TITLE PAGE

20. Selten vorkommende Stoffe im Steinkohlenteer.
Compounds rarely occurring in bituminous coal tar.

Frame Nos. 339 - 350

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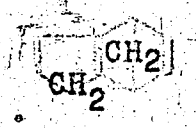
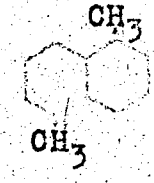
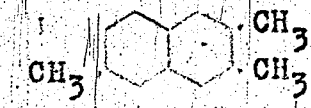
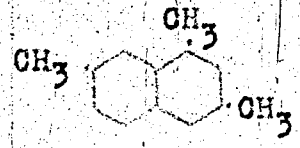
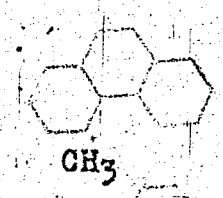
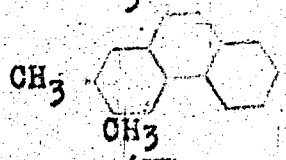
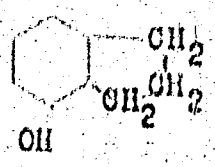
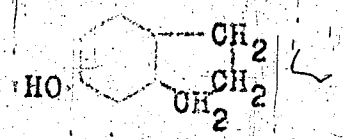
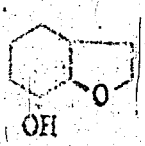
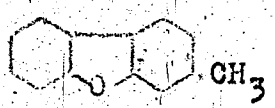
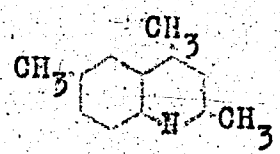
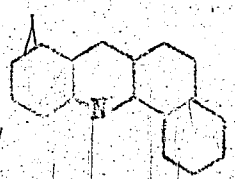
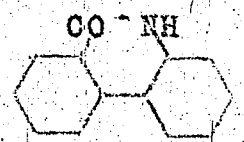
Aub: Kruber, Über die Ergebnisse der Steinkohlenteer-forschung der letzten 30 Jahre.

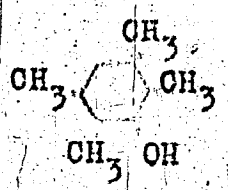
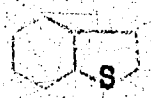
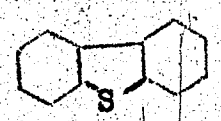
Angew.Chem. 53, 69.

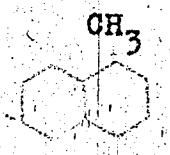
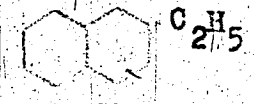
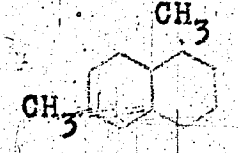
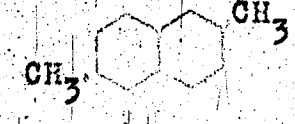
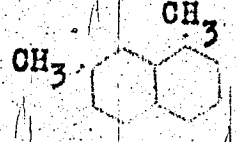
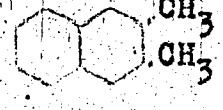
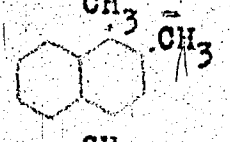
Nach diesem Aufsatz kommen im Steinkohlenteer außer Verbindungen, die bereits in der Arbeit von Fisher, Fuel in Science and Practise, aufgezählt sind, noch folgende Stoffe vor:

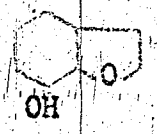
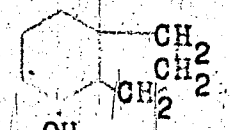
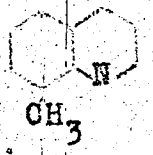
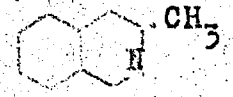
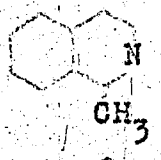
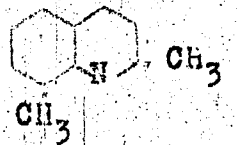
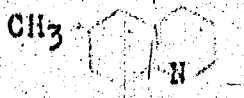
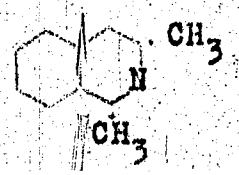
Name	Formel	Schmelz-Punkt	Siede-Punkt
Dicyklopentadien		33°	170°
1,5-Dimethylnaphthalin		82°	
Trimethylnaphthaline			
2.3.6-Trimethylnaphthalin		102°	286°
1.3.7-Trimethylnaphthalin		13,5°	280°
1-Methylphenanthren		119°	355°
3-Methylphenanthren		65°	350°
9-Methylphenanthren		92°	354°

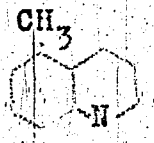
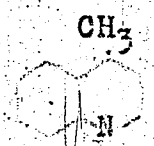
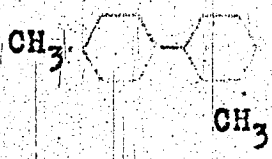
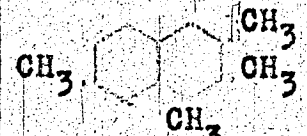
Name	Formel	Schmelz-Punkt	Siede-Punkt
4-Oxy-hydrinden		50°	245°
5-Oxy-hydrinden		55°	251°
7-Oxy-oumaron		43°	240°
2-Methyl-diphenylenoxyd		66°	304°
2.4.6-Trimethyl-chinolin		50°	288°
3.4-Benzacridin		107°	433°
Phenanthridon		286°	435°
Fluoren-nitrile			
Methyl-thionaphthene		52° und 36°	

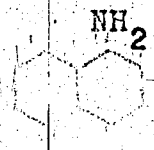
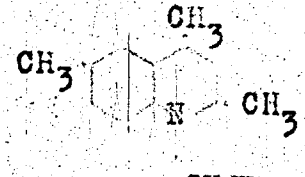
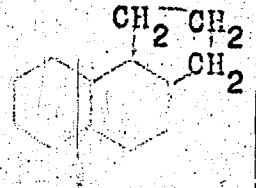
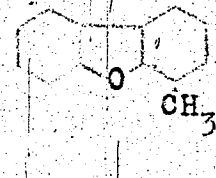
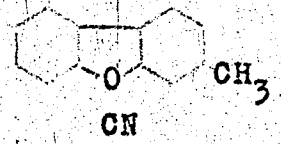
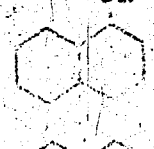
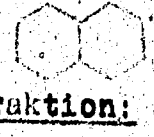
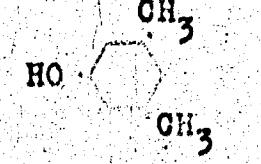
Isoliert wurden die Verbindungen aus folgenden Fraktionen:

Name	Formel
Leichtöl (Motorenbenzol):	
Offene und cyklische Olefine	
Dihydrobenzol	
Tetrahydrobenzol	
n-Hexylen	C_6H_{12}
n-Heptylen	C_7H_{14}
n-Propionsäure	$CH_3 \cdot CH_2 \cdot CO_2H$
Benzolvorlauf	
Äthylmercaptan	$CH_3 \cdot CH_2 \cdot SH$
Neutrale Schweröllfraktion (ca. 250°):	
Indol (4-5 %)	
Durenol	
Rohnaphthalin des Steinkohlenteers:	
Thionaphthen (4 %)	
Methylnaphthalin-Fraktion:	
2 verschiedene Methylthionaphthene	
Rohphenanthren:	
Diphenylensulfid (3-5 %)	

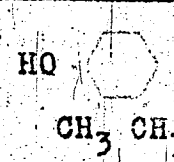
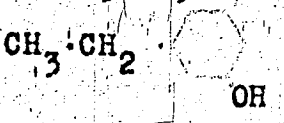
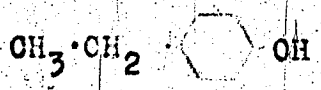
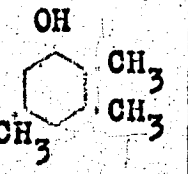
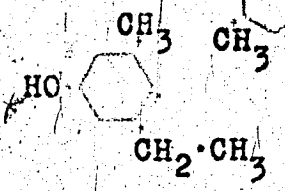
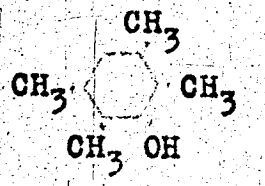
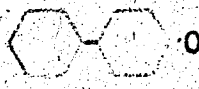
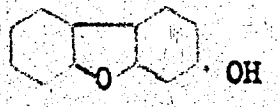
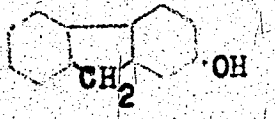
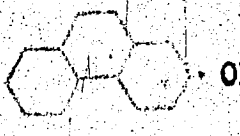
Name	Formel
Teerölfraktion 240-270°	
α-Methylnaphthalin	
β-Methylnaphthalin	
β-Äthylnaphthalin	
1.6-Dimethylnaphthalin	
2.6-Dimethylnaphthalin	
2.7-Dimethylnaphthalin	
1.7-Dimethylnaphthalin	
2.3-Dimethylnaphthalin	
1.2-Dimethylnaphthalin	
1.5-Dimethylnaphthalin	
Phenole (1,0-1,5 %)	
Benzoesäure	

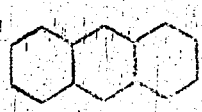
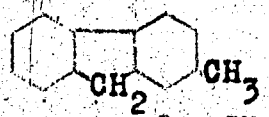
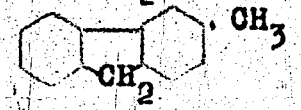
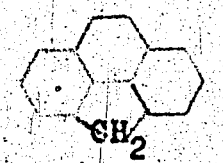
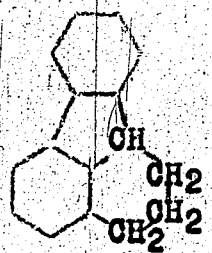
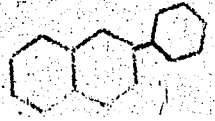
Name	Formel
7-Oxy-cumaron	
4-Oxy-hydrinden	
5-Oxy-hydrinden	
240-265°:	
8-Methyl-chinolin	
3-Methyl-isochinolin	
1-Methyl-isochinolin	
2.8-Dimethyl-chinolin	
7-Methyl-chinolin	
6-Methyl-chinolin	
3-Methyl-chinolin	
1.3-Dimethyl-isochinolin	

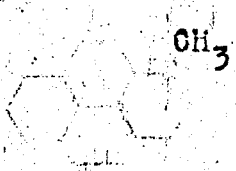
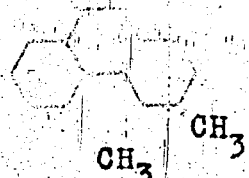
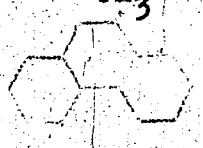
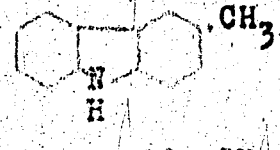
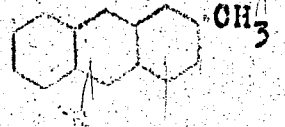
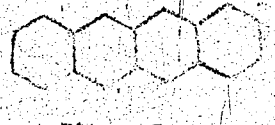
Name	Formel
5-Methyl-chinolin	
4-Methyl-chinolin	
270-290°:	
m-Methyl-diphenyl	
p-Methyl-diphenyl	
4.4'-Dimethyl-diphenyl	
3.4'-Dimethyl-diphenyl	
280-290°:	
Dimethylnaphthaline + Äthylnaphthalin (1,0-1,2 % des Gesamtteers)	
Trimethylnaphthaline (0,1% des Gesamtteers)	
2.3.6-Trimethylnaphthalin	
1.3.7-Trimethylnaphthalin	

Name	Formel
ca. 300°:	
primäre Basen (8-10 %)	
α-Naphthylamin	
β-Naphthylamin	
2.4.6-Trimethylchinolin	
4.5-Benzoindan	
bis 300° [1]:	
1-Methyl-diphenylenoxyd	
2-Methyl-diphenylenoxyd	
α-Naphthonitril	
β-Naphthonitril	
Xylenolfraktion:	
1.3.5-Xylenol	
1.2.6-Xylenol	

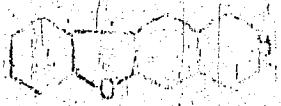
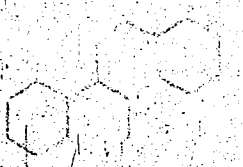
[1]) Enthält über 4% O und 0,3 % N

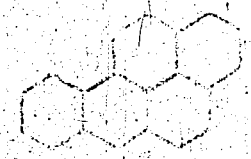
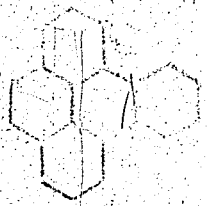
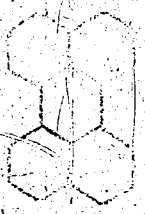
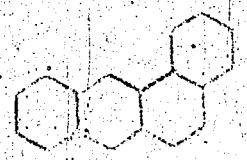
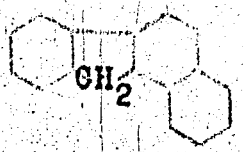
Name	Formel
1.2.3-Xylenol	
m-Äthylphenol	
p-Äthylphenol	
Cumenolfraktion 230°:	
Isopseudocumenol	
sym. m-Methyl-äthyl-phenol	
250°:	
sym. Hemellitol	
Durenol	
Anthracenöl:	
Phenole 6 %	
4-Oxy-diphenyl	
2-Oxy-diphenylenoxyd	
2-Oxy-fluoren	
Phenanthrol-(2)	

Name	Formel
Phenanthren	
Antracen	
Carbazol	
Fluoren	
Diphenylenoxyd	
302°:	
2-Methylfluoren	
3-Methylfluoren	
Nonadecan	$C_{19}H_{40}$
Neutrale Anthracenölfraktion 350-360°:	
4.5-Methylenphenanthren	
360-370°:	
1.2.3.4-Tetrahydrofluoranthen	
2-Phenylnaphthalin	

Name	Formel
1-Methyl-phenanthren	
3-Methyl-phenanthren	
9-Methyl-phenanthren	
Diphenylensulfid	
Fluoren-nitril	
Phenanthridin	
365-375°:	
2-Methyl-carbazol	
3-Methyl-carbazol	
6-Methyl-anthracen	
Pech [1]:	
Naphthacen	

[1]) Pech ist praktisch frei von Phenolen, enthält aber 1,5-2 % anderweitig gebundenen Sauerstoff = 30 % O-haltige Verbindungen.

Name	Formel
1.2-Benz-carbazol	
3.3 -Naphthylen-phenylenoxyd	
1.9-Benzoxanthen	
Chrysen	
Triphenylen (1-3 % im Roh-chrysen)	
3.4-Benzacridin (Chrysenfraktion)	
Phenanthridon	

Name	Formel
Über 440°:	
3.4-Benzpyren	
1.2-Benzpyren	
Perylen	
1,2-Benzanthracen	
1,2-Benzo-fluoren	
2.3-Benzo-fluoren