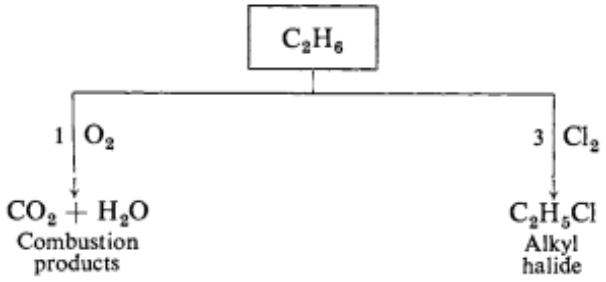
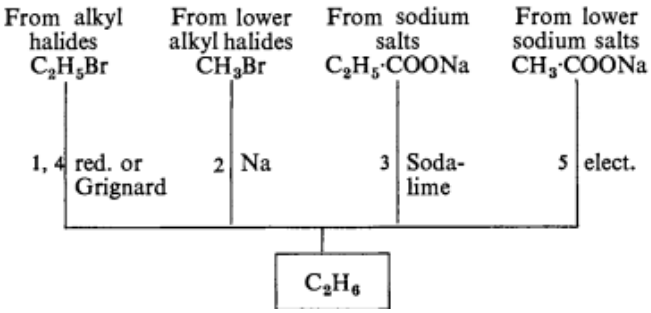
All organic chemistry in schemes

Reactions of Paraffin Hydrocarbons

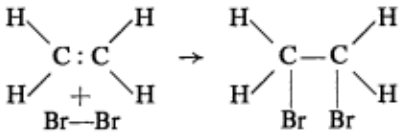


Preparation of Paraffin Hydrocarbons

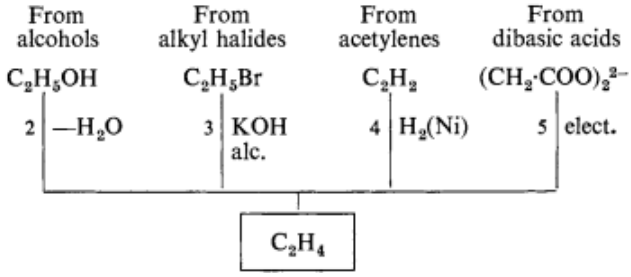


Alkenes

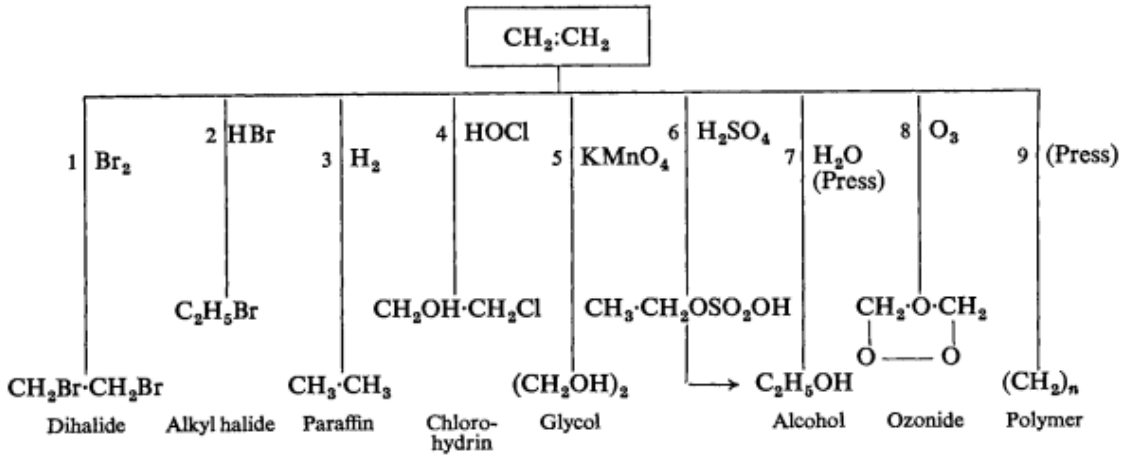
The double bond is reactive and readily becomes converted by *addition reactions* into single bonds, e.g. by reaction with halogens, halogen hydrides and hydrogen.



Preparation of Ethylenic Hydrocarbons

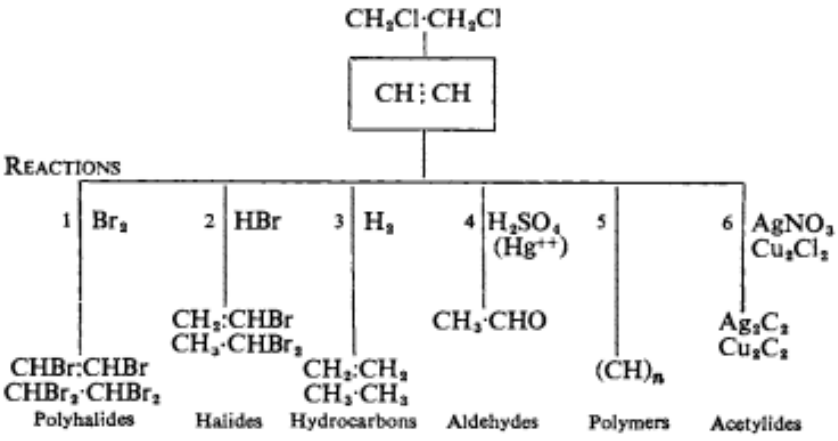


Reactions of Ethylenic Hydrocarbons

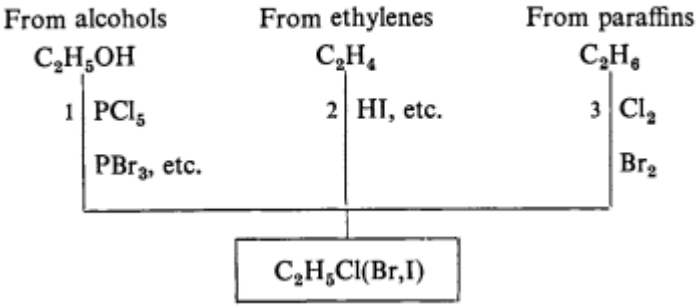


Triple-bonded Hydrocarbons

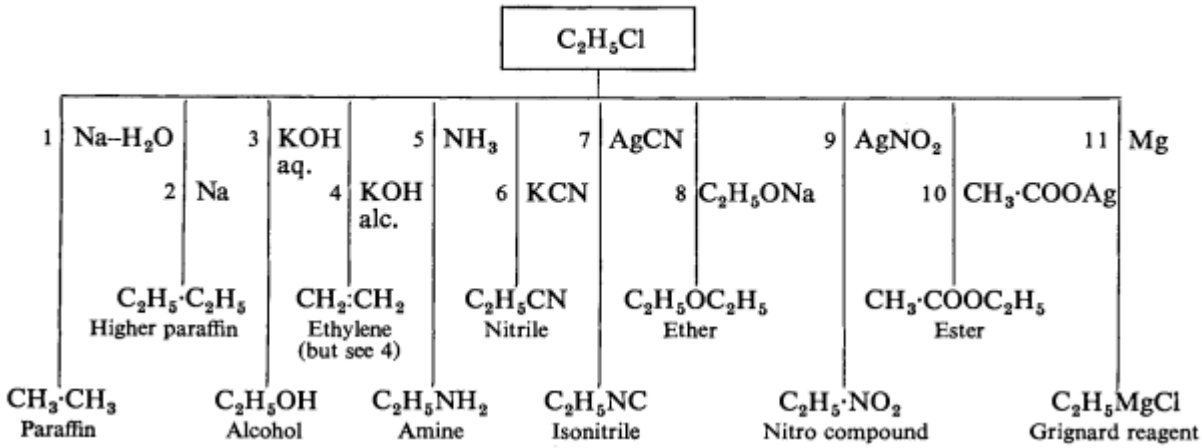
PREPARATION. From unsaturated dihalide



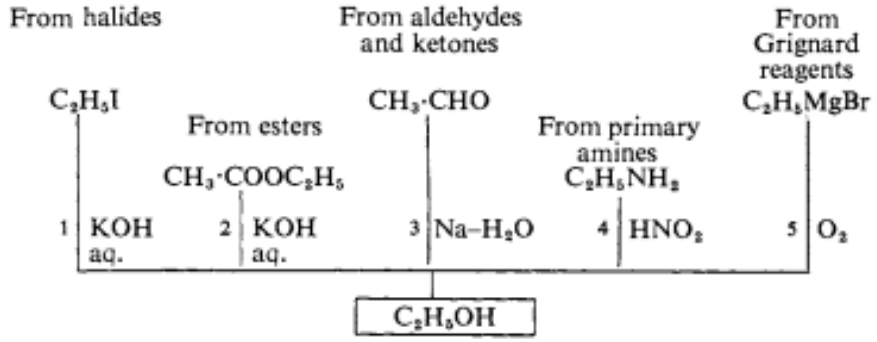
Preparation of Alkyl Halides



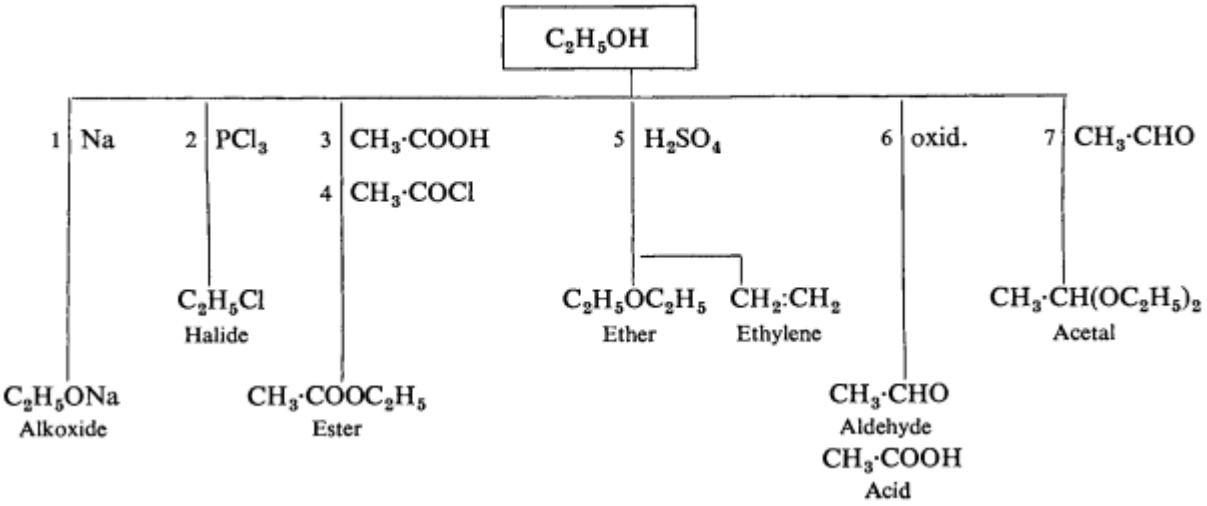
Reactions of Alkyl Halides



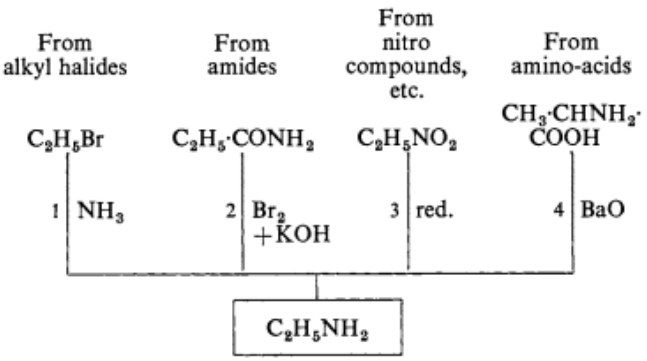
Preparation of Alcohols



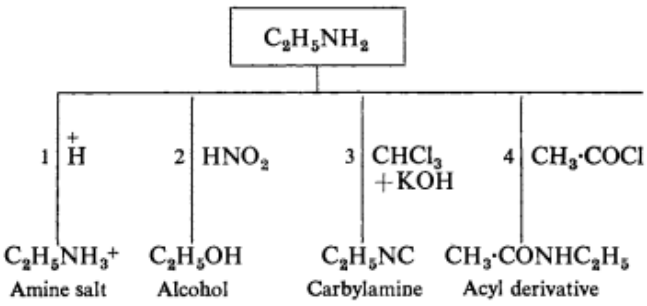
Reactions of Alcohols



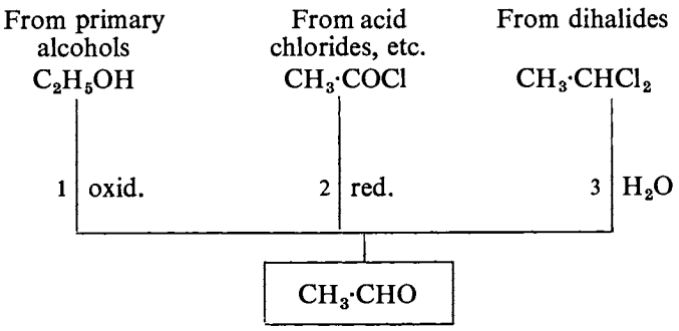
Preparation of Primary Amines



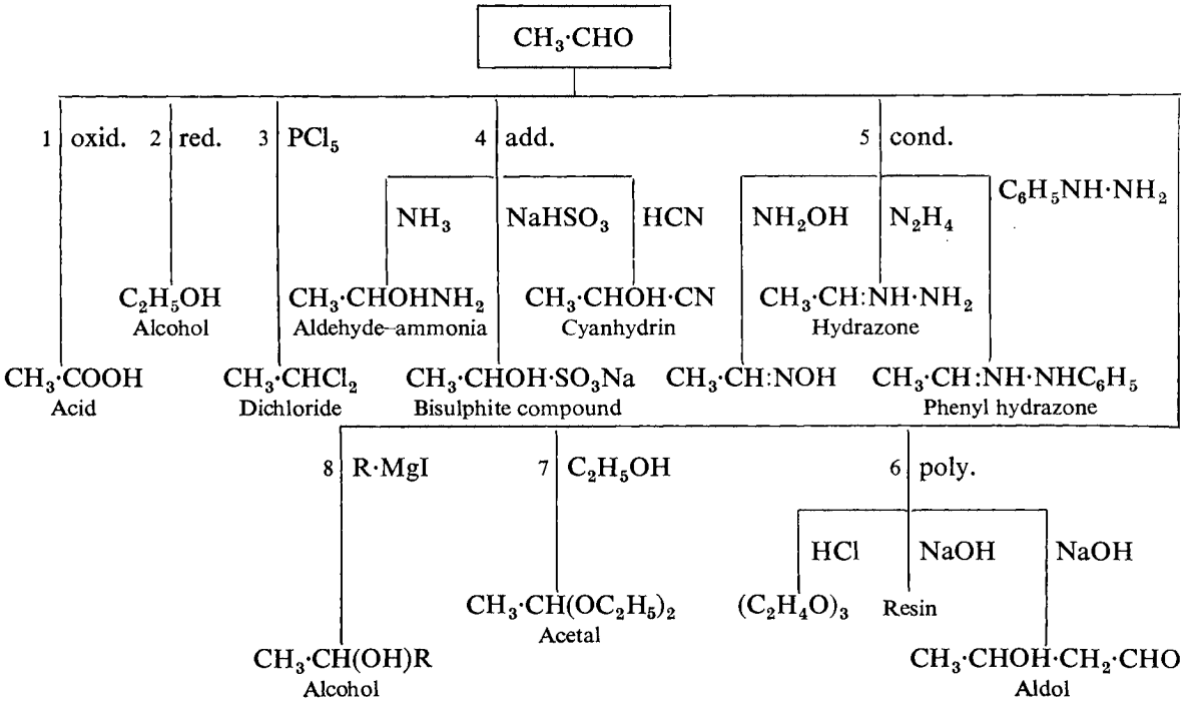
Reactions of Primary Amines



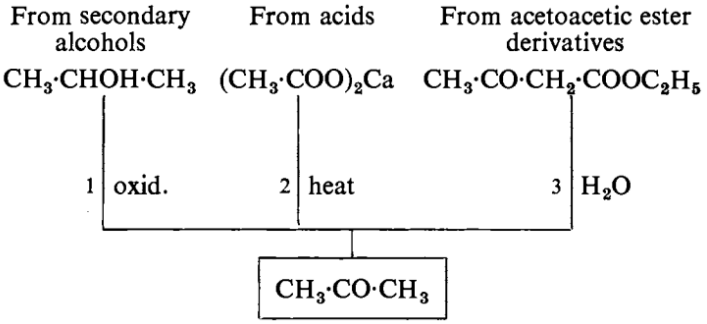
Preparation of Aldehydes



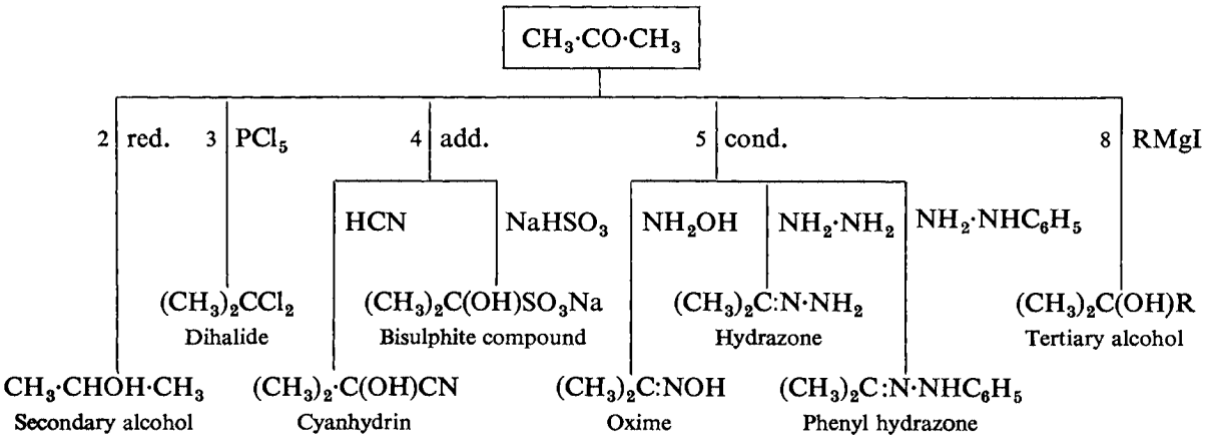
Reactions of Aldehydes



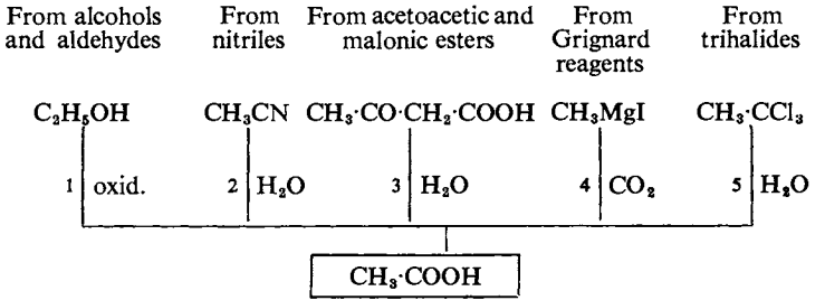
Preparation of Ketones



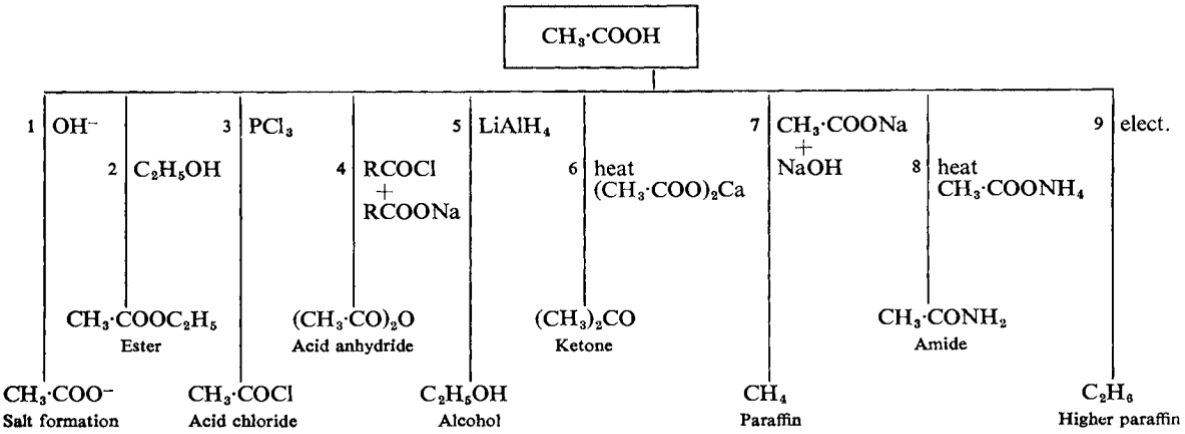
Reactions of Ketones



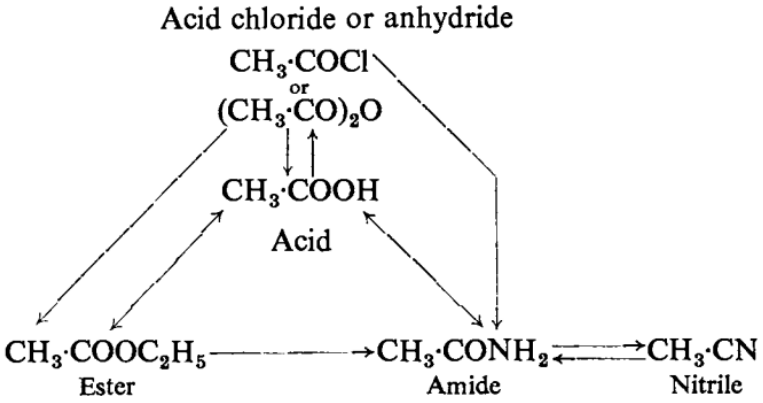
Preparation of Acids



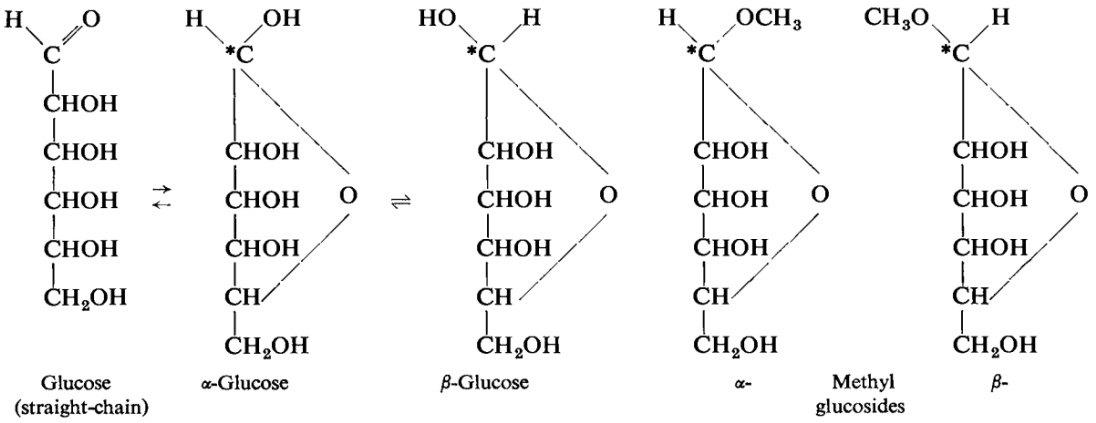
Reactions of Acids

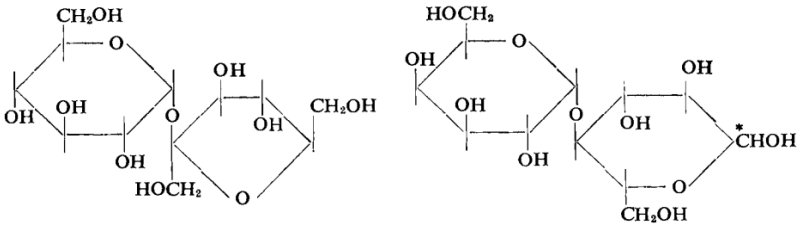


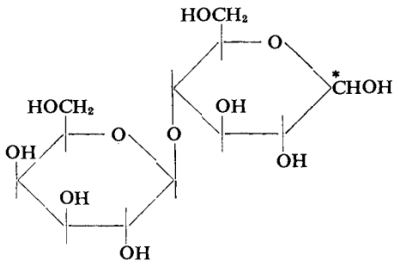
Interconversion of Derivatives of Acids



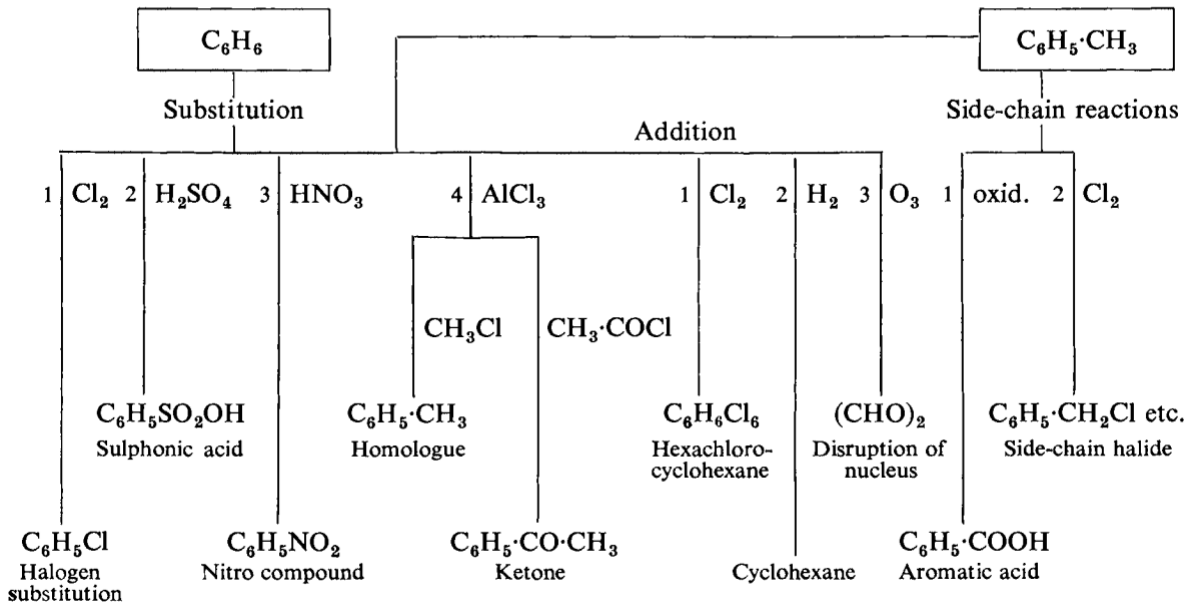
Carbohydrates







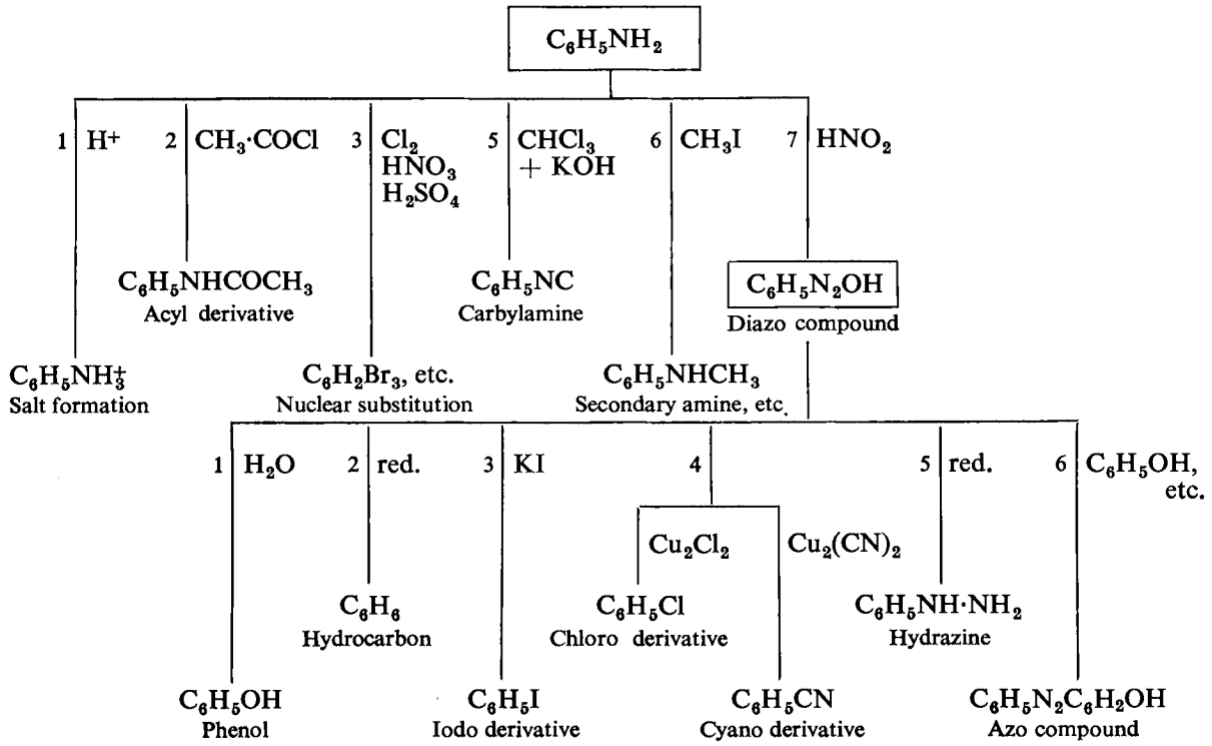
Reactions of Benzene Hydrocarbons



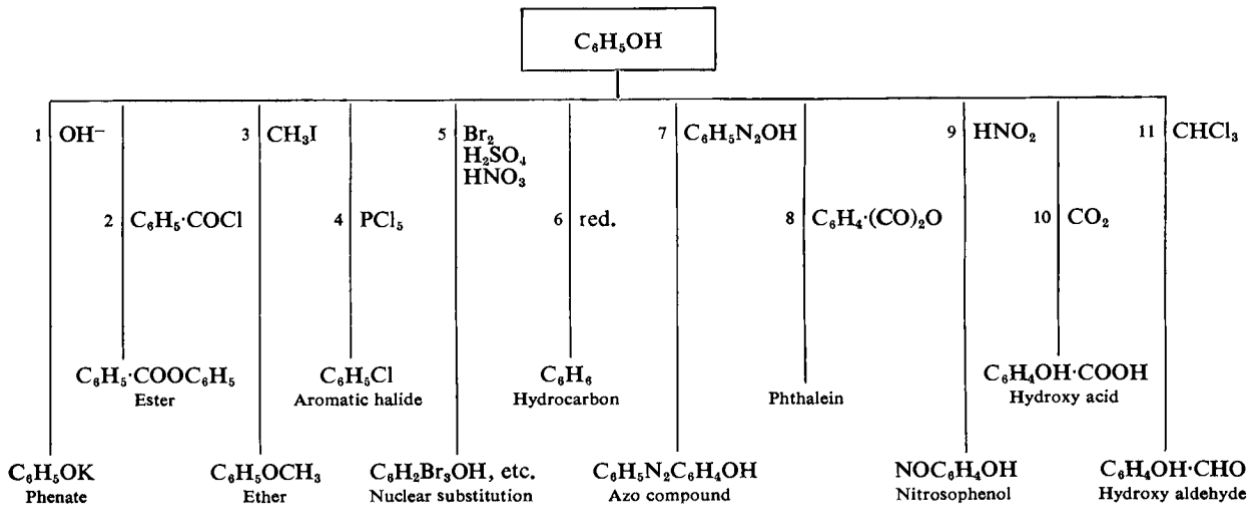
Comparison of Reactions of Hydrocarbons

Reactant	*Aliphatic*			*Aromatic*	
	Paraffins	*Ethylenes*	*Acetylenes*	*Benzene*	*Homologues*
Hydrogen	no action	addition	addition	addition	addition
Chlorine; bromine	substitution	addition	addition	addition or substitution	nuclear or side-chain substitution
Iodine	no action	addition	addition	no action	no action
Hydrogen halide	no action	addition	addition	no action	no action
Permanganate	no action	decolorization	decolorization	no action	acid formed
Ozone	no action	addition	addition	addition	addition
Sulphuric acid	no action	addition	addition	sulphonation	sulphonation
Nitric acid	no action	no action	complex action	nitration	nitration

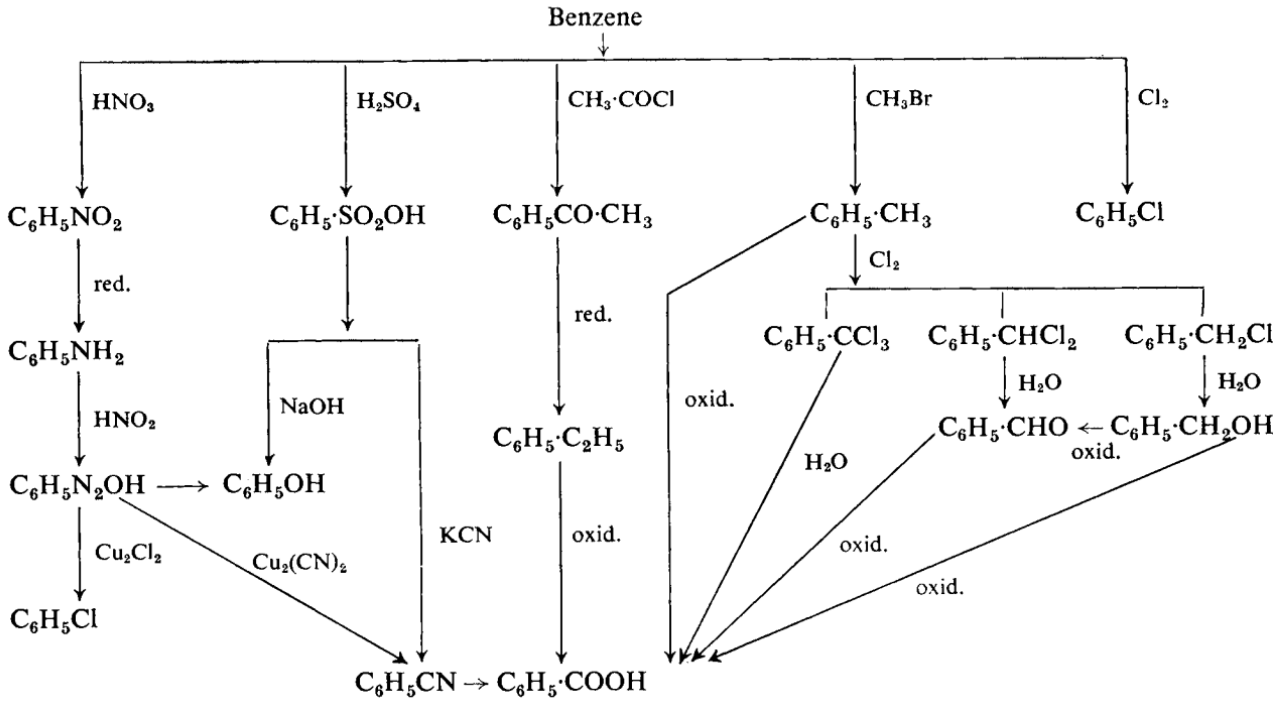
Reactions of Amines and Diazo Compounds



Reactions of Phenols



Interconversion of Aromatic Compounds



RECOGNITION OF SOME COMMON FUNCTIONAL GROUPS

Group	*Reagent*	*Result*
Aliphatic		
C:C or C:C	Bromine water or pot. permanganate	Decolorized
C—Cl (Br, I)	Hydrolysis with pot. hydroxide	Alcohol
CH_2OH	Oxidation by dichromate + dil. sulphuric acid	Aldehyde
CHOH	Oxidation by dichromate + dil. sulphuric acid	Ketone
C_2H_5OH or $(CH_3)_2CHOH$	Iodine + sodium hydroxide	Iodoform
C—O—C	Hydrogen iodide	Alkyl halide
$—NH_2$	Chloroform + pot. hydroxide Nitrous acid Acetyl chloride	Carbylamine Nitrogen + alcohol Substituted amide
>NH	Nitrous acid Acetyl chloride	Nitrosamine (yellow oil) Substituted amide
CO or CHO	Hydroxylamine	Oxime
CO or CHO	Phenyl hydrazine	Phenyl hydrazone
CHO	Silver salt; Fehling's solution	Reduction
COOH	Phosphorus pentachloride	Acid chloride
COCl or $(CO)_2O$	Primary amine	Substituted amide
Ester	Potassium hydroxide	Alcohol + salt of acid
Aromatic		
Primary amine	Nitrous acid then phenol and alkali	Diazo compound Azo compound
Phenol	Diazo compound + alkali	Azo compound

C. G. Lyons, S, M c Lintock, N. H. Lumb, A concise text-book of organic chemistry. PERGAMON PRESS LTD., OXFORD-L O N D O N-E D I N B U R G H-NEW YORK-PARIS-FRANKFURT. – 1965. – 254 p.