyl	0.43
2,6-Dimethylnaphthalene	0.42
3-Methyldiphenyl	0.42
4,4′-Dimethyldiphenyl	0.42
2,3-Dimethylnaphthalene	0.40
Diphenyl	0.40
Fluorene	0.38
Diphenylmethane	0.35
1-Phenylnaphthalene	0.39
9-Methylanthracene	0.38
2-Methylanthracene	0.38
9,10-Dimethylanthracene	0.38
Anthracene	0.34
Phenanthrene	0.34
2-Phenylnaphthalene	0.33
2,3-Benzofluorene	0.29
1,2-Benzofluorene	0.29
1,4-Diphenylbenzene	0.29
Pyrene	0.33
3-Methylpyrene	0.33
Chrysene	0.32
2,2′-Dinaphthyl	0.28
1,2-Dihydronaphthalene	0.46
9,10-Dihydrophenanthrene	0.35
Fluoranthene	0.31
Perylene	0.29

TABLE 124

TLC R_F VALUES OF SOME ANTHRACENE DERIVATIVES
(E. BOYLAND AND P. SIMS, *Biochem. J.*, 104 (1967) 398)

Thin layer: Silica Gel G (Merck).
Solvents: S_1 = Benzene.
S_2 = Benzene–ethanol (19:1).
S_3 = Benzene–ethanol (9:1).
Detection: Fluorescence in U.V. light.
D_1 = Immediate.
D_2 = After exposure to ammonia.

Compound	R_F			*Detection*[a]	
	S_1	S_2	S_3	D_1	D_2
7,12-Dimethylbenz[*a*]anthracene	0.95[b]	0.98	0.98	V	V
7-Hydroxymethyl-12-methylbenz[*a*]anthracene	0.22	0.62	0.72	V	V
12-Hydroxymethyl-7-methylbenz[*a*]anthracene	0.40	0.78	0.85	V	V
7,12-Dihydroxymethylbenz[*a*]anthracene	0.00	0.28	0.45	V	V
12-Methylbenz[*a*]anthracene-7-carboxaldehyde	0.62	0.98	0.98	YG	YG
12-Methylbenz[*a*]anthracene-7-carboxylic acid	0.00	0.00	0.05	V	V
Methyl 12-methylbenz[*a*]anthracene-7-carboxylate	0.69	0.98	0.98	B	B
cis-5,6-Dihydro-5,6-dihydroxy-7,12-dimethylbenz[*a*]-anthracene	0.00	0.23	0.38	dV	dV
trans-5,6-Dihydro-5,6-dihydroxy-7,12-dimethylbenz[*a*]-anthracene	0.00	0.20	0.32	dV	dV
cis-5,6-Dihydro-5,6-dihydroxy-7-hydroxymethyl-12-methylbenz[*a*]anthracene	0.00	0.05	0.25	dV	dV
cis-7-Acetoxymethyl-5,6-dihydro-5,6-dihydroxy-12-methylbenz[*a*]anthracene	0.00	0.25	0.38	dV	dV
8,9-Dihydro-8,9-dihydroxy-7,12-dimethylbenz[*a*]anthracene	0.00	0.16	0.30	dV	dV
8,9-Dihydro-8,9-dihydroxy-7-hydroxymethyl-12-methyl-benz[*a*]anthracene[c]	0.00	0.05	0.21	dV	dV
3-Hydroxy-7,12-dimethylbenz[*a*]anthracene	0.28	0.70	0.79	V	YG
4-Hydroxy-7,12-dimethylbenz[*a*]anthracene	0.38	0.76	0.82	V	P
3-Hydroxy-7-hydroxymethyl-12-methylbenz[*a*]anthracene	0.00	0.22	0.39	V	YG
4-Hydroxy-7-hydroxymethyl-12-methylbenz[*a*]anthracene	0.00	0.26	0.42	V	P

[a] Abbreviations of colours: B = blue, G = green, P = pink, V = Violet, Y = yellow, d= dark.
[b] R_F 0.54 in light petroleum (b.p. 80–100°)–benzene (19:1).
[c] The isomeric 12-hydroxymethyl-7-methyl derivatives had identical properties.

TABLE 125

PC R_F VALUES OF BISAZODYES

(A. ARCORIA AND G. SCARLATA, *Ann. Chim.* (*Rome*), 58 (1968) 34)

Paper: Whatman No. 1.

Solvent: Pyridine–33 % ammonia–water (1 : 1 : 3).

Compound		R_F
Ar–N=N(C_6H_4)$_n$–N=N–Ar		
	n=1	
Ar=	Nevile-Winther's acid	0.30
	Croceic acid	0.95
	R acid	0.90
	G acid	0.98
	n=2	
Ar=	Nevile-Winther's acid	0.25
	Croceic acid	0.80
	R acid	0.50
	G acid	0.79
	n=3	
Ar=	Nevile-Winther's acid	0.14
	Croceic acid	0.60
	R acid	0.45
	G acid	0.58
Ar–N=N–(C_6H_4)$_2$–O–C_6H_4–N=N–Ar		
Ar=	Nevile-Winther's acid	0.48
	Croceic acid	0.89
	R acid	0.77
	G acid	0.91

TABLE 126

TLC R_F VALUES OF SOME ANIONIC AND CATIONIC METAL CHELATES
(J. L. SWAIN AND J. L. SUDMEIER, *Anal. Chem.*, 30 (1968) 419)

Thin layer: Silica gel F-254 (Merck, Darmstadt).
Solvents: S_1 = Propanol–ammonia–acetic acid (70:30:2).
S_2 = Propanol–ammonia (7:3).
S_3 = Propanol–ethanol–ammonia–acetic acid (30:30:30:2).
S_4 = Propanol–ethanol–ammonia (3:3:4).
S_5 = Ethanol–ammonia–acetic acid (70:30:2).
S_6 = Ethanol–ammonia (7:3).
S_7 = Methanol–ethanol–ammonia–acetic acid (30:30:40:2).
S_8 = Butanol–acetic acid–water (8:2:2).
S_9 = Ethanol–acetic acid–water (7:2:2).
Detection: Iodine.

Solvent	*Chelate**	R_F
S_1	*trans*-Co(III)EDDA(en)$^{1+}$	0.21
	EDDA	0.16
S_2	EDTA	0.15
S_3	CyDTA	0.19
	Co(III)CyDTA^{1-}	0.41
S_4	Rh(III)EDTA^{1-}	0.48
	Pt(II)Cl_2H_4EDTA	0.15
S_5	EDTA	0.30
	CyDTA	0.30
	EDDA	0.24
	Pt(II)Cl_2H_4EDTA	0.23
	Co(III)CyDTA^{1-}	0.73
	cis-Co(III)$(en)_2(NO_2)_2^{1+}$	0.50
	trans-Co(III)$(en)_2(NO_2)_2^{1+}$	0.63
	trans-Co(III)EDDA(en)$^{1+}$	0.44
	trans-Co(III)EDDA(dmen)$^{1+}$	0.57
	trans-Co(III)EDDA(deen)	0.78
	Co(III)$(en)_3^{3+}$	0.18
S_6	EDTA	0.33
	CyDTA	0.43
	EDDA	0.44
	Rh(III)EDTA^{1-}	0.77
	Pt(II)Cl_2H_4EDTA	0.47
	Co(III)CyDTA^{1-}	0.69
	cis-Co(III)$(en)_2(NO_2)_2^{1+}$	0
	trans-Co(III)$(en)_2(NO_2)_2^{1+}$	0
	trans-Co(III)EDDA(en)$^{1+}$	0.40
	trans-Co(III)EDDA(dmen)$^{1+}$	0.09
	trans-Co(III)EDDA(deen)	0.11
	Co(III)$(en)_3^{3+}$	0
S_7	EDDA	0.56
	Co(III)CyDTA^{1-}	0.68
S_8	CyDTA	0.18
	Co(III)CyDTA^{1-}	0.18
S_9	EDTA	0.15
	CyDTA	0.15
	EDDA	0.13
	Co(III)CyDTA^{1-}	0.57
	cis-Co(III)$(en)_2(NO_2)_2^{1+}$	0.29
	trans-Co(III)$(en)_2(NO_2)_2^{1+}$	0.35
	trans-Co(III)EDDA(en)$^{1+}$	0.31
	trans-Co(III)EDDA(dmen)$^{1+}$	0.37
	trans-Co(III)EDDA(deen)	0.42
	Co(III)$(en)_3^{3+}$	0.30

* EDTA = ethylenediaminetetraacetic acid; CyDTA = *trans*-1,2-cyclohexanediaminetetraacetic acid; EDDA = ethylenediamine-N,N'-diacetic acid.

TABLE 127

TLC R_F VALUES OF MINOR ALKALOIDS OF *Strychnos nux vomica*
(G. B. MARINI-BETTÒLO, F. DELLE MONACHE, A. GELABERT DE BROVETTO AND E. CORIO, *J. Assoc. Offic. Anal. Chemists*, 51 (1968) 187)

Thin layer: Silica Gel GF_{254} (Merck).
Solvents: S_1 = Cyclohexane–chloroform–diethylamine (5:4:1).
S_2 = Benzene–ethyl acetate–diethylamine (7:2:1).
S_3 = Chloroform–methanol (96:4).
S_4 = Pyridine–ethyl acetate–water (23:150:33, upper phase).
Detection: Dragendorff's reagent.
2 % solution of cesium (?) sulfate in phosphoric acid.

Alkaloid	R_F			
	S_1	S_2	S_3	S_4
Pseudostrychnine	0.37	0.64	0.64	0.69
Pseudobrucine	0.31	0.54	0.57	0.50
Vomicine	0.40	0.76	0.46	0.76
Icajine	0.50	0.78	0.41	0.67
Novacine	0.44	0.66	0.31	0.45
Strychnine	0.38	0.58	0.11	0.12
Brucine	0.23	0.39	0.06	0.03
Diaboline	0.42	0.48	0.02	0.05
Descacetyldiaboline	0.28	0.38	0.0	0.0

TABLE 128

TLC R_F VALUES OF LICHEN SUBSTANCES (QUINONOID PIGMENTS)
(J. SANTESSON, *Acta Chem. Scand.*, 21 (1967) 1166)

Thin layer: Eastman Chromagram sheets, type K 301 R 2 (6.7 cm).
Solvents: S_1 = Toluene–cyclohexane (4:1).
S_2 = Toluene.
S_3 = 95 % ethanol.
Detection: Coloured spots in visible light.

Compound	R_F			*Colour of the spot*
	S_1	S_2	S_3	
Emodin	0.03	0.04	[a]	yellow-orange
Endocrocin	0.00	0.00	0.45	yellow
Fragilin	0.54	0.63	[a]	yellow
Lauropurpone	0.38	0.51	[a]	orange-red
Mysaquinone	0.00	0.00	0.08	violet-red
Parietin	0.53	0.59	[a]	yellow
Parietinic acid	0.00	0.00	0.65	yellow
Polyporic acid	0.73	0.85	[a]	yellow
Rhodocladonic acid	0.00	0.00	0.05	red-violet
Solorinic acid	0.57	0.74	[a]	orange-yellow

[a] R_F values exceed 0.90.

TABLE 129

TLC R_F VALUES OF LICHEN SUBSTANCES (DEPSIDES AND DEPSIDONES)
(J. SANTESSON, *Acta Chem. Scand.*, 21 (1967) 1168)

Thin layer: Eastman Chromagram sheets, type K 301 R2 (6.7 cm).
Solvents: S_1 = Toluene–butyric acid (19:1).
S_2 = Toluene–butyric acid (9:1).
S_3 = Dichloromethane–hexane–butyric acid (10:9:1).
S_4 = Toluene–glacial acetic acid (9:1).
S_5 = Dichloromethane–glacial acetic acid (9:1).
Detection: Bis-diazotized benzidine.

Compound	R_F					*Colour with bis-diazotized benzidine*
	S_1	S_2	S_3	S_4	S_5	
Barbatic acid	0.40	0.54	0.34	a	a	red-brown
Boninic acid	0.22	0.42	0.35	0.51	a	yellow-yellow-brown
Confluentinic acid	0.24	0.43	0.28	a	a	red-brown
Diffractaic acid	0.38	0.53	0.32	a	a	red-brown
Divaricatic acid	0.32	0.49	0.27	a	a	red-brown
Evernic acid	0.27	0.45	0.20	a	a	red-brown
Grayanic acid	0.20	0.38	0.24	a	a	yellow-yellow-brown
Homosekikaic acid	0.46	0.67	0.45	a	a	yellow-yellow-brown
Hypothamnolic acid	0.03	0.06	0.01	0.25	0.34	yellow-yellow-brown
Sekikaic acid	0.43	0.56	0.37	a	a	red-brown
Sphaerophorin	0.43	0.60	0.38	a	a	red-brown
Squamatic acid	0.05	0.07	0.03	0.30	0.56	yellow-yellow-brown
Variolaric acid	0.02	0.04	0.02	0.21	0.42	red-brown
Secondary front	0.58	0.70	0.55	0.57	0.82	

[a] Travels with the secondary front.

TABLE 130

TLC R_F VALUES OF LICHEN SUBSTANCES (DEPSIDES)
(J. SANTESSON, *Acta Chem. Scand.*, 21 (1967) 1165)

Thin layer: Eastman Chromagram sheets, type K 301 R 2 (6.7 cm).
Solvents: S_1 = Toluene–glacial acetic acid (9:1).
S_2 = Dichloromethane–glacial acetic acid (9:1).
Detection: First spray with 0.1 % aqueous solution of Echtblausalz B, then with 1 % potassium hydroxide solution and finally heated to 100° for 30–45 sec.

Compound	R_F		*Colour with Echtblausalz B*
	S_1	S_2	
Cryptochlorophaeic acid	0.45	0.65	brown
Gyrophoric acid	0.26	0.45	red-violet
Hiascic acid	0.08	0.23	red-brown
Remalinolic acid	0.33	0.56	red-violet
Sekikaic acid	0.56	0.81	red-brown

TABLE 131

TLC R_F VALUES OF LICHEN SUBSTANCES (PULVIC ACID, ITS DERIVATIVES AND USNIC ACID)
(J. SANTESSON, *Acta Chem. Scand.*, 21 (1967) 1167)

Thin layer: Eastman Chromagram sheets, type K 301 R 2 (6.7 cm).
Solvents: S_1 = Chloroform–acetone (4:1).
S_2 = Hexane–chloroform–acetone (2:3:1).
S_3 = Toluene–glacial acetic acid (4:1).
S_4 = Hexane–chloroform–acetone (10:8:1).
Detection: Visible light and U.V. 365 mμ light.

Compound	R_F				*Detection*	
	S_1	S_2	S_3	S_4	*Daylight*	*U.V.*
Calycin	0.73	0.60	0.81	0.56	orange-red	dark brown-red
Epanorin	0.83	0.80	0.84	0.57	yellow	orange
Pinastric acid	0.58	0.40	0.86	0.19	yellow	orange
Pulvic acid	0.00	0.00	0.27	0.00	yellow	yellow
Pulvic dilactone	0.90	0.83	0.92	0.75	yellow	yellow
Rhizocarpic acid	0.82	0.78	0.84	0.53	yellow	orange
Usnic acid	0.78	0.62	0.82	0.51	faint yellow	dark
Vulpinic acid	0.47	0.29	0.85	0.17	yellow	yellow

TABLE 132

TLC R_F VALUES OF LICHEN SUBSTANCES (ALIPHATIC LICHEN ACIDS)
(J. SANTESSON, *Acta Chem. Scand.*, 21 (1967) 1169)

Thin layer: Eastman Chromagram sheets, type K 301 R 2 (6.7 cm).
Solvents: S_1 = Diethyl ether–butyric acid (30:1).
S_2 = Dichloromethane–glacial acetic acid (9:1).
Detection: Solution of 40 mg bromocresol green in 100 ml 0.01 *N* sodium hydroxide.

Compound	R_F	
	S_1	S_2
Acaranoic acid	0.60	[a]
Acarenoic acid	0.48	[a]
Caperatic acid	0.08	0.28
Lichesterinic acid	0.62	[a]
Nephromopsinic acid	0.70	[a]
Norrangiformic acid	0.10	0.36
Protolichesterinic acid	0.66	[a]
Rangiformic acid	0.61	[a]
Roccellic acid	0.75	[a]

[a] Travels with the secondary front (0.82).

TABLE 133

TLC R_F VALUES OF LICHEN SUBSTANCES (*m*-DIHYDROXYPHENOLS)
(J. SANTESSON, *Acta Chem. Scand.*, 21 (1967) 1164)

Thin layer: Eastman Chromagram sheets, type K 301 R 2 (6.7 cm).
Solvents: S_1 = Diethyl ether–glacial acetic acid (50:1).
S_2 = Dichloromethane–glacial acetic acid (9:1).
S_3 = Dichloromethane.
Detection: First spray with 0.1 % aqueous solution of Echtblausalz B, then with 1 % potassium hydroxide solution and finally heated to 100° for 30–45 sec.

Compound	R_F			*Detection*
	S_1	S_2	S_3	
Anziaic acid	0.79	0.70	0.03	red-violet
Diploschistesic acid	0.59	0.30	0.01	brown-yellow
Erythrin	0.09	0.04	0.01	violet
Gyrophoric acid	0.64	0.45	0.01	red-violet
Hiascic acid	0.40	0.23	0.01	brown-yellow
Hypothamnolic acid	0.07	0.71	0.02	yellow-brown
Lecanoric acid	0.70	0.45	0.01	red-violet
Methyl 3,5-dichlorolecanorate	0.86	0.90	0.59	brown
Olivetoric acid	0.70	0.63	0.02	red-violet
Siphulin	0.47	0.10	0.01	violet

TABLE 134

TLC R_F VALUES OF LICHEN SUBSTANCES (AROMATIC ALDEHYDES)
(J. SANTESSON, *Acta Chem. Scand.*, 21 (1967) 1163)

Thin layer: Eastman Chromagram sheets, type K 301 R 2 (6.7 cm).
Solvents: S_1 = Toluene–glacial acetic acid (9:1).
S_2 = Toluene–diethyl ether–glacial acetic acid (3:6:1).
S_3 = Toluene–diethyl ether–glacial acetic acid (7:12:1).
S_4 = Cyclohexane–chloroform–methyl ethyl ketone (30:15:2).
Detection: 0.1 % ethanolic solution of *o*-dianisidine.

Compound	R_F			
	S_1	S_2	S_3	S_4
Atranorin	0.82	0.94	0.85	0.60
Baeomycesic acid	0.52	0.83	0.71	[a]
Barbatolic acid	0.51	0.60	0.36	[a]
Chloroatranorin	0.81	0.94	0.85	0.39
Fumarprotocetraric acid	0.10	0.46	0.25	[a]
Norstictic acid	0.34	0.81	0.66	[a]
Pannarin	0.81	0.93	0.85	0.49
Physodalic acid	0.34	0.62	0.46	[a]
Protocetraric acid	0.10	0.52	0.33	[a]
Psoromic acid	0.52	0.82	0.73	[a]
Salazinic acid	0.06	0.49	0.29	[a]
Stictic acid	0.21	0.51	0.26	[a]
Thamnolic acid	0.21	0.45	0.22	[a]

[a] R_F value does not exceed 0.10.

TABLE 135

TLC R_F VALUES OF 4-NITROPHENYLHYDRAZONES OF AROMATIC CARBONYL COMPOUNDS
(E. D. BARBER AND E. SAWICKI, *Anal. Chem.*, 40 (1968) 986)

Thin layer: Silica Gel G, plates activated at 110–120° for 1 h.
Solvents: S_1 = Dichloromethane.
S_2 = Benzene–methanol (95:5).
S_3 = Benzene.
S_4 = Ethyl acetate–hexane (1:1).
Detection: Potassium hydroxide.

Compound	R_F				*Colour*
	S_1	S_2	S_3	S_4	
Benzaldehyde	0.58	0.60	0.30	0.63	red-brown
Salicylaldehyde	0.48	0.43	0.23	0.51	red-brown
3-Hydroxybenzaldehyde	0.38	0.28	0.06	0.39	brown
4-Hydroxybenzaldehyde	0.07	0.24	0.02	0.47	dark purple
2-Methoxybenzaldehyde	0.81	0.63			
Anisaldehyde	0.53	0.72	0.21	0.57	pink
2-Hydroxy-3-methoxybenzaldehyde	0.33	0.39			red-brown
Vanillin	0.36	0.34			red-brown
Veratraldehyde	0.33	0.54	0.07		
Piperonal	0.55	0.71	0.12		red-purple
Acetophenone	0.67	0.67	0.27	0.65	purple-red
2-Hydroxyacetophenone	0.59	0.46	0.09	0.41	purple-brown
3-Hydroxyacetophenone	0.14	0.25	0.02	0.41	
4-Hydroxyacetophenone	0.26	0.31	0.02	0.42	
2,4-Dimethylacetophenone	0.70	0.78	0.34		red
3,4-Dimethylacetophenone	0.72	0.86		0.80	yellow-red
2,5-Dimethylacetophenone	0.85	0.81			red
Propiophenone	0.67	0.67			orange
Butyrophenone	0.73	0.77			red
Benzophenone	0.81	0.88	0.47		bright-red
o-Hydroxybenzophenone	0.49	0.53	0.24		bright red
	0.89	0.85			
m-Hydroxybenzophenone	0.59	0.91	0.26		purple
	0.64				
p-Hydroxybenzophenone	0.24	0.50			red
	0.47				
2-Hydroxy-5-methylbenzophenone	0.47	0.63	0.05		
2-Naphthaldehyde	0.19	0.33	0.02		
Cinnamaldehyde	0.56	0.59	0.11		
	0.72	0.67			
Furfural	0.63				
5-Methyl-2-furfural	0.64				

TABLE 136

PC R_F VALUES OF 4-NITROPHENYLHYDRAZONES OF AROMATIC CARBONYL COMPOUNDS
(E. D. BARBER AND E. SAWICKI, *Anal. Chem.*, 40 (1968) 985)

Paper: Schleicher and Schüll 2043 B gl.
Impregnation: I_1 = 35 % solution of formamide in ethanol.
I_2 = 50 % solution of dimethylformamide.
I_3 = 25 % solution of dimethylformamide.
I_4 = 20 % solution of formamide.
Solvents: S_1 = Cyclohexane–benzene–dipropylene glycol (70:30:3).
S_2 = Dibutyl ether–N,N-dimethylformamide–tetrahydrofuran (85:15:4).
S_3 = Cyclohexane–benzene–formamide (15:12:7).
Detection: Potassium hydroxide.

Compound	R_F				*Colour*
	I_1S_1	I_2S_2	I_3S_2	I_4S_3	
Benzaldehyde	0.43	0.44	0.41	0.37	rust
Salicylaldehyde	0.07	0.34	0.27	0.06	rust
m-Hydroxybenzaldehyde	0.04	0.24	0.12	0.02	
p-Hydroxybenzaldehyde	0.03	0.23		0.02	deep purple
o-Methoxybenzaldehyde	0.29	0.30			light purple
Anisaldehyde	0.27	0.26			pink
2-Hydroxy-3-methoxybenzaldehyde	0.04	0.20			purple
Vanillin	0.03	0.03			
Veratraldehyde	0.08	0.11			purple
Piperonal	0.17	0.24			orange
Acetophenone	0.56	0.45	0.45	0.43	purple-red-purple
2-Hydroxyacetophenone	0.05	0.35	0.38	0.07	purple
3-Hydroxyacetophenone	0.05	0.24	0.15	0.02	
4-Hydroxyacetophenone	0.05	0.03	0.13	0.02	lavender
3,4-Dimethylacetophenone	0.72	0.53	0.50	0.29[a]	deep pink
2,4-Dimethylacetophenone	0.86	0.50	0.20	0.41[a]	
2,5-Dimethylacetophenone	0.81	0.50		0.37[a]	
Benzalacetophenone		0.54			
Propiophenone	0.76	0.44	0.46	0.26[a]	rust
Butyrophenone	0.84	0.60	0.50	0.46	rust
Benzophenone	0.94	0.58		0.94	brown
o-Hydroxybenzophenone	0.89	0.14		0.15	
	0.22	0.47		0.72	
m-Hydroxybenzophenone	0.93	0.54		0.83	
p-Hydroxybenzophenone	0.06	0.14	0.27	0.03	deep pink
2-Hydroxy-5-methylbenzophenone	0.09	0.34			
2-Naphthaldehyde	0.02	0.08			brown
Cinnamaldehyde	0.60	0.43		0.07	
Furfural	0.08	0.33			
5-Methyl-2-furfural	0.14	0.40			

[a] Smears.

TABLE 137

TLC R_F VALUES OF 3,5-DINITROBENZOIC ACID ESTERS OF ALIPHATIC ALCOHOLS
(W. DIEMAIR, K. PFEILSTICKER AND I. HÖLSCHER, *Z. Anal. Chem.*, 234 (1968) 421)

Thin layers: Tl_1 = Kieselgur G impregnated with Polyethylene glycol M600.
Tl_2 = Kieselgur G impregnated with phenoxyethanol; the chromatogram is developed three times.
Solvent: Petroleum b.p. 100–140°.
Detection: U.V. light.

Compound	R_F	
	Tl_1	Tl_2
Methanol	0.15	0.24
Ethanol	0.32	0.35
1-Propanol	0.44	0.43
1-Butanol	0.54	0.50
Isobutanol	0.56	0.52
1-Pentanol	0.62	0.55
1-Hexanol	0.71	0.60
1-Heptanol	0.77	0.66
1-Octanol	0.82	0.72
2-Ethylhexanol	0.83	0.77
1-Nonanol	0.86	0.77
1-Decanol	0.89	0.80

TABLE 138

TLC R_F VALUES OF ALCOHOLS AS β-ALKOXYPROPIONITRILES
(M. M. BUZLANOVA, V. N. ULIANOVA AND S. I. OBTEMPERANSKAYA, *Zh. Anal. Khim.*, 23 (1968) 1426)

Thin layer: Silica Gel KSK.
Solvents: S_1 = Cyclohexane–ether–heptane (10:7:3).
S_2 = Carbon tetrachloride–ethyl acetate (20:5).
Detection: D_1 = 0.2 % ethanolic solution of meth[illegible]ed–0.1 % ethanolic solution of methylene blue (1:1).
D_2 = Sulfuric acid and heating.
D_3 = Iodine vapour.

Compound	R_F	
	S_1	S_2
Methyl alcohol	0.19	
Ethyl alcohol	0.27	
Propyl alcohol	0.34	
Isopropyl alcohol	0.37	
Butyl alcohol	0.43	
Isobutyl alcohol	0.41	
sec.-Butyl alcohol	0.40	
Amyl alcohol	0.49	
Isoamyl alcohol	0.54	
sec.-Amyl alcohol	0.41	
Hexyl alcohol	0.56	
Allyl alcohol	0.38	
Cyclohexyl alcohol	0.53	
Heptyl alcohol	0.63	
Octyl alcohol		0.72
sec.-Octyl alcohol		0.49
Nonyl alcohol		0.76
Decyl alcohol		0.80
Dodecyl alcohol		0.85

TABLE 139

TLC R_F VALUES OF METHYLBENZENECARBOXYLIC ACIDS

(J. KULICKA, R. BARANOWSKI, Z. GREGOROWICZ AND Z. KULICKI, *Chem. Anal.* (*Warsaw*), 13 (1968) 171)

Thin layer: Silica Gel G.
Solvents: S_1 = Benzene–chloroform–carbon tetrachloride–dioxane–formic acid (15:10:2:2:0.5).
S_2 = Benzene–carbon tetrachloride–dioxane–formic acid (16:3:3:1.5).
S_3 = Benzene–carbon tetrachloride–dioxane–acetic acid (16:3:3:1.5).
Detection: Bromocresol green pH 10.

Compound	R_F		
	S_1	S_2	S_3
2,5-Dimethylbenzoic acid	0.75	0.81	0.84
2,4-Dimethylbenzoic acid	0.75	0.81	0.84
3,4-Dimethylbenzoic acid	0.70	0.81	0.84
4-Methylisophthalic acid	0.29	0.49	0.60
Methylterephthalic acid	0	0	0.42
4-Methylphthalic acid	0.13	0.29	0.31
Trimellitic acid	0.03	0.08	0.06

TABLE 140

TLC R_F VALUES OF SOME BILE ACIDS

(E. NYSTRÖM AND J. SJÖVALL, *Acta Chem. Scand.*, 21 (1967) 1976)

Thin layer: Methylated Sephadex G-25 superfine.
Solvents: S_1 = Chloroform–heptane–acetic acid (39:10:1).
S_2 = Chloroform–2,2,4-trimethylpentane–acetic acid (66:33:1).
Detection: 5% phosphomolybdic acid in ethanol (after transferring the spots to filter paper).

Compound	R_F	
	S_1	S_2
Taurocholic acid	—	0.04
Glycocholic acid	0.12	0.13
Cholic acid	0.23	0.25
Deoxycholic acid	0.43	0.76
Lithocholic acid	0.58	0.89

TABLE 141

TLC R_F VALUES OF SOME ANTIOXIDANTS
(J. JANÍČEK AND E. DAVÍDKOVÁ, *Z. Lebensm.-Untersuch.-Forsch.*, 131 (1967) 345–347; from *Z. Anal. Chem.*, 234 (1968) 211)

Thin layer: Silica Gel CH with 13% gypsum (Spolana, Neratovice).
Solvents: S_1 = Chloroform.
S_2 = Chloroform–acetic acid (9:1).
S_3 = Chloroform–acetic acid (7.5:2.5).
S_4 = Chloroform–acetic acid (6:4).
S_5 = Chloroform–acetic acid (2.5:7.5).
Detection: 20% ethanolic phosphomolybdenic acid.

Compound	R_F				
	S_1	S_2	S_3	S_4	S_5
Butylhydroxyanisole	0.42	0.69	0.83	0.95	1.00
Dibutylhydroxytoluene	0.87	0.87	0.92	0.95	1.00
Nordihydroguaiaretic acid	0.0	0.12	0.43	0.77	1.00
Methyl gallate	0.0		0.34	0.60	0.60
Ethyl gallate	0.0		0.43	0.68	0.90
Propyl gallate	0.0		0.51	0.70	0.91
Octyl gallate	0.0		0.64	0.81	0.95
Lauryl gallate	0.0		0.68	0.85	0.97

TABLE 142

PC R_F VALUES OF DICHLOROQUINOXALINE REACTIVE DYES
(A. CEE AND J. GASPARIČ, *Mikrochim. Acta*, (1968) 453)

Paper: Whatman No. 3MM.
Solvents: S_1 = *n*-Butanol–dimethylformamide–water (11:3:11).
S_2 = *n*-Butanol–dimethylformamide–water (11:3:10).
S_3 = *n*-Propanol–water (2:1).
S_4 = *n*-Propanol–acetic acid–water (5:2:3).

Dye	R_F			
	S_1	S_2	S_3	S_4
Levafixbrillantgelb E-3G	0.66	0.73	0.54	0.51
Levafixgelb E-RL	0.59	0.67	0.35	0.18
Levafixgelb E-3RL red spot	0.45	0.44	0.16	0.06
yellow spot	0.64	0.65	0.53	0.35
Levafixgoldgelb E-G	0.44	0.50	0.27	0.14
Levafixbrillantscharlach E-3B	0.60	0.66	0.45	0.32
Levafixbrillantrot E-2B	0.56	0.65	0.43	0.28
Levafixrubin E-FB	0.49	0.53	0.28	0.13
Levafixbrillantrot E-4B	0.46	0.56	0.28	0.10
Levafixrotviolett E-2BL	0.40	0.47	0.23	0.09
Levafixblau E-3R	0.45	0.45	0.18	0.06
Levafixbrillantblau E-G	0.75	0.77	0.79	0.75
Levafixbrillantblau E-R	0.71	0.75	0.66	0.52
Levafixdunkelblau E-G	0.43	0.40	0.15	0.03

TABLE 143

PC AND TLC R_F VALUES OF VINYLSULFONE REACTIVE DYES (REMAZOL DYES)
(A. CEE AND J. GASPARIČ, *Collection Czech. Chem. Commun.*, 33 (1968) 1094)

Paper chromatography
Paper: Whatman No. 3.
Solvents: S_1 = *n*-Propanol–acetic acid–water (5:2:3).
S_2 = *n*-Propanol–water (2:1).
S_3 = *n*-Butanol–dimethylformamide–water (11:3:10).

Thin layer chromatography
Thin layer: Silica Gel G (Merck).
Solvents: S_4 = *n*-Butyl acetate–pyridine–water (2:2:1).
S_5 = *n*-Butyl acetate–acetic acid–water (2:2:1).

Dye	R_F*														
	S_1			S_2			S_3			S_4			S_5		
	A	*B*	*C*	*A*	*B*	*C*	*A*	*B*	*C*	*A*	*B*	*C*	*A*	*B*	*C*
Remazol Gelb G	0.74	0.86	0.91	0.70	0.84	0.89	0.79	0.88	0.90	0.41	0.48	0.56	0.32	0.59	0.63
Gelb GGL	0.60	0.74	0.86	0.42	0.54	0.64	0.67	0.76	0.81	0.30	0.40	—	0.46	0.60	0.68
Goldgelb G	0.59	0.76	0.84	0.58	0.70	0.76	0.76	0.83	0.86	0.36	0.47	0.54	0.23	0.56	0.60
Gelb GNL	0.28	0.41	0.54	1.18	0.35	0.44	0.52	0.60	0.75	0.28	0.38	0.42	0.16	0.35	0.45
Gelb GR	0.60	0.73	0.78	0.62	0.73	0.78	0.77	0.84	0.86	0.40	0.52	0.55	0.30	0.56	0.60
Gelb RT	0.61	0.75	0.81	0.61	0.76	0.84	0.78	0.85	0.88	0.36	0.50	0.54	0.26	0.53	0.58
Gelb RTN	0.41	0.54	0.66	0.40	0.52	0.60	0.70	0.77	0.82	0.33	0.49	0.53	0.21	0.50	0.57
Remalangelb 2 G	0.80	0.88	0.91	0.59	0.77	0.88	0.78	0.86	0.89	0.76	0.81	0.85	0.65	0.90	0.95
Remazolbrillantorange GD	0.27	0.38	0.50	0.33	0.37	0.43	0.55	0.65	0.74	0.13	0.30	0.41	0.15	0.34	—
Brillantorange G	0.23	0.46	0.54	0.28	0.38	0.50	0.43	0.55	0.77	0.32	0.46	—	0.11	0.17	0.44
	—	0.75	—	—	0.75	—	0.58	0.65	0.77	0.46	—	—	0.05	0.20	—
	0.15	—	—	0.18	—	—	0.82	0.86	—	—	—	—	0.65	—	—
Brillantorgane RD	0.33	0.41	0.53	0.35	0.42	0.48	0.56	0.65	0.78	0.17	0.28	0.40	0.10	0.31	—
Brillantorange RR	0.48	0.59	0.71	0.42	0.52	0.60	0.73	0.80	0.83	0.22	0.38	0.48	0.27	0.51	0.57
Brillantorange 3 R	0.47	0.59	0.71	0.40	0.51	0.60	0.70	0.78	0.82	0.21	0.39	0.47	0.19	0.43	0.59
Goldorange 4 GA	0.26	0.45	0.52	0.15	0.33	0.38	0.54	0.63	0.71	0.25	0.32	0.39	0.15	0.25	0.38
Scharlach GGD	0.37	0.45	0.54	0.35	0.41	0.54	0.64	0.76	0.81	0.32	0.39	0.43	0.14	0.18	0.34
Rot B	0.57	0.71	0.78	0.58	0.71	0.80	0.76	0.83	0.87	0.41	—	0.53	0.33	0.58	0.62
Brillantrot BB	0.22	0.32	0.43	0.25	0.32	0.40	0.55	0.70	0.77	0.30	0.38	0.43	0.08	0.20	0.30
Rot 3 B	0.18	0.22	0.32	0.27	0.31	0.36	0.50	0.53	0.67	0.27	0.36	0.42	0.07	0.15	0.23
Brillantrot 5 B	0.34	0.45	0.54	0.33	0.39	0.43	0.57	0.68	0.73	0.13	0.28	0.34	0.09	0.17	0.26
Brillantrot 6 BD	0.38	0.46	0.55	0.34	0.44	0.53	0.60	0.75	0.79	0.26	0.30	0.37	0.09	0.29	0.40

Rubin R	0.22	0.33	0.44	0.23	0.29	0.34	0.44	0.52	0.69	0.28	0.35	0.43	0.07	0.12	0.35
	—	—	—	—	—	—	—	0.61	0.76	—	—	—	—	—	—
Bordo B	0.35	0.50	0.60	0.38	0.41	0.54	0.72	0.77	0.82	0.39	0.51	0.54	0.21	0.48	0.55
Rotviolett R	0.09	0.16	0.24	0.22	0.25	0.31	0.43	0.50	0.53	0.15	0.25	0.29	0.04	0.11	0.16
Brillantviolet 5 R	0.11	0.18	0.22	0.19	0.24	0.28	0.43	0.50	0.53	0.08	0.10	0.26	0.03	0.16	—
Brillantblau B	0.66	0.81	0.85	0.62	0.83	0.87	0.81	0.89	0.92	0.45	0.50	0.64	0.57	0.65	0.71
Brillantblau R	0.65	0.81	0.87	0.61	0.83	0.88	0.81	0.89	0.92	0.5'	0.55	0.67	0.58	0.69	0.74
Marineblau RD	0.17	0.28	0.37	0.04	0.29	0.39	0.44	0.53	0.55	0.04	0.11	0.19	0.03	—	—
Druckmarineblau RD	0.17	0.28	0.37	0.04	0.29	0.39	0.44	0.53	0.55	0.04	0.11	0.19	0.03	—	—
Brillantblau RD	0.81	0.86	0.86	0.84	0.87	0.87	—	—	0.93	—	—	0.67	—	—	0.74
	—	0.76	—	—	0.81	—	—	—	0.89	—	—	—	—	—	—
Blau 3 R	0.12	0.17	0.28	0.19	0.23	0.30	0.43	0.52	0.55	0.12	0.22	0.32	0.05	0.12	0.18
Türkisblau G	p	p	p	0.19	—	—	0.52	0.68	0.74	p	—	—	0.00	—	—
Türkis FC 3 A	p	p	p	p	p	p	0.42	0.51	—	0.37	—	—	0.00	—	—
Brillantgrün 6 B	p	p	p	0.19	—	—	0.53	—	—	0.33	—	—	0.00	—	—
Rhodazolbrillantgrün 5 GA	p	p	p	p	p	p	0.52	0.68	0.74	0.39	—	—	0.00	—	—
	0.59	0.73	0.78	0.56	0.71	0.79	0.76	0.83	0.81	0.40	0.49	—	0.19	0.52	0.56
Druckbraun 3 R	0.11	0.16	0.23	0.19	0.23	0.30	0.43	0.50	0.54	0.13	0.25	0.30	0.05	0.07	0.15
	0.59	0.75	—	0.57	0.71	—	0.76	0.83	0.86	0.44	0.54	—	0.25	0.59	0.63
	0.66	—	0.84	0.62	—	0.86	0.81	—	—	—	—	—	—	—	—
Rotbraun 4 RD	0.43	0.53	0.57	0.42	0.48	0.55	0.54	0.66	0.75	0.15	0.27	0.33	0.03	0.08	0.27
Rotbraun 3 G	0.19	0.43	0.52	0.10	0.20	0.30	0.45	0.50	0.56	0.13	0.27	0.31	0.03	0.16	—
	—	—	—	—	—	—	—	—	—	—	—	—	0.12	0.36	0.49
Grau G	0.27	0.33	0.42	0.21	0.31	0.37	0.57	0.65	0.69	0.22	0.30	0.35	0.04	0.08	0.11
Schwarz B	0.14	0.28	0.52	0.25	0.33	0.45	0.55	0.66	0.76	0.14	0.32	0.39	0.06	0.17	0.39
Printing Black G	0.28	0.39	0.42	0.35	0.41	0.44	0.56	0.64	0.69	0.17	0.22	0.30	0.04	0.07	—

* A = Sulfoester form, B = hydroxyethylsulfon form, C = vinylsulfon form.

TABLE 144

TLC R_F VALUES OF *o*-CARBORANES
(S. HEŘMÁNEK, V. GREGOR AND J. PLEŠEK, *Collection Czech. Chem. Commun.*, 33 (1968) 1610)

Thin layer: Silica Gel G (Merck) or Silica Gel (10 % plaster) LSL (Inst. Org. Chem. and Biochem., Prague-Suchdol).

Solvents: S_1 = *n*-Hexane.
S_2 = Cyclohexane.
S_3 = Carbon tetrachloride.
S_4 = Benzene.
S_5 = Chloroform.
S_6 = Diethyl ether.
S_7 = Methylene dichloride.

Detection: The plates are sprayed with a mixture of benzene and a saturated ethanolic solution of KOH, then heated for 10–15 minutes to 110–120°, allowed to cool and detected with a 10 % solution of silver nitrate, stabilized with 5 % ethelenediamine.

o-$B_{10}H_{10}C_2XY$		R_F						
X	*Y*	S_1	S_2	S_3	S_4	S_5	S_6	S_7
H	H	0.16	0.19	0.44	0.87	0.90	x*	x
H	CH_3	0.32	0.36	0.65	0.92	x	x	x
H	CH_2Br	0.32	0.37	0.66	0.95	0.95	x	x
H	$COCH_3$	0.24	0.26	0.60	0.90	0.92	x	x
H	CH_2OCOCH_3	0.02	0.03	0.16	0.59	0.71	x	0.91
H	CH_2OH	0	0	0.01	0.17	0.21	0.83	0.40
H	$CH_2OCOC(CH_3)=CH_2$	0.06	0.06	0.26	0.76	0.81	x	x
CH_3	CH_2OH	0	0	0.02	0.19	0.23	0.81	0.45
CH_2OH	CH_2OH	0	0	0	0	0.08	0.62	0.08
CH_2OCOCH_3	CH_2OCOCH_3	0	0	0.02	0.24	0.46	x	0.69
CH_2OCH_3	$CH_2OCOC(CH_3)=CH_2$	0.02	0.02	0.18	0.65	0.80	x	x
CH_2—O—	CH_2	0.25	0.28	0.58	0.87	0.89	x	x

* x = Front.