JOURNAL: INDEX OF SUBJECTS, 1962

A

Acenaphthene, alkylation, 870.

Acetaldehyde, base-catalysed reaction with iodine, quantitative aspects, 3348.

Acetals, from chloral, and their co-oligoacetals with formaldehyde, 4320.

and oligoacetals. Parts I, II, 4307, 4320.

Acetamides, dichloro-N-substituted, prep., 1420.

Acetates, halogeno-, optically active, reaction with aldehydes,

secondary and tertiary alkyl, pyrolysis, 335.

Acetic acid, ethyl ester, slow combustion, 4513.

α-methoxy-α-phenyl-, new resolution of, 1519.

substituted phenoxy-derivatives, dipole moments, 983. sulpho-, mechanism of formation in the system H₂SO₄-Āc₂O-AcOH, 1913.

[14C]Acetic acid, vinyl-, adsorption and hydrogenation on thiophen-poisoned palladium, 3217.

p-Nitrophenyl acetate, acetate-catalysed hydrolysis, 1334.

Acetic anhydride, hydrolysis. Part VIII, 976.

hydrolysis, effects of salts of strong acids, 4478.

Acetoin, oxidation with quinquevalent vanadium, 1629. Acetone, chlorination in aqueous solution, kinetics, 1927.

oxidation by ammonium ceric nitrate in aqueous nitric acid, kinetics, 1868.

acetyl-, co-ordinated, reactivity, 4778.

diacetyl-, influence of pH on the self-condensation, 3751.

Acetophenone, enol-acetylation of, by isopropenyl acetate catalysed by toluene-p-sulphonic acid, kinetics and mechanism, 1906.

diazo-, 2-substituted, prep. and behaviour towards acid, 3579

Acetyl chloride, rates of hydrolysis, 5157.

Acetylation, by acetic anhydride in acetic acid catalysed by Lewis acids, 1894.

acid-catalysed, by isopropenyl acetate, kinetics, 1876.

Acetylene, addition of methyl, ethyl, isopropyl, and t-butyl radicals: isomerisation of alkenyl radicals, 940. ethoxy-, unusual product from diphenylketen and, 2708.

Acetylenes, new prep. Parts I, II, 2333, 2337.

Acetylenedicarboxylic acid, dimethyl ester, reaction with 1methylimidazoles, 1510.

dimethyl ester, reaction with quinaldine, 4417.

Acid, conjugated triene, of Catalpa ovata seed oil, 573. Acid chlorides, mechanism of hydrolysis. Parts VIII, IX,

1076, 5157. Acids, aliphatic. Parts III, IV, 3108, 4638.

aliphatic, aryl-substituted, electrolysis, 1360.

alkanoic, synthetic branched-chain, prep. by use of thiophen as a chain extender, 350.

amino-, potential antagonists, and related compounds, 4601. and peptides, cyto-active. Parts IX, X, 3802, 3806. synthetic, thiophen as a chain-extender for, 2578. N-maleoyl-, reaction with benzylamine, 3726.

α-amino-, new alicyclic, 3977.

α-amino-β-hydroxy-, prep. Parts I, II, 1116, 3589. αω-diamino-, α-N-toluene-p-sulphonyl-, kinetics of lactamization of methyl esters in aqueous solution, 2948.

carboxylic, persulphate oxidation. Part I, 3379. complexes with pyridine, dielectric studies in benzene,

dibasic, some methyl-substituted, prep., 4286.

epithio-, prep., 4638. fatty. Parts VII—IX, 3055, 3058, 3063.

labelled at C₍₀₎, high-yield prep., 1405. steroid esters, infrared spectra, 3257.

hydroxy-, aliphatic. Part I, 4836.

halogenohydroxy-, prep. and some reactions, 3108.

Acids, α-hydroxy-, acyl derivatives and lactides of, pyrolysis,

β-hydroxy-, partial asymmetric prep. Part II, 1762.

long-chain monocarboxylic, infrared spectral variations and molecular mobility of, 2310.

oxy-, inorganic, nuclear magnetic resonance spectra of the methyl esters of, 1370.

peroxy-, derived from optically active amino-acids, prep.,

polyethenoid, non-conjugated, new method of determining the structure, 3058.

unsaturated, partial oxidation with performic acid, 3058. mixtures of, partial oxidation with various peracids, 3063.

αβ-unsaturated, methyl-substituted. Part III, trans-10hydroxy-2-methyldec-2-enoic acid, 5299.

Acrylates, β -pyridyl-, ethyl, and their 1-oxides, kinetics of alkaline hydrolysis, 2148.

Acrylic acid. Ethyl α-cyano-β-o-methoxyphenylacrylate, cistrans-isomerisation by various nucleophiles, 396.

Acrylonitrile, application to prep. of some reduced heterocyclic systems, 661.

interaction with benzaldehyde, 3040.

Active solids, prep. by thermal decomposition. Part XIV, 3255.

Acyl derivatives, kinetic solvent isotope effects in spontaneous hydrolysis reactions of, 2212.

radicals, new photolytic method for production, 1967.

Acylation. Parts III—VII, 1876, 1887, 1894, 1899, 1906.

by carboxylic anhydrides in non-aqueous media catalysed by sulphuric and by sulphoacetic acid, mechanism, 1887. Friedel-Crafts, by monocarboxylic acid anhydrides in carbon tetrachloride as solvent with stannic chloride as catalyst, kinetics, 1899.

Addition, free-radical, synthetic aspects. Part I, 4468.

Adenine, thermodynamic constants, 1466.

Adipic acid, diethyl ester, conformation as solute in carbon tetrachloride, 3997.

Adsorption, from binary systems of limited concentration range: application of some fundamental concepts, 855. and hydrogenation of [14C]crotonic and [14C]vinylacetic acid on thiophen-poisoned palladium, 3217.

Akuamma alkaloids. Part V, 312.

 ψ -Akuammigine, 312.

Akuammine, 312

Alcohols, relative rates of oxidation by quinquevalent vanadium, 2068.

ω-amido-, derivatives, cyclisation versus elimination and replacement in, 3676.

Aldehydes, reaction with optically active halogeno-acetates, 1762.

novel reduction of nitriles to, 3961.

aliphatic, base-catalysed reaction with iodine, quantitative aspects. Parts I, II, 2228, 3348.

aromatic, acid-catalysed condensation with ethyl cyanoacetate, 731.

reaction with diazoalkanes, 1232.

Alginic acid, constitution, 1208.

ethylenediammonium salt, molecular size and shape, 2705. Alizarin, 3-nitro-, chemical degradation in methanol, 80; photochemical degradation in methanol, 83.

Alkaloids, biosynthesis. Parts I, II, 3526, 3534. of akuamma. Part V, 312. of the Amaryllidaceae. Part XI, 5010.

ergot, biosynthesis, 421.

from greenheart. Part II, 2077. of Pleiocarpa. Part I, 3245.

Senecio. Part XIV, 34.

of Tylophora crebriflora: structure and prep, of tylocrebrine, 1008.

Alkanedicarboxylates of bivalent metals, dissociation constants in water, 306.

Alkanes, diazo-, reaction with aromatic aldehydes, 1232. αω-dichloro- and -dibromo-, dipole moments, molar Kerr constants, and apparent conformations, 1407.

nitroso-, isotopically labelled, prep., 37.

dipyridyl-, prep., 1475.

Alkenyl radicals, isomerisation, 940.

Alkoxy-radicals. Part II, 4464.

reactions. Part III, 130.

Alkyl chlorides and bromides, normal C₂-C₅, thermodynamic properties, 1794.

Alkyl radicals, reactions. Parts IX—XI, 940, 3357, 4620.

Alkylating agents, surface-active, 4739.

Alkylation, aromatic. Part V, alkylation by aliphatic alcohols in aqueous perchloric acid, 4183.

of the aromatic nucleus. Parts VI, VII, 867, 870.

Allenes. Part III, 2298.

cyclic, prep., 2298.

DL-Allothreonine, prep., 1116.

Alloxan, ring contractions with alicyclic secondary amines: formation of amine salts of alloxanic acid, 3887.

Allyl bromide, addition of hypochlorous acid to, mechanism, 443.

cation, radical, and anion, electronic structures, 1035. (Errata, 3844.)

chloride, addition of hypobromous acid to, mechanism, 443. halides, action of γ -radiation on, 3331.

L-Altrose, 3,6-dideoxy-3-dimethylamino-, and some derivatives therefrom, prep., 1396.

Methyl 3,4-anhydro-α-D-altroside and 2,3-anhydro-α-D-mannoside and their derivatives. Part I, 4770.

Aluminium, diethyl-2,2-dimethylhydrazino-, prep., 3818. Ethylaluminium dichloride, reaction with methylammonium chloride, 4734.

Amaryllidaceae, alkaloids of. Part XI, 5010.

Amides, diphenylmethylation, 5277.

formation via carbamic carboxylic anhydrides, rate, 2065. hydrolysis in aqueous solution catalysed by an ion-exchange resin, 1226.

hydrolysis in aqueous-organic solvents, catalysis by ion-exchange resins, 3369.

intramolecular reactions of. Part III, 3677.

acid, prep. from acid chlorides, 2824.

Amidines, cyclic. Part XV, 2549.

α-hydroxy-, complexes formed with transition-metal ions. Part I, acid dissociation constants of the ligands, 296.

Amidinium chlorides, α-hydroxy-, use of mandelic acids in the resolution of, 1309.

Amines, hydrogen bonding of some, nuclear magnetic resonance study, 1123.

aliphatic, isotopic exchange of gaseous hydrogen with. Part II, 3083.

reaction with tungsten(VI) chloride, 1330.

heterocyclic, infrared absorption spectra in dimethyl sulphoxide solutions, 617.

NN'-Dithiodiethylamine, NN'-thionylbisdiethylamine, and NN'-sulphurylbisdiethylamine, heats of formation and bond energies, 3212.

Effect of γ-radiation on diethylamine, trimethylamine, benzylamine, phenethylamine, 1-methylpiperidine, N-methyldiethylamine, and t-butylamine, 886.

N-Methyl-2-cyclopentylethylamine, stereochemistry of the Hofmann-Freytag-Loeffler reaction applied to, 4703.

Amino-oxy-derivatives. Part III, 3915.

Ammonia, liquid, and gaseous hydrogen, isotopic exchange between. Part I, 1378.

Ammonium chloride, methyl-, reaction with ethylaluminium dichloride, 4734.

group, acid dissociation constants in 2-aminoethanol, 2-aminoethyl phosphate, and 2-aminoethyl sulphate, 3068. perchlorate-cuprous oxide system, thermal ignition in, 556.

Amobiasis, chemotherapy of: some N-substituted dichloroacetamides, 1420.

Amphiboles. Parts I-III, 1468, 1472, 3693.

Amylose, partly methylated, positions of alkylation in, 4232.
 Analgesics, synthetic, configurational studies. Part IV, 1386.
 Analysis, organic, submicro-methods. Part XIV, determination of chlorine, 1939. Part XV, 3033.

Andira inermis (Wright) H. B. K., extractives from, 4906. Anhydrides, carboxylic, hydrolyses, Part II, 4478.

cyclic dibasic acid, ten, conformations as indicated by their dipole moments, molar Kerr constants, etc., 4009.

Aniline, reactions with the four picryl halides, 1,2,3,5-tetranitrobenzene, and 1,2,4-trinitrobenzene in ethanol, kinetics, 9.

o-bromo-, action of γ-radiation on, 924.

NN-diethyl-, reaction with cyanuric chloride, 1507.

Anisole, introduction of tropyl (cycloheptatrienyl) and benzyl groups by tropylium halides, 5295.

Anodic processes. Part V, 4104.

Anthracene, reaction with benzenesulphonyl azide, 2517. reaction with sulphur monochloride, 1725.

reaction with free radicals derived from 2,2,4-trimethylpentane (iso-octane), 2248.

cis- and trans-9,10-dihydro-9,10-dimethyl-, stereospecific prep., 3776.

Antiraquinone, 2-methyl-1-nitro- and 1-amino-2-methyl-, reactions, 3373.

mordant dyes, chemical and photochemical degradation in methanol. Parts I, II, 80, 83.

Antibiotics, carbohydrate components of. Parts II, III, 1396, 2116.

Antihistaminic compounds, copper(II), cobalt(II), and nickel(II) complexes of: stability and thermodynamic values, 1776.

Antimony, tribromide, crystal and molecular structure: β -antimony tribromide, 2218.

Triphenylstibine, formation of complexes with silver salts, 2854.

Antimycin-A complex, preliminary biosynthetical study, 303.
Antioxidants for linoleic acid and methyl linoleate, hydroxy-polyporic acids and related compounds as, 2753.

(+)-Apiose, prep., 2515.

Aquation, octahedral, mechanism and steric course. Part V, 1388.

L-Arabinose, 5-acetamido-5-deoxy-, prep., 4699.

Arenes, polyfluoro-. Parts V, VI, 4966, 4977.

Aromatic compounds, fluoro-, polycyclic. Parts I, II, 186, 190.

nucleus, alkylation. Parts VI, VII, 867, 870. reactivity. Part XXII, 2383.

Arrhenius plot, non-linear, for the proton-transfer reaction between acetic acid and the anion of 2,4,6-trinitrotoluene in ethanol at low temperature, 3454.

Arsenic analogue of 1-phenyl-4-piperidone, derivatives of, 5110.

Arsenates. Part II, thermogravimetric, infrared, and magnetic studies of some solid phases in the system chromium(III)-arsenic acid, 4802.

Arsine, bromodiphenyl-, crystal structure, 2567.

ditertiary, complexes, spectra. Part I, 1564.

ditertiary, complexes of some d¹⁰ metals (Ag¹, Zn¹¹, Cd¹¹, and Hg¹¹), 2177.

ditertiary, complexes of octahedral bivalent molybdenum, 2592.

ditertiary, complex compounds with nickel(0) and palladium(0), 2537.

a tritertiary and a tetratertiary, rhenium complexes with,

a tetratertiary, ruthenium(II) complexes with, 182.

Trifluoromethylthio- and trifluoromethylseleno-bis(trifluoromethyl)arsine, prep. and properties, 2529.

Heptafluoropropylselenobis(trifluoromethyl)arsine, prep. and properties, 2529.

Benzophenarsazines, alkyl-substituted, prep., 1126. Diarsine complexes of quadrivalent-metal halides, 2460.

Tungstoarsenic(III) acid, prep. and properties, 3186. Arylation, aromatic, convenient new method, 4257.

Ascaridole, reaction with ferrous sulphate, 4492.

Aspartic acid, DL-erythro- and -threo-β-hydroxy-β-methyl-, prep., 1116.

DL-Aspartic acid, erythro- and threo-β-hydroxy-, prep., 3589. L-Aspartic β-semialdehyde, prep., 3963.

Aspergillus niger, a metabolite (flavasperone) of, structure, 40. Aspergillus terreus Thom., new metabolic product of, 4189.

"Asperxanthone", a metabolite of Aspergillus niger, structure, 40.

Azabenzocycloheptenones. Part IV, 3468.

Azadibenzotropone, an, prep., 3468.

"Azaheptacyclic" (seven-membered nitrogen heterocyclic) compounds, approaches to, 3097.

Aza-steroids. Part III, 1050

Azelaic acid, δ -oxo-, prep., 4722.

Azides, photolysis, 622.

organic, pyrolysis: mechanistic study, 1632.

Azines, basic properties. Part I, potentiometric and conductometric titration of dimethylketazine with hydrogen chloride in acetone, 4283

methyl, nature of the addition reactions with some typical dienophiles, 3037.

polycyclic, $n \longrightarrow \pi$ transitions of, 493. tautomeric. Parts I, II, 1540, 1544.

Azobenzene, formation of complexes with cuprous and silver

Azo-compounds, reaction with arenesulphinic acids, 2713.

Azoles, α-amino-, reaction of ethyl α-cyano(and α-ethoxycarbonyl)-β-ethoxyacrylate and -β-ethoxycrotonate with,

Azulene, heterocyclic iso- π -electronic analogues of, 740.

Balanops australiana F. Muell., constituents of bark of, 498. Barium, solutions in liquid sodium, surface tension, 3868. liquid, density, 3873.

Bases, use of chloromercurates to facilitate the infrared examination of, 4259.

oxygen, adducts with acids, hydrogen bonding in. Part I, 5128.

weak, dissociation constants in sulphuric acid, conductometric determination. Part I, 4272

Benzacridines, alkyl-substituted, prep., 1126.

Benzaldehyde, interaction with acrylonitrile, 3040.

selective poisoning of the catalyst in the prep. from benzoyl chloride by the Rosenmund reduction, 2024.

2,4-dihydroxy-, infrared C=0 absorption of, 2835.

Benzamide, investigation of reaction with phosphorus pentachloride with oxygen-18 as tracer, 2110.

Benz[a]anthracene, $\tilde{3}$ -methoxy-, prep., 673.

Benzene, strength of C-H bond in, 4672.

bromo-, y-radiolysis, 905.

pentafluoro-, reactions, 3253.

hydrazo-, kinetics of rearrangement at high acidities, 3294. iodo-, γ-radiolysis, 911.

1,2,3-trinitro-, kinetics of reaction with aniline in ethanol,

1,3,5-trinitro-, intermolecular charge-transfer complexes with aliphatic amines, 3843.

Benzenes, dialkyl-, radicals obtained on photolysis of, electronic absorption spectra, 4327.

four 2-halogeno-1,3-dinitro-, kinetics of the reactions with aniline in ethanol, 3149.

hydrazo-, substrate-isotope effects on kinetics and products of acid rearrangement of, 3308.

nitro-, substituted, basicities, 4272.

o-substituted nitro-, substituent interactions in. Part IV,

[85S]Benzenethiolsulphinate, phenyl, specifically labelled, prep., 1667.

Benzenethiol[35S]sulphonate, phenyl, specifically labelled, prep., 1667.

Benzidine and semidine rearrangements, mechanism. Parts I-XI, 2386, 2402, 2407, 2413, 2418, 2429, 2436, 3294, 3299, 3308, 3314.

Benzilic acid, 2-bromoethyl ester, reaction with secondary amines, 685

Benzimidazo[1,2-c]quinazolines, certain 6-substituted, prep. and reactions, 945.

2,3-Benzobiphenylene, prep. from biphenylene, 2633.

Benzocarbazoles derived from 5,7,8-trimethyl-1-tetralone,

Benzo[c]cinnoline, effect of substituents on the ultraviolet absorption spectra of, 1812.

and some methylbenzo[c]cinnolines, nitration, 4860. its oxide, and some methyl derivatives, nitration, 4384.

and its N-oxide, nitration, 2454. 4-nitro-, and its N-oxide, dipole moments, 5292. 5H-Benzocycloheptene, 6,7-dihydro-, and related compounds, oxidation by selenium dioxide, 3629.

Benzodiazines, mercapto-derivatives, ionization constants, 3129.

Benzodioxan derivatives, novel, prep. by chloromethylation of p- and o-diacetoxybenzenes, 1730.

Benzoic acid, 2-chloro-5-nitro-, crystal and molecular structure, 1767.

o-phenoxy-, oxidative coupling, 2533.

Benzoic acids, o-benzoyl-, electrolysis in methanol at 20-30°, 324.

o-benzoyl-, electrolysis in pyridine at 93°, 2771.

o-benzoyl-, oxidation by persulphate, 3379.

Benzophenarsazines, alkyl-substituted, prep., 1126.

Benzophenone, 2,2'-diamino-, prep. of 3,6-phenanthrolines

oxime, action of γ -radiation on, 1120.

Benzophenones, 2-carboxy-2'-hydroxy-, prep. and reactions of lactones from, 4695.

Benzopyridocarbazoles, new highly carcinogenic, prep., 146.

Benzoquinolizines from isoquinoline and dimethyl acetylene. dicarboxylate, 748.

Benzoquinone, 2,3-dimethyl-, conversion of the photodimer into derivatives of biphenylene, 1717.

Benzoquinones, di-, tri-, and poly-, methylene-linked, prep., 4550.

poly-, methylene-linked, electrochemical and physicochemical behaviour, 4558.

Benzoselenopheno[2,3-b]benzoselenophens, prep. from 1,1diarylethylenes and selenium oxychloride, 734.

1,2,3-Benzothiadiazole. Part I, nitro-, amino-, and hydroxyderivatives, 2374.

Benzothiazole, 2-methylthio-, crystal and molecular structure,

Benzothiazoline, 2-thio-, Mannich bases derived from, 2070.

Benzoyl chloride, y-radiolysis of mixtures with benzene, anisole, or nitrobenzene, 914.

peroxide, decomposition in alkylbenzenes, 2862.

Benzyl bromides, rates of reaction with substituted thiophenols, 1062

cyanide, 4-nitro-, kinetics of some fast reactions in solution at -77°, 2314.

groups, introduction into anisole by tropylium halides. 5295.

radical, absorption and emission spectrum in the visible region, 4323.

p-tolyl ether, rearrangement, 2995.

Benzyloxy-radical, reaction with inhibitors: iodine, 4464.

Bergapten, isolation from leaves of Ficus carica, L., 4253. Beryllium, complexes with bipyridyl and other chelate donor groups, 3340.

Beta energy recoil effects of carbon-14 in toluene and ethylbenzene, 2573.

Betaines, mesomeric, with six-membered rings, 1544.

Biacetyl, photo-oxidation in solution, 2813.

1,1'-Bianthryls, optical rotatory dispersion studies, 4268.

Bicyclo[2,2,1]heptadiene, hexachloro-, reaction with potassium ethoxide, 457.

Bicyclopropyl, thermal decomposition. Part I, 1689

Biosynthesis, studies in relation to. Parts XXV—XXXI, 303, 370, 421, 425, 1502, 3583, 3586.

alkaloid. Parts I, II, 3526, 3534.

phenol oxidation and. Part V, 806.

of phenols. Part IV, 4189.

of polyacetylenes. Part V, the role of malonate derivatives, and the common origin of fatty acids, polyacetylenes, and "acetate-derived" phenols, 4662.

Biotin antagonists, search for, 4909.

γ-Biotin, isolation, 4909.

1,1'-Biphenanthryl and the structure of the oxygenated compound previously so described, 674.

methylchloro-derivatives, dissociation constants in 71% aqueous ethanol, 4857.

ortho-substituted, kinetics of the reaction with diazodiphenylmethane, 1824.

Biphenyl, 2-iodo- and 2-bromo-, y-radiolysis, 911.

Biphenyls, methyl-substituted, rates and products of chlorination in acetic acid, 3784.

2-t-butyl-, 2'-substituted, optical studies. Part II, 1401.

Biphenylcarboxylic acids, 3'-methyl-4'-nitro-, prep. by reaction of 3-methyl-4-nitrobenzenediazonium acetate with methyl benzoate, 2208.

Biphenyl-2-carboxylic acid, 2'-nitro-, novel intramolecular rearrangement of, 4579.

Biphenyl-4-carboxylic acid, 2-nitro-2'-t-butyl-, optical studies,

Biphenylene, crystal and molecular structure, 1.

heat of formation and molecular structure, 3895.

derivatives of, conversion of the photodimer of 2,3-dimethylbenzoquinone into, 1717.

2-hydroxy-, prep. and reactions, 5090.

2,3-dimethoxy., prep., 5085.

Biphenylenes. Parts VI—IX, 2633, 5085, 5090, 5298. 2,3:6,7-dibenzo-, prep., 2782.

Biphenylene-2-aldehyde, prep., 5298.

Biphenylene-2,3-quinone, prep. and reactions, 5090.

Bipyridyl, and other chelate donor groups, beryllium complexes with: evidence for the bipyridyl anion as donor, 3340.

2,2'-Bipyridyl derivatives of Group VI carbonyls, 4712. stability of metal complexes of, 5222.

copper(II) complexes with, stability constants, 88.

zinc(II) and nickel(II) complexes with, stability constants, 278.

1,1-dioxide, tervalent manganese complexes of, 1121.

Bipyridyls, electric dipole moments of some, 1188.

Bismuth, triphenyl-, formation of complexes with silver salts,

Bond-energy scheme, Allen's empirical, examination and application to paraffins and cycloalkanes, olefins, alkyl alcohols and bromides, and amines, 4396.

Bond energies and heats of formation. Parts VI-VIII, 2927, 2932, 3212.

Bonds, bent, in cycloalkanes, 2851.

carbon-carbon, abnormally long (in perylene, terrylene, and quaterrylene), 2775.

carbon-carbon double, activation by cationic catalysts. Part XI, 689.

carbon-carbon double, activated, addition of Wittig reagents to, 4733.

Borazoles, dialkylamino-, prep. and reactions, 113.

Boron, atom, mechanism of substitution at. Part I, 1197.

cationic organic complexes of. Part II, 3364.

derivatives of 2-methylpentane-2,4-diol, 1032.

organic compounds of, halides. Part VI, 94. organic compounds of, thermochemistry. Part VII, 2150. organic derivatives of. Part IV, 1032. Part V, pinacol

derivatives, 3819. ring compounds. Part II, 1428.

dichloride, diethylamino-, reaction with primary amines,

trichloride, interaction with esters of sulphurous and sulphuric acid, 1505.

trichloride, steric hindrance to replacement in, 1786.

trichloride-methyl a-D-glucoside reagent, reactivity, 761.

trichloride-phosphoryl chloride complex and similar compounds, structures, 3450.

halides, o-nitroanilino-, highly coloured, 3737.

trihalides, reactions with heptasulphur imide, 4442.

hydride derivatives. Part VIII, 3417.

-nitrogen compounds. Part V, 4068.

Benzeneboronic acid, nitration, ortho: para-ratio in, 3822. Borines, amino-, organo-substituted, infrared spectroscopic study, 4068.

Boronates, cyclic, and their amine complexes, 3723.

n-Butyl dichloroborinate, s-butyl chloride from, 1099.

Decaborane, relative rates of reaction with some nitriles and sulphides, 1344.

Di(alkylamino)phenylborons, cyclic (borazole) and noncyclic condensation of, 2200.

Diazonium tetrafluoroborates, reaction with nickel carbonyl,

Diborane, prep. and purification, 2076.

reaction with oxygen, 2893.

heats of reaction with acetone and with propan-2-ol, 2150. Diboron, tetrakisdimethylamino-, transamination with aliphatic diamines, 4648.

Diboron tetrafluoride. Part I, decomposition, and reactions with oxygen and nitric oxide, 2767.

Boron, 1,3,2-Dioxaborinans, new 2-substituted, prep., 1428. Sodium decaboranate, reactions in relation to decaboranylmagnesium iodide, 3416.

Trisaminoboranes, 4088.

Bromination, by hypobromous acid in aqueous acetic acid. reagents involved, 4829.

by hypobromous acid in concentrated mineral acids, kinetics, 997.

Bromopicrin reaction, some developments of, 3586.

Brönsted reaction, significance, with particular reference to acylation and alkylation, 1068.

Brushite, CaHPO₄,2H₂O, structure, 1414.

Bunte salts, new prep. of disulphides from, 2172.

Buta-1,3-diene, reaction of methylene with, 3826.

Butane, 1,4-diphenyl-, 14C-labelled, prep., 4926.

tritio-, prep. by reaction of tritiated water with n-butylmagnesium bromide, 4724.

Butan-2-ol, gas-phase decomposition catalysed by hydrogen bromide, 653.

2-phenyl-, optically active, stereochemistry of the reaction with hydrogen peroxide, 4288.

Butan-2-one, 4-dialkylamino-, metho-salts, kinetics of reactions in alkylation with, 103.

3-hydroxy-3-methyl-, oxidation with quinquevalent vanadium, 1629.

Butyl. See s-Butyl and t-Butyl.

But-2-yne, hexafluoro-, complexes with transition metals,

Butyric acids, 2-alkyl-4,6-dinitrophenyl esters, prep., 519.

Cæsium, tungstoaluminate, structure, 3281,

tungstoferrate, structure, 1512.

Calactinic acid, degradative studies, 4225.

Calcium, solutions in liquid sodium, surface tension, 3868. oxide-carbon dioxide system in the pressure range 1-300 atm., 464.

Brushite, CaHPO4,2H2O, structure, 1414.

Calomel-electrode equilibria, 1619.

Calycanthine, structure: X-ray analysis of the dihydrobromide dihydrate, 194.

Camphane, (-)-2-bromo-2-nitro-, crystal and molecular structure, 799.

Carbamoyl phosphate, reactions in aqueous solution, kinetic and tracer studies, 1944.

Carbanion-halogen fission by nucleophilic attack of mercaptoacetic acid on a-benzoyldiphenylmethyl halides, dibenzoylmethyl bromide, and di-p-nitrophenylmethyl chloride, 3232.

Carbodi-imide, diphenyl-, addition products with aminoguanidine, thiosemicarbazide, or semicarbazide, and their cyclisation, 3561.

Carbohydrate carbonates. Part II, preparation by esterexchange methods, 1934.

components of antibiotics. Parts II, III, 1396, 2116. osotriazole formation, scope and mechanism. Part VII,

Carbohydrates, conformations in solution, proton resonance study. Part I, 3699.

hydrogen transfer from, conformational effects on kinetics of, 3100.

radiation chemistry of. Parts IX-XI, 2733, 2740, 4216. reactions at position 1 of. Parts III, IV, 3429, 5138. fluoro-, Parts IV, V, 2266. 2507.

Carbon atom, metal-bearing, nucleophilic substitution at,

dioxide, radiolysis, 3498.

tetraiodide, thermodynamic functions, 1513.

Carbon-14, beta energy recoil effects in toluene and ethylbenzene, 2573.

Carbon-carbon double bonds, nucleophilic attacks on. Parts I—IV, 377, 383, 392, 396.

activated, base-catalysed hydrolysis in 95% ethanol, 392. Carbonyl compounds, a-halogeno-, reaction with triphenyl-

phosphine, 2337. groups, interaction with biologically essential substituents. Part IV, 1101.

Carbonyl-methylene condensations. Part XIII, 731.

Carbonyl-transition-metal complexes, protonation of, formation of metal-hydrogen bonds in, 3653.

Carbonyls of Group VI, 2,2'-bipyridyl derivatives, 4712. Cardenolides. Part IV, 4225.

"Carvone hydrosulphide," constitution, 3830

Catalpa ovata seed oil, conjugated triene acid of, 573.

Catalysis, by hydrogen halides in the gas phase. Parts VI,

VII, 653, 1602.

by ion-exchange resins. Parts I, II, 1226, 3369.

Catalysts, activated metal, synthetical applications. Parts XIII-XV, 3235, 3241, 3746.

anionic, catalytic action of. Part II, 141.

palladium, poisoned by various metallic ions, detoxication,

reduced nickel, activation by metallic oxides for the hydrogenation of ethyl oleate, 5293.

Catalytic toxicities of the phenyl derivatives of the typical elements of groups V, VI, and VII, and their hydrogenolysis by W-7 Raney nickel, 3746.

Cation-exchange resins, action on D-glucose, 2730.

Cephalin, a synthetic, sorption of water vapour by, 4897.

Cerium(III) chloride alcoholates, composition and solubility,

Chain extender, use of thiophen as. Parts II, III, 350, 2578. Chalcone analogue (heterocyclic), 1-p-methoxyphenyl-3-2'quinolylprop-2-en-1-one, mechanism of electrolytic reduction of, 2239.

Chalcones and flavanoids, reduction with lithium aluminium hydride in the presence of aluminium chloride, 1658.

Chattaway-Adamson rearrangement, 2270.

Chelate compounds of the transitional metals, exchange studies. Part VIII, 341.

Chelates, metal, acylation. Part I, influence of the metal ion and a β -diketone ligand on the point of reaction, 2153. Part II, 4628.

Chemical constitution and physical properties. Parts XXXIII-XXXVII, 1176, 1183, 1188, 4518, 4525.

Chemisorption, investigation by radiochemical techniques. Part V, 3217.

Chloral, acetals from, and their co-oligoacetals with formaldehyde, 4320.

Chlorination of diethyl malonate in aqueous solution, kinetics,

of methyl-substituted biphenyls in acetic acid, rates and products, 3784

Chlorine oxy-radicals, 4785.

Cholestane, 3-aza-5 α - and -5 β -, and 4-aza-5 α - and -5 β -, and related compounds, prep., 2275.

3α-cyano-, stereospecific prep., 3261.

3-methylene-, acid-catalysed rearrangement, 5014.

Cholestan-6-one, 3β -acetoxy-, enol acetylation, 3839.

5α-Cholestan-3-one, tribromination, 2233.

5α-Cholestan-6-one and friedelin, α-bromo- and αα'-dibromoketones derived from, comparative studies, 1246.

Cholest-4\alpha- and -5-ene, 3-aza-A-homo-, 1050,

Cholest-5-en-3\alpha-yl toluene-p-sulphonate, 4,4-dimethyl-, solvolysis, 2684.

Cholesteryl derivatives of 4-amino-2-methoxyphenyl ethers, prep., 178.

halides, conformations as solutes in carbon tetrachloride, 1081.

Cholic acid: Choloyl derivatives of 4-amino-2-methoxyphenyl ethers, prep., 178.

Chromanones derived from resorcinol, 4870.

Chromatography, moving-bed, preliminary studies, 4875.

Chromens and naphthopyrans, reaction with bromine. Part

Chromium group, peroxy-compounds of, constitution, 2136. tricarbonyleyclo-octa-1,3,5-trienyl-, X-ray analysis, 3770. sulphide carbonyl complexes of, 4454.

Chromate, visible and ultraviolet absorption spectra, effect of environment and certain complex-forming cations on,

Chromium(III)-arsenic acid system, thermogravimetric, infrared, and magnetic studies of some solid phases in,

Chromous perchlorate, oxidation with sodium azide, 2816. The complex ion Cr(H₂O)₅NO²⁺, 507.

Perchromates, violet, 3948.

Chromium, 12-Tungstochromic(III) acid, prep., properties, structure, and spectra, 3322.

Chrysene, 1,2,3,4,5,6,11,12-octahydro-8-methoxy-1-oxo-, prep.,

Cinnoline derivatives, polycyclic. Parts X-XII, 1812, 4860, 4384.

derivatives, polynuclear, unsymmetrical. Part I, 3671. 1,2,3,4-tetrahydro-, and related compounds, prep., 1509. Civetone, dihydro-, new prep., 2348.

Clerodin, structure: X-ray analysis of clerodin bromo-lactone, 4133.

Cobalt, dissolution in solutions of sodium persulphate, 2122.

cis- and trans-Aquoamminebis(ethylenediamine)cobalt(III) salts, isomerisation, racemisation, and water exchange,

Bis(ethylenediamine)cobalt(III) salts, dichloro-, chlorobromo-, chlorohydroxo-, and bromohydroxo-, base hydrolysis, 4531.

Carbonato-cis-diammine(ethylenediamine)cobalt(III) ion and carbonate ion in aqueous solution, isotopic exchange reaction of, 476.

Carbonatotetra-amminecobalt(III) bromide, crystal struc-

Cobalt(II) complexes of antihistammic compounds: stability and thermodynamic values, 1776.

Cobalt(II) halides, complexes formed with pyrazines, 1235.

Cobalt(II) methyl- and phenyl-phosphinates, 2523

Cobalt(II), N-substituted salicylideneimine complexes of, magnetic moments and structures, 1374.

Cobalt(II), tertiary phosphine complexes of, reactions with carbon monoxide and nitric oxide, 2099.

Cobalt(II), tetrahedral isoselenocyanato-complexes of, prep.,

Cobalt(III), dichlorobisethylenediamine-, ions, isomerisation in anhydrous dimethylformamide and dimethylacetamide,

Cobalt(III), dihalogenobisdiarsine-, configuration of the isomers, 1564.

Cobaltic salts, oxidations of organic compounds with. Parts I, II, 965, 971.

Di-μ-hydroxobistetramminedicobalt(III) chloride tetrahydrate, crystal structure, 4429.

Nitroso(dimethyldithiocarbamato)cobalt

 $[Co(NO)\{S_2C\cdot N(CH_3)_2\}_2]$, crystal structure, 668.

Cochlospermum gossypium gum, acidic sugar components of,

Colensenone, structure, 3740.

Colour reactions, chemistry of: the Zimmermann reaction, 367. Complexes, of EDTA with bivalent cations, extent of chelate ring formation in solution, 2761.

intermolecular charge-transfer, of 1,3,5-trinitrobenzene with aliphatic amines, 3843.

metal, in solution. Part I, 2360.

metal, factors influencing the rates of dissociation. Part IV, 4475.

of metals with picolinic acid N-oxide, 5262.

of metals with 1,10-phenanthroline and its analogues, stability. Parts I—III, 5222, 5237, 5245.

mononuclear, errors inherent in competitive methods of determining stability constants of, 5271.

organometallic, electronic effects in, 3849.

Bivalent transition-metal tetrafluoroborate-methyl cyanide complexes, prep. and properties, 2444.

Concanavalin-A, interaction with glycogens, 4592.

Conductance, electrical, of particles of ion-exchange resin, 612. Conjugation in unsaturated systems containing hetero-atoms. Part I, 3324.

Contact angles of water against saturated hydrocarbons, 2206. Co-ordination, effect on ionization. Parts I, II, 2745, 2750.

compounds having carboxylic esters as ligands. Part II, relative acceptor strengths of some Group III and IV halides, 542.

Copolymer, sulphonated secondary intermeshed, kinetics and equilibria in, 1789.

Copper, dissolution in solutions of sodium persulphate, 2122. 1-methyl- and 1,6-dimethyl-3,4,5-triazaphenanthrene as reagents for, 4914.

some complexes with nitrogen compounds, oxidationreduction potentials in water, 1351.

Copper, Copper(II) chelates, anomalous behaviour, 4628.

Copper(II) complexes of antihistaminic compounds: stability and thermodynamic values, 1776.

Copper(II), 1,2-diamine complexes of, compounds formed by reaction with some ketones, 3017.

Copper(II)— and nickel(II)—diamine complexes, comparison of rates of dissociation, 4475.

Copper(Π)-2,2'-bipyridyl complexes, stability constants, 88. Copper(Π) chloride complexes, stability constants, 2672.

Copper(n) salts, anhydrous, ultraviolet and visible spectra in organic solvents, 2257.

Cuprous oxide-ammonium perchlorate system, thermal ignition in 556.

Tetrakisthioacetamidecopper(1) chloride, crystal structure,

12-Tungstocupric(Π) acid, prep., properties, and structure, 3946.

Coumaran-3-one, 2-(3,4-dihydroxybenzylidene)-4-hydroxy-6-methoxy-, isolation from *Melanorrhea* spp. (rengas), 1192.
Crocidolite, oxidation, 1468.

kinetics of oxidation, 1472.

reduction, 3693.

Crotonaldehyde, kinetics of the hydration of, 1166.

[14C] Crotonic acid, adsorption and hydrogenation on thiophenpoisoned palladium, 3217.

Crotonic acids, 2-alkyl-4,6-dinitrophenyl esters, prep., 519. Cucurbitaceae. Occurrence of 2-epicucurbitacin B in Luffa echinata, 3259.

 (\pm) -Cuparene, total synthesis, 1558.

Curvularin. Part IV, prep. of a degradation product, 220.
Cyanoacetate, ethyl, acid-catalysed condensation with aromatic aldehydes, 731.

Cyanogen, fluorination, 3276.

Cyanuric chloride, reaction with NN-diethylaniline, 1507. Cyclamiretin, constitution and stereochemistry, 5176. Cyclic systems, angularly bridged, prep. Part II, 2720. Cyclitols. Parts XII, XIII, 2985, 2991.

from the heartwood of *Phyllocladus trichomanoides*, 2829. cyclic diketals, conformation: the skew conformation, 2991. isopropylidene derivatives, formation by ketal interchange,

Cycloalkanes, bent bonds in, 2851.

Cyclobutane. von Braun's "diphenylcyclobutane derivative": 6,6'-dihydroxy-3,3,3',3'-tetramethyl-1,1'-spirobi-indane and a related compound, 415.

3α,5-Cyclo-5α-cholest-6-ene, 6-acetoxy-, reaction with bromine, 3168.

Cycloheptatrienyl (tropyl) groups, introduction into anisole by tropylium halides, 5295.

π-Cyclohexadienyl compounds of manganese, rhenium, iron, and ruthenium, 4458.

Cyclohexane-1,2-dione, O-alkylation, 681.

1-arylhydrazones, cyclisation, 3671.

Cyclohexane-1,3-dione, 4-phenyl-, condensation with 2-chlorocyclohexanone, 5291.

Cyclohexanol, mechanism of oxidation by cobaltic salts, 965. isotope effects in oxidations of, 2190.

Cyclohexanone, mechanism of oxidation by chromic acid, 822.

mechanisms of oxidation under acid conditions. Part I, two-electron oxidants, 827; Part II, one-electron oxidants, 832.

2-chloro-, condensation with 4-phenylcyclohexane-1,3-dione, 5291.

Cyclohexanones, 2-aryl-, axial and equatorial, $n \longrightarrow \pi^*$ band of, 429.

Cyclohex-1-enecarboxylic acid, 6-oxo-, ethyl ester, 1517.

Cyclopentadiene analogues containing as ring member an element of Group V, electronic structures, 929.

Cyclopentanecarboxylic acid, 2-oxo-, ethyl ester, reaction with arylamines. Part II, 2624.

1H-Öyclopenta[b]quinolines, 2,3,4,9-tetrahydro-9-oxo- (2,3-di-hydro- β -quinindones), prep., 2624.

2,3-Cyclopenteno-4-pyrone, 6-phenyl-, prep., 1857.

Cyclopropane, isomerisation in the gas phase in presence of hydrogen bromide, 1602.

isopropenyl-, thermal unimolecular isomerization, 3981.

 1,1-dimethyl-, thermal unimolecular isomerization at low pressures, 1157. Cyclopropane, 1,1,2,2-tetramethyl-, thermal unimolecular isomerization, 3052.

Cynara scolymus L., chemical investigation. Part I, steroids of the receptacles and leaves, 1700.

Cysteine desulphydrase, an enzyme model system for, 1101.

Cytidine, methylation, 1348.

Cytosine, methylation, 1348.

D

Deamination, nitrosation, and diazotisation. Parts IX—XI, 5197, 5203, 5208.

Depsipeptides of *Pithomyces chartarum*: structure of sporidesmolide I, 753.

from *Pithomyces chartarum* and from pasture samples from "facial eczema" areas, similarity of, 554.

Detergents, non-ionic, two synthetic, light-scattering and viscosity studies in aqueous solution, 537.

Deuterium-exchange studies with diethyl and ethyl hydrogen phosphonate, 1365.

Dextran containing a-1,3-glucosidic linkages, 170.

Dextrans, structural studies. Parts I, II, 170, 176. Diamagnetism of some molybdenum complexes, 2006

Diazines, mercapto-derivatives, ionization constants, 3129.

Diazirine, dimethyl-, thermal unimolecular decomposition, 3865

Diazo-compounds, heterocyclic. Part II, 1638.

Diazo-reduction, two types, 3314.

Diazoalkanes and quinones, adducts from. Part I, 5186.

Diazoethane, photolysis, and reactions of ethylidene, 2293. Diazonium sulphates, pure solid, prep., 3841.

tetrafluoroborates, reaction with nickel carbonyl, 686.

Diazotisation, nitrosation, and deamination. Parts IX—XI, 5197, 5203, 5208.

influence of neutral salts on kinetics of, 5197.

acid-catalysed, of the anilinium and related ions in aqueous perchloric acid (up to 3.0m), 5208.

acid-catalysed, of \bar{p} -nitroaniline and 2,4-dinitroaniline in aqueous perchloric acid (up to 3.0m), 5203.

Dibenz[a,kl]anthrone, electrophilic reactivity, 3516.

2,3:6,7-Dibenzobiphenylenes, prep., 2782.

Dibenzocarbazoles derived from 5,7,8-trimethyl-1-tetralone, 2630.

Dibenzo[c,f][1,2]diazepin-11-one, prep., 3712.

Dibenzofuran and dibenzothiophen, prep. and properties of derivatives of. Part I, monophenyl derivatives, 4900. Parts II, III, 5288, 5291.

Dibenzo[c,e]thiepin, 2,7-dihydro-, desulphurisation by activated metal catalyst, 3241.

Dibenzothiophen, free-radical phenylation, 5288.

and dibenzofuran, prep. and properties of derivatives of. Part I, monophenyl derivatives, 4900. Parts II, III, 5288, 5291.

Dibenz[f,h]pyrrolo[1,2-b]isoquinoline, 9,11,12,13,13a,14-hexa-hydro-2,3,6-trimethoxy-, prep., 1357.

Dielectric studies of carboxylic acid-pyridine complexes in benzene, 3000.

Dienes, conjugated, acid-catalysed addition of thiols to, 5040. Dienol-benzene rearrangement in C₁₉ steroid series with ring A aromatic, 1710.

Dienone-phenol and related rearrangements, 1833.

Diffusion coefficients for aqueous silver nitrate solutions at 25°, 35°, and 45° from diaphragm-cell measurements, 2042.

Diginin and diginigenin, structures, 3610.

Diphenylmethylation of amides and of salicylic acid and its derivatives, 5277.

Dipole moments of polyene-acid adducts, 864.

of substituted phenoxyacetic acids and phenols, 983.

electric, of chloro- and nitro-quinolines, 1183.

electric, of methylquinolines, 1176.

electric, of some phenanthrolines and bipyridyls, 1188.

electric, of phenyl derivatives of some N-heterocyclic molecules, 4518.

electric, of some phenyl-substituted 2-phenylpyridines, 4525. Disilane, new chloride, cyanide, and oxygen derivatives of, prep. and properties, 548.

Displacement reactions, mechanism. Parts I—III, 9, 2616,

nucleophilic, in aromatic systems. Part VII, 1975.

Dissociation constants, of the 1- and 3-halogeno-2-naphthoic acids in 71% aqueous ethanol, 4853.

of some methylchlorobenzoic acids in 71% aqueous ethanol: further examples of steric distortion, 4857.

acid, of the ammonium group in 2-aminoethanol, 2-aminoethyl phosphate, and 2-aminoethyl sulphate, 3068.

basic, of weak bases in sulphuric acid, conductometric determination. Part I, 4272.

in water, of some bivalent metal alkanedicarboxylates, 306. Dissolution of metals and alloys. Part II, 2122

Diterpene series, synthetical studies. Part II, 4248.

Diterpenes. Parts V, VI, 1840, 1850. synthesis. Part V, 2534.

from tambooti wood (Spirostachys africana Sond.), structure, 4046.

Diterpenoid bitter principles. Parts IV, V, 4809, 4816.

1,4-Dithiinium radical-cations, 4963

Dithiocarbamic acid, N-alkyl-, addition to propiolic acid, 4077. N-substituted, esters and derivatives, 4072

Dithiocarbamates, S-alkenyl NN-dimethyl-, reduction with lithium aluminium hydride, 4717.

Dithiocarbonates, O-alkyl hydrogen, esters and derivatives,

Dithioformic acid, alkoxy-, addition to propiolic acid, 4077. Dithiole series. Part I, prep of 1,2- and 1,3-dithiolium salts,

Drug, radioactive: 2-methyl-6-tritio-1,4-naphthaquinol bis-(disodium phosphate) and 2-methyl-5,6,7-tritritio-1,4naphthaquinol bis(disodium phosphate), prep., 3440.

Dyes, new intermediates and. Part IX, 3373.

Echitamine, structure: X-ray analysis of the methanol solvate of echitamine bromide, 5061.

Eicosa-7,13-dienoic acid, prep., 3055.

Electrolysis of some aryl-substituted aliphatic acids, 1360. of some o-benzoylbenzoic acids in methanol at 20-30°, 324. of some o-benzoylbenzoic acids in pyridine at 93°, 2771. controlled-potential. Part VIII, 1733.

Electrolyte solutions, sorption by synthetic magnetite from, 3899.

Electron distribution in cyclic $p\pi$ - $d\pi$ systems, 4118. pairing, 1553.

Electronic structures and formulae: the allyl cation, radical, and anion, 1035. (Errata, 3844.)

Electrons, valency, triatomic molecules and ions containing nineteen, 2819.

Elimination-addition. Parts I, II, 3686, 3425.

Eliminations, gas-phase. Part III, 335.

Ellipticine, prep., 3482.

Emetine and related compounds. Part I, prep. of tetra-hydroisoquinolyl ketones, 2471. Parts II-IV, 2479, 2490,

 (\pm) -Emetine, stereospecific prep., 2490.

and (\pm) -2,3-dehydroemetine, synthetic N-substituted derivatives of, 3385.

2,3-dehydro-, stereospecific prep., 2479.

Endo-polysaccharase system, artificial, attempt to devise, 3932. Enteromorpha compressa (a green seaweed), structural investigations on the water-soluble polysaccharide from, 3141.

2-Epicucurbitacin B, occurrence in Luffa echinata, 3259.

Ergot alkaloids, biosynthesis, 421. Erythrose: Methyl (\pm) -2-deoxy-2-fluoroerythronate and related compounds, 2507.

Esters, hydrolysis, tracer studies in. Part X, 2562. aliphatic, gaseous oxidation. Part I, 4513.

carboxylic, as ligands in co-ordination compounds. Part II, relative acceptor strengths of some Group III and IV halides, 542.

simple carboxylic, conformations as solutes, 3904.

Ethers, eight di-n-alkyl, as solutes in carbon tetrachloride, dipole moments, molar Kerr constants, and conformations, 2886.

allyl phenyl, and others, γ -radiolysis, 918.

aromatic, action of sulphur monochloride on, 4709.

substituted dibenzyl, dehydrogenation by free benzoyloxyand t-butoxy-radicals, 3336.

Ethers, o-nitrophenyl oxygen, cyclisation, 2367. vinyl, nuclear magnetic resonance spectra, 2021.

Ethylamine, bis-2-hydroxy-, esterification, 2075.

Ethylene, chlorotrifluoro-, thermal reactions of, 512

tetrafluoro-, reaction with nitric oxide: formation of a nitroso-polymer, 3021.

1,1-dipenyl-, products of reaction with butyl-lithium in benzene, 141.

1,1-diphenyl-, and related compounds, interaction with titanium tetrachloride in the absence of a co-catalyst, 689.

Ethylenediamine: Carbonato-cis-diammine(ethylenediamine)cobalt(III) ion and carbonate ion in aqueous solution, isotopic exchange reaction of, 476.

Ethylenediamine silver complexes, infrared spectra and structures, 3447.

Ethylenediaminetetra-acetic acid, chelates formed with tin(II),

complexes with bivalent cations, extent of chelate ring formation in solution, 2761.

Ethylenediammonium salt of a polycarboxylic acid, molecular size and shape, 2705.

Ethylene glycol, action of γ -radiation on, 4508.

Ethylidene, reactions in photolysis of diazoethane, 2293.

Exaltolide, new prep., 2348.

Exaltone, new prep., 2348.

Ferrocene derivatives. Part XII, di- and tri-ferrocenylmethane derivatives, prep., 3880.

Ferrocinium salts, decomposition in organic solvents, 363. Ficus carica, L., constituents of the leaves of. Part I, 4253. Flavan derivatives. Parts V, VI, 3858, 4502.

Flavan-3.4-diol diacetate,3',4'-dimethoxy-6-methyl-, the four racemates of, prep., 3858.

leucoanthocyanidins, absolute configurations, 4502.

Flavanoids and chalcones, reduction with lithium aluminium hydride in the presence of aluminium chloride, 1658. Flavans, polymerisation. Part VI, 1658.

Flavasperone ("asperxanthone"), a metabolite of Aspergillus niger, structure, 40.

Flaviolin (2,5,7-trihydroxy-1,4-naphthaquinone), prep., 2063. Flavonoid series, potential bronchodilators in, 5121. Fluorene, alkylation, 867.

products of chlorination in acetic acid, 988.

and its 9-methyl and 9,9-dimethyl derivative, reactivity at the 2-position, 2382.

commercial, impurities in, 994.

hydro-, β -keto-esters, stereochemistry and isomerization,

Fluorenones, reactions with strongly basic nucleophiles, 1756. Fluorine: Arenes, polyfluoro-. Part V, pentafluorophenylhydrazine and the pentafluorophenyl radical, 4966; Part VI, propenylpolyfluoroarenes, pentafluorobenzoic acid, and tetrafluoroterephthalic acid, 4977.

Benzene, pentafluoro-, reactions, 3253.

Cyanogen, fluorination, 3276.

Difluoromethyl group, proton magnetic resonance investigation, 3828.

Dioxygen difluoride, microwave spectrum, structure, and dipole moment, 4585.

Disulphur decafluoride, prep. and reactions, 3183.

Ethylene, chlorotrifluoro-, thermal reactions of, 512.

Fluorides of the noble metals. Part II, 5253.

Fluoroaromatic compounds, polycyclic. Parts I, II, 186,

Fluorocarbons, complexes with transition metals. Part II, stabilized fluorocarbanion, 1132. Part III, 3488.

Pentafluorophenyl-lithium and derived compounds, prep., 3227.

Pentafluorophenylmercury compounds, prep. and study,

Pentafluorosulphur compounds, high-resolution nuclear magnetic resonance spectra. Part II, complex nuclear

magnetic systems, 3077. Pentafluorosulphur derivatives, photochemical reactions with sulphur dioxide, 771.

Perfluoroalkyl derivatives of nitrogen. Part X, 3021.

Fluorine: Perfluoroazo-compound, cyclic, infrared and nuclear magnetic resonance spectra, 4840.

Perfluoro-n-propyl-lithium, direct prep. and stability, 4423. Polyfluoro-compounds, aromatic. Parts X-XII, 1801,

Polyfluoro-compounds, heterocyclic. Part II, 3407.

Sulphur chloride pentafluoride: new methods of prep., 3180.

Thiocarbonyl fluoride, 4361.

Trifluoromethylthio- and trifluoromethylseleno-bis(trifluoromethyl)-phosphine and -arsine and heptafluoropropylselenobis(trifluoromethyl)arsine, prep. and properties, 2529.

Folic acid antagonists, prep., 4689.

Formaldehyde, quantitative aspects of the base-catalysed reaction with iodine, 2228.

Formates, chloro- and fluoro-, prep. and reactions, 2266.

Formic acid: Chloroformates of secondary alcohols, mechanisms of hydrolysis, 1076.

Ethyl chloroformate, reaction between a series of anions and, 1055.

Formyl radical, identification (by electron-spin resonance) in irradiated organic compounds, 237.

Free-radical addition, synthetic aspects. Part I, 4468.

Friedelin and 5\alpha-cholestan-6-one, \alpha-bromo- and \alpha \alpha'-dibromoketones derived from, comparative studies, 1246.

D-[14C]Fructose, self-decomposition, 4216. Fungi, chemistry of. Part XL, 4150.

Fungicidal activity and chemical constitution. Part X, 519. Furanose derivatives, 1,2-O-isopropylidene-, clarification of ambiguous nuclear magnetic resonance spectra by double irradiation, 2080.

Furans, studies with. Part I, 2262.

having a β -methylcrotonyl side-chain, prep., 2262. polysubstituted, prep. from 2-pyrones, 5297.

Furoic acid, thermodynamic properties in aqueous and aqueous dioxan solutions, 4741.

G

Galactose 4-sulphate, prep., 2119.

L-Galactose, 3-amino-3,6-dideoxy-derivatives, 2499.

Galanthamine, prep., 806.

Gallotannins. Parts V-VII, 2944, 3808, 3814. molecular weights, observations on, 2944.

Tara, 3814.

Turkish, 3808.

Gas-phase eliminations. Part III, 335.

Geigerin, structure: X-ray analysis of bromogeigerin acetate,

Germanium, hydrides of, 2807.

organic compounds of. Part III, 1217.

Digermanes, hexa-aryl-, prep., 3509.

Germyl groups, trimethyl-, and trimethylsilyl groups, relative inductive effects, 1217.

Triphenylgermyl complexes of copper, silver, and gold,

Gibberellic acid, butylcellosolve ester, prep., 4727.

D-Glucal and its tri-O-acetyl derivative, methoxymercuration,

3,4,6-tri-O-acetyl-, reaction with p-nitrophenol, 3667.

Glucomannan component of European larch, 214.

β-D-Glucopyranoside, methyl 3,4,6-tri-O-acetyl-2-chloromercuri-2-deoxy-, X-ray analysis, 509.

methyl 3,4,6-tri-O-acetyl-2-Ö-methyl-, prep., 4214.

1-thio-, ethyl and phenyl, acid-catalysed hydrolysis, kinetics and mechanism, 5138.

α-D-Glucopyranosyl bromide, 2,4,6-tri-O-acetyl-3-O-benzyl-, a new intermediate for the Koenigs-Knorr synthesis of glycosides, 3089.

α-1,4-Glucosans. Parts XIII—XV, 1597, 4592, 4596.

Glucose, penta- and tetra-O-galloyl-, structure, 2944.

3-α-isomaltosyl-, enzymic prep. from nigerose, 176. **D-Glucose**, action of cation-exchange resins on, 2730. 2-deoxy-, action of alkali on, 1488.

β-D-Glucose hydrochloride monohydrate, 3,6-dideoxy-3-dimethylamino-, prep., 2116.

L-Glucose, 3-amino-3,6-dideoxy-derivatives, 2499.

α-D-Glucoside, methyl, reactivity of the reagent from boron trichloride and, 761

methyl 4,6-O-benzylidene-, 2,3-dibenzenesulphinate, a correction, 1136.

Glutaconic esters, self-condensation products of, structure,

Glutaric acid, aa'-di-n-propyl- and -butyl-, and some derived amido-acids, 1096.

Glutazine and some of its derivatives, prep., 4676.

Glycerol dihydrogen phosphates, (\pm) -1,2- and 1,3-di-O-acyl-, X-ray examination of a series of, 3495.

Glycidic esters, Darzens synthesis, application to indan-1-one and related ketones, 1986.

aliphatic, reactions with thiourea and with thioacetic acid, 501.

aromatic, reactions with thiourea and thioacetic acid, 656.

Glycine and silver, aqueous systems containing, equilibrium states arising in, 3282.

Glycogens, determination of average chain length by a-amylolysis, 1597.

interaction with concanavalin-A. 4592.

structural analysis on a milligram scale, 4596.

Glycopyranosides, 2-deoxy-, new route to, 1014.

Glycopyranosylmethane derivatives, diethylsulphonyl-, nucleophilic degradation, 1019.

conformational and electronic factors influencing, 1024.

Glycosides. Part II, 4214.

acid-catalysed hydrolysis, 3429.

Koenigs-Knorr synthesis, new intermediate for, 3089. sulphonium, hydrolysis by alkali, 1999.

Glycosyl bromides, acetyl-, purification, 2823

Gold(1) alkynyls and their co-ordination complexes, 3220.

Greenheart, alkaloids from. Part II, 2077.

Grignard reagents and related metal alkyls, proton magnetic resonance spectra, 5125.

Grisen-3-ones, oxidation of 3-alkylidenegrisens to, by ruthenium tetroxide, 4745.

Grisens, 3-alkylidene-, oxidation to grisen-3-ones by ruthenium tetroxide, 4745.

Griscofulvic acids, 3'-alkyl-, and their enol ethers, 1269.

Griscofulvin, modification of the aromatic ring, 1260.

analogues. Parts I-V, 1260, 1269, 1277, 1282, 1292. analogues, infrared absorption, 1292.

some chlorides, prep. and properties, 1282.

halogen derivatives, 1277.

Guanosine and related compounds, methylation with diazomethane, 5281.

Guarea species (hardwood), constituents of, 5095.

H

Halides: Carbanion-halogen fission by nucleophilic attack of mercaptoacetic acid on α-benzoyldiphenylmethyl halides, dibenzoylmethyl bromide, and di-p-nitrophenylmethyl chloride, 3232.

Halogen compounds, organic, radiation chemistry. Part II, 3331.

substitution, aromatic, kinetics and mechanisms. Parts XIV, XV, 3784, 4829.

Hardwoods, chemistry of extractives from. Parts XXXIII, XXXIV, 1192, 5095.

Heats of combustion and molecular structure. Part VIII,

of formation and bond energies. Parts VI-VII, 2927, 2932, 3212.

of hydrolysis of some organic sulphites, 3835.

Hemicelluloses of European larch (Larix decidua). Part II,

Heptitol, 1-deoxy-1-nitro-D-glycero-L-manno-, transformation into cyclic derivatives, 4633.

N-Heteroaromatic systems, electronic spectra. Part IX,

Heterocycles, nitrogen, seven-membered ("azaheptacyclic compounds"), approaches to, 3097. silicon-containing, direct prep. by reaction of silicon with

dihydric phenols, 873.

Heterocyclic compounds, addition reactions of. Parts IX-XI, 748, 1148, 3758.

ionization constants. Part V, 3129.

prep. Part II, 2367.

polyfluoro. Part II, 3407. of nitrogen. Parts IV, V, 1514, 5302.

reduced, application of acrylonitrile to prep., 661. small-ring. Parts II, III, 501, 656.

from urea derivatives. Parts III, IV, 230, 3561.

syntheses, with malonyl chloride. Part III, the course of the reaction with simple ketones, and additional evidence for the constitutions of the products, 2606. Parts IV-VI, 3550, 3553, 3638.

systems, polynuclear, Part XIV, 3926.

N-Heterocyclic molecules, phenyl derivatives, electric dipole moments, 4518.

Heterocyclics, oxygen, naturally occurring. Part XI, 1459. Hexadeca-8,10-dienoic acid, prep., 3055.

x-D-xylo-Hexofuranose, 1,2-O-isopropylidene-, proton resonance study of conformation in solution, 3699.

Hispidin, a new pigment and precursor of a fungus "lignin,"

Histamine and some structural analogues, metal complexes of. Part II, 2818

Hormones, modified steroid. Parts XXV-XXIX, 22, 29, 1091, 1223, 4995.

steroid, compounds related to. Parts VIII-X, 1572, 1578, 4729.

steroid, hydroaromatic. Part VIII, 782.

steroid sex, tricyclic analogues of: bromination of enol acetates, 1312.

Hydantoins: Spirohydantoins and spirothiohydantoins, stereospecific prep., 2789.

Hydrazine, supposed ruthenium(II) complex of, 137.

N-1-naphthyl-N'-phenyl-, transitional kinetics and products of acid rearrangement, 2418.

N-2-naphthyl-N'-phenyl-, transitional kinetics and solventisotope effect in acid rearrangement of, 2429.

Hydrazones, new reaction of, 470.

Hydrocarbons, aromatic, prediction of the spectra of, 2611.

dihydroaromatic, epimeric: stereospecific syntheses of cisand trans-1,2-dihydro-1,2-dimethylnaphthalenes and 9,10dihydro-9,10-dimethylanthracenes, 3776.

polycyclic aromatic, prep. Part II, 4268.

Hydrogen bonding in some adducts of oxygen bases with acids. Part I, 5128.

chloride, liquid, solvent system. Part IV, 600. Part V, solubilities and reactions of some compounds containing doubly bonded oxygen, 2680.

peroxide, decomposition, activation of platinum catalysts by rare-earth and other oxides in, 2330.

transfer to quinones. Part III, 3100.

Hydrogenation of ethyl oleate, reduced nickel catalysts for, activation by metallic oxides, 5293.

Hydrolysis, of acid chlorides, mechanism. Part VIII, 1076. of esters, tracer studies in. Part X, 2562.

of p-nitrophenyl acetate, acetate-catalysed, 1334.

spontaneous, of acyl derivatives, kinetic solvent isotope effects in, 2212.

Hydroxylamine, 2-naphthyl-, reaction with thiols, 606. phenyl-, reaction with thiols, 606.

Hydroxylamine-N- and -O-sulphonic acids, phenyl-, prep.,

Hydroxylamines, aryl-. Part II, 5217.

Imidazole, heat of combustion, 2927.

2-2'-aminoethyl-, metal complexes of, 2818.

5-Amino-1-β-D-ribofuranosylimidazole-4-carboxylic acid 5'-O-phosphate, prep., 2937.

Imidazole-4-carboxylic acid 5'-O-phosphate, 5-amino-1-β-Dribofuranosyl-, prep., 2937.

Imidazole-4-carboxylic acids, 5-amino-, prep., 2937

Imidazoles, purines, and pyrimidines. Parts XVII, XVIII, 583, 2937.

1-methyl-, reaction with dimethyl acetylenedicarboxylate,

Imidazoline, 2-2'-pyridyl-, system with iron(II), ionization,

Imidazolines, 2·α-hydroxyalkyl-, optically active, prep., 2272. Inclusion compounds of urea, infrared spectra, 2340.

Indane: 6,6'-Dihydroxy-3,3,3',3'-tetramethyl-1,1'-spirobi-indane and a related compound, 415.

Two spiroindanes: Barnes's "tetrahydroindenoindene" derivatives, 418.

Indane-1-carboxylic acid, 2-benzylidene-1-oxo-, conversion into 2-phenylnaphthalene derivatives, 3006.

Indane-1,3-dione, 2-phenyl-, rearrangement of benzylidenephthalide to, 2141.

Indan-1-one, and related ketones, application of the Darzens glycidic ester synthesis to, 1986

Indene, 2,3,3a,4,5,7a-hexahydro-7-vinyl-, addition of pbenzoquinones to, 3941.

Barnes's "tetrahydroindenoindene" derivatives: spiroindanes, 418.

Indenes, polyaza-, structure of certain. Parts X, XI, 2222, 3854.

Indeno(2',3'-1,2)phenanthrene and its analogues, shorter route to, 3974.

Indole, 1-acetyl-2,3-dimethyl-, nitration, 4426.

5,6-dibenzyloxy-, some derivatives of, prep., 1134.

6-fluoro-, and its derivatives, prep., 2825.

3-iodo-2-o-iodophenyl-, prep., 1514.

3-prop-2'-ynyl-, prep., 2834. Indolecarboxylic esters, prep., 1148.

Indolizines, prep. from ethyl 2-pyridylacetate, 2627.

Indolizinium salts, nuclear magnetic resonance spectra, 3288. Indolo- and quinolino-derivatives, certain polycyclic, structure and properties. Part XIV, 4346. Part XV, 5110. Indologuinoxalines, 3926.

Inositols and their monomethyl ethers, separation by gas chromatography, 3251.

Interaction, molecular: polarisation studies of mixtures of pyridine with polyhalogenated hydrocarbons, 157. Intermediates, unstable. Parts XIV, XV, 237, 2582.

Iodine, compounds containing, unstable intermediates in interactions with strong acids, 2582.

heptoxide, 1194.

Iodides of osmium and rhenium, prep., 2113.

Iodonium salts, diaryl-, infrared absorption spectra, 4498.

Ion-exchange resins, behaviour with mixed solvents. Part II, aqueous ammonia solution, 880.

catalysis by. Parts I, II, 1226, 3369.

particles of, electrical conductance, 612.

Ion-pair formation in water, factors affecting, 785.

Ionization, effect of co-ordination on. Parts I, II, 2745, 2750. constants of mercapto-derivatives of diazines and benzodiazines, 3129.

Ions, condensed, in aqueous solution. Part III, 2009.

Iron, dissolution in solutions of sodium persulphate, 2122.

π-cyclohexadienyl compounds of, 4458. 1-methyl- and 1,6-dimethyl-3,4,5-triazaphenanthrene as reagents for, 4914.

tricarbonylcyclo-octatetraene-, and some related compounds, protonation, 4821.

Ferro- and ferri-cyanide solutions, radiolysis, 4848.

Iron(II)-2-2'-pyridylimidazoline system, ionization, 2750.

Iron(II), tertiary phosphine complexes of, reactions with carbon monoxide and nitric oxide, 2099.

Iron(II) and iron(III) complexes of pyridine-2-aldoxime, ionization, 2745.

Isobutylamine, n-butyl-, heat of combustion, 2927.

Isobutyraldimine, n-butyl-, heat of combustion, 2927.

Isobutyrophenone, autoxidation, 4743.

Isoemetine, (\pm) -2,3-dehydro-, stereospecific prep., 2479.

 (\pm) -Isoemetine, stereospecific prep., 2490.

Isoglucal, structure, 1488.

—)-Isomethadone, configuration, 1386.

Isophotosantonic lactone, some analogues prepared photochemically, 3472.

Isoprene, chlorination, 3204.

Isopropyl combination, absolute rate, 4620.

Isopsoralidin, dihydropsoralidin, and their methyl ethers, prep., 3105.

Isoquinoline and dimethyl acetylenedicarboxylate, benzoquinolizines from, 748.

Isoquinoline-1-spiro-4'-piperidines, 1,2,3,4-tetrahydro-, prep.,

Isosbestic points, 3044.

Isosterigmatocystin, structure, 4179.

Isotope effects in the abstraction of hydrogen from ethanol by hydrogen atoms in irradiated aqueous solutions, 3706.

(hydrogen) in the equilibria between 2,4-dinitrophenol and amines, 3513.

Isotopic exchange between gaseous hydrogen and liquid ammonia. Part I, 1378.

of gaseous hydrogen with liquid aliphatic amines. Part II,

Isovanillin, some derivatives, prep., 4737.

Isoxazole, conversion into a triazole, 2083.

Isoxazoles, prep. from cinnamoylacetaldehyde and its derivatives, 4234.

phenyl-, conjugation in, 3324.

Itaconic acid, γ - α -naphthyl- γ -phenyl-, β -ethyl α -hydrogen ester, conversion into 1-methoxy-4-phenylphenanthrene and 7-methoxynaphtho[2,1-c]fluoren-9-one, 1854.

Itaconic acids, γγ-disubstituted. Part II, 1854.

K

Ketals, halogeno-, reaction with organolithium compounds, 1129.

Ketazine, dimethyl-, potentiometric and conductometric titration with hydrogen chloride in acetone, 4283.

Keten, diphenyl-, unusual product from ethoxyacetylene and,

Ketones, photolysis, nitric oxide and oxygen as inhibitors in,

asymmetric, relation between rotatory power and intensityborrowing by the carbonyl absorption at 3000 A, 3285. benzyl phenyl, substituted, acid-catalysed bromination, kinetics, 3318.

diethyl, oxidation by cobaltic salts, 971.

hydroxymethylene, reactions. Part I, 4234.

polycyclic, electrophilic reactivity. Part III, 3516.

2-Ketoses, 1-deoxy-1-pyrimidinylamino-, prep., 44

Khaya ivorensis, structure of a constituent (khivorin) of, 768. Khivorin (constituent of Khaya ivorensis), structure, 768.

Kinetic solvent isotope effects in spontaneous hydrolysis reactions of acyl derivatives, 2212.

Kinetics: acetate-catalysed hydrolysis of p-nitrophenyl acetate, 1334.

acid-catalysed bromination of benzyl phenyl ketones, 3318. acid-catalysed hydrolysis of glycosides, 3429.

acid rearrangement of 1,1'-hydrazonaphthalene, substrate-isotope effects on, 3299.

acylation, 1876, 1887, 1894, 1899, 1906.

alkaline hydrolysis of the ethyl β -pyridylacrylates and their 1-oxides, 2148.

base-catalysed reaction of acetaldehyde and propionaldehyde with iodine, 3348.

base-catalysed reaction of formaldehyde with iodine, 2228. base hydrolysis of dichloro-, chlorobromo-, chlorohydroxo-, and bromohydroxo-bis(ethylenediamine)cobalt(III) salts, 4531.

benzidine and semidine rearrangements, 2386, 2402, 2407, 2413, 2418, 2429, 2436, 3294, 3299, 3308, 3314.

chlorination of acetone in aqueous solution, 1927.

chlorination of diethyl malonate in aqueous solution, 2285. decomposition of some tertiary trans-dimeric C-nitrosocompounds, 2880.

diazotisation, influence of neutral salts on, 5197.

diazotisation, acid-catalysed, of p-nitroaniline and 2,4dinitroaniline in aqueous perchloric acid (up to 3.0 m),

diazotisation, acid-catalysed, of the anilinium and related ions in aqueous perchloric acid (up to 3.0m), 5208. hydration of mesityl oxide and crotonaldehyde, 1166.

hydrogen transfer from carbohydrates, conformational effects on, 3100.

hydrolysis of acid chlorides. Part VIII, 1076. Part IX, acetyl chloride, 5157.

hydrolysis of amides in aqueous-organic solvents, 3369. hydrolysis of methyl toluene-p-sulphinate, 2562.

Kinetics: hydrolysis of phosphorochloridates and related compounds. Part III, phosphoramidochloridates. Part IV, phosphoryl chloride, 3599.

isomerisation, racemisation, and water exchange of cistrans-aquoamminebis(ethylenediamine)cobalt(III) salts, 1388.

lactamisation of methyl esters of some a-N-toluene-psulphonyl derivatives of αω-diamino-acids in aqueous solution, 2948.

and mechanism of the acid-catalysed hydrolysis of ethyl and phenyl 1-thio- β -D-glucopyranoside, 5138.

and mechanisms of aromatic halogen substitution. Parts XII-XV, 988, 997, 3784, 4829.

and mechanism of the decomposition of Michael adducts: an example of the E1cB elimination, 1741.

methanolysis of t-butyl chloride, bromide, and iodide, 4291. oxidation of acetone by ammonium ceric nitrate in aqueous nitric acid, 1868.

oxidation of cyclohexanol and 1-deuteriocyclohexanol, 2190.

oxidation of vanadium(III) by iron(III) in solution in aqueous perchloric acid, 2841.

of ortho-substituted benzoic acids diazodiphenylmethane, 1824.

reaction between phosphine and sodium hypochlorite in alkaline solution, 4200.

reactions in alkylation with 4-dialkylaminobutan-2-one metho-salts, 103.

reactions of carbamoyl phosphate in aqueous solution, 1944. reactions of substituted α-chloropyridines with aniline and substituted anilines in methanol, 1975.

reactions of the four 1-halogeno-2,4-dinitronaphthalenes, 2,4-dinitro-1-naphthyl toluene-p-sulphonate, and 1-chloro-2,4,5-trinitronaphthalene with aniline in ethanol,

reactions of the four 2-halogeno-1,3-dinitrobenzenes and 1,2,3-trinitrobenzene with aniline in ethanol, 3149.

reactions of the four picryl halides, 1,2,3,5-tetranitrobenzene, and 1,2,4-trinitrobenzene with aniline in ethanol,

rearrangement of hydrazobenzene at high acidities, 3294. solvolysis of t-butyl chloride, bromide, and iodide in methanol-water solutions, 4301.

Hydrazobenzenes, substrate-isotope effects on acid rearrangement, 3308.

Some fast reactions of 4-nitrobenzyl cyanide in solution at -77°, 2314.

Sulphides, organic, acid-catalysis in the oxidation by peroxybenzoic acid in aprotic non-basic solvents, 4920.

Kojic acid benzyl ether, oxidation of the side chain in, 439. Krigenamine (alkaloid), structure, 5010.

L

Labdane-8a,15-diol, new leaf-gum constituent, 4705.

←Lactones. Part I, 4695.

Lanthanons, separation factors in fractional crystallisation or precipitation of, 4353.

Lattice energies and crystal-field stabilization energies of transition-type metal compounds, 2837.

Laudanosoline 4',6-dimethyl ether, prep., 2203.

Laudexium and suxamethonium, compounds related to both, prep., 1481

Laumontite, fibrous zeolite, intracrystalline behaviour in,

Lead dioxide, calcination in vacuo, 3255.

Plumbane, trimethyl- and triethyl-, some properties of, 1144.

Plumbanes, trialkyl-. Part II, 1144.

Leaf-gum constituent, labdane-8α,15-diol, 4705.

Lecithin, a synthetic, sorption of water vapour by, 4897.

Leucine, DL-erythro-β-hydroxy-, prep., 1116.

Light-scattering and viscosity studies of two synthetic nonionic detergents in aqueous solution, 537.

Lignans. Part II, 5025.

Linderone and methyl-linderone, structure, 4338.

Linoleic acid and methyl linoleate, hydroxypolyporic acids and related compounds as antioxidants for, 2753.

Lipids. Part VIII, 2449.

of tubercle bacilli, constituents of. Part IX, 4262.

 \pm)- α -Lipoic acid, prep. from anisole, 4263.

Lithium, organic compounds of, reaction with halogeno-ketals

butyl-, products of reaction with 1,1-diphenylethylene in benzene, 141.

perfluoro-n-propyl-, direct prep. and stability, 4423.

Lumisterol and its derivatives, isomerisation with acids, 2917. 9α-Lumisterol (pyrocalciferol), reduction products of, 2907. Lupeol, isolation from the common spangle gall of oak, 3276.

Macromolecules, reactions of. Part II, 2187.

Magnetic properties of some halides of titanium and zirconium,

Magnetite, synthetic, sorption from some electrolyte solutions by, 3899.

Maleic anhydride, mechanism of the photo-addition to benzene,

N-Maleoylamino-acids, reaction with benzylamine, 3726.

Malonic acid, diethyl ester, kinetics of chlorination in aqueous solution, 2285.

Malonic ester and related compounds, radical-alkylation, 4468. Malononitriles, arylmethylene-, cleavage by water in 95%

Malonyl chloride, heterocyclic syntheses with. Part III, the course of the reaction with simple ketones, and additional evidence for the constitutions of the products, 2606. Parts IV-VI, 3550, 3553, 3638.

Mandelic acid, 2-bromoethyl ester, reaction with secondary amines, 685.

Mandelic acids, use in the resolution of α-hydroxy-amidinium chlorides, 1309.

Manganese, π -cyclohexadienyl compounds of, 4458.

halogenocarbonyl complexes, 4715.

sulphide carbonyl complexes of, 4454

tervalent, complexes with 2,2'-bipyridyl 1,1-dioxide, 1121. Manganese(II) ion, hydrolysis of, 2197.

Permanganate, visible and ultraviolet absorption spectra, effect of environment and certain complex-forming cations on, 3503.

Potassium permanganate-potassium perchlorate solid solutions, early stages of thermal decomposition of, 4242.

Mannan, extracellular, of Penicillium charlesii G. Smith,

Mannich bases derived from 2-thiobenzothiazoline, 2070.

D-Mannose, deærated solutions of, action of y-radiation on,

p-[14C]Mannose, self-decomposition, 4216.

Methyl 3-amino-3-deoxy-α-D-mannoside hydrochloride, improved prep., 373.

Methyl 2,3-anhydro-α-D-mannoside and 3,4-anhydro-α-Daltroside and their derivatives. Part I, 4770.

-)-Melacacidin, absolute configuration, 4502.

Melanorrhea spp. (rengas), extractives from, 1192.

Melphalan, a pentapeptide and a basic dipeptide from, 3806. N-acyl-dipeptides from, further studies, 3802.

Mercury, solubility in water, neutron-activation study, 4080. pentafluorophenyl-, compounds of, prep. and study, 4367.

Alkylmercuric derivatives. Oxides, carbonates, and trismethylmercurioxonium salts, 521.

Bis(trifluoromethylthio)mercury, reaction with salts of oxyacids, spectroscopic studies, 1254.

Compounds (RHg), containing active s-butyl and groups containing five, six, or seven carbon atoms, 1201.

Hg | HCl(aq) system, effects of impurities on: the passivation law, and the properties of passivating calomel films, 4104.

Mercuration of phenanthrene, 3278.

Mercuric chloride, methoxycarbonyl-, crystal and molecular structure, 3243.

Mercuric oxide, thermal decomposition, 1047.

Mercuric hydroxides and halides, perfluoroalkyl-, ionisation constants, 2047.

Organomercury groups. Part III, 1201.

Mesityl oxide, kinetics of the hydration of, 1166.

Metal chelates, acylation. Parts I, II, 2153, 4628. ions, hydrolysis. Part III, 4500.

Metal-pyrazine complexes. Part I, 1235.

Metals and alloys, dissolution. Part II, 2122.

liquid. Parts V-VII, 2699, 3868, 3873.

noble, fluorides of. Part II, 5253.

transition, carbonyl complexes of, protonation of, formation of metal-hydrogen bonds in, 3653.

certain chelate compounds of, exchange studies. Part VIII, 341.

complexes with aliphatic Schiff bases. Parts II, III, 1204, 3016.

complexes with fluorocarbons. Part II, stabilized fluorocarbanion, 1132. Part III, 3488.

ions from, complexes formed by a-hydroxyamidines with. Part I, acid dissociation constants of the ligands, 296.

oxyanions of, structure and reactivity. Parts XIII, 3503. Part XIV, closed-shell ions in sulphuric acid and oleum, 4411.

peroxy-complexes of. Part I, 3948.

bivalent, tetrafluoroborates, prep. and properties of complexes with methyl cyanide, 2444.

of the first and second series, oxides and halides of, lattice energies and crystal-field stabilisation energies,

zerovalent, complexes with the ditertiary phosphine, Me₂P·CH₂·CH₂·PMe₂, 2545.

Methane, diazodiphenyl-, kinetics of the reaction with orthosubstituted benzoic acids, 1824.

diethylsulphonylglycopyranosyl-derivatives, degradation, 1019 (conformational and electronic factors influencing, 1024.)

Methyl radicals, reaction with propene, 4656.

Methylene (active) compounds, tritylation and detritylation of. Parts I—III, 716, 723, 726.

aryl-, group, transfer of, and cyclodimerisation, 377.

Methylene-carbonyl condensations. Part XIII, 731.

Methylene Blue and related compounds, electron-spin resonance observations on reduction of, 2055.

Michael adducts, kinetics and mechanism of the decomposition of: an example of the ElcB elimination, 1741.

+)-Mollisacacidin, absolute configuration, 4502.

Molybdenum, complexes of, diamagnetism, 2006.

some complexes of, physical and chemical properties, 4570. octahedral bivalent, ditertiary arsine complexes of, 2592. quadrivalent, complex chlorides and bromides, 4643.

pentafluoride, prep. and structure, 4486.

sulphide carbonyl complexes of, 4454.

Molybdate ions, ion-exchange behaviour, 2009.

Molybdenum(II) compounds, bromo- and iodo-, 410.

Monascin, biosynthesis, 3583.

Monosaccharides and derivatives, sulphates of. Part IV, 2119. Morphine, biosynthesis, 3534.

Multiple bonds, reactions (in liquid hydrogen chloride) of some compounds containing, 600.

Musk compounds, macrocyclic. Part I, 2348.

Mycaminose, absolute configuration, 2116.

alkaline degradation, 1396.

D- and L-Mycaminose hydrochlorides, prep., 2758.

Mycelianamide, terpenoid chain of, biosynthesis, 1502.

Mycological chemistry, studies in. Parts VIII—XI, 40, 2060, 2063, 4179.

N

Naphthacene, reaction with sulphur monochloride, 1725.

2-methoxy-, prep., 673.

Naphthalene, arylation by means of diazonium salts and zinc, quantitative study. Part II, 4652.

derivative (Collie's) from self-condensation of diacetylacetone, constitution, 3751.

1,3,5-triaza-, some derivatives, 4678.

1,4,6-triaza-, derivatives of, 3162.

1-chloro-2,4,5-trimitro-, kinetics of the reaction with aniline in ethanol, 2616.

octafluoro-, reactions of, 186.

1,1'-hydrazo-, kinetics, solvent-isotope effect, and products of acid rearrangement, 2386.

Naphthalene, 1,1'-hydrazo-, substrate-isotope effects on kinetics and products of acid rearrangement, 3299.

1,2'-hydrazo-, kinetics and products of acid rearrangement, 2402.

2,2'-hydrazo-, kinetics and products of acid rearrangement, 2407.

2,4-Dinitro-1-naphthyl toluene-p-sulphonate, kinetics of the reaction with aniline in ethanol, 2616.

Naphthalene-2,7-diamine, derivatives, 4254.

Naphthalenes, polyaza-. Part VII, 4678.

the four 1-halogeno-2,4-dmitro-, kinetics of the reactions with aniline in ethanol, 2616.

hydrazo-, crossing tests on products of acid rearrangements of mixtures of, 2413.

cis- and trans-1,2-dihydro-1,2-dimethyl-, stereospecific prep.,

perfluoromethyl-, and derived compounds, 190.

2-phenyl-, conversion of 2-benzylidene-1-oxoindane-1carboxylic acid into, 3006.

sixteen monosubstituted, molar Kerr constants and dipole moments, 4756.

1,4-Naphthaquinol bis(disodium phosphate), 2-methyl-6-tritioand 2-methyl-5,6,7-tritritio-: a radioactive drug, prep.,

1,4-Naphthaguinone, 2,5,7-trihydroxy- (flaviolin), prep., 2063. Naphtho[2,1-c]fluoren-9-one, 7-methoxy-, prep. from β -ethyl α-hydrogen γ-α-naphthyl-γ-phenylitaconate, 1854.

1-Naphthoic acid, 8-o-t-butylphenyl-, optical studies, 1401. Naphthoic acids, 1,8-dimethyl-, prep., 2526.

2-Naphthoic acids, 1- and 3-halogeno-, dissociation constants in 71% aqueous ethanol, 4853.

Naphthols, nitroso-, reaction with arenesulphinic acids, 2713. Naphthopyrans and chromens, reaction with bromine. Part

Naphtho[2,3-b]thiophen, prep., 704.

1,6-Naphthyridines, conversion of methylnicotinic acids into,

"Necic" acids, biological synthesis using carbon-14, 34. Nerine krigeii, alkaloids of, and structure of krigenamine,

Neuromuscular blocking agents, synthetic. Part IV, 1481. Nickel, alloys with copper, dissolution in solutions of sodium

persulphate, 2122. -coumarin solutions, polarography at a dropping-mercury electrode, 1704.

nitritobis(ethylenediamine)-, perchlorate, magnetic susceptibility and crystal structure, 3845.

Nickel(II) complexes, rates of reaction with nitrogen-containing unidentate ligands, 4208.

Nickel(II) complexes of antihistaminic compounds: solubility and thermodynamic values, 1776.

Nickel(π)-2,2'-bipyridyl complexes, stability constants, 278. Nickel(II)- and copper(II)-diamine complexes, comparison of rates of dissociation, 4475.

Nickel(II) complexes with N-isopropylidene-substituted Schiff bases derived from some C-substituted ethylene-

diamines, 1204. Nickel(II), tertiary phosphine complexes of, reactions with carbon monoxide and nitric oxide, 2099.

Nickel(II), tetrahedral complexes of, and factors determining their formation. Part IV, 693.

Nickel(0), complex compounds of ditertiary phosphines and arsines with, 2537.

Nicotinates, 2-bromomethyl-, reaction with nucleophilic reagents, 119.

Nicotinic acids, methyl-. Part III, their conversion into pyranopyridines and 1,6-naphthyridines, 4528.

Nigerose, enzymic prep. of 3-a-isomaltosylglucose from, 176.

Niobium and tantalum, halides. Part VI. 150. Nitramine, trinitrophenylmethyl-, explosive mitiation by pro-

jectile impact, 2304. Nitration of the mononitrotoluenes, some aspects of, 5142.

Nitriles, novel reduction to aldehydes, 3961. Nitro-compounds, aromatic, reduction by sodium borohydride catalysed by palladised charcoal, 371.

Nitrogen, carcinogenic compounds of. Parts XXXII-XXXIV, 146, 1126, 2630.

heterocyclic compounds of. Parts IV, V, 1514, 5302. perfluoroalkyl derivatives of. Part X, 3021.

Nitrogen, phosphorus compounds of. Part II, 5004.

unidentate ligands containing, rates of reaction of complexes of nickel(II) with, 4208.

Nitrates of some aldehydes, ketones, and ethers, infrared spectra and structure, 2343.

Nitrites, alkyl, formation of esters from, 130.

Nitrosation, diazotisation, and deamination. Parts IX-XI, 5197, 5203, 5208.

C-Nitroso-compounds, some tertiary trans-dimeric, decomposition rates, 2880.

Non-metals, oxides and oxyions of. Part I, 1194.

Norbornane, 2-chloro-2-nitroso-, dimer, 3833.

19-Norpregn-4-ene-3,20-dione, 16α-methyl-, prep., 364.

19-Norpregn-5(10)-ene-3,20-dione, 16α-methyl-, prep., 364.

Nuclear magnetic resonance. Part I, 3288.

Nucleic acids and their components, reactions. Part I, reaction of acid imino- and thiol groups with formaldehyde, 1462. Part II, 1466.

Nucleophilic attacks on carbon-carbon double bonds. Parts I-IV, 377, 383, 392, 396.

displacement, novel intramolecular, involving 2'-nitrobiphenyl-2-carboxylic acid, 4579.

reactivity. Parts I-III, 1055, 1062, 1068

Nucleosides, sulphonium, hydrolysis by alkali, 1999.

Nucleotide-porphyrin complex, cobaltic, prep., 2556.

Oak, common spangle gall, isolation of lupeol from, 3276.

Octadeca-cis-13,trans-15- and -trans-13,trans-15-diene-9,11diynoic acids, prep., 2449.

Octadeca-7,11-dienoic acid, prep., 3055.

Octadec-13-ene-9,11-diynoic acids, cis-13- and trans-, prep., 2449.

Estrone, stereoselective total synthesis (and related studies),

Olefin complexes of the type [Pt(olefin)(PPh₃)₂], 3269.

Olefinic substances, kinetics and mechanisms of additions to. Part VIII, 443.

Olefins, C2, photochemical addition of hydrogen sulphide to,

Oleic acid, ethyl ester, hydrogenation, activation of reduced nickel catalysts by metallic oxides for, 5293.

Oligoformals, reactive, prep. and properties, 4307.

Oligonucleotide analogues substituted in the sugar portion, prep., 979.

Optical rotatory dispersion: application of the octant rule to some structural and stereochemical problems, 4929.

Optical studies of 2'-substituted 2-t-butylbiphenyls. Part II,

Organic reactions in aqueous solution at room temperature.

Part III, 3751.

Organometallic complexes, electronic effects in, 3849.

and metalloid compounds made from heptafluoro-2-iodopropane, and their properties, 1993.

Orientational control in acid media, 4259.

Osmium, nitro-complexes of, 3248.

iodides, prep., 2113.

Osmotic behaviour of aqueous salt solutions at elevated temperatures. Part II, 937.

Osotriazoles having reactive groups, prep., 3154.

from carbohydrates, scope and mechanism of formation. Part VII, 3154.

Otobain, structure, 1780.

Overcrowding, molecular, X-ray studies. Part IV, 1767.

Oxalates, thermal decomposition. Part I, variation of surface area with the temperature of treatment in air, 960.

Oxalic acid, diethyl ester, conformation as solute in carbon tetrachloride, 3997.

Oxaloacetic acid. Part II, acid-base catalysed prototropy in aqueous solution, 63.

1,3-Oxazines, 4-oxo-, degradation of 5-oxopyrano[3,4-e]-[1,3]oxazines to, 3553.

Oxidation of cyclohexanone under acid conditions, mechanisms. Part I, two-electron oxidants, 827; Part II, one-electron oxidants, 832.

Oxidation-reduction potentials of some copper complexes in water, 1351.

Oxidations, of organic compounds by cobaltic salts. Parts I, II, 965, 971.

of organic compounds with quinquevalent vanadium. Part IX, bromide-catalysis of some reactions, 818. Parts X, XI, 1629, 2068.

Oxides and oxyions of the non-metals. Part I, 1194. Part II, CO₂- and NO₂, 2873. Part III, oxy-radicals of chlorine, 4785. Part IV, nitrogen derivatives, 4794.

N-Oxides, heterocyclic, deoxygenation. Parts I, II, 1917, 1923.

Oxindole, 3-phenyl-, 1,3-diacetyl- and 3-acetyl-1-methyl-, prep., 5302.

Oxyanions of transition metals, structure and reactivity. Part XIII, 3503.

Oxygen: Dioxygen difluoride, microwave spectrum, structure, and dipole moment, 4585.

P

Palladium, acetyl complexes of, infrared spectra, 1112. dichlorobisdialkylnitrosamine complexes, 4723.

Palladium(I), some five co-ordinate complexes of, 1548.
Palladium(0), complex compounds of ditertiary phosphines and arsines with, 2537.

Palmarin, investigations on constitution, 4809. and its congeners, constitution, 4816.

Papaverine, biosynthesis, 3526.

Paraffins, gem-polynitro-, polarographic behaviour and controlled-potential electrolysis, 1733.

Penicillanic acid, 6-amino-, derivatives of. Part I, 1440. Part II, trisubstituted acetyl derivatives, 1445. Part III, 2,6-dialkoxybenzoyl derivatives, 1453.

Penicillin, α -aminobenzyl-, and some related compounds, prep., 1440.

Penicillium charlesii G. Smith, extracellular mannan of, 2801.

Pentane-2,4-dione, 3-cyano-, metal complexes, C≡N stretching frequency in, 1957.

Pentonic acids, 2-C-hydroxymethyl-, configuration, 3544. Peptides. Part XII, 4387.

and amino-acids, cyto-active. Parts IX, X, 3802, 3806.

Peroxides, aroyl. Part I, 2862.

of elements other than carbon. Part VIII, 2465. organic. Part XI, 4288.

organic, reactions. Part I, 4492.

Peroxy-complexes of transition metals. Part I, 3948. Perrin's relationships, a test of, for small molecules, 3718.

Perylene, abnormally long carbon-carbon bonds in, 2775.

Phenanthrene, mercuration, 3278.

commercial, impurities in, 994.

hydro-, β -keto-esters, stereochemistry and isomerization, 450.

1-methoxy-4-phenyl-, prep. from β-ethyl α-hydrogen γ-α-naphthyl-γ-phenylitaconate, 1854.

Phenanthridine, adducts with dimethyl acetylenedicarboxy-

Phenanthridine, adducts with dimethyl acetylenedicarboxy-late, constitution, 3758.

Phenanthroline, 2-methyl- and 2,9-dimethyl-, stability of metal complexes of, 5237.

1,10-Phenanthroline, stability of metal complexes of, 5222. and its analogues, metal complexes of, stability. Parts I— III, 5222, 5237, 5245.

5-methyl-, stability of metal complexes of, 5245.

Phenanthrolines, electric dipole moments of some, 1188.

3,6-Phenanthrolines, prep. from 2,2'-diaminobenzophenone, 632.

Phenazine and its derivatives, action of arylsulphinic acids on, 4438.

Phenol, dissociation constant in alcoholic solvents, 4421.

m-ethyl-, prep. and purification, 5301.

4-methoxy-3-t-butyl-, oxidation, 4987.

2,4-dinitro, equilibria with amines, hydrogen-isotope effects in, 3513.

Phenol oxidation and biosynthesis. Part V, 806.

Phenols, action of sulphur monochloride on, 3876.

biosynthesis. Part IV, 4189.

alkoxy-, oxidation. Part I, 4987.

hindered, autoxidation in alkaline media. Part II, 2356. substituted, dipole moments, 983.

Phenyl-group migration in compounds containing Si-O-Hg linkages, 403.

Phenyl radicals, addition to sulphur dioxide, 2068.

from photolysis of acetophenone, reactions, 4672.

9-Phosphaphenanthrene 9-oxide, 9,10-dihydro-9-hydroxy-, a new cyclic phosphinic acid, prep., 3729; crystal and molecular structure, 3733.

Phosphatides, sorption studies on. Part II, 4897.

Phosphorus, analogue of 1-phenyl-4-piperidone, derivatives of, 5110.

nitrogen compounds of. Part II, 5004.

organic compounds of. Part IV (Z. Pelchowicz et al.), 3824. organic compounds of, reactivity. Parts XI—XIII (J. I. G.

Cadogan et al.), 18, 1304, 2953.

organic compounds of, silicon-substituted, thermal decomposition, 592.

organic compounds of, with sulphur and selenium. Part XXII, 5056.

pentachloride, investigation of reaction with benzamide with oxygen-18 as tracer, 2110.

Carbamoyl phosphate, reactions in aqueous solution, kinetic and tracer studies, 1944.

Cobalt(II) methyl- and phenyl-phosphinates, 2523.

Cyclophosphazenes, non-geminal phenylchloro-, from reaction of phenyltetrachlorophosphorane and ammonium chloride, 5004.

S-2-Diethylaminoethyl diethyl phosphorothioate ("Amiton"), high-temperature decomposition, 18.

Ditertiary phosphine (Me₂P·CH₂·CH₂·PMe₂), complexes with zerovalent transition metals, 2545.

α- and β-Glycerophosphatidic acids, X-ray examination of a series of, 3495.

"Methyl metadithiophosphonate" [CH₃·PS₂]₂, X-ray diffraction determination of the crystal and molecular structure, 300.

Pentaphenylphosphole, 9-phenyl-9-phosphafluorene, and their oxides, heats of combustion, 2932.

P-H bond, ionisation, 1365.

Phosphine, reaction with sodium hypochlorite in alkaline solution, kinetics, 4200.

Phosphine, tribenzyl-, dibenzylphenyl-, benzyldiphenyl-, and allyldiphenyl-, complexes with nickel(II), prep., 693. Phosphine imide dimers, 4731.

Phosphines, amino-, 3984.

ditertiary, complex compounds with nickel(0) and palladium(0), 2537.

di- and tri-tertiary, prep., 1490.

methyl-, mass spectra, 3270.

methyl, reaction with nitric oxide, 3272.

tertiary, complex compounds with rhenium-(v),-(III), and -(II), 4019.

tertiary, complexes of iron(I), cobalt(II), and nickel(II), reactions of carbon monoxide and nitric oxide with, 2099.

Phosphinic acid, a new cyclic (9,10-dihydro-9-hydroxy-9-phosphaphenanthrene 9-oxide), prep., 3729; crystal and molecular structure, 3733.

Phosphinic acid, methyl-, prep. and nuclear magnetic resonance spectrum, 3837.

Phosphites, dialkyl, reaction with cupric chloride, 1122.

Phosphites and thiophosphites, dialkyl, reactions of organic disulphides with, 5056.

Phosphonates, alkyl ammonium, simple prep., and comments on the reaction, 2521.

Phosphonates, alkyl-, dialkyl, thermal decomposition: new route to alkylphosphonic acids, 331.

Phosphonic acids, alkyl-, new prep. by thermal decomposition of dialkyl alkylphosphonates, 331.

Phosphonitrilic derivatives. Part VIII, 635.

Phosphonitrilic dimethylamide, tetrameric (octakisdimethylaminocyclotetraphosphazatetraene), crystal and molecular structure, 3193.

Phosphonitrilic halides, vibrational spectra, 635.

Phosphonothioates, methyl-, OO-dialkyl and O-alkyl hydrogen, prep., 3824.

Phosphoramidates, nitrosation, 1304.

Phosphoramidochloridates, mechanism of hydrolysis, 3591. Phosphorochloridates and related compounds, mechanism

moments, 983. of hydrolysis. Parts III, IV, 3591, 3599.

Phosphorus, phosphorothiolate synthesis, new (radical-chain | Polysaccharide, pneumococcus type V capsular: characterisatransfer reactions of triethyl phosphite), 2953.

Phosphoryl chloride, mechanism of hydrolysis, 3599. Phosphoryl chloride-boron trichloride complex and similar

compounds, structures, 3450.

(PNCl₂)₃, (PNCl₂)₄, and (PNF₂)₄, dielectric study, 4258. Triethyl phosphite, radical-chain transfer reactions of, 2953. Trifluoromethylthio- \mathbf{and} trifluoromethylseleno-bis(trifluoromethyl) phosphine, prep. and properties, 2529.

Triphenyl phosphite, reaction with acid chlorides, 3267. Photochemical transformations. Parts XII—XIV, 622, 1967,

Photolysis, liquid-phase. Part V, 2675.

Phthalates of some transition metals, thermodynamic properties, 2360.

Phthalide, benzylidene-, rearrangement to 2-phenylindane-1,3-dione, 2141.

7-hydroxy-4,6-dimethyl-, biosynthetical study, 370.

Phyllocladene, structure and absolute configuration, 1840. Phyllocladus trichomanoides, cyclitols from the heartwood of,

Physical properties and chemical constitution. Parts XXXIII—XXXVII, 1176, 1183, 1188, 4518, 4525.

Picolinic acid N-oxide, metal complexes of, 5262.

Pimaradienes, intermediate for prep., 2534. α-Pinene, radiation chemistry, 1521.

 β -Pinene, radiation chemistry, 1531.

Piperidine, undecafluoro-, reactions, 3407.

4-Piperidone, 1-phenyl-, and its phosphorus and arsenic analogues, derivatives of, 5110.

Pithomyces chartarum, depsipeptides of, 753.

Pivalic anhydride, comparison of hydrolysis with that of acetic anhydride, 976.

Platinum, acetyl complexes of, infrared spectra, 1112.

alkyl complexes of, infrared spectra. Part II, partly deuterated complexes, 1220.

catalysts, activation by rare-earth and other oxides in the decomposition of hydrogen peroxide, 2330.

trimethyl compounds, nuclear magnetic resonance spectra,

Dioxygenyl hexafluoroplatinate(v), $O_2^+[PtF_6]^-$, 5253. Olefin complexes of the type [Pt(olefin)(PPh₃)₂], 3269. Platinum($\bar{\Pi}$), hydrido-complexes, 5075.

Pleiocarpa alkaloids. Part I, 3245.

Pleiocarpine, the major alkaloid of Pleiocarpa mutica Benth.

Pneumococcus type V capsular polysaccharide: characterisation of pneumosamine as 2-amino-2,6-dideoxy-L-talopyranose, 5037.

Podophyllotoxin group, lactones of, reduction with lithium aluminium hydride, 5025.

Polar and steric effects, separation of. Part I, 1824.

Polarisability, molecular, 56, 1081, 1407, 1494, 2886, 3904, 3991, 3997, 4003, 4009, 4753, 4756.

Polarisation studies of mixtures of pyridine with polyhalogenated hydrocarbons, 157.

Polarographic and controlled-potential macroelectrolysis study of the mechanism of the electrolytic reduction of a heterocyclic chalcone analogue, 2239.

reduction of heterocyclic N-oxides, 1923.

Polarography of nickel-coumarin solutions at a droppingmercury electrode, 1704.

Polyacetylenes, biosynthesis. Part V, 4662.

Polyanion equilibria in aqueous solution. Part II, 205.

Polyazaindenes, structure of certain. Parts X, XI, 2222,

Polyazanaphthalenes. Parts VII-IX, 4678, 4685, 4689.

Polycyclic compounds, prep. Part VII, 3974.

Polyenals, phenyl-, and diphenylpolyene ketones, molecular polarisability, 56.

Polyene-acid adducts, dipole moments, 864.

Polymer networks, interpenetrating. Part II, 1789.

Polymerisation, benzylsodium and cumylpotassium as initiators, 361.

Polynucleotides. Parts III, IV, 71, 979.

Polyporic acids, hydroxy-, and related compounds, prep. as antioxidants for linoleic acid and methyl linoleate, 2753.

Polysaccharide, acid, from the green seaweed Ulva lactuca, 2082.

tion of pneumosamine as 2-amino-2,6-dideoxy-L-talopyranose, 5037.

water-soluble, of the green seaweed Enteromorpha compressa, structural investigations, 3141.

Polysaccharides, chemical synthesis. Part III, 4232.

Endo-polysaccharase system, artificial, attempt to devise,

Polystyrene, "living" system of, spontaneous slow transformations in, 355.

Polyvinyl bromides, six, as solutes in dioxan, molar Kerr constants and dipole moments, 4003.

Porphyrin-nucleotide complex, cobaltic, prep., 2556.

Porphyrins. Part I, intramolecular hydrogen bonding in,

Pregna-4,6-diene-3,20-dione (17α -acetoxy-6-methyl-), 16α -acetoxy-, 16α -methyl, and 16β -methyl derivatives of, 22.

5α-Pregnanes, side-chain-substituted, not carrying substituents in the phenanthrene nucleus, prep., 4950.

Pregnan-20-ones, 17α-hydroxy-, new prep., 1578.

5α-Pregn-1-ene-3,20-dione, 17α-acetoxy-4α-methyl-, prep.,

 5α -Pregn-16-ene-11,20-dione, 3β -acetoxy-, Michael reaction with malonic ester derivatives, 3264.

Prévost reaction, novel, with isophyllocladene and isokaurene,

Proline, 4-methyl-, stereoisomers, prep., 4387.

L-Proline, N-carboxy-, anhydride, use of triethylamine in prep., 374.

Propane, heptafluoro-2-iodo-, organometallic and metalloid compounds made from, and their properties, 1993.

Propene, reaction of methyl radicals with, 4656.

deuterated complex {K[PtCl₃(C₃D₆)],H₂O} of, infrared spectra and structure, 2821.

3,3,3-trifluoro-, hydroboration, 94.

Propiolic acid, addition of N-alkyl-substituted dithiocarbamic acid and alkoxydithioformic acids to, 4077.

Propionaldehyde, base-catalysed reaction with iodine, quantitative aspects, 3348.

Propyl radicals, isomerisation, 3252.

Proton-proton spin decoupling by single sideband modulation, 847.

Proton-transfer reaction between acetic acid and the anion of 2,4,6-trinitrotoluene in ethanol at low temperature, a nonlinear Arrhenius plot for, 3454.

Psoralen, isolation from leaves of Ficus carica, L., 4253.

Psoralidin, dihydro-, isopsoralidin, and their methyl ethers, prep., 3105.

Pteridine, equilibria in aqueous solutions of, 645.

studies. Parts XVI—XX, 645, 1591, 2162, 2595, 2600.

Pteridines, biosynthesis. Part III, 44.

2-amino-, covalent hydration, 2595.

hydroxy-, reduction, 2162.

hydroxy-, reversible water addition to, 2600.

2-hydroxy-, addition to, 1591.

Purines, pyrimidines, and imidazoles. Parts XVII, XVIII. 583, 2937.

hydroxy-, selective thiation by phosphorus pentasulphide,

Purpurin, 3-nitro-, chemical degradation in methanol, 80; photochemical degradation in methanol, 83.

Pyran, tetrahydro-, derivatives, acid hydrolysis, 3361

Pyrano[3,4-e]-[1,3]-oxazines, 5-oxo-, prep. from nitriles, and degradation to 4-oxo-1,3-oxazines and other products, 3553.

Pyranopyridines, conversion of methylnicotinic acids into,

Pyrazine-metal complexes. Part I, 1235.

Pyrazole, heat of combustion, 2927.

Pyrazoles, prep. from cinnamoylacetaldehyde and its derivatives, 4234.

2-Pyrazolines, 1-(2,4-dinitrophenyl)-, formation from $\alpha\beta$ unsaturated ketones, 3831.

Pyrazolyl sulphides, aryl, prep., 4146.

Pyridine, electrophilic reactivity deduced from the pyrolysis of 1-arylethyl acetates, 4881.

interaction with hydrogen chloride and hydrogen bromide in nitrobenzene, 4726.

mixtures with polyhalogenated hydrocarbons, polarisation of, 157.

Pyridine, derivatives, infrared spectra and hydrogen bonding in, 1005.

derivatives, 3-substituted, prep. from α-methylene-nitriles, 3638

5-acetyl-2-methyl-, oxidation, 2831.

3,4-diamino-, 3-amino-4-methylamino-, and 4-amino-3methylamino-, prep., 2379.

perfluoro-2,3,4,5-tetrahydro-, prep., 3407.

4-mercapto-, hydrochloride, infrared spectrum and structure, 3127.

1-oxide, novel oxygen- and peroxide-catalysed reduction with triethyl phosphite, 1917.

N-oxide, 2-carboxy-, uranium, plutonium, beryllium, and zirconium complexes, prep., 4738.

Dipyridylalkanes, prep., 1475.

"Malonyl-a-aminopyridine" and its alkylation products, structure: mesomeric betaines with six-membered rings,

Pyridine-2-aldoxime, iron(III) and iron(III) complexes of, ionization, 2745.

Pyridine-carboxylic acid complexes, dielectric studies in benzene, 3000.

Pyridines, amino-, hydrochlorides, vibration spectra and structures, 3119.

α-chloro-, substituted, kinetics of reactions with aniline and substituted anilines in methanol, 1975.

methoxy-, vibration spectra of cations of, 3115.

2-phenyl-, phenyl-substituted, electric dipole moments, 4525.

Pyridoxine, isopropylidene-, and some esters of pyridoxine, convenient prep., 2531.

2-Pyridylacetic acid, ethyl ester, prep. of indolizines from, 2627. Pyrimidine derivatives, hexahydro-, stereochemistry, 1942. reactions. Part IV, 3172.

2,4- and 2,5-diamino-, and related compounds, methylation,

1,4,5,6-tetrahydro-, and its derivatives, prep., 527.

NN'-Dipyrimidinylalkylenediamines and related compounds, 2856.

1-Pyrimidinylamino-2-ketoses, 1-deoxy-, prep., 44.

Pyrimidines, purines, and imidazoles. Parts XVII, XVIII, 583, 2937.

hydro-. Parts I, II, 527, 4039.

tetrahydro-, use of chloromercurates to facilitate the infrared examination, 4259.

substituted 1,4,5,6-tetrahydro-, new general prep., 4039.

Pyrocalciferol (9\alpha-lumisterol), reduction products of, 2907.

Pyrolysis, studies in. Part XVII, 838. Pyrone series. Parts V, VI, 1857, 5153.

2-Pyrone, 6-benzyl-4,5-diphenyl- (supposed), 5153.

4-Pyrone, 2,6-diphenyl-, action of carbonyl reagents on, 1857. Pyrones. Part II, 2085.

vinylogous, formation by triacylation of isobutene, 3889. 2-Pyrones, prep. of polysubstituted furans from, 5297.

Pyronodioxins, prep. from an enolic ketone, diketones, and benzaldehyde, 3550.

Pyrroles, 1-alkyl-, and dimethyl acetylenedicarboxylate, products from, 1148.

2-diazo-, 1638.

Pyrrolidine, 1-methyl., perfluoro-, prep., 3407.

Pyrrolines, 2-2'-pyrryl-, prep., 98.

3-Pyrrolines, 3-amino-4-cyano-, hydrolysis to 3-pyrrolidones and reaction with hydrogen sulphide, 4664.

1H-Pyrrolizine, 2,3-dihydro-1-oxo-, derivatives of, structure and properties, 4346.

5H-Pyrrolo[1,2-a]imidazole, 2,3,6,7·tetrahydro-5-methyl-7,7-

diphenyl., prep., 877. 1*H*-Pyrrolo[2,3-b]pyridine, 3-2'-aminopropyl., prep., 2833.

Pyrromethenes and porphyrins, intramolecular hydrogen bonding in, 4329.

Pyrylium salts obtained by diacylation of olefins. Part IX. 3889.

Q

Quaterrylene, abnormally long carbon-carbon bonds in, 2775. Quercetin, (±)-dihydro-, isolation from Melanorrhea spp. (rengas), 1192.

Quinaldine, reaction with dimethyl acetylenedicarboxylate,

Quinazoline, some derivatives, 4678.

3-oxides, covalent hydration in, 5030.

Tricycloquinazoline derivatives, prep., 2549.

Quinazolines. Parts IV, V, 561, 5030.

substituted, covalent hydration in the cations of, 561.

 β -Quinindones, 2,3-dihydro- (2,3,4,9-tetrahydro-9-oxo-1Hcyclopenta[b]quinolines), prep., 2624. Quinoline series. Part III, 2370.

4-mercapto-, hydrochloride, infrared spectrum and structure, 3127.

Quinoline-2-aldehyde, self-condensation, 3827.

Quinolines, prep. by reductive cyclisation by means of cyclohexene and palladium-charcoal, 2518.

bromo-, mechanism of formation from the N-cyanoquinolinium ion, 291.

chloro- and nitro-, electric dipole moments, 1183.

methyl-, electric dipole moments, 1176.

5- and 7-substituted, prep. by Skraup reaction, 3645.

Quinoline-substituted ethylenes, prep. and reactions, 2370. Quinolinium ion, N-cyano-, reactions with some nucleophiles,

ion, N-cyano-, mechanism of formation of bromoquinolines from, 291.

ions, N-substituted. Parts I, II, 283, 291.

salts. m-amidinophenyldiazoaminostyryl-, prep., 677.

Quinolino- and indolo-derivatives, certain polycyclic, structure and properties. Parts XIV, XV, 4346, 5110.

Quinolizidine and the monomethylquinolizidines, and their salts and quaternary salts, prep. and stereochemistry, 2637. Quinones, hydrogen transfer to. Part III, 3100.

redox behaviour, polarographic investigation: roles of

electron affinity and solvent, 4540. polymeric. Parts I, II, 4550, 4558

and diazoalkanes, adducts from. Part I, 5186.

Quinonoid intermediates in reactions of $\omega\omega'$ -dialkylsulphonylxylenes, 3425.

Quinoxaline analogues. Part VII, 3162.

further derivatives, 4685.

2,3-dihydro-, and its 1,4-dimethyl derivative, substitution

Quinoxalinecarboxyanilides, rearrangement to spiro-compounds, 123.

Quinoxalines and related compounds. Part VI, 1170.

Radiation chemistry of carbohydrates. Parts IX, X, 2733,

of organic halogen compounds. Part II, 3331.

Irradiated aqueous solutions, abstraction of hydrogen from ethanol by hydrogen atoms in, isotope effects, 3706.

y-Radiation, chemical effects on organic systems. Parts IV-X, 886, 905, 911, 914, 918, 924, 1120.

effects of. Part VI, action on degrated solutions of ethylene glycol, 4508.

Radical addition, quantitative aspects. Parts I-III, 4154,

reactions, polar influences in. Part I, 3336.

Radicals, aromatic, absorption and emission spectra. Parts I, II, 4323, 4327.

ethyl, isopropyl, and t-butyl, disproportionation of, 3357.

Raman effect and solvent extraction. Part III, 407.

Rayon, cellulose acetate, derived dyes from 2-methyl-1-nitroand 1-amino-2-methyl-anthraquinone, 3373. Reactivity, aromatic. Part XXII, 2383.

Reduction, by borohydride, of aromatic nitro-compounds catalysed by palladised charcoal, 371.

Rhenium, π -cyclohexadienyl compounds of, 4458.

bromides and oxide bromides, 2078.

complexes with a tritertiary and a tetratertiary arsine, 4447. iodides, prep., 2113.

Rhenium-(v), -(III), and -(II), complex compounds with tertiary phosphines and a tertiary arsine, 4019. D-Ribitol, 4.0-α-D-glucopyranosyl-, a degradation product of

the ribitol teichoic acid from the walls of Lactobacillus arabinosus, 2184.

D-Ribose, aqueous solutions in oxygen, action of γ -radiation on, 2740.

D-[14C]Ribose, self-decomposition, 4216.

Rosenmund reduction, selective poisoning of the catalyst,

Rotatory power of asymmetric ketones and intensity-borrowing by the carbonyl absorption at 3000 Å, relation between,

Rotenone and related compounds, proton magnetic studies, 775.

Rotiorin, biosynthesis, 3583.

Rubropunctatin, biosynthesis, 3583.

Ruthenium, \u03c3-cylcohexadienyl compounds of, 4458.

Ammineruthenium(III) phosphates, 2018.

Ruthenium(II) complexes with a tetratertiary arsine, 182. Ruthenium(II), supposed hydrazine complex of, 137.

Salicylamide, N-diphenylmethyl-, acid-catalysed rearrangement, 5277.

Salicylic acid and its derivatives, diphenylmethylation, 5277. Salicylideneimine complexes of $cobalt(\Pi)$, N-substituted, magnetic moments and structures, 1374.

Santonin, chemistry of. Part VI, 1432.

the double-bond derivatives of, stereochemistry, 1678.

 $6\alpha(H)$, $11\beta(H)$ -Santonin, some reduction products, 1432.

Sapogenin degradation products, some aliphatic hydroxyacids, 4836.

s-Butyl chloride from n-butyl dichloroborinate and from nbutanol-hydrogen chloride, 1099.

Schiff bases, aliphatic, transition-metal complexes with. Parts II, III, 1204, 3016.

Schistosomiasis, chemotherapy of. Part V, 178.

Sclerotiorin, further evidence for structure, 4150.

Seaweed, green (Ulva lactuca), acid polysaccharide from, 2082. Sebacic acid, diethyl ester, conformation as solute in carbon tetrachloride, 3997.

Selenium, organic compounds of, oxidation by ozone, 2089. Benzoselenopheno[2,3-b]benzoselenophens, prep. from 1,1-

diarylethylenes and selenium oxychloride, 734. Isoselenocyanato-complexes of cobalt(II), tetrahedral, prep., 3008.

Selenocyanates, inorganic, infrared spectra, 3008.

Silyl selenides, perfluoroalkyl, prep., 2290.

Senecio alkaloids. Part XIV, 34.

Sepeerine (alkaloid from greenheart), 2077.

Serine, benzyloxycarbonyl-, complex formation during prep.,

Sesquiterpenes. Part II, 1678.

Sesquiterpenoids. Part XIII, 1961.

Silica xerogel, thermal dehydration promoted by alkalineearth chlorides, 4265.

Silicic acid, polymerization, 2320.

Silicon, reaction with dihydric phenols: direct prep. of siliconcontaining heterocycles, 873.

heterocycles containing, direct prep. by reaction of silicon with dihydric phenols, 873. organic compounds of. Part XXII, 592.

four organic compounds of, electron-spin resonance study, 51.

tetrachloride, interaction with water in the gaseous phase,

Compounds containing Si-O-Hg linkages, phenyl-group migration in, 403.

Cyclodisilazane, tetramethyl-NN'-bistrimethylsilyl-, X-ray diffraction determination of the crystal and molecular structure, 1721.

Silane, diethylaminotrimethyl-, heat of formation and bond energies, 3212.

Silyl groups, trimethyl-, and trimethylgermyl groups, relative inductive effects, 1217.

Silyl isocyanate, prep. and properties, 4844.

Silyl selenides, perfluoroalkyl, prep., 2290.

Silver and glycine, aqueous systems involving, equilibrium states arising in, 3282.

-ethylenediamine complexes, infrared spectra and structures, 3447.

Silver, natural, absolute isotopic abundance ratio and atomic weight, 161.

nitrate, aqueous solutions at 25°, 35°, and 45°, diffusion coefficients from diaphragm-cell measurements, 2042. perchlorate, reaction with iodine, 2510.

 β -Sitosterol, isolation from leaves of Ficus carica, L., 4253. Skraup reaction: formation of 5- and 7-substituted quinolines, 3645.

Sodium, liquid (and solutions of barium and calcium in), wetting of iron, cobalt, and nickel by, role of oxide films in,

Solids, active, prep. by thermal decomposition. Part XIV, 3255.

Solvent extraction and Raman effect. Part III, 407.

studies with zinc-65 as tracer of zinc chloride and zinc bromide complexes, 2662.

Spectra: aromatic hydrocarbons, prediction of, 2611.

ditertiary arsine complexes. Part I, 1564.

Relation between the rotatory power of asymmetric ketones and intensity-borrowing by the carbonyl absorption at 3000 Å, 3285.

absorption: ketones. Part VII, 429.

absorption and emission: aromatic radicals. Part I, the benzyl radical in the visible region, 4323. Part II, 4327.

electronic: N-heteroaromatic systems. Part IX, 493. radicals obtained on photolysis of dialkylbenzenes, 4327. electron-spin resonance: four organosilicon compounds, 51

Observations on reduction of Methylene Blue and related compounds, 2055.

infrared: acetyl complexes of platinum and palladium, 1112. acids, long-chain monocarboxylic, spectral variations and molecular mobility, 2310.

alcohols, monohydric, doublets in the hydroxyl absorption, 1566.

alkyl platinum complexes. Part II, 1220.

amines, heterocyclic, in dimethyl sulphoxide solutions. Part I, 617.

bases, use of chloromercurates to facilitate, 4259.

borines, amino-, organo-substituted, 4068.

dialkylthiomethanes and 1,2-dialkylthioethanes, 4372.

2,4-dihydroxybenzaldehyde (C=O absorption), 2835.

diphenyl [180]sulphone, 3968.

diphenyl [180]sulphoxide, 3968.

griseofulvin analogues, 1292.

iodonium salts, diaryl-, 4498.

4-mercapto-pyridine and -quinoline hydrochlorides, 3127. metal complexes of 3-cyanopentane-2,4-dione, C=N stretching frequency, 1957.

a perfluoroazo-compound, cyclic, 4840.

propene complex, deuterated K[PtCl₃(C₃D₆)],H₂O, 2821. selenocyanates, inorganic, 3008.

silver-ethylenediamine complexes, 3447.

steroid esters of fatty acids, 3257.

urea inclusion compounds, 2340.

and hydrogen bonding in pyridine derivatives, 1005.

and structure of nitrates of some aldehydes, ketones, and ethers, 2343.

and structure of crystalline adducts of some phosphine, arsine, and amine oxides, and sulphoxides with strong acids, 5128.

mass: the methylphosphines, 3270.

microwave: dioxygen difluoride, 4585.

nuclear magnetic resonance: hydrogen bonding of some amines, 1123.

indolizinium salts, 3288.

methyl esters of some inorganic oxyacids, 1370.

a perfluoroazo-compound, cyclic, 4840.

phosphinic acid, methyl-, 3837.

trimethylplatinum compounds, 4736.

vinyl ethers, 2021.

ambiguous, clarification by double irradiation, 2080. high-resolution, of pentafluorosulphur compounds. Part II, complex nuclear magnetic systems, 3077.

proton magnetic resonance: difluoromethyl group, 3828.

Grignard reagents and related metal alkyls, 5125.

rotenone and related compounds, 775.

in aqueous solutions, internal reference standards for, 2576.

Raman: trichlorostannite and tribromostannite ions, 407.

Spectra, ultraviolet: amines derived from nitration products of benzo[c]cinnoline and some methylbenzo[c]cinnolines, 4860.

benzo[c]cinnoline, effect of substituents on, 1812.

some anhydrous copper (Π) salts in organic solvents, 2257. dialkylthiomethanes and 1,2-dialkylthioethanes, 4372.

1,2,4-thiadiazoles, 4191.

and visible, of permanganate and chromate, effect of environment and certain complex-forming cations on, 3503.

vibration: aminopyridine hydrochlorides, 3119. methoxypyridines, cations, 3115. phosphonitrilic halides, 635.

Spirans. Part IV, 4745.

Spirohydantoins and spirothiohydantoins, stereospecific prep., 2789.

Spirostachys africana Sond. (tambooti wood), structure of diterpenes from, 4046.

Sporidesmolide I, structure, 753.

Squalene autoxidation, inhibition by keto-sulphides and ketosulphoxides, 2959.

autoxidizing, antioxidant action of sulphoxides and thiosulphinates in, 3570.

Stability constants, observations on the computation by Olerup's graphical procedure, 4056.

of copper(II) chloride complexes, 2672.

of mononuclear complexes, errors inherent in competitive methods of determining, 5271.

Starches, physicochemical studies on. Part XXIV, 222. of various plant origins, fractionation and characterisation,

Steric and polar effects, separation of. Part I, 1824. Steric hindrance in analytical chemistry. Part VI, 4914.

Sterigmatocystin, prep. of a degradation product of (methyl 1,3,8-trimethoxyxanthone-4-carboxylate), 2060. amended structure, 4179.

Steroid esters of fatty acids, infrared spectra, 3257.

hormones, compounds related to. Parts VIII—X, 1572, 1578, 4729.

hormones, hydroaromatic. Part VIII. 782.

hormones, modified. Parts XXV—XXIX, 22, 29, 1091, 1223, 4995.

ketones, oxygenation in strongly basic medium, 1578. ketones, unsaturated, electrolytic reduction. Part II, 2352.

polyenes, structures, 2352.

series, studies in. Part LXXIV, 1312. sex hormones, some tricyclic analogues of: bromination of enol acetates, 1312.

Steroids. Parts XV—XVIII (C. W. Shoppee et al.), 2233, 3604, 3610, 3624.

Part CLXXII (C. Djerassi et al.), 1323.

and Walden inversion. Parts L, LI, 1246, 2684.

new method for locating double bonds in, 2917.

nucleophilic substitution reactions at $C_{(3)}$ and $C_{(17)}$ in, use of aprotic solvents for, 954.

of the receptacles and leaves of Cynara scolymus L., 1700. aza-. Parts III, IV, 1050, 2275.

containing ring a aromatic. Part I, dienol-benzene rearrangement in C_{10} series, 1710.

11-ethynyl-, prep., 3624.

hydroxy. Part I, 1566.

3-keto-, methylated in ring-A, bromination, 3604.

3-oxo-, factors controlling the direction of enol acetylation of, 1323.

3-oxo-, recovery from their 2,4-dinitrophenylhydrazones,

3- and 20-oxo-, Mannich reaction with, 1572

of unnatural configuration. Parts VII, VIII, 2907, 2917. urinary, and related compounds. Part III, 4950.

 Δ^4 -Steroids, 4-methyl-3-oxo-, new route to, 1091.

Stilbene, cis- and trans-, addition of bromotrichloromethane to, 4154.

Stilbenequinone, derivatives of, 480.

Stilbenes, trans-, substituted, orientation of the addition of trichloromethyl radicals to, 4164.

phenanthrene, and trans-β-methylstyrene, relative rate ratios for the addition of trichloromethyl radicals to, 4170. **Streptothric**in group of antibiotics. Part I, the general structural pattern, 1642.

Strontium carbonate, a high-temperature form, 2525. Styrene, 4-chloromethyl., 1515.

Poly-(m-aminostyrene) and the copolymer with styrene, halogeno- and thio-substitution of diazo-derivatives of, 2187.

Styryl ketones, substituted phenethyl and 3-phenylpropyl, and corresponding saturated ketones, prep., 126.

Submicro-methods of organic analysis. Part XIV, determination of chlorine, 1939. Part XV, 3033.

Substitution, aromatic, ortho: para-ratio in. Part VI, 3822. aromatic halogen, kinetics and mechanisms. Parts XII—XV, 988, 997, 3784, 4829.

at a boron atom, mechanism. Part I, 1197.

homolytic aromatic. Part XXVII, 487.

nucleophilic, at a metal-bearing carbon atom, 3796.

Succinic acid, OO'-dideuterio-, formation of DO₂C·CHD·CH·CO₂D on irradiation of, 366.

diethyl ester, conformation as solute in carbon tetrachloride, 3997.

Succinic anhydrides, substituted, catalytic hydrogenation, 4798.

Sucrose, reaction with enol ethers, 3158.

derivatives. Part I, 3158

Sugar components, acidic, of Cochlospermum gossypium gum, 2785.

derivative (5-acetamido-5-deoxy-L-arabinose) containing nitrogen as the hetero-atom in the ring, 4699.

Sugars, anhydro-, structure and reactivity. Part IV, 1488. branched-chain, prep. Part I, 2515.

(±)-Sugiyl methyl ether and related compounds, prep., 4248. Sulphoacetic acid, mechanism of formation in the system H₂SO₄-Ac₂O-AcOH, 1913.

Sulphonamido-group, introduction by means of benzenesulphonyl azide, 2517.

Sulphur, submicro-determination by the oxygen-flask method, 3033.

extrusion of. Part V, 3262.

monochloride, action on aromatic ethers, 4709.

monochloride, action on phenols, 3876.

chloride pentafluoride: new methods of prep., 3180.

dioxide, addition of phenyl radicals to, 2068.

Arenesulphinic acids, reaction with azo-compounds and nitrosonaphthols, 2713.

Chlorodithio-compounds and their properties, 1725.

Desulphurisation, by activated metal catalyst: of alcohols derived from thiophen, 3235; of 2,7-dihydrodibenzo[c,e]-thiepin, 3241.

Dialkylthiomethanes and 1,2-dialkylthioethanes, infrared and ultraviolet spectra, 4372.

Diphenyl [180] sulphone, infrared absorption, 3968.

Diphenyl [18O]sulphoxide, infrared absorption, 3968.

Disulphur decafluoride, prep. and reactions, 3183.

Heptasulphur imide, reactions with the boron trihalides, 4442.

Pentafluorosulphur derivatives, photochemical reactions with sulphur dioxide, 771.

Potassium methylenedisulphonate, crystal structure, 3393. Sodium hydroxymethanesulphinate dihydrate (Rongalite), detailed refinement of crystal structure, 3400.

Sulphanilohydrazide derivatives, prep., 2133.

Sulphides, aryl pyrazolyl, prep., 4146.

and disulphides, di(methylpentenyl), isomeric, prep. and characterisation, 5045.

hydroxyethyl, acid-catalysed decomposition, 3955.

organic. Part X, acid-catalysis in the oxidation by peroxybenzoic acid in aprotic non-basic solvents, 4920. Parts XI-XIII, 1667, 2959, 3570, 4920.

tertiary alkyl, reversible formation and solvolysis in acetic acid-perchloric acid, 1694.

unsaturated, solvolysis assisted by silver ion, 4062.

Disulphides, prep. by displacement reactions, 683.

Disulphides, new prep. from Bunte salts, 2172.

Disulphides, dialkenyl, reaction with cyanide ion, 4205. Disulphides, dialkenyl and alkenyl alkyl, reaction with triethyl phosphite, 4205.

Hydrogen sulphide, photochemical addition to C₂ olefins,

Sulphites, aromatic, alkaline hydrolysis, 4888. organic, heats of hydrolysis, 3835.

Sulphites, organic, nucleophilic displacements in. Parts | VIII, IX, 3835, 4888.

Sulphonium nucleosides and glycosides, hydrolysis by alkali, 1999.

Sulphonyl groups, displacement from diarylsulphonylalkanes, 3686.

Sulphuroxyaryl compounds, pentafluoro- (ArO·SF₅), prep. and properties, 2107.

Surface-active alkylating agents, 4739.

Suxamethonium and laudexium, compounds related to both, prep., 1481.

Sydnones, five, molar Kerr constants, 4753.

L-Talose, 3-amino-3,6-dideoxy-derivatives, 2499.

Tantalum and niobium, halides. Part VI, 150.

ψ-Taraxasterol, isolation from leaves of Ficus carica, L.,

Tartaric acid, complexes with peroxytungstate ions, 1837.

Taxicin-I, O-cinnamoyl: isolation studies and the functional groups, 2964; glycol cleavage fragments from, 2972.

Taxine. Parts I, II, 2964, 2972.

t-Butyl alcohol, mechanism of oxidation by cobaltic salts, 965. alcohol-water system, dielectric constants and vapour pressures, 1608.

chloride, bromide, and iodide, methanolysis of, kinetics, 4291.

chloride, bromide, and iodide, solvolysis in methanol-water solutions, kinetics, 4301.

-)-Teracacidin, absolute configuration, 4502.

Terephthalaldehyde, condensation products of: cyclisation of the Michael adduct by polyphosphoric acid, 1519.

Terpenoids. Part LI, 4034.

synthetical studies. Part VII, 533. 2,2',2"-Terpyridine complexes with transitional metals,

exchange studies, 341. Terramycin (oxytetracycline), biosynthesis, 425.

Terrylene, abnormally long carbon-carbon bonds in, 2775. Tetra-azaindenes, 2- and 3-alkylsulphonyl- and -hydroxy-, structure, 3854.

Tetracycline, oxy- (terramycin), biosynthesis, 425.

1-Tetralone, 5,7,8-trimethyl-, prep., 2630.

Thermochemistry of organoboron compounds. Part VII,

Thermodynamic properties of the normal C2-C5 alkyl chlorides and bromides, 1794.

Thiadiazoles. Part XII, 4191.

1,2,4-Thiadiazoles, ultraviolet absorption spectra, 4191.

Thiation, selective, of hydroxypurines by phosphorus pentasulphide, 860.

Thiazolopyridines and bisthiazolopyridines, prep., 3464.

Thiocarbamates, S-alkenyl NN-dimethyl-, reduction with lithium aluminium hydride, 4717.

Thiocarbonyl fluoride, 4361.

Thiohydantoins. Part VI, 2789.

Thiols, acid-catalysed addition to conjugated dienes, 5040.

Thiophen, use as a chain extender. Parts II, III, 350, 2578. alcohols derived from, desulphurisation by activated metal catalyst, 3235.

Thiophenols, substituted, rates of reaction with benzyl bromides, 1062.

Thiourea, tetramethyl-, reduction with lithium aluminium hydride, 4717.

Isothioureas derived from o-aminothiophenol and diarylcarbodi-imides, prep. and cyclisation, 230.

6-Thioxanthines, prep. of some, 1863.

Thymoguinone, 3-hydroxy-, adduct with diazomethane, 5186. Tillandsia usneoides, L. (Spanish moss), isolation of some new cyclopropane-containing triterpenes from, 4034. Timbers, West African. Part V, 768.

Tin, organoperoxides, 2465.

Tin(II), chelates formed with ethylenediaminetetra-acetic

Tin(II), reaction with vanadium(v) in dilute hydrochloric acid, 1137.

 $Tin(\Pi)$, reducing reactions in aqueous solution. Parts I, II, 435, 1137.

Tin, Tin(III), method for detection in reducing reactions of tin(II), 435.

Tin(IV), organic compounds of, prep., 2050.

Trichloro- and tribromo-stannite ions, Raman spectra,

Tricyclohexyl- and trimethyl-phenylstannanes, prep., 1131. Titanium chlorides, lower, oxidation by carbon tetrachloride by a route involving a carbonium ion, 2066.

halides, magnetic properties, 2036.

Toluene, reactions with some para-substituted diaroyl peroxides, kinetics, 487.

octafluoro-, some replacement reactions of, 1801.

o-hydrazo-, transitional kinetics and solvent-isotope effect in acid rearrangement of, 2436.

Toluenes, the mononitro-, some aspects of the nitration of, 5142.

Toluene-p-sulphinic acid, methyl ester, tracer studies in hydrolysis of, 2562

Triazanaphthalenes. Part I, covalent hydration in 1,3,5-, 1,3,6-, 1,3,7-, and 1,3,8-triazanaphthalene, 4094.

Triazaphenanthrene methiodides, site of quaternisation in some, 1671.

Triazaphenanthrenes. Part V, 1671.

1,2,4-Triazine, 5,hydroxy-3-mercapto-6,4'-pyridyl, 3260.

Triazines, dihydro-, amino-oxy-, and related heterocycles, prep., 3915.

1,2,4-Triazines, prep. of some, 1805.

1,3,5-Triazines. Parts I, II, 1507, 3267.

Triazole, conversion of an isoxazole into, 2083.

1,2,4-Triazole-3-aldehydes, 1,5-diaryl-, prep., 575.

Triazoles. Part VI, 575. Part VII, prep. of substituted 1,2,4-triazoles, 5149.

Trichloromethyl radicals, orientation of addition to substituted trans-stilbenes, 4164.

relative rate ratios for the addition to stilbenes, phenanthrene, and $trans-\beta$ -methylstyrene, 4170.

Tricyclo[7,2,1,01,6]dodecan-11-one, (\pm) -10-methyl-, with the natural configuration of rings, prep., 533.

Tricycloquinazoline, derivatives, prep., 2549. Triterpenes and related compounds, chemistry of. Part XLII,

new cyclopropane-containing, isolation from Spanish moss

(Tillandsia usneoides, L.), 4034. tetracyclic, reduction of the 7,9(11)-diene group in, 2763.

Triterpenoids. Part XXVI, 5163.

Tritylation and detritylation of active methylene compounds. Parts I-III, 716, 723, 726.

Tropanes, 3-halogeno-, conformations as solutes in benzene, 3991.

Tropinone, conformation as solute in benzene, 3991.

Tropyl (cycloheptatrienyl) groups, introduction into anisole by tropylium halides, 5295.

Tropylium chloride, valid and invalid preparations: unusual tropylium-phosphorus chloride complex, 1339.

salts. Parts II, III, 1339, 5295.

Trypanocides, new, search for. Part VII, 677.

Tryptophan, 6-fluoro-, 6-methoxy-, and 7-methoxy-, prep.,

Tubercle bacilli, lipids of, constituents. Part IX, 4262.

Tungsten, sulphide carbonyl complexes of, 4454.

Cæsium tungstoaluminate, structure, 3281.

Cæsium tungstoferrate, structure, 1512.

12-Heteropolytungstates and their ether-addition compounds, thermal decomposition, 3189.

Paratungstate A anion, thermodynamic study, 205.

Peroxytungstate ions, complexes of tartaric acid with,

Tungsten(VI) chloride, reaction with some aliphatic amines,

Tungstoarsenic(III) acid, prep. and properties, 3186.

12-Tungstochromic(III) acid, prep., properties, structure, and spectra, 3322

12-Tungstocupric(II) acid, prep., properties, and structure, 3946.

12-Tungstomanganic(IV) acid, prep., properties, structure, and spectra, and its stability relative to analogous 12heteropolytungstates, 4408.

Tylocrebrine (phenanthroindolizidine alkaloid), structure and

synthesis, 1008.

Tylophora crebriflora, the alkaloids of: structure and prep. of tylocrebrine, 1008.

Tyrosine, oxidation with hydrogen peroxide, 3274.

U

Ulva lactuca (a green seaweed), acid polysaccharide from, 2082. Unsaturated systems containing hetero-atoms, conjugation in. Part I, 3324.

Uracil, 1-methyl- and 5-bromo-1-methyl-, tautomerism, 1540.
Uranium(IV) perchlorate-dimethylacetamide complex, prep., 1655

Urea derivatives, heterocyclic compounds from. Parts III, IV, 230, 3561.

inclusion compounds, infrared spectra, 2340.

Isothioureas derived from o-ammothiophenol and diarylcarbodi-imides, prep. and cyclisation, 230.

Uridylic acids, poly-, analogues of, prep. (and survey of anhydride reagents), 71.

v

Vanadium, quinquevalent, oxidation of organic compounds with. Part IX, bromide-catalysis of some reactions, 818. Parts X, XI, 1629, 2068.

group, peroxy-compounds of, constitution, 2136.

tetrafluoride, prep. and properties, 2692.

Vanadium(III), kinetics of the oxidation by iron(III) in solution in aqueous perchloric acid, 2841.

Vanadium(v), reaction with tin(π) in dilute hydrochloric acid, 1137.

Vangueria tomentosa, triterpenoids of, 5163.

Veraguensin, lignan from Ocotea veraguensis Mez., 1459.

Vinyl bromide, as solute in dioxan, molar Kerr constant and dipole moment, 4003.

chloride and six polyvinyl chlorides, as solutes in dioxan, molar Kerr constants and dipole moments, 1494.

Violanthrene, dehydro-, reaction with sulphur monochloride,

Virgilia oroboides gum. Part III, products of hydrolysis of the methylated gum, 2030. Vitamin B₁₂ coenzyme, some reactions, 4608.

Vitex divaricata (black fiddlewood), extractives from, 5194.

W

Walden inversion and steroids. Parts L, LI, 1246, 2684.

Water, photo-oxidation by ferric ion at 25°, 4957.

West African timbers. Part V, 768.

Wetting of iron, cobalt, and nickel by liquid sodium and by solutions of barium and calcium in liquid sodium, role of oxide films in, 2699.

Willardiine, prep., 583.

Withaferin, functional groups of, 2925.

Withania somnifera, constituents of. Part I, 2925.

Wittig reagents, addition to activated carbon-carbon double bonds, 4733.

Woods, extractives from. Parts I, II, 4906, 5194.

X

Xanthone-4-carboxylate, methyl 1,3,8-trimethoxy-, degradation product of sterigmatocystin, prep., 2060.

Xylenes, $\omega\omega'$ -dialkylsulphonyl-, quinonoid intermediates in reactions of, 3425.

\mathbf{z}

Zeolite, fibrous (laumontite), intracrystalline behaviour in, 4728.

Zierone, constitution, 1961.

structure. Part II, 792. Zimmermann colour reaction, chemistry of, 367.

Zinc, ion, hydrolysis, 4500.

bromide and zinc chloride complexes. Part II, solventextraction studies with zinc-65 as tracer, 2662.

chloride and zinc bromide complexes. Part II, solventextraction studies with zinc-65 as tracer, 2662.

Zinc(II)-2,2'-bipyridyl complexes, stability constants, 278. Zirconium halides, magnetic properties, 2036.