INDEX OF SUBJECTS, 1956

One Hundred and Fifteenth Annual General Meeting, 4015.

Absorption of Orange II by polyglycine, 2940.

of uncharged molecules by ion-exchange resins, 3364.

Aceanthrene, 7:9-dimethyl-, prep., 1068.

Acenaphthene, condensation with thionaphthen-2:3-dicarboxylic anhydride, 1429.

Acetaldehyde diethyl acetals, arylthio-, cyclisation, 2603.

2-nitrophenyl-N-phenethyl-, application Bischler-Napieralski reaction to, 4123

Acetanilide, N-chloro-, rearrangement at high pressure, 953. Acetates, of alkaline-earth metals, ion association in, 744.

Acetic acid, cyano-, esters, condensation with di-iminoisoindoline and succinimidine, 235.

ionisation functions, in relation to structure of water and hydration of ions and molecules, 2798.

αα-difluoro-α-(trifluorothio)-, prep., spectra, and salts,

fluoro-, Perkin and similar reactions with, 1524.

mercapto-, anhydro-compounds from nitrogen-containing derivative of. Part III, 3189.

phenoxy-, prep., 1891.

tetrahydro-2-pyranyloxy-, ethyl ester, Claisen ester condensation, 4665.

2:4:6-trimethoxyphenyl-, reaction with phosphorus pentachloride, 3209.

9-xanthenyl-, basic esters and their quaternary salts, prep., 812.

Acetic acids, (arylazothio)-, anhydro-compounds from, 3189. (2-benziminazolylthio)-, prep. and dehydration, 361. fluoro, ethyl esters, enolates, 1521.

Acetoarones, o-aroyloxy, thermal cyclisation. Part III, 4411. Acetone, effect of water on conductivity in, 998.

mixtures with water, behaviour with ion-exchange resins, 1676; E.M.F. measurements in, 3168.

Acetone, acetyl-, condensation with 1:2-diamines, 2597. 2-furyl-, prep., 4232.

Acetones, thermal decomp. in presence of toluenc, 2136. Acetonyl aryl sulphides, cyclisation to thionaphthens, 4791. Acetophenone, 2:6-dimethyl-, prep., 4673.

Acetophenones, ω -chloro-, carbonyl frequencies, 3704.

Acetophenones, thermal decomp. in presence of toluene, 2136. fluoro-, cuprous salts, interaction with aromatic hydrocarbons, 1858.

silver salts, properties and interaction with aromatic hydrocarbons, 1855.

a hydroxy, complexes with niobium and tantalum, 4946. Lewis, interaction with aromatic hydrocarbons and bases.

Parts XVI, XVII, 555, 3881. long-chain carboxylic, copper, nickel, cobalt, and iron salts,

magnetic properties, 3948. monocarboxylic, chemical constitution and dissociation

constants. Part XV, 2995. optically active, methyl-substituted long-chain, inter-

mediates for prep. Part I, 1620. organic, adsorption and chromatographic separation on ion-exchange resins, 1681.

strong, acylation and allied reactions catalysed by. Part XV, 3933.

monobasic, catalysis of pinacol-pinacone rearrangement

tertiary, reactions with aromatic compounds. Parts VIII, IX, 4558, 4561.

unsaturated, addition of bromotrichloromethane and butanal to, 1749.

Acetophenones, carboxylic, relative strengths, 4761.

fatty. Part II, 4049.

See also Per-acids.

Acetyl cyanide, pyrolysis, 2628.

peroxide, reaction with but-3-enoic acid and crotonic acid,

Acetylation, Friedel-Crafts, of alkylbenzenes with excess of reagent, 4943.

Acetylenedicarboxylic acid, methyl ester, reaction with phenanthridine in methanol, 246.

Acetylenes ("Acetylenic compounds"), researches Parts LII—LIV, 4073, 4761, 4765.

Acetylenes, vinyl-, hydration, 911.

Acid, monobasic dicarboxylic, from demethyleneoxodelpheline, 3864.

Acids, α-amino-, degradation by ketones, 4292.

reaction with cyanamide, 307.

a-benzamido-, prep. of benziminazoles from, 673. fatty. Part IV, 1611.

Acid anhydrides, N-carboxy-α-amino-, reactions of, catalysed by tertiary bases, 381.

chlorides, mechanism of hydrolysis of. Part VI, 501.

strengths of organic hydroperoxides, 2845.

Aconitum and Delphinium alkaloids. Parts I-III, 2689, 3121, 3864.

Actinomycins, pure, isolation and properties, 2469.

Acridine, 5:10-dihydro-5-oxo-, reaction with tertiary aromatic amines, 484.

Acridines, 2-chloro-5-α-halogenoacylamino-7-methoxy-, prep.,

hydroxy-, ionisation constants, 1294.

Acrylonitrile, in organic syntheses. Part II, 959.

Acrylonitriles, $\alpha\beta$ -disubstituted, prep., 1743.

Acyl chlorides, binary systems with boron and gallium trichlorides, 1527.

cyanides, action on 2- and 1:2-substituted indoles. Part II,

and their dimers, competitive routes in pyrolysis of, 2628.

Acylation, and allied reactions catalysed by strong acids. Part XV, 3933.

decarboxylative, with a-phonylglycine, 2910.

Friedel-Crafts, comparison of inter- and intra-molecular processes of, 4647.

intramolecular. Part I, 3857.

Adenosine-5' triphosphate, prep., 1371.

Adenosine-2' uridine-5' phosphate, prep., 1546.

Adipic acid, a-methylene-, and related compounds; reduction of the methyl ester, 1146.

 α - and β -phenyl-, prep., 4426.

Adsorbents, solid, adsorption of binary liquid mixtures on,

Adsorption, by cellulose acctate and other polymers, 1272.

from binary liquid mixtures on activated alumina, 4828. of binary liquid mixtures on solid adsorbents, 784.

of catalyst poisons, reversibility. Part IV, 264.

of complex anions from uranyl sulphate solution by anion-

exchange resins, 1596. of dyes by growing crystals, and crystal symmetry. Part I, ammonium nitrate IV, 4841.

Aerobacter aerogenes A3 (S1) (Klebsiella type 54), structure of extracellular polysaccharide of, 3483.

Agapanthagenin, isolation from Agapanthus species, 1167. Agapanthus species, isolation of agapanthagenin from, 1167.

Ajmaline, isolation from Rauwolfia natalensis Sond., 215.

DL-Alanine anhydride, N-carboxyphenyl-, kinetics of polymerisation of, catalysed by tri-n-butylamine, 381. Alcohols, comparison between reactivity of the 1-carbon atom in, and certain properties of alkoxysilanes, 1536. determination of small quantities of, 1633.

hydrogen bonding properties of, in solution, 559.

of friedelane triterpenes, 2119.

ω-phenyl unsaturated tertiary, prep. and cyclodehydration, 1238.

primary, viscosities of dilute solution of, in benzene, heptane, and cyclohexane, 200.

secondary and tertiary, containing the pyridyl group, resolution, 3394.

solutions in non-polar solvents. Part III, 200.

unsaturated, oxidation by manganese dioxide, 2446.

selective dehydrogenation of, by high potential quinones, 3070.

Aldehydes, aliphatic, prep. from lithium alkyls and dimethylamides, 4691.

α-amino-, reaction with cyanamide, 307.

hydrogen-bonding properties of, in solution, 559.

polyene, ω -p-methoxyphenyl-, prep. and absorption spectra, 4082.

prep. from nitriles, modification, 4695.

 $\alpha\beta$ -unsaturated, prep. from ethynylcarbinols and thiolacetic acid, 116; from a ethynyl alcohols, 911.

Aldols, prep. from ethynylcarbinols and thiolacetic acid, 116. Aldopentoses, prep. from disulphones derived by oxidation of hexose diethyl dithioacetals, 970.

Alicyclic systems, long-range effects in. Part I, 932

Alkaloids of Aconitum and Delphinium. Parts I-III, 2689, 3121, 3864,

of chelidonine-sanguinarine group, synthetical experiments on. Part IV, 4535,

of Dioscorea hispida Dennstedt. Part III, 1577.

of lupin. Part XVI, 3390.

of morphine-thebaine group. Parts VI, VII, 1863, 1963. of Rauwolfia. Part I, 215.

of Toddalia aculeata, 769.

tropane, stereochemistry. Parts VIII, IX, 873, 1411.

Alkanes, nitroso-, prep. from alkyl nitrites, 1670.

Alkanesulphonic acids, perfluoro., 173.

Aikenediones, conjugated, ultraviolet absorption spectra of 2:4-dinitrophenylhydrazones of, 1083.

Alkenes, chloro, pyrolysis. Parts III, IV, 2640, 3092.

Alk-2-enyl sulphides, reaction with organic hydroperoxides, 489.

Alkenylation, with lithium alkenyls. Part XIII. 3333. Alkoxides, structural chemistry, Parts V-VIII, 1139,

2260, 3469, 4439. Alkoxides, isomeric, of quinquevalent tantalum, 1139. normal, of quinquevalent niobium, 2381.

primary, of quadrivalent cerium and thorium, 2260.

secondary, of quadrivalent cerium and thorium, 3469.

Alkyl halides, homolytic reactions with alkyl-lithium compounds, 1603. kinetic effects of phenyl and halogen substituents in, on

their reactions with halide ions in acetone, 845. tertiary, rates of ionisation and the Baker-Nathan effect,

1590.

hydroperoxides, alkylation with ethers, 4669. nitrites, prep. of nitrosoalkanes from, 1670. perchlorates, alkylation by, 3933.

sulphates. Part I, 579.

Alkyl cations, formation during decomp. of nitramines, 921. groups, effects on aromatic nucleophilic replacement, 4284. influence of reaction medium on relative apparent electrondonating effects of, 1590.

Alkyl-oxygen fission in ester hydrolysis. Parts V, VI, 3629, 4676.

in phthalide ring opening, 3608.

Alkylamines, aryl-2-halogeno.. Parts XVI—XVIII, 1364, 1719, 1724.

indolyl, prep., 1984.

Alkylation, Friedel-Crafts, comparison of inter- and intramolecular processes of, 4647.

Allenes, naturally occurring, isomerisation, 3767.

Part I, 1015.

Allomerisation, of chlorophyll, 1203.

a-D-Alloside, methyl 2:3-anhydro-, reaction with magnesium halides, 496.

Allyl alcohol, a phenyl., rearrangement at high pressure, 953. Allylic shift, of olefinic bond in free-radical reactions, 3231.

Aloins. Part I, 3141. Alstyrine, prep., 771.

β-D-Altrose, 1:6-anhydro-, O-toluene-p-sulphonyl derivatives, behaviour towards alkali, 441.

Alumina, activated, adsorption from binary liquid mixtures on, 4828.

Aluminium, atom polarisation of acetylacetone complex of, 1821.

bromide, reaction with olefins and benzenc, 2614.

chloride, solubility in hydrocarbons, 1164.

complexes with flavonols, prep., 3224.

soaps, dielectric properties in toluene solution, 3463. tri soaps, 1972.

Potassium aluminosilicates, prep., 2882.

Amides, reactivity in aqueous and non-aqueous solution in relation to hydrogen bond formation, 72. reduction by lithium borohydride, 3981.

Amidines, chemotherapeutic, search for. Part XII, 368.

NN'-di(amidinophenyl)-, 368.

NN'-diaryl-, metal derivatives, 640.

Amines, complexes with platinum(11), stability constants, 2371.

and imines, heterocyclic. Parts VI, VII, 235, 4135,

infrared absorption of co-ordination compounds of, with platinous chloride, 2712.

reactivity in aqueous and non-aqueous solution in relation to hydrogen-bond formation, 72.

Amines, aromatic, diazotised, reaction with aliphatic hydroxylamines, 2784.

reactions with disodium pentacyanoamminoferrate. Part I, 2747.

primary, oxidation with benzoyl peroxide, 222. reaction with aldehydocarbohydrates, 476.

tertiary, condensation with acridone, 484.

(2-hydroxyethyl)-, complexes with niobium and tautalum, 4946.

nitro-, aromatic, phosphorescence and fluorescence, 4865. simple, relative tendencies to form co-ordination compounds,

tertiary, reactions with nitratoalkyl ethers, amines, amides, and urethanes, 2006.

Ammines, of metals, infrared spectra, 3108.

and related compounds, infrared spectra. (Part I, 3108.) Part II, 4495.

Ammines, deutero-, of metals, infrared spectra, 3108.

Ammonia, infrared spectra of co-ordination compounds of, 2712.

Ammonium ferric disulphate dodecahydrate, and derivatives, observations on, 4705.

halides, tetra-alkyl-, reaction with potassium in liquid ammonia, 4653.

nitrate IV, absorption of dyes by growing crystals of, 4841.

nitrates, quaternary. Part II, 2006. picrate, tetraethyl-, conductivity in phthalate esters,

tetrapentyl-, conductivity in phthalate esters, 2428.

Ammonium salts, bisquaternary. Part II, 3941.

Amylosaccharides, ionophoresis and reaction with borate ions, 30.

" β -Amyradiene-III," identity, 1377.

α-Amyrin, stereochemistry, 456.

β-Amyrin, and related alcohols, constitution of compounds obtained by dehydration of, 456.

 δ -Amyrin, approach to total synthesis of, 2431. Androgens, 2α -halogeno-, prep., 1179.

Androstane, 4:4-dimethyl derivatives, prep., 4490.

Androst-5-ene-3 β :16 α :17 β -triol, prep. and conversion into 16α-hydroxytestosterone, 297.

Androsterone, 11-substituted derivatives, prep., 4825.

 (\pm) -Angustione, prep., 2179.

and related compounds, prep., 4068.

Anhydrides, carboxylic, ionisation in sulphuric acid, 607.

Anhydrite. See Calcium sulphate, 196.

Anilides, and ethers, phenolic, halogenation. Part XVIII, 3939.

Anilides, formed from alkylphosphoric dihalides, combustion,

thermochemistry of formation of, from phosphorus halides, 422.

Aniline, molar Kerr constants at infinite dilution, 2775. oxidation by peroxidase in presence of p-toluidine, 3814.

Anilinium ions, steric relations between dissociation of, and ionisation of aralkyl chlorides. Parts II, III, 448, 451.

Anions, complex, adsorption by anion-exchange resins from uranyl sulphate solution, 1596.

Anisole, reactivity in aqueous and non-aqueous acid media, 3911.

2:4:6-trinitro-, kinetics and mechanisms of colour reactions of, at low temperatures, 2528.

Anisotropy, apparent, of methane and other quasi-spherical molecules, 708.

Annual General Meeting (115th). Report of Honorary Officers, Report of Council, and Accounts for Year ended December 31st, 1955, 4015.

Anthanthrene, nitration, 3572.

Anthracene, absorption and reflection of plane-polarised light by, 2662.

homologues of, in a Kuwait oil, 603.

reaction with free radicals from di-tert.-butyl peroxide, 1108.

Anthracene, 9-methyl-, reaction with free radicals from ditert. butyl peroxide, 1108.

perfluorotetradecahydro, prep., 783.

Anthracenes, retardation of autoxidation of benzaldehyde by, 879.

Anthracenes, 9:10-di-(ω-carboxyalkyl)-, prep., 1511. 9:10-disubstituted, new method of prep., 1511.

Anthranilic acids, N-quinolylamino-, prep., 4173.

Anthraquinones, methoxy-, infrared absorption spectra of carbonyl group in, 4811.

Anthra-9:10-quinone-1-sulphenic acid, structure, and those of its derivatives and analogues, 4245.

Antituberculosis agents. Part II, 3892.

potential, of indole series, 2853.

Aphididæ, colouring matters of. Part XV, 4091.

Aporphine, 2:3:6-trimethoxy., prep. and non-identity of isothebaine methyl ether with, 1732.

Aporphine series. Part II, 4123.

aldehydoApurinic acid di(carboxymethyl) dithioacetal, of calfthymus, alkaline degradation, 2579; nature of end-groups produced by, 2584.

Aquifoliaceae of Hong Kong, occurrence of triterpenes in, 1461.

n-Arabinose, 2-O-benzyl-, benzyloxymalondialdehyde as intermediate in oxidation of, with sodium periodate, 3065.

Aralkyl chlorides, steric relations between ionisation of, and dissociation of anilinium ions. Parts II, III, 448, 451.

Aromatic compounds, benzoyloxylation, halogenation, and phenylation by silver bromide dibenzoate and silver iodide dibenzoate, 2264.

 $S_{\rm N}$ mechanism in. Parts XVI, XXI, 750, 2329.

reactions with derivatives of tertiary acids. Parts VIII, IX, 4558, 4561.

simple approximation to resonance energies of, 1886. use of deactivated charcoals for isolation of, 2291.

systems, nucleophilic displacements in. Part V, 1563. reactivity, 164.

Aromatisation reaction, new and specific. Part I, 3260.

Arrhenius parameters of reactions involving multiplicity changes, 2136.

9-Arsafluorenes, substituted, prep., 1195.

Arsenic compounds, tervalent, stereochemistry. (Part I, 1195.) Part II, 1976.

o Phenylenebis(dimethylarsine), chelates with bivalent palladium, 4375.

Aryl isothiocyanates, new prep., 659.

Aryl phenacyl sulphides, cyclisation to thionaphthens, 4791.

Arylalkyl halides, ortho-effects in solvolysis of, 850.

polar and steric ortho-effects in bimolecular Finkelstein substitutions of, 855.

Arylamines, N-2-cyanoethyl-, effect of substituents on prep.,

Ascaridole glycol anhydride, structure of by-product in formation of, 1078.

Aspergillus nidulans, isolation of dechloronomidulin from, 3545.

Association of ions, thermodynamics. Part II, 744.

Atom self-polarisabilities, and similar quantities, calculation in molecular-orbital theory, 769.

Autoxidation of aliphatic hydroxylamines, 1093.

of benzaldehyde, retardation. Part VII, 879.

of but 2-enyl methyl sulphide, methyl 1-methylbut 2-enyl sulphide, and n-butyl methyl sulphide, 3056. of tetralin, 4926.

Autoxidation, retarded by 2:4:6-trialkylphenols, kinetics, 2215. Aza-hydrocarbons, aromatic, $n-\pi^*$ -transitions in spectra of, 122.

Azanaphthalenes, chloro-, kinetics of reactions of, with ethoxide ions and with piperidine, 1563.

Azides, organic, reactions of. Parts V, VI, 1498, 1627.

Azobenzene, 2-benzylthio-2'- and -4'-nitro-, prep. and debenzylation, 90.

Azobenzenes, kinetics of reduction of, 620.

Azobenzenes, 4-[di-(2-chloroalkyl)amino]-, prep. of derivatives of, 1364.

4-di-(2-chloroethyl)amino-, rates of reduction of, by stannous chloride, hydrazine, and the xanthine oxidase-xanthine system, 1724.

ultraviolet absorption spectra, 1719.

Azobenzene-2-sulphenyl bromide, and derivatives, action of alkali on, 653; reactions with malonic acid, acetone, and acetophenone, 648.

Azo-compounds, kinetics of reduction of, 620.

reactivity in aqueous and non-aqueous solution in relation to hydrogen-bond formation, 72.

Azo-compounds, aromatic. Part VIII, 614.

o-mercapto. Parts VIII—XI, 90, 96, 648, 653.

Azomethane, hexafluoro-, decomp. in presence of toluene, 2136.

Azomethinecarboxylic acids, derived from ketones, effect of substituents on mobility of, 4292.

Azonaphthalene, 1-benzylthio-2-phenyl-, debenzylation, 96.

I

Bacteriochlorophyll, structure, 1172, 2272.

Baker-Nathan effect, 1590.

Bamia fellahi. See Hibiscus esculentus, 828.

K-Bands, of conjugated systems, effect of terminal halogen atoms on, 4314.

Barbaloin, structure, 3141.

Barbituric acids, thermodynamic ionisation constants, 2485.

Barringtogenic acid, isolation and structure, 4369.

Barringtogenol, isolation and structure, 4369.

Bases, aromatic, interaction with Lewis acids. Part XVI, XVII, 555, 3881.

cyclic, structural and stereochemical investigations of. Part I, 573.

tertiary, catalysis of reactions of N-carboxy-α-amino-acid anhydrides by, 381.

Beckmann rearrangement, of ketoximes, mechanism, 980. of cyclopentanone oxime, 4694.

2:3-Benzacridine, addition reactions with dienophils, 2676.

Benzacridines, bearing hydrogenated rings, prep. and carcinogenic activity, 2593.

Benzaldehyde, equilibria with its cyanohydrin, effect of hyperconjugation of CH₂X groups in, 404. retardation of autoxidation of. Part VII, 879.

Benzaldehydes, phenyl, chemotherapeutic action of thiosemicarbazones of, 100.

pyridyl-, chemotherapeutic action of thiosemicarbazones of, 100.

Benzamides, NN-dimethyl-, reduction, 3982.

1:2-Benzanthracenes, retardation of autoxidation of benzaldehyde by, 879.

Benzene, calculation of atom self-polarisabilities in, 769.

effect of molecular oxygen in fradiation of aqueous solutions of, with X-rays, 832. heats of mixing with cyclohexane, heptane, toluene, and

hexane, 3708, 3713. ionisation equilibria of metal co-ordination complexes in.

Part II, 538.

Benzene, reaction with aluminium bromide, 2614.

system with fluorobenzene, vapour-liquid equilibrium data,

ternary solutions with pyridine and an alcohol, molecular polarisation in, 4499.

viscosities of solutions of primary alcohols in, 200.

Benzene, bromo-, neutron-irradiated, radiolytic reactions in,

vibrational frequencies and thermodynamic properties,

tert.-butyl-, influence of steric factors in substitution of derivatives of, with bromine, 2340.

chloro, vibrational frequencies and thermodynamic properties, 1350.

1:2-diamino-4-nitro-, orientation of products from reaction of, with n-butyl glyoxylate, 26.

p-di-tert.-butyl-, dinitration, 1890.

o-di-iodo-, reaction with magnesium, lithium, and n-butyllithium, 1.

ethyl-, phenylation, 1463.

fluoro-, system with benzene, vapour-liquid equilibrium data, 4682

vibrational frequencies and thermodynamic properties, 1350.

m-fluoronitro-, influence of alkyl groups on rate of replacement in, 4284.

hexamethyl-, association with substituted p-benzoquinones in carbon tetrachloride, 3881.

iodo-, vibrational frequencies and thermodynamic properties, 1350.

p-iodonitroso-, X-ray examination of crystal structure of, 2841.

isopropyl-, phenylation, 1463.

s-trinitro-, kinetics and mechanisms of colour reactions of, at low temperatures, 2528.

[14C]Benzene, prep. of di[ar-14C]benzoyl peroxide from,

Benzenes, acyl-, prep. from corresponding amines, 2784. alkyl-, interaction with excess of Friedel-Crafts acetylating agent, 4943.

methyl-, association with chloranil in cyclohexane, 555. monosubstituted, energy levels and absorption, 4960.

Benz-epines modelled on proguanil, prep., 4727.

Benziminazole, theoretical investigation of chemical reactivity of, 4288.

Benziminazoles, prep., 361,

prep. from α-benzamido-acids and peptides, 673.

Benziminazoles, 4-hydroxy- and 4:7-dihydroxy-, prep., 569. 5-substituted, further substitution in, 3683.

Benzocarbazoles bearing hydrogenated rings, prep. and carcinogenic activity, 2593.

1:2-Benzofinorene, 3-hydroxy-, prep., 3834.

Benzocycloheptanones, peri-hydroxy-, prep., 1585. Benzocycloheptene-3:7-dione, dehydration product, 2620.

Benzocycloheptenones, peri-hydroxy, hydrogen bonding in, 3600.

Benzoic acid, effect of added hydroxy-compounds on association of, 3975.

Benzoic acid, 4-tert.-butyl-, anomalous nitration, 3243.

3:5-dinitro-, hydrolysis of steroid and triterpenoid esters of,

2:4:6-trimethoxy-, decarboxylation, 3209.

Benzoic acids, 2-acyl-, reaction with hydrazoic and sulphuric acids, 1627.

2-bromo-4- and -5-methyl-, and related compounds, prep.,

nitro-, substituted, steric effects in, 2995.

silyl-, acid strengths, 688.

Benzoin o-nitrophenylhydrazone, deoxy-, reaction with o-nitrophenylhydrazine, 4814.

Benzoins, deoxy-, photochemical changes of, 1774.

Benzo[a]**perylene** and derivatives, prep., 2652.

3:4- and 5:6-Benzophenanthridines, prep., 4213. 1:2-Benzophenanthridinium chloride,

7:8-dimethoxy-10methyl-2':3'-methylenedioxy-, prep., 4535.

Benzophenarsazines, bearing hydrogenated rings, prep. and carcinogenic activity, 2593.

Benzophenone, adduct with epipregnanolone, prep., 2555. 3:4-Benzopyrene (Benzo[a]pyrene), nitration, 3572.

3:4-Benzopyrene, 10-methyl- and 8:10-dimethyl-, prep., 1938.

3:4-Benzopyrene-1:5-quinone, prep., 2379.

5:6-Benzoquinoline, prep. of derivatives of, 3684.

p-Benzoquinone, heat of combustion, and thermodynamic quantities of its redox reaction, 2695.

p-Benzoquinones, substituted, association with hexamethylbenzene in carbon tetrachloride, 3881.

p-Benzoquinone monoximes, infrared spectra, 2725.

Benzo-2:1:3-selenadiazoles, 4-hydroxy-, prep., 569.

Benzothionaphthen 1:1 dioxides, self-condensation, 2609.

Benzo-1:2:3-triazine, 3:4-dihydro-4-oxo-, reaction with phosphorus pentachloride and phosphorus oxychloride, 3242.

Benzotriazoles, l-benzyl-, pyrolysis, 1076. 4-hydroxy-, prep., 569.

Benzoxazoles, modelled on proguanil, prep., 4727.

Benzoxazoles, 4-hydroxy-, prep., 569.

Benzoyl chlorides, p-substituted, formolysis, 501.

cyanide, pyrolysis, 2628.

peroxide, oxidation of 2-naphthylamine by, 1337.

oxidation of aromatic primary amines with, 222.

reaction with phenols, kinetics, 2948; structural effects in, 2959.

retardation of chain-decomp. of, by polycyclic aromatic hydrocarbons, 4687.

[14C]Benzoyl peroxide (di[14C]benzoyl peroxide), prep. from [14C]benzene, 1356.

Benzyl chloride, stannic chloride catalysed polycondensation of, 4768.

phosphates, solvolysis by phenols, 3524.

Benzyl alcohol, molar Kerr constants at infinite dilution,

Benzyl alcohol, 2:4-dinitro-, esterification by sulphuric acid,

Beryllium, atom polarisation of dibenzoylmethane complex of,

Besthorn's Red, structure, 1158.

Biosynthesis, studies in relation to. Part VIII, 3717.

Bischler-Napieralski reaction, application to 2-nitrophenyl-N-phenethylacetamides, 4123.

Bis-2:4-diaminophenyl sulphone, prep., 793.

Bisdiguanides with antibacterial activity, prep., 4422.

Bond, olefinic, allylic shift in free-radical reactions, 3231.

Bond lengths, calculated, in some cyclic compounds. Part IV,

strengths, thermochemical evaluation in carbon compounds. Part IV. Differences in bond strengths based on reaction $RI + HI \rightarrow RH + I_2$, where R = p-methoxyphenyl and *cyclo*hexyl, 3011.

Bonding, d-orbital contraction in, 4895.

Boron halides, interaction with esters of boronic acids and hydrogen halides, 824.

trichloride, binary systems with acyl chlorides, comparison with those formed by gallium trichloride, 1527. fission of alkyl allyl ethers by, 4987.

fission of esters of carboxylic acids by, 4296.

reaction with unsaturated alcohols and ethers, 3285.

trifluoride, nuclear-resonance spectra and structure of hydrates of, 3870.

Aryloxyboron compounds, prep., stability, and complex formation, 3006.

sec.-Aminoboron halides, dimeric, prep., 4305.

Borate complexes, formation by hydroxamic acids, 2566. ions, reaction with amylosaccharides, 30.

Borates, ion-exchange of solutions of, 3183.

Borohydride ion, Raman effect of, in liquid ammonia, 1170. Boronates, interaction with boron halides and hydrogen halides, 824.

Boronic esters and their halogen derivatives, stability, solvolysis, and co-ordination reactions, 1541.

Dialkyl chloroboronates, prep. and stability, 1768.

Dichloroboronites, prep., stability, and complex formation,

Nitronium tetrafluoroborate, nitration of aromatic compounds with, 4257.

Phenylboron chlorides, prep. and characterisation, 4697.

Tetra(hydrogen sulphato)boric acid, and its anion, formation in solutions of boric acid and oxide in sulphuric acid, 1925.

Boron, Triaryl borates, prep., stability, and complex formation,

 β -Boswellic acid, structure, 2904.

Brevifolin, prep., 418.

Bromination of phenol with bromine and iodine bromide in acetic acid and carbon tetrachloride, kinetics and mechanism, 4934.

Bromination, acid-catalysed, of toluene by hypobromous

acid, partial rate factors for, 36.

Bromine, reaction with phosphorus trichloride. Part I, 4613. Hydrobromic acid, extraction of indium from, into mixed organic solvents, 2475.

Hypobromous acid, partial rate factors for bromination of toluene by, 36.

Bromopicrin, vibrational assignment, 759.

Bruckner method, application to prep. of phenanthridine derivatives, 4280.

Bulbocapnine, conversion into morphothebaine, 472.

Butadiene, calculation of atom self-polarisability of position l

Butadienes and related compounds. Part III, 2701.

Buta-1:3-dienes, 1:1:4:4-tetra-aryl-, factors bearing on formation of, 2701.

Buta-1:3-diene-2-carboxylic acid, prep. of derivatives of, 3238. cycloButadiene, possible existence of transition-metal complexes of, 1969.

Butane, 2:3-dimethyl-2:3-di-p-tolyl-, prep., 1078.

cycloButane, auxochromic effect of ring of, 2208.

octafluoro-, thermal decomp., 1002.

[2H₈]cycloButane, thermal decomp., 1002.

cycloButane-1:3-dione, 2:2:4:4-tetramethyl-, crystal structure, 3083.

(±)-Butanoic acid, 2:4-dihydroxy-2-hydroxymethyl-, 1:4lactone, prep., 4807.

Butan-2-one, 3-hydroxy-3-methyl-, reaction in cyclic form, 2587.

But-2-ene nitrosochloride, 2-methyl-, prep. and reactions, 2587.

isoButene, carbonium-ion intermediates involved in addition of hypochlorous acid to, 3337.

But-3-enoic acid, reaction with acetyl peroxide, 3231.

But-3-en-2-ol, 4-cyclohex-1-enyl-, oxidation by manganese dioxide, 2446.

isoBut-1-enyl radicals, prep. from isobut-1-enylsilver. Part II, 3640.

But-2-enyl methyl sulphides, autoxidation, 3056.

n-Butyl glyoxylate, orientation of products of reaction of, with 1:2-diamino-4-nitrobenzene, 26.

Butyl alcohols, ternary solutions with benzene and pyridine, molecular polarisation in, 4499.

n-Butyl methyl sulphide, autoxidation, 3056.

(+)-sec.-Butylnitramine, formation of alkyl cations during decomp., 921.

But-2-yn-1-ol, 1-phenyl-, oxidation by manganese dioxide, 2446.

Butyraldehyde, addition to unsaturated acids, esters, and nitriles, 1749.

isoButyraldehyde, oxidation with the free radical from potassium nitrosyldisulphonate, 1132.

(+)-Butyric acid, β -amino-, correlation of configuration of, with that of α-amino-acids, 3982.

y-methoxy-α-methyl-, prep., 1620.

Butyrospermol, chemistry, 3172.

constitution, 2029.

constitution and stereochemistry, 3272.

C

Cadmium oxide, dissociation pressure, 3919.

Terpyridylcadmium chloride, stereochemistry, 594.

Cæsium, ion-sieve reagent for separation of, from alkali metals, 675.

Cæsium hexaiodo-tellurite and -polonite, prep. and crystal structure, 3385.

Calciferol and its relatives. Part II, 4060.

Calcium hydroxide, calcination, 1506.

sulphate, relation between specific conductivity of solutions of and its solubility, 196.

Camphor, conformation and molecular polarisability, 3549. e-Caprolactam. See 6-Hexanolactam, 4876.

Carbamates, perfluoroalkyl, prep., properties, and infrared spectra, 3428.

Carbamic acids, N-acyldithio-, prep. of esters of, 4458.

Carbazole, 7-amino-1:2:3:4:10:11-hexahydro-8-methyl-, prep. of 1-methylindolo(2':3'-2:3)carbazole from, 1135.

See also 1:9'-Dicarbazolyl, 1124. Carbazoles, acetyl., prep., 2212. benzoyl., prep., 2212.

1:2:3:4-tetrahydro-, 8-substituted, attempted acylation,

polycyclic, prep., 1515.

Carbazole series, Friedel-Crafts reaction in. Part V, prep. of carbazole-2:6-dicarboxylic acid, 2212.

Carbohydrates, degradation by alkali. Parts XII, XIII, 2916, 2921.

ionophoresis. Part III, IV, 30, 4311.

ionophoresis on fibreglass sheets, 4311.

novel formazans of, prep., 3228.

of parsnip roots, 220.

Carbohydrates, acetobromo-, catalytic reduction, 214.

amino- ("amino-sugars"), and related compounds. Part I, 4531.

αβ-anhydro-, reaction with magnesium halides, 496. deoxy ("deoxy sugars"). Part XXX, 789.

aldehydoCarbohydrates, interaction with primary aromatic amines, 476.

Carbolines, tryptamines, and related compounds. Parts II, III, 4589, 4593.

 β -Carboline anhydro-bases, N_{β} -alkyl-, structure, 3659.

 β -Carbolines, prep., 4589.

Carbon, accurate determination of, in low-carbon steels, 3398. statistical thermodynamic interpretation of sorption of water and methanol by, 3307.

Carbon monoxide, factors influencing elimination of, from pivaloyl chloride, 4561.

quantitative determination by use of an infrared gas analyser, 4558.

reduction by lithium aluminium hydride, 4428.

Carbon atom, aromatic, nucleophilic powers of common reagents towards, 254.

saturated, mechanism of substitution at. Parts L, LI, LII, 845, 850, 855.

compounds, thermochemical evaluation of bond strengths in. Part IV, 3011. Carbon-14, apparatus for photochemical prep. of substances

containing, 3792. prep. of compounds uniformly labelled with, on a laboratory

scale, 3784.

Carbon-chlorine bond, effect of a-chloro-substituents on $S_{\rm N}$ l reactivity of, 287.

Carbon-carbon double bonds, activation by cationic catalysts. Part II, 2757.

Carbon-iodine bond, strength, 3011.

Carbon-nitrogen bonds, correlation curve for lengths of, 3595.

Carbonium ions, in addition of hypochlorous acid to isobutene, 3337.

Carbonyl compounds, peri-hydroxy-. Parts I, II, 1585, 3600.

of metals. (Part I, 1860.) Part II, 2879.

groups, characterisation in pentacyclic triterpenoids, 1007. steric requirements for spectroscopic interaction of, with a $\beta\gamma$ -double bond, 2302.

Carbostyril, 3:4-dihydro-4-phenyl-, and derivatives, prep.,

isoCarbostyril, 3:4-dihydro-4-phenyl-, and derivatives, prep., 2557.

Carissone, association with eudesmols in Eucalyptus macarthuri, 2973.

(±)-Carolinic acid, prep., 4661.
Casimiroa edulis Llave et Lex, constituents of. Part I, the seed, 4163; Part II, the bark, 4170.

Catalysts, cationic, activation of carbon-carbon double bonds by. Part II, 2757. evaporated metal, deuteration and exchange of ethylene on,

at low temperatures, 735. metal, activated, synthetic applications. Part II, 616.

8 A

5022 Catalysts, poisoned, revival by gas-phase desorption, 264. reversibility of adsorption of poisons on. Part 1V, 264. strengths of bonds linking poisons to. Part I, 2635. Caulosapogenin, formula, and identity with hederagenin, 2314. Cellular constituents. See Xanthine oxidase, 1212, 1219. Cellulose, esparto, degraded, 683. Cellulose acetate, adsorption properties, 1272. Cerin, constitution and stereochemistry, 2419. Cerium tetra-(primary alkoxides), prep., 2260. tetra (secondary alkoxides), prep., 3469. Ceric perchlorate, action of hydrogen peroxide, 104. Ceric salts, decomp. of hydrogen peroxide by. Part II, 104. Chabazites, synthetic, correlation between isomorphous replacements, stability, and sorption capacity, 2892 Charcoal, palladised, as catalyst for reduction of aromatic nitro-compounds by hydrazine hydrate, 2556. Charcoals, deactivated, use for isolation of aromatic substances, Chelation of hydroxyl group in coumarinic acid, 2155. Chelerythrine, identity of toddaline with, 769. Chelerythrine chloride, prep., 4535. Chelidonine sanguinarine alkaloids, synthetical experiments on. Part IV, 4535. Chitose, proof of structure of, as 2:5-anhydro-D-mannose, Chloramine-T, action on cinnamyl phenyl sulphide, 1755. Chloranil, association with methylbenzenes in cyclohexane, 555. Chlorella vulgaris, use in prep. of ¹⁴C-labelled substances, 3784, Chlorin, molecular-orbital calculations on, 1172. octamethyl-, prep., 1655. Chlorine. Chlorides of metals, exchange of 36Cl between, and nitrosyl chloride, 150. Hypochlorous acid, carbonium ion intermediate involved in addition of, to isobutene, 3337.

Perchloric acid, kinetics of reaction of cobalt(III) with thallium(1) in, 343. α -Chloro-substituents, effect on S_N 1 reactivity of C-Cl linkage, Chlorophyll, allomerisation, 1203. position of extra hydrogen atoms in, 2272. and related substances. Parts III-V, 1655, 2272, 2280. Chlorophyll-b, note on structure of, 2272. Chloropicrin, vibrational assignment, 759. 2:3-secoCholestane-2:3-dioic acid, 6x-hydroxy-, structure of lactonic acid derived from, 1059. Cholestanol, alleged presence in wool wax, 1736.

Cholestan-la-ol, unambiguous route to, 3289.

Cholestan-3β-ol, acetate, 6-bromo-7-oxo-, configuration of epimers, 1064.

Cholestanols, 3-methyl-, prep., 3500. Cholestan-3-one, bromination, 4351.

 5α : 6β -dibromo, monohalogenation, 1179.

Cholestenone, 4-methyl- and 4-2'-carboxyethyl-, prep., 4679. Cholest-4-en-3-ones, 6-substituted, absorption spectra, 3677. Cholest-4-en-3-ones, 2a-halogeno-, prep., 1179.

Cholest-1-en-3 β -ol, reaction with thionyl chloride, 3289.

Cholest-4-en- 7β -ol, toluene-p-sulphonate, solvolysis, 1893.

Cholest-4-en-3-ylamines, epimeric, prep., 1649.

Cholest-7-en-3-ylamines, NN-dimethyl-, prep. and deamination, 4821.

Cholesterol, mesomorphism of fatty esters of, 3733.

Cholesterol, 20\xi\text{-hydroxy-, prep., 4675.} 7-oxo-, occurrence in wool wax, 1736.

phosphates, prep. and reactions, 4603.

toluene-p-sulphonate, solvolysis with thiophenoxide ions, 4817.

 ψ -Cholesterol. See Cholest-4-en-7 β -ol, 1893.

3α-Cholesterylamine, prep., 1054.

Cholic acid, sodium salt, diffusion in water, 2978.

isoChondrodendrine, structure, and anomalous optical rotation, 4451.

Chroman, 4-p-hydroxyphenyl-2:2:4-trimethyl-, identity of "Dianin's compound" with, and prep., 2010, 2018. 2:4:4-trimethyl-, prep. of derivatives of, from 1:3:3-trimethylindan-1-yl hydroperoxide, 4785.

Chroman-4-one, prep. of derivatives of, 795.

Chromatography, application to fractionation of high polymers,

gas-liquid, correlation of response of micro-flame detector with heats of combustion for use in, 2299.

Chromium, electron-spin resonance of oxyanions of, 4710.

Chromous perchlorate, oxidation in solution by molecular oxygen, 2095.

Chromonol, prep. of ethers of, from o-hydroxyacetoarones, 4411.

Chromonols, 5:8-dihydroxy-, Wessely-Moser rearrangement,

Chrysean, thiazoles derived from, prep., 1870. isoChrysean, thiazoles derived from, prep., 1870.

Chrysene, nitration, 3572.

Chrysene, 1:2:3:4:4a:4b:5:6:10b:11:12:12a-dodecahydro-1:1-dimethyl-, prep., 1238.

cis-syn-1:4:5:6:12:13:14:15-octahydro-8-methoxy-1:4-dioxo-, reduction products and their interrelation, 3249; direct conversion into 1-alkoxy-5:6:11:12-tetrahydro-8-methoxychrysenes, 3260.

1:2:7:8-tetrahydro-3:10-dimethoxy-, prep., 4308.

1:2:7:8-tetrahydro-3-methoxy-, prep., 4308.

Chrysenes, 1-alkoxy-5:6:11:12-tetrahydro-8-methoxy-, prep. by a new and specific aromatisation reaction, 3260.

Cinnamic acid, reaction with phenol in presence of hydrochloric acid, 1382.

Cinnamic acids, trans-p-n-alkoxy-, effect of halogen substitution on mesomorphism of, 1417.

Cinnamyl phenyl sulphide, action of chloramine-r on, 1755.

Cinnolines, and other heterocyclic types in relation to chemotherapy of trypanosomiasis. Part XI, 26. Part XXXV, 4207.

Ciunolines, amino-, basic strengths and ultraviolet and infrared spectra, 4191.

chloro-, prep. and ultraviolet spectra, 4207.

hydroxy-, ionisation constants, 1294. prep. and ultraviolet spectra, 4207.

Circumanthracene, prep., 3878.

Citraldehyde, rearrangement at high pressure, 953.

Claisen ester condensation of ethyl tetrahydro-2-pyranyloxyacetate, 4665.

Cobalt, complexes with chelate compounds, 1042.

Chloronitrobis(ethylenediamine)cobalt(III) ions, bimolecular basic hydrolysis and aquation, 2862.

Cobalt(III), kinetics of reaction of, with thallium(I) in aqueous perchloric acid, 343.

Cobaltic complexes, solid, spectra in 2—15 μ region, 2849.

nitroammines, solid, spectra in 2-15 μ region, 2849. Halogenoamminobis(ethylenediamine)cobalt(III) ions, bimo-

lecular basic hydrolysis and aquation, 1707.

Halogenoisothiocyanatobis(ethylenediamine)cobalt(III) ions, bimolecular basic hydrolysis and aquation, 1691.

Hexamminocobalt trihydroxide, rate of depolymerisation of diacetone alcohol by, 671.

Ion-pair Co(NH₃)₆³⁺OH⁻, dissociation constant, 671.

Nitratoamminobis(ethylenediamine)cobalt(III) ions, bimolecular basic hydrolysis and aquation, 1707.

α-Cocaine di-iodides, prep. of methylene derivatives of, 938. Codide, β -ethylthio-, attempts to prepare adducts of, with dienophils, 1863.

Coenzyme A. Part X, 4968.

Colloids, association, and solubilised materials, diffusion in water, 2978.

Colombo root, bitter principles of. Parts I, II, 2085, 2090.

Colour of organic compounds. Part VIII, 1360.

Colour reactions of aromatic nitro-compounds at low temperatures, kinetics and mechanisms. Parts II—IV, 2528, 2540, 2546.

Columbin, functional groups in, 2085; constitution, 2090. Columbium. See Niobium, 4946.

Complexes, co-ordination, of methyl derivatives of indium and thallium, 3351.

Complexes, of aryloxyboron compounds, formation, 3006. of metals, stabilities, 1115.

of phosphates, ion-exchange sorption and pH-tritration methods of detection of formation of, 269.

of transition metals of type [Co(NH₃)₅X]²⁺, spectra, 4981. Complex-forming agents, organic, for metals. Parts I-III, 569, 2983, 4670.

Conductivities, electrical, of carboxylic anhydrides in sulphuric acid, 607.

of metal thiosulphates in aqueous methanol and ethanol,

of silver nitrate in non-aqueous and mixed solvents. Part IV, ethylene glycol and its mixtures with water, pyridine, and quinoline, 473.

of solutions in nitric acid. Part I, 4463.

of solutions in which the solvent molecule is "large". Parts I, II, 1424, 2428.

of tetraethylaminonium picrate in phthalate esters, 1424. of tetrapentylammonium picrate in phthalate esters,

specific, relation to solubility of anhydrite, 196.

Conessine, constitution. Part IX, steroidal amines related to conessine, 3749.

Conformation and molecular polarisability, 3549.

Conjugated systems, effect of terminal halogen atoms on K-bands of, 4314.

Conjugation, interdependence with molecular conformation, in aromatic ethers. Part I, 2455.

relation to configuration in diphenyl derivatives. Part VI, alkyldiphenyls, 2286; Part VII, halogenodiphenyls, 4637.

Co-ordination compounds, of ammonia and amines, infrared spectra of N-H stretching modes of vibration in, 2712. of metals, atom polarisation, 1821.

relative tendencies of simple monoamines to form,

Copolymerisation of styrene and diethyl vinylphosphonate,

Copper, alloys with tin, anodic oxidation at very low current

density, 2857. atom polarisation of trans-planar complexes of, 1821.

effect of sulphur dioxide on oxidation of, 2182.

electrodeposited, hydrogen overpotential at, in hydrochloric acid, 3020.

polarography of malonate complexes of, 4847.

reaction with organic solvent-dinitrogen tetroxide mixtures, 3900.

Copper(I) complexes, structure, 538.

fluoro acid salts, prep., 1858.

Copper(II) acetates, anomalous paramagnetism and δ-bonding in, 3837.

salts, magnetic studies. Part I, 3837.

Di-(o-phenylenebisdimethylarsine)copper(1) di-iodocuprite(I), and related compounds, structure, 538.

Terpyridylcopper(II) chloride, stereochemistry, 594.

Copper salts, insoluble, precipitation in aqueous solution,

Coprostane, 3\alpha-chloro-, unambiguous prep., 2492.

Coprostanyl halides, configurations, 2492.

Coprostan-3α-ylamine, prep., 1054.

Coprostan-3-ylamines, epimeric, prep., 1649.

Corchorus olitorius, purification and monosaccharide degradation products of mucilage of, 828.

Corticosterone, prep. from cortisol, 517. Corticosterone, 11-dehydro-, prep. of analogues of, 1152.

Cortisol, conversion into corticosterone, 517.

Cortisone, by ways in prep. of, from hecogenin. Parts I, II, 4739, 4744.

prep. of esters of, from 4:5α-dihydrocortisone, 4356.

studies in synthesis of. Parts XIII-XVIII, 4320, 4326, 4330, 4344, 4351, 4356.

Cortisone, 4:5\address-dihydro-, prep. of cortisone esters from,

Coryline, prep., 771.

Coumarinic acids, stability; chelation of hydroxyl group in, 2155.

Coumarins, 3:4-dihydro-4-phenyl-, prep., 1382.

4-hydroxy-, prep., 3315.

Coumarones, 3-aroyl-, prep., 3213.

Cow's milk, estimations of co-factors and catalytic activities of enzyme fractions of, 1219.

p-Cresol, structure of neutral crystalline dimer obtained by oxidation of, 530.

Critical micelle concentrations of sodium alkyl sulphates,

Crotonic acid, reaction with acetyl peroxide, 3231.

Crotonic acid, α-alkyl-β-amino-, esters, prep. of 2:3:5:6-substituted pyrimidones from, 4708.

β-amino-α-(N-substituted benzimidoyl)-, esters, prep., and conversion into 3-methyl-1:5-diphenylpyrazole-4-carboxylates, 4696.

Crotononitrile, β-amino-αγ-diphenyl-, prep. of silicon derivatives of, 2779.

Crystals, thin, measurement of thickness of, by interferometry, 2658.

Crystal symmetry, and adsorption of dyes by growing crystals. Part I, aminonium nitrate IV, 4841.

Cucurbitaceae, bitter principles of. Part IV, 3682.

Cucurbitacin A, dehydrogenation, 3682.

Curare and related topics. Part II, 4451.

Curvularia, isolation of curvularin from, 4301.

Curvularin. Part I, isolation from Curvularia, and partial characterisation, 4301.

Cyanamide, reaction with a-amino-acetals and -aldehydes, 307. Cyanates, inorganic, decomp. in water, 900.

isoCyanates, perfluoroalkyl, prep., properties, and infrared spectra, 3428.

Cyanoethylation, novel method of. Part IV, substitution effects in, 388.

2-Cyano-2-propyl. See Ethyl, 1-cyano-1-methyl-, 1127.

Cyclic compounds, calculated bond lengths in. Part IV, 3595.

reduced. Parts I, II, 1238, 4518.

Cyperone, structure. Part V, steric course of reduction of cyperones, 2670.

Cysteine peptides, oxidation, 3157.

protected, prep., 3148.

Cystinol, prep., 4066. Cytidine diphosphate glycerol, isolation, reactions, and structure, 4186.

Cytidine diphosphate ribitol, from Lactobacillus arabinosus,

Cytosines, acyl., structures, 2384.

D

Dambonitol. Part II, oxidation, and identity with 1:3-di-Omethyl*meso*inositol, 480.

Dammar resin, constitution of neutral tetracyclic triterpenes of, 2196.

Dammarenediols, formulation, 2196.

Decanoic acid, potassium salt, diffusion in water, 2978.

Decan-1-ol, diffusion in water, 2978.

Dehydrogenation, selective, of unsaturated alcohols by highpotential quinones, 3070.

Delpheline, environment of nitrogen atom in, 2689.

interrelation of functional groups in, 3121.

Delphelines, rearrangements, 3864.

Delphinium and Aconitum alkaloids. Parts I-III, 2689, 3121, 3864.

Depolymerisation of trioxan in aqueous acids, 1286.

+)- β -Desmotropo- ψ -santonin, revised structure, 1828.

Dextran, molecular weights, 3380.

sulphate, distribution of ester groups in, and their stability towards hydrolysis, 3752.

1:2-Diamines, condensation with acetylacetone to give diazepines, 2597.

Di-(6-amino-2:4-dihydroxypyrimidin-5-yl) disulphide, prep., 917.

"Dianin's compound," structure, 2010; rational synthesis,

Diaryl-2:2'-disulphonic acids and related compounds. Parts I, II, 1665, 3668.

Diaryls, heterocyclic, prep. by use of activated metal catalysts,

3:7a-Diazaindanones, isomeric dyes from, 1360.

Diazepines. Part I, 2597.

1:2-5:6-Dibenzanthracene, quantitative X-ray investigation of crystal structure of monoclinic modification of, 925.

Dibenzo[ce]dithiin 5:5-dioxide, 1:3:8:10-tetramethyl-, optical stability, 3673.

Dibenzofuran, prep. of derivatives of, 4276.

Dibenzofuran, 2-methoxy-, orientation in substitution of,

3:4-5:6-Dibenzophenanthrene, 9:10-dihydro-, racemisation,

Di(benzothiazol-2-yl) disulphide, thermochromism, 15.

Dibenzyl ketone, thermal decomp. in presence of toluenc, 2136.

Di-tert.-butyl peroxide, reactions of free radicals from, with anthracene and 9-methylanthracene, 1108.

1:9'-Dicarbazolyl, prep. of derivatives of, 1124.

1:9-9':1'-Dicarbazolylene, attempted prep., 1124.

"Dichlorodideoxydulcitol," Bouchardat's, structure, 636. Di-(2-chloroethyl) ether, reaction with hydrazine, 782.

Di-(5-cyanoethoxycarbonylmethylene-2-pyrrolidinylidene), prep., colour, and fine structure, 244.

Dielectric properties of aluminium soaps in toluene solution,

Diels-Alder reaction, studies on. Part IV, 3249.

Dienophils, condensation of thebaine with, 1863.

reactions with 1-1'-acetoxyvinylcyclohexene, 4518. reactions with 2:3 benzacridine, 2676.

Diethyl ether, 2:2'-dibenzoyloxy-, pyrolysis, 3563. sulphide, heats of adsorption on platinum, 2635.

Diffusion, in water, of association colloids and solubilised materials, 2978.

Diffusion coefficient of hydrogen in iron, 230.

1:3-Diglycerides, infrared spectra and polymorphism, 2522.

Dilsea edulis, structure of floridean starch from, 2831.

¹⁴[C]Dimethylamine, prep., 1892.

14 C Dimethylnitrosamine, prep., 1892. Dinaphtho(7':1'-1:13)(1'':7''-6:8)peropyrene, prep., 3878.

1:2-Diols, related to cyclohexane, stereochemistry, 4384,

1:3-Diones, cyclic, 2-acyl derivatives of. Parts III, IV, 3495,

Dioscorea hispida, Dennstedt, alkaloid of. Part III, 1577. Dioscorine, Hofmann degradation and tentative structure,

3:7-Dioxa-1-azabicyclo[3:3:0]octanes, prep., 1662.

Dioxan, mixtures with water, behaviour with ion-exchange resins, 1676.

2:3-Diphenoquinone, 5:6-dichloro-, prep., 3820.

5:6-dimethyl-, prep., 3824. Diphenyl, nitration, 3572.

Diphenyl, 4-acetoxy-, anomalous bromination, 3243.

2:2'-diacetyl-, anomalous reduction, 3475.

5:6-dichloro-2:3-dihydroxy-, prep., reactions, and conversion into the diphenoquinone, 3820.2:3-dihydroxy-5:6-dimethyl-, prep., reactions, and con-

version into the diphenoquinone, 3824.

Diphenyls, alkyl-, configuration and conjugation in, 2286. halogeno, relation between configuration and conjugation

in, 4637. Diphenyl derivatives, relation between configuration and con-

jugation in. Parts VI, VII, 2286, 4637. series, polyhydroxy-, synthetic and oxidative studies in. Parts II, III, 3820, 3824.

sulphide, sulphonation, 3246.

Diphenylamine, 4-benzoyl-, prep., 4667.

2:2'-dibromo-, prep. and properties, 786.

hexanitro, spectrophotometric study. Part I, molecular and ionic forms in dioxan, 401.

hydrochloride, 2-amino-, phenazine pigments obtained by oxidation of, 888.

hydrochlorides, chloro-2-amino-, prep. of phenazine pigments and aposafranones from, 896.

Diphenyl-2:2'-disulphonic acid, 4:4'-dimethyl-, reductive scission, 1665.

4:6:4':6'-tetramethyl-, distrychnine salt, optical resolution, 3668.

Diphenyl-2:2'-disulphonic acids, prep., 1665.

Diphenylpicrylhydrazyl, reaction with 1-cyano-1-methylethyl radicals, 1127.

Diphenylpyrazine N-oxides, prep., 1885.

Diphenyl-2:2'-thiolsulphonate, 4:6:4':6'-tetramethyl-, optical stability, 3673.

Dipole moments, of alkylpyridines, 3621.

of pyridine, quinoline, and isoquinoline, 1405.

Dipropyl sulphide, bis-2:3-dibromo-, dehydrobromination products and related bases derived from, 3892.

Di-2-pyridyl and related compounds, prep., 616.

[4:4':6:6'- $^{14}C_1$]Di-2-pyridyl, prep., 3975.

Disc, rotating, transport to surface of, 3756.

Displacements, aromatic nucleophilic, activating power of p-SO₂·X groups in, 2329.

nucleophilic, border-line mechanisms in, 4633. in aromatic systems. Part V, 1563.

Dissociation, electrolytic, influence on rates of reactions. Part II, 1396.

incomplete, of salts, reaction-kinetic investigation. Part IV, 2836.

Dissociation constants and chemical constitution of monocarboxylic acids. Part XV, 2995.

1:3-Dithia-2-arsaindane, 2-p-carboxyphenyl-5-methyl-, optical resolution, 1976.

Dithiadiazines, tetrachlorotetrahydro-, prep., 3139.

Dithiocarbamic acids, N-acyl-, prep. of esters of, 4458.

Di-1-thionaphthoyl disulphide, thermochromism, 15.

Ditolyl-2:2'-disulphonic acids, prep., 1665.

Divicine, See Pyrimidine, 2:4-diamino-5:6-dihydroxy-, 2124. (+)-Docosanoic acid, 2(L):4(L)-dimethyl-, prep., 2036.

Dodecan-1-ol, diffusion in water, 2978.

 β_{γ} -Double bond, steric requirements for spectroscopic interaction of, with a carbonyl group, 2302.

Dulcitol, 1:6-diamino-1:6-dideoxy-2:4-3:5-di-O-methyleneprep., 636.

Durenol, oxidation by peroxidase, 940.

Dyes, absorption by growing crystals, and crystal symmetry. Part I, aminonium nitrate IV, 4841.

and new intermediates. Part IV, 1429.

Dyes, cyanine, derived from 2-methylindolo(3':2'-3:4)quinoline, 1331.

from 3:7a-diazaindanones, 1360.

styryl, prep., 1480.

trinuclear, related to oxonols. Part II, prep. and absorption spectra, 2991.

E

α-Ecgonine, methyl ester, prep. of derivatives of, 938.

-)-Ecgoninol, absolute configuration of nitrogen atoms in salts of, 873.

Effects, polar, and infrared spectra. Part III, internal spectral relationships, 2753.

of substituents on mechanism of aromatic side-chain reactions. Part XVI, 404.

steric restrictions of, and their application to studies of rotational isomerism, 3704.

steric, in electronic spectra, 3779.

in substituted nitrobenzoic acids, 2995.

ortho-Effects in solvolysis of arylalkyl halides, 850.

polar and steric, in bimolecular Finkelstein substitutions. 855.

trans-Effect in platinous complexes, 4495.

Elbs reaction, with heterocyclic ketones, 3435.

Elements, heaviest, magnetochemistry. Part IX, 78.

transition, chemistry of. Part I, 1860.

E.M.F., small, potentiometric circuit for measurement of,

Energies, resonance, of aromatic molecules, simple approximation to, 1886.

Energy levels of monosubstituted benzenes, 4960.

Enols, bis-compounds from, formation and reductive scission, 319.

Enzyme, disproportionating, of potato. See D-Enzyme, 44,

D-Enzyme, dextrins synthesised by, 53.

D-Enzyme of potato, 44.

Enzymes of cow's milk, catalytic activities of co-factors of, 1219.

(±)-Ephedrine, condensation with aldehydes and ketones, 1662.

Equilibria, ionisation, of metal co-ordination complexes in benzene solution. Part II, 538. Ericaceae of Hong Kong, occurrence of triterpenes in, 1461.

Ergostan-5-ols, epoxidation, 4691.

Ergost-22-en-11-ones, 3β :7-dihydroxy-, prep., 4320.

Erythroaphin-sl and its derivatives, alkaline inversion, 4091.

Esparto, degraded cellulose from, 683.

Ester C₃₃H₄₆O₇, obtained by oxidation of methyl glycyrrhetate acetate, constitution, 1946.

Esters, aliphatic, kinetics of alkaline hydrolysis of, 3958. carboxylic, fission by boron trichloride, 4296.

complex forming properties, 1272.

1:3-dioxo-, prep. of heterocyclic compounds from, 3663.

hydrolysis in sulphuric acid, 1572.

α-hydroxy-, prep. of tetronic acids from, 4103. kinetics of alkyl-oxygen fission in hydrolysis of. Parts V, VI, 3629, 4676.

of germanium. Part I, parachors and molecular structure,

structural effects in oxidation of, 1799.

thermochemistry of formation of, from phosphorus halides,

tracer studies on hydrolysis of. Part III, 1079.

unsaturated, addition of bromotrichloromethane and butanal to, 1749.

Esterification by sulphuric acid of 2:4-dinitrobenzyl alcohol,

Ethane, nitro-, neutralisation by metallic hydroxides, 2836.

Ethanol, aqueous, conductivity of metal thiosulphates in, 1392.

reaction of propyl bromides with thiosulphates in, 1396. solvolysis of n-propyl bromide in, 1400.

Ethanol, I-phenyl-, acid-catalysed oxidation, 665.

1-phenyl 1-2'-pyridyl-, resolution, 3394. Ethanolamines. See Amines, (2-hydroxyethyl)-, 4946.

Ethers and anilides, phenolic, halogenation. Part XVIII, 3939.

alkyl allyl, fission by boron trichloride, 4987.

aromatic, interdependence of molecular conformation and conjugation in. Part I, 2455.

kinetic method for determination of ortho/para-ratios for halogenation of, 3939.

Ethoxaloacetic acid, p-nitrobenzoyl, ethyl ester, prep., 3541. Ethoxide ions, reactions with chloroazanaphthalenes, 1563.

Ethyl chloride, 1:1-dimethyl-, reaction with sodium thiophenoxide, 41.

nitrate, latent heat of vaporisation and thermochemistry of,

Ethyl hydroperoxide, l-phenyl-, stereochemical investigation of prep. and reactions of, 665.

methyl ketone, effect of water on conductivity in, 998.

Ethyl, 1-cyano-1-methyl-, reaction with diphenylpicrylhydrazyl, 1127.

Ethylamines, 2-(3:4-dihydroxy[14C1]phenyl), prep., and use in study of melanin formation, 1549.

Ethylene, deuteration and exchange of, on evaporated metal catalysts at low temperatures, 735.

tetrafluoro, reaction with trichlorosilane, 962.

Ethylenes, diaryl-, effect of para-substituents and solvents on dimerisation of, 2757.

1:2-dichloro-, molecular mode of decomp., 2640. radical-chain decomp., 3092.

Ethylene glycol, conductivity of silver nitrate in, 473.

Ethylenediaminetetra-acetic acid, co-ordination compounds with gallium, indium, and thallium, 4701.

thermodynamics of formation of complex ions of, with bivalent cations, 4571.

Ethyleneimine, ionisation, 2448.

α-Ethynyl alcohols, rearrangement, 911.

Ethynylcarbinols, addition of thiolacetic acids to, 116.

Ethynylmagnesium bromide, synthetical applications, 4765. cycloEucalenol, experiments on, 1384.

Eucalyptus macarthuri, association of eudesmols and carissone in, 2973.

microcorys, cycloeucalenol from, 1384.

Eucarvone, reactions, 4096.

Eudesmols, isomeric, separation, prep., and characterisation, and their association with carissone in Eucalyptus macarthuri, 2973.

 $9\xi(H)$ -Eupha-7:24-dien-3 β -ol, identity of butyrospermol with: configuration at $C_{(9)}$, 3172.

Exchange reactions, and magnetic susceptibilities of complex salts. Part IV, correlation with absorption spectra, 520. of hydrogen isotopes, between toluene and sulphuric acid,

of hydrogen isotopes, kinetics. Parts V, VI, 2743, 3911.

Ferrocene derivatives. Part III, 3030.

Fibreglass, ionophoresis of carbohydrates on, 4311.

Finkelstein substitutions, bimolecular, polar and steric ortho-effects in, 855.

Fischer indole syntheses, formation of osazones during, 4814. Flavogallol, structure, 4225.

Flavone, 3:7-dimethoxy-3':4'-methylenedioxy-, prep., and

identity of demethoxykanugin with, 2176.

Flavonols, aluminium complexes, 3224.

5:8-dihydroxy-, Wessely-Moser rearrangement, 4409.

Flavoproteins, metallic derivatives, homogeneity of crystalline fractions of, 1212.

Fluorene, chemistry of. Part V, 3204.

4:5-dimethyl-, prep., 2415.

Fluorenes, 9:9-dialkyl-, prep., 3204.

9-halogenoalkyl-, dehydrohalogenation, 3204.

Fluorenone, 4:5-dimethyl-, prep., 2415.

Fluorenones, Schmidt reaction with, 1498. Fluorenone-4:5-dicarboxylic acid, prep., 2415.

Fluorescene of aromatic nitro-amines, 4865.

Fluorination of tellurium, 3454.

Fluorine compounds, organic (Bergmann et al.). Parts V-VII, 1519, 1521, 1524.

(Fear et al.) Part IV, 3199.

Fluorides, complex, of formula ABFs, structural chemistry,

Parts IV-VII, 876, 1242, 1855, 1858.

Hydrogen fluoride, aqueous, acidic properties, 1286.

Fluoropicrin, vibrational assignment, 759.

Formaldehyde, electronic spectrum, 858. quantitative microestimation of, in presence of periodate,

Formates of alkaline-earth metals, ion association in, 744.

Formazans, of carbohydrates, novel, prep., 3228.

Formic acid, liquid and solid, infrared spectra, 225. Frémy's salt. See Potassium nitrosyldisulphonate, 1132.

Friedel-Crafts acetylation of alkylbenzenes with excess of reagent, 4943.

acylation and alkylation, comparison of inter- and intramolecular processes of, 4647.

reaction in the carbazole series. Part V, 2212.

Friedelane series, triterpenes of. Parts I, II, 2115, 2119.

Friedelin, constitution and stereochemistry, 2419.

Fries rearrangement, mechanism, 2222.

Fumagillin, degradation products, 4237. Fungi, chemistry of. Part XXVI, 3545.

higher, chemistry of. Part VI, 3767.

Furan, tetrahydro-, conformation and molecular polarisability, 3549.

Furans, 5-chlorotetrahydro-, ring fission, 136.

Furano(2':3'-3:4) isoquinoline, 1:2-dihydro-1-oxo-5'-phenyl-, prep., 2477.

D-Furanosides, methyl 2:3-anhydro-, ammonolysis. Part II, 819.

Furanoxanthone, dihydro-oxo-, prep., 2140.

Furfuraldehyde, 5-hydroxymethyl-, prep. from 2:3-di-Omethyl-p-glucose, 2921.

Fuscin, constitution and prep., 1028.

G

D-Galactopyranose 6-(methyl sulphite), 1:2-3:4-di-O-isopropylidene-, prep., 2589.

D-Galactose diethyl dithioacetal, oxidation, 970.

aldehydo.p. Galactose, 2-deoxy-, prep. and characterisation of derivatives of, 789.

2:3:4:5:6-penta-O-acetyl-, reaction with primary aromatic amines, 476.

Gallium, co-ordination compounds with ethylenediaminetetraacetic acid, 4701.

dichloride, Raman spectrum and constitution, 3723.

trichloride, addition compounds. Part I, 1527.

binary systems with acyl chlorides, comparison with those formed by boron trichloride, 1527.

Tetrachlorogallate ion, Raman spectrum in aqueous solution, 3721.

Gallofiavin. Part III, 418.

isoGallofiavin, position of carboxyl group in, 418.

Gentiodextrins, prep., 4543.
Germanium, chemical effects at pn junctions in, 3726.

surface chemistry. Part I, 3726.

Alkyl orthogermanates, prep., parachors, and molecular structure, 4916.

Germanium esters. Part I, parachors and molecular structure, 4916.

Gibberellic acid. Part III, 2415.

Glabric acid, isolation from liquorice root, and characterisation, 2417.

Gladiolic acid, prep., 2443.

D-Glucofuranose, 1:2-5:6-di-O-isopropylidene-, action of phosphorus pentachloride on, 1244.

3-(methyl sulphite), 1:2-5:6-di-O-isopropylidene-, prep., 2589.

Glucomannans of lily bulbs, 181.

Glucosamine 6 (dihydrogen phosphate), prep. of crystalline monohydrate of, 814.

D-Glucosamine hydrochloride, deamination, 4531.

α-1:4-Glucosans. Part IV, 2831.

D-Glucosazone, l-phenylazo-, identity with "D-Glucosazone-formazan," 3227.

"D-Glucosazone-formazan," proof of structure of, by synthesis, 3227. D-Glucose, 2-acetamido-2-deoxy-, reaction with ethanethiol

and hydrochloric acid, 2042.

3:6- and 4:6-di-O-methyl-, degradation by alkali, 2916. 2:3-di-O-methyl-, degradation by lime-water, and conversion into 5-hydroxymethylfurfuraldehyde, 2921.

6-O-methyl-, degradation by alkali, 2916.

1:2-O-isopropylidene, oxidation with periodic acid and prep. of phenylhydrazones from, 3228.

D-Glucose diethyl dithioacetal, oxidation, 970.

aldehydo-D-Glucose, 2-deoxy-, prep. and characterisation of derivatives of, 789.

3:4:5:6-tetra-O-acetyl-2-deoxy-, reaction with primary aromatic amines, 476.

α-D-Glucoside, methyl 4:6-O-benzylidene-3-deoxy-3-iodo-2-Otoluene-p-sulphonyl-, action of sodium iodide on, 471.

 (\pm) -Glyceraldehyde, 2-deoxy-2-fluoro-, prep., 2150.

Glycerides, infrared spectra and polymorphism. Parts I, II, 55, 2522.

Glycerosazone, 3.0-methyl-, ultraviolet light absorption,

Glycine, a-phenyl-, decarboxylative acylations with, 2910. Glycine peptides, esters, self-condensation, 3642.

oxidation, 3157.

Parts II, III, 1444, 2940.

protected, prep., 3148.

Glycollic acid, thio. See Acetic acid, mercapto., 3189.

1:2-Glycols, stereoisomeric, mechanisms of oxidative fission of, 840.

Glycosides, flavonoid, from Zanthoxylum species, 632.

Glycosyl halides, O-acyl-, reactivity. Part IV, 1836. α-D-Glycosyl 1-halides, O-acetyl-, solvolytic reactions in presence of electrophilic catalysts, 1836.

Glycosylamines, N-glycyl-, prep., 2818.

18α-Glycyrrhetic acid, relation of glabric acid to, 2417.

Glycyrrhetate acetate, methyl, constitution of the ester, C₃₃H₄₆O₇, obtained by oxidation of, 1949.

Glycyrrhiza glabra root, isolation of glabric acid from, 2417.
Glyoxal, phenyl-, condensations with 5:6-diaminouracil, aminomalonamide, and 2:4:5-triamino-6-hydroxypyrimidine, 2131.

Glyoxaline, carbamoyl-, prep., 4667.

4:5-dihydro-2-(3-hydroxy-2-naphthyl)-, prep., 3684.

Glyoxalines, phosphorylation through, 2812.

prep., 361.

purines, and pyrimidines. Parts II—IV, 1877, 3847, 4118. Glyoxalines, 2-amino-, prep., 307. 2-mercapto-. Part X, acylation, 1103.

Glyoxalinium salts, condensed, prep., 1158.

Glyoxalinophenazines derived from anilinoaposafranines, prep. and hydrogenation, 3347.

Glyoxylic acid, 2:4:6-trimethoxyphenyl-, reaction with thionyl chloride, 3209.

Grignard reagents, reactions with substituted 3:4-dihydro-4oxoquinazolines, 415.

Griscofulvin. Part X, 1956.

Griscoviridin. Part III, 2925.

Griseoviridin diacetate, octahydrodethio-, degradation to 10-aminodecanoic acid, 2925.

Guaiacol, oxidation by peroxidase, 940.

Gum labdanum, acidic constituents, 4259. chemistry of. Parts I, II, 4259, 4262.

mastic, isolation of masticadienonic acid from, 4150.

isolation of oleanonic acid and a triterpenoid keto-acid from, 4158.

of Hakea acicularis, composition, 4487. of Khaya grandifolia, structure, 989.

H

Hæmatinic acids and their imides, prep. and characterisation,

Hæmatoxylin, reactions, 3296.

Hakea acicularis, composition of gum of, 4487.

Halogenation, base-catalysed, of aliphatic ketones, quantitative aspects. Part I, 2512.

in acid solution, 2283.

of aromatic ethers, ortho/para-ratios for, 3939.

of phenolic ethers and anilides. Part XVIII, 3939.

of phenols and aromatic sulphonamides, secondary mechanisms in, 1883.

Halogens, nature of compounds formed with triaryl phosphites, 3043.

reaction with triphenyl phosphite, 3038.

Halide ions, kinetic effects of phenyl and halogen substituents in alkyl halides on their reactions with, in acetone, 845.

Halogen halides, interaction with boron halides and esters of boronic acids, 824.

Hardwoods, chemistry of extractives from. Parts XXVI—XXVIII, 1384, 4469, 4477.

Heats of combustion of quinol and p-benzoquinone, 2695.

formation of complex ions of ethylenediaminetetra-acetic acid with bivalent cations, 4571.

of phosphorus esters and anilides, 422.

mixing of binary mixtures of benzene, cyclohexane, n-heptane, toluene, and n-hexane, 3708.

of ternary, quaternary, and quinary mixtures of benzene cyclohexane, toluene, heptane, and hexane, 3713. vaporisation of ethyl nitrate, 210.

Hecogenin, by-ways in prep. of cortisone from. Parts I,

II, 4739, 4744. improvement in conversion of, into 3\beta:12\beta-diacetoxy- $5\alpha:25D$ -spirostan-11-one, 4330.

Hecogenin, 9:11-dehydro-, as intermediate in prep. of 11-oxygenated steroids, 4739.

Hederagenin, identity of caulosapogenin with, 2314.

Hemicellulose from wheat straw, constitution, 3830.

n-Heptane, heats of mixing with benzene, cyclohexane, toluene, and hexane, 3708, 3713.

viscosities of solutions of primary alcohols in, 200.

bicyclo[2:2:1]Heptane, prep. and anomalous absorption spectra of derivatives of, 4073. cycloHeptatrienyl. See Tropylium.

-)-Hesperetin, isolation from Zanthoxylum species, 632.

Hesperidin, as a β -7-rutinoside of (—)-hesperetin, 632. Heterocyclic compounds, addition reactions. Parts II, III, 246, 2676.

containing five-membered rings, absorption spectra,

3438. containing oxygen ("Oxygen heterocycles"). Parts V,

VI, 2408, 4276. nitrogenous, with six-membered rings and hydroxyl groups, ionisation constants, 1294.

prep. from δ-unsaturated 1:3-diketo-esters, 3663.

quaternary dichloroiodides, prep., 1642. substances, ionisation constants. Part II, 1294

systems, polynuclear (Badger et al.). Parts IX-XI, 122, 3435, 3438,

(B. R. Brown et al.) Part I, 1158.

n-Hexane, heats of mixing with benzene, cyclohexane, toluene, and n-heptane, 3708, 3713.

Hexane, 1:6-di- $(N^5$ -p-chlorophenyl- N^1 -diguanido)-, prep. and antibacterial activity, 4422

cycloHexane, association of chloranil with methylbenzenes in,

heats of mixing with benzene, heptane, toluene, and hexane, 3708, 3713.

viscosities of solutions of primary alcohols in, 200.

cycloHexane, trans-1-2'-cyclohexylidene-ethylidene-2-methylene-, prep., 4060.

cycloHexanes, (±)-1:3-diamino-, epimeric, prep. and configuration, 805.

cycloHexane derivatives. Part II, 2165.

stereochemistry. (Part II, 805.) Parts III-V, 2363, 4384, 4391.

cycloHexanecarboxylic acid, 2:4-dioxo-6-styryl-, ethyl ester, hydrolysis, 3001.

cycloHexane-1:3-dione, 2-acetyl-4:4:6-trimethyl-, prep. and identity of (\pm) angustione with, 2179.

 (\pm) -2-acetyl-4:4:6-trimethyl-, prep. and identity with \pm)-angustione, 4068.

cycloHexane-1:3-diones. Part I, 3001.

cycloHexane-1:3-diones, 2-acyl-, ultraviolet and infrared absorption spectra, 3495.

di- and tri-methyl-, prep., 4068.

Hexanoic acid, $D \cdot (+) \cdot 6$ -methoxy-3-methyl-, prep., 1620.

cycloHexanol, 3-benzyl-, cyclodehydration, 1809.

cycloHexanols, 2-phenethyl-, isomeric, prep. of as-octahydrophenanthrene from, 1344.

6-Hexanolactam, equilibrium with water in their mutual system, 4876.

Hexan-2-one, 1:6-dihydroxy-, cyclic structures of an anhydro-2:4-dinitrophenylhydrazone and a 2:4-dinitrophenylosazone derived from, 1146.

cycloHexanone, use in prep. of 1-methylindolo(2':3'-2:3)carbazole, 1135.

cycloHexanone, 2-ethynyl-2-hydroxy-, Meyer-Schuster rearrangement, 4699.

3-isohexyl-3-methyl-, prep. and reactions, 790.

cycloHexanones, conformation and molecular polarisability,

substituted, catalytic hydrogenation, and stereochemistry of the products, 2165.

cycloHexene, 1-1'-acetoxyvinyl-, prep. and reaction with dienophils, 4518.

Hex-2-enoic acid, 5-oxo-3-phenethyl-, prep., and configuration of isomers and related compounds, 3001.

Hex-5-enoic acid, 2:4-dioxo-, 6-substituted, ethyl esters, prep. and conversion into heterocyclic compounds, 3663.

cycloHex-3-enone, 3-methyl-, prep., 4232. cycloHexyl acetate, 1-ethynyl-2:2:6:6-tetramethyl-, pyrolysis, 1015.

halides, conformation and molecular polarisability, 3549. cycloHexylamine, N-pantoyl-, prep., 4968.

Hibiscus esculentus, purification and monosaccharide degradation products of mucilage of, 828.

High pressures, liquid-phase reactions at. Part X, 953. (\pm) -D-Homo-18:19-bisnorandrostane-3:17-dione, prep., 4909. D-Homo-18:19-bisnorsteroids, prep., 4909.

 (\pm) -D-Homo-18;19-bisnortestosterone, prep., 4909.

Homoapocamphoric acid, prep., 358.

Homophthalimides, 4-phenacyl-, prep., 2477.

Hong Kong, occurrence of triterpenes in Aquifoliaceae and Ericaceae of, 1461. Rutaceae of. Part I, 632.

Hormones, cortical, analogues, 1152.

hydroaromatic steroid. Part V, 4909. modified steroid. Parts I-III, 627, 1179, 1184.

steroid, and related substances, partial reduction. Part II,

517. Hybridisation in ground state of the hydrogen molecule-ion,

f-orbital, in uranyl and related complexes, 3650.

Hydantoin, 3-benzoyl-1-phenyl-2-thio-, prep. and properties, 188.

Hydantoins, heterocyclyl-2-thio-, prep., 1644. 2-thio-, prep. as reference compounds, 192.

Hydrates, solid, Raman spectra and constitution, 2913.

Hydration of ions and molecules, 2798.

Hydrazine, reaction with di-(2-chloroethyl) ether, 782.

Hydrazine, tetramethyl-, prep. from tetramethyltetrazen, 3677.

Hydrazine hydrate, palladised charcoal as catalyst for reduction of aromatic nitro-compounds by, 2556.

Hydrazoic acid, reaction with 2-acylbenzoic acids and alkylidenephthalides, 1627.

Hydrazones, acyl-, prep. of phthalazines from, 3927.

 $4-0x0-\Delta^2$ -thiazolin-2-yl-, prep., 713.

Hydrocarbons, aromatic, interaction with cuprous salts of fluoro-acids, 1858.

interaction with Lewis acids. Parts XVI, XVII, 555,

nitration, partial rate factors for, and their interpretation, 3581.

reaction with silver salts of fluoro-acids, 1855.

branched-chain, synthesis and reactions. Part X, 911.

observation of progress of oxidation of, by pressure change and by analysis, 1795.

polycyclic aromatic, retardation of autoxidation of benzaldehydes by, 879.

retardation of chain-decomp. of benzoyl peroxide by,

possibly related to carcinogenic factors in city smoke, prep., 1068.

solubility of aluminium trichloride in, 1164.

and their derivatives, oxidation. Parts I-III, 1795, 1799,

rôle of intermediates in oxidation of, 1804.

thermodynamics of mixtures of. Parts II, III, 3708, 3713. unsubstituted polycyclic aromatic, relative reactivities,

Hydrochlorination of surface of rubber latex particles, kinetics and mechanism, 3298.

Hydrogen, diffusion coefficient of, in iron, 230. peroxide, action of ceric perchlorate on, 104.

alkylation with ethers, 4669. decomp. by ceric salts. Part II, 104.

Hydrogen bonds, effect of ring size on formation of, in perihydroxy-carbonyl compounds, 3600.

formation by water, alcohols, aldehydes, carbohydrates, ketones, phenols, and quinones in solution, 559.

formation in amine complexes of platinous chloride,

formation of complexes containing, by alcohols, studied by dielectric polarisation, 4507.

intramolecular, formation in 8-hydroxyquinoline, 614. studies in formation of. Parts III-V, 72, 559, 1272.

isotope exchange reactions, kinetics. Parts V, VI, 2743. 3911.

of toluene with sulphuric acid, 2743.

molecule-ion, hybridisation in ground state of, 2631. stability in aqueous solutions, 778.

overpotential, at electrodeposited copper in hydrochloric acid, 3020.

transfer. Part IX, 3070.

Hydrogenation, catalytic, of cyclic compounds, mechanism.

Hydrolysis of aryl sulphonates. Part II, kinetics, 3240. of steroid and triterpenoid 3:5-dinitrobenzoates, 3245.

Hydroperoxides, organic, acid strengths, 2845. reaction with alk-2-enyl sulphides, 489.

Hydroxamic acids, formation of borate complexes by, 2566. Hydroxides, metallic, neutralisation of nitroethane by, 2836.

Hydroxonium salts, Raman spectra and constitution, 2913. Hydroxyl cation (OH+), stability in aqueous solutions, 778.

Hydroxylamines, aliphatic. Part II, autoxidation, 1093; Part III, 2784.

NN-dialkyl-, reaction with diazotised aromatic amines, 2784.

cis-Hydroxylations, with potassium manganate, 2452. Hyperconjugation of CH₂X groups in the benzaldehydecyanohydrin equilibria, 404.

I

Ilex, triterpenes in, 1461. Iminazoles. See Glyoxalines, 2812. Imines and amines, heterocyclic. Parts VI, VII, 235, 4135. Indane, l-amino-, aryl and alkyl derivatives of potential pharmacological interest, prep., 2928.

1-amino-3-phenyl-, acyl derivatives, prep., 691.

1-phenyl-, heterocyclic and carbocyclic systems related to, **698.**

Indanes, 1-cyano-3-dimethylamino-1-phenyl-, prep., 691. I-phenyl-, 2-substituted, prep., 706.

Indanone, 2-phenyl-, prep., 3834.

Indanones, peri-hydroxy-, hydrogen bonding in, 3600. prep., 1585.

Indan-1-yl hydroperoxide, 1:3:3-trimethyl-, prcp. and conversion into 2:4:4-trimethylchroman derivatives, 4785. Indeno[2,1-a]perinaphthene, prep., 3487.

 β -isoIndigos, dialkylimino-, prep. and reactions, 4144.

Indium, co-ordination compounds with ethylenediaminetetraacetic acid, 4701.

extraction from hydrobromic acid into mixed organic solvents, 2475.

Trimethylindium, co-ordination complexes, 3351.

Indole, 2-o-aminophenyl-, reaction with acyl cyanides, 1319. 2-(4:5-diethyl-2-pyridyl)-3-ethyl-, prep., 771.

Indoles, prep. as potential antituberculosis agents, 2853.

1- and 1:2-substituted, action of acyl cyanides on. Part II, 1319.

Indoles, 3-formyl-, semicarbazones of, as antituberculosis agents, 2853.

isoIndoline, di-imino-, products of condensation of, with cyanoacetates, 235.

N-substituted derivatives, condensation products with amines, 4135.

Indolo(2':3'-1:2)carbazole, 9-methyl-, prep., 4783.

Indolo(2':3'-2:3)carbazole, 1-methyl-, prep., 1135.

Indolocarbazoles, experiments on prep. Parts VIII, IX,

Indolo(3':2'-3:4)quinoline, 2-methyl-, cyanine dyes derived from, 1331.

3-Indolyl ketones, reduction, 1984.

Infrared gas analyser, quantitative estimation of carbon monoxide by, 4558.

Inhibitor, use of a stable free radical as, in polymerisation,

mesoInositol, 1:3-di-O-methyl-, identity with dambonitol, 480. Intermediates, new, and dyes. Part IV, 1429.

Iodination, base-catalysed, of methyl ketones, 2512. Iodine, action on disilver difluoromalonate, 3199.

thermodynamic properties of solutions of, 1278.

Iodine pentafluoride, viscosity, 3681.

Iodide ion, exchange reaction with methyl iodide in different solvents, 2110.

Periodate, application to structure of carbohydrate phenylosazones, 1799.

Periodic acid, oxidation of dambonitol by, 480.

Sodium metaperiodate, oxidation of dambonitol by, 480. Sodium periodate, benzyloxymalondialdehyde as intermediate in oxidation of 2-O-benzyl-p-arabinose by,

3065. Iodoform, formation from malonic acid, 2283.

Ion-dipole reaction, simple, effect of solvent on. Part I,

Ion-exchange of phosphates. Part I, 269.

of solutions of borates, 3183.

Ions, complex, absorption spectra and stability of, 8.

of type X2A·AX2, X2A·AY2, and YXA·AXY, structure, 45ÌÂ.

Ionisation constants of heterocyclic substances. Part II, 1294.

of hydroxy-derivatives of nitrogenous six-membered ring-compounds, 1294.

thermodynamic, of barbituric acids, 2485.

Ionophoresis of amylosaccharides, 30.

of carbohydrates. Part III, 30.

Iridium fluorides, simple, improved prep., reactions, mag netism, etc., 4481.

trifluoride, prep., 4481.

Iron, diffusion coefficient of hydrogen in, 230 electron-spin resonance of oxyanions of, 4710.

identity of cubic oxide present in films on, 4373.

Aminonium ferric disulphate dodecahydrate (ammonium ferric alum), and derivatives, observations on, 4705.

Iron, disodium pentacyanoamminoferrate, reactions with aromatic amines. Part I, p-aminophenol, 2747.

Ferric complexes, atom polarisations, 1821.

Ferric oxide, hydrous, calcination, 3612.

Ferricyanide, alkaline, oxidation of monohydric phenols by, 2823.

Pentacyano-p-hydroxyanilinoferrate ion, prep. of compounds containing, 2747.

cycloPentadienyliron carbonyls, prep., 3030.

Isatin, structure, 2202.

Isatins, substituted, structure, 2202.

Isomerisations at high pressures in the liquid phase, 953.

Isomerism, enol, in the tropine series, 310.

rotational, application of steric restrictions of polar effects to study of, 3704.

Janovsky reaction, non-restriction to m-dinitrobenzenes, 3686.

Julolidine, 1:6-dioxo-, condensation products with malonodinitrile, 3179.

pn-Junctions, chemical effects at, 3726.

K

Kanugin, demethoxy-, identity with 3:7-dimethoxy-3':4'methylenedioxyflavone, 2176.

Kerr constants, molar, of benzyl alcohol and aniline, at infinite dilution, 2775.

Keten, dimethyl-, dimer, crystal structure, 3083.

Keto-amines, cyclic, condensation products with malono-dinitrile, 3179.

Ketones, absorption spectra. Parts IV, V, 2302, 3675.

aliphatic, prep. from lithium alkyls and dimethylamides,

prep. of cyclopentenones from products of Stobbe condensations with, 2231.

quantitative aspects of base-catalysed halogenation of. Part I, 2512.

condensation products of, with phenols. Parts X, XI, 2010, 2018.

conductimetric studies in. Part II, 998.

containing tertiary alkyl groups, rearrangement, 2483.

degradation of a amino acids by, 4292.

effect of water on conductivity in, 998.

fluoro-, prep., 835. heterocyclic, Elbs reaction with, 3435.

hydrogen bonding properties of, in solution, 559.

hydroxy-, of friedelane triterpenes, 2119.

methyl, base-catalysed iodination, 2512.

of friedelane triterpenes, 2115.

oxidation by per-acids, 1226.

steroidal, prep. of acetylhydrazines and azines of, 4326.

 γ -substituted $\alpha\beta$ -unsaturated, absorption spectra, 3675. $\alpha\beta$ -unsaturated, prep. from α -ethynyl alcohols, 911.

Ketoxime sulphonates, as intermediates in pyrophosphate formation, 1231.

Ketoximes, new mechanism for Beckmann rearrangement of, 980.

Khaya, plant gums of, 989.

Khaya grandifolia, structure of gum of, 989.

Kojic acid, prep. of derivatives of, 2558.

Kuwait oil, anthracene homologues in, 603.

Labdanolic acid, isolation and structure, 4259, 4262. Lactones. Parts III, IV, 3608, 4980.

Lactobacillus arabinosus, cytidine diphosphate ribitol from, 4583.

structure of cytidine diphosphate glycerol from, 4186.

Lantadene A, identity with rehmannic acid, 4160. Lantana camara, isolation of lantadene A from, 4160.

Lapachenole, prep., 3701.

Lauric acid, metal salts, magnetic properties, 3948.

Lead, anodic behaviour in halide solutions, 2966. dioxide, thermal decomp. in air, 725.

styphnate monohydrate, thermal decomp., 3331.

Lead salts, insoluble, precipitation in aqueous solution, 2393.

Tetraphenyl-lead, formation of phenyl radicals from, 3319.

Lecithin, solubilised, diffusion in water, 2978.

Lectures.

CENTENARY: H. C. Brown, "Chemical effects of steric strains," 1248.

CENTENARY: M. Calvin, "The photosynthetic carbon cycle," 1895.

FARADAY: O. Hahn, "Personal reminiscences of a radio-chemist," 3997.

LIVERSIDGE: E. W. R. Steacie, "Reactions of radicals in gaseous systems," 3986.

PRESIDENTIAL ADDRESS: W. Wardlaw, "Alkoxides old and new," 4004.

TILDEN: G.W. Kenner, "Recent progress in the chemistry of peptides," 3689.

Lepidocrocite, calcination, 3612.

Leprapinic acid, prep., 1734.

Leptospermone, dehydro-, structure, 4983.

Lilium genus, glucomannans of bulbs of, 181.

Lily bulbs, glucomannans from, 181.

Linolenic acid, structure and prep., 4049.

Liquids, homologous, relation between viscosity and b. p., 2740.

organic, effect of dissolved oxygen on diamagnetic susceptibility of, 466.

Liquid mixtures, binary, adsorption on solid adsorbents, 784. Liquorice. See Glycyrrhiza glabra, 2417.

Lithium, reaction with o-di-iodobenzene, 1.

Lithium alkenyls, alkenylation with. Part XIII, 3333.

alkyls, homolytic reactions with alkyl halides, 1603.
use in prep. of aliphatic aldehydes and ketones, 4691.

borohydride, reduction of amides by, 3981. n-Butyl-lithium, reaction with o-di-iodobenzene, 1.

1-Methylvinyl-lithium, prep. and reactions, 3333.

isoPropenyl-lithium, prep. and reactions, 3333.

Localisation theory of organic reactions. Part III, 272.

Lupin alkaloids. Part XVI, 3390.

Lupanine, externally compensated, prep., 3390.

Lycoctonines, rearrangements, 3864.

α- and β-D-Lyxofuranosides, methyl 2:3-anhydro-5-O-methyl-, ammonolysis, 819.

M

Magnesium, reaction with o-di-iodobenzene, 1.

Magnesium halides, reaction with $\alpha\beta$ -anhydro-carbohydrates, 496.

o-Bromophenylmagnesium bromide, prep., 4692.

Ethynylmagnesium bromide, prep. and synthetical applications, 4765.

Magnetism of copper(II) salts. Part I, 3837.

of metal carboxylates, 3948.

Magnetochemistry of the heaviest elements. Part IX, 78. See also Susceptibility.

Maleic acid, isomerisation at high pressure, 953.

Malondialdehyde, benzyloxy-, as an intermediate in oxidation of 2-O-benzyl-D-arabinose with sodium periodate, 3065.

Malondiamide, prep. of pyrimidines from, 2312.

Malonic acid, formation of iodoform from, 2283.

Malonic acid, α -(1:3-dihydro-6:7-dimethoxy-1-oxo-4-benzo-

falonic acid, α-(1:3-dihydro-6:7-dimethoxy-1-oxo-4-benzo-[c]furylmethyl)-, dimethyl ester, prep. and isomerisation, 3608.

difluoro-, disilver salt, reaction with iodine, 3199. tetrahydro-2-furylidene-, diethyl ester, prep., 4661.

Malonodinitrile, condensation products with cyclic ketoamines, 3179.

Malonyl chloride, difluoro-, reactions, 3199.

Maltodextrins, prep., 53.

Manganese, electron-spin resonance of oxyanions of, 4710. structure and reactivity of oxyanions of, 3373.

Manganese dioxide, oxidation of unsaturated alcohols by, 2446. solid, oxidation of organic compounds by, 4685.

Hypomanganate anion (MnO₄³⁻), oxidation by, and definition of, 717,

Manganese manganate anion (MnO₄²⁻), oxidation by, 717.

Potassium manganate, oxidations with, 2452.

Potassium permanganate, stages in oxidations of organic compounds by. Part VII, 717.

Mannose, polysaccharides containing. Part IV, 181.

D-Mannose, 2:5-anhydro-, identity of chitose with, 4531.

D-Mannose diethyl dithioacetal, oxidation, 970.

α-D-Mannoside, methyl 2:3-anhydro-, reaction with magnesium halides, 496.

Marigold-seed oil, isolation of octadec-8:10:12-trienoic acid from, 777.

Masticadienonic acid, constitution and stereochemistry, 4150. iso Masticadienonic acid, isolation from gum mastic, 4158.

Melamine, calculated bond lengths in, 3595.

Melanin, study of formation of, by use of radioactive 2-(3:4-dihydroxyphenyl)ethylamines, 1546.

Melting, double, of molecular addition compounds of dinitrogen tetroxide with organic donors, 2709.

 (\pm) -p-Menthane-2:3-diols, configurations, 2363. p-Menthanediols, stereochemistry, 4384, 4391.

(±)-p-Menth-1-ene, hydroxylation, and structures of the trans-diols, 4384.

 (\pm) -trans-p-Menth-2-ene, hydroxylation, and configuration of related diols, 2363.

Mercury fulminate, thermal decomp., 3323.

Mercurous fluoride, crystal structure, 1316.

Mercurous ion, Hg-Hg bond length in. Parts I, II, 1312, 1316.

Mercurous nitrate dihydrate, crystal structure, 1312.

See also Organomercury compounds.

Mesitol, oxidation by peroxidase, 940.

Mesityl oxide, condensation product with phenol ("Dianin's compound"), structure, 2010.

dimerisation; a novel type of diene addition, 4054.

Mesomorphism, and chemical constitution. Part VII, 1417. of trans-p-n-alkoxycinnamic acids, effect of halogen substitution on, 1417.

of fatty esters of cholesterol, 3733.

Metal alkyls, fate of methyl radicals in thermal decomp. of, 3410.

ammines, and deuteroammines, infrared spectra, 3108.

co-ordination complexes, ionisation equilibria of, in benzene solution. Part II, 538.

sulphates, univalent, cryoscopic measurements on, in sulphuric acid, 80.

Metalloflavoproteins, homogeneity of crystalline fractions of, 1212.

Metals, alkali, ion-sieve reagent for separation of cæsium from, 675.

organometallic compounds of. Part VI, 1603.

alkaline-earth, association with acetate and formate ions, 744.

bivalent, five-covalent terpyridyl complexes. Part I, 594.

carbonyl compounds of. (Part I, 1860.) Part II, 2879.

derivatives of, from NN diarylamidines, 640.

deuteration and exchange of ethylene on, at low temperatures, 735.

liquid. Part IV, 1454.

organic complex-forming agents for. Parts I—III, 569, 2983, 4670.

stabilities of complex compounds of, 1115.

transitional, spectra of complexes of, of type $[Co(NH_3)_5X]^{2+}$,
4981.

structure and reactivity of oxyanions of. Parts I, II, 3373, 4710.

Methacrylic acid, methyl ester, initiation of polymerisation of, by peroxides, 427.

Methane, apparent anisotropy, 708.

bromotrichloro, addition to unsaturated acids, esters, and nitriles, 1749.

trifluoronitroso-, vibrational assignment, 754.

trimethylsulphonyl-, crystallographic study, 2562. heat capacity and entropy, 2563.

Methanes, arylazotriaryl-, decomp., 4397.

Methanesulphenyl chloride, trichloro-, prep. of S-alkoxyand S-amino-derivatives from, 3139.

Methanol, aqueous, conductivity of metal thiosulphates n, 1392.

Methanol, diphenyl-, ternary solutions with benzene and pyridine, molecular polarisation in, 4499.

Methanols, aryl-, strengths of, as secondary bases, 3944. pyridyl., resolution, 3394.

Methyl chlorides, aryl-, rates of solvolysis; molecular-orbital treatment of this and related reactions, 2789.

cyanide, crystal structure of addition complex of, with quinol, 4855.

iodide, exchange reaction with iodide ion in different solvents, 2110.

reaction with trimethylamine in carbon tetrachloride. kineties, 1035.

sulphones, trichloro-, and related compounds, 508.

Methyl esters, diphenyl-, hydrolysis in aqueous acetone, 3629. radical, replacement by trifluoromethyl, 3631.

radicals, fate of, in thermal decomp. of metal alkyls, 3410.

Methincyanines, chain substituted, prep., 1480.

Meyer-Schuster rearrangement of 2-ethynyl-2-hydroxycyclohexanone, 4699.

Micro-flame detector, correlation of response of, with heats of combustion for application to gas-liquid chromatography,

Milk. See Cow's milk, 1219.

Molecular compounds, structure. Part XI, 4855.

Molecules, aromatic, simple approximation to resonance energies of, 1886.

diatomic, binding in, 275.

heterocyclic, vibrational frequency correlations in. (Part I, 2202.) Part II, 3809.

of type X2A·AX2, X2A·AY2, and XYA·AXY, structure, 4514.

organic, electronic spectra and their interpretation. Part II, **4314**.

quasi-spherical, apparent anisotropy, 708.

uncharged, absorption by ion-exchange resins, 3364. Molybdenoflavoproteins, homogeneity of crystalline fractions of, 1212.

Molybdenum hexafluoride, complexes, 1242.

hexafluoride, prep. and manipulation, 4681.

Monocrystals, intensity of ultraviolet light absorption by. Parts I, II, 2658, 2662.

Monocyanoethylation, conditions for, 959.

Monoglycerides, infrared spectra and polymorphism, 55.

apoMorphine, dimethyl ether, prep., 4123.

Morphine-thebaine alkaloids, method for systematic degradation of, to nitrogen-free products, 1963. Parts VI, VII, 1863, 1963.

Morphothebaine, prep. from bulbocapnine, 472.

Mucondialdehyde, formation by \hat{X} -irradiation of aqueous benzene solutions containing molecular oxygen, 832.

Mulakhia. See Corchorus olitorius, 177.

Multiplicity, Arrhenius parameters of reactions involving changes in, 2136.

Mycelianamide, structure, 3717.

Mycolipenic acid, prep. of an oxidation product of, 2036.

Mycological chemistry, studies in. Part V, 2173.

Naphthalene, peri-derivatives, influence of steric factors in substitutions of, 2335.

lowest singlet excited levels of. Part I, semi-empirical calculation, 1557; Part II, restricted calculations, 2734. nitration, 1441.

Naphthalene, 2-acetamido-5:6:7:8-tetrahydro-, bromination, 3243.

2-acetyl-6:7-dimethoxy-1-methyl-, prep., 4252.

2-acetyl-1-methyl-6:7-methylenedioxy-, prep., 4252.

1:8-dihydroxy-, reactions, 2412.

2:3-dihydroxy-, prep. of derivatives of, 4252. 1-ethynyl-1:2:3:4-tetrahydro-1-hydroxy-6-methoxy-,

prep. and reactions, 3249.

1:2:3:4-tetrahydro-6-methoxy-4-isopropyl-1-oxo-, and related compounds, prep., 4629.

Naphthalenes, β -alkyl-, catalytic reduction to tetrahydrostage, 2731.

dihydroxy-, conversion into benzocoumarins and other heterocyclic systems, 1743.

Naphthalenes, 1-phenyl. Part III, 395. 1:2:4:7-tetrahalogeno-, prep., 1979.

Naphthalene-1:2-dicarboxylic anhydride, 4-acetoxy-Δ4-octa-

hydro-, prep., 4518. Naphthalene-2:8-dicarboxylic anhydrides, l-phenyl-, effect of

substituents and their position on absorption spectra of, 1:4-Naphthaquinone, 2:5-dihydroxy-7-methyl-, prep., 2173.

2:3-dihydro-2:3-methylene-, as dehydrogenation product of benzocycloheptane-3:7-dione, 2620.

Naphthaquinone monoximes, infrared spectra, 2725.

Naphthoic acids, kinetics of alkaline hydrolysis of esters and amides of, 170.

2-Naphthol, 7-methyl-, prep., 2564.

Naphthols, phenylazo, absorption spectra and structure, 2143. Naphtho(1':2'-2:3)pyran, 4'-methoxy-6:6-dimethyl-, prep. and identity with lapachenole, 3701.

Naphtho(1':9':8'-2:3;4)thiapyran," Tilak's, shown to be 6:7-benzothionaphthen, 2603.

1-Naphthylamine, 7-nitro.. Part I, prep., halogenation, and diazo-coupling, 1979.

2-Naphthylamine, oxidation by benzoyl peroxide, 1337.

1:2:3:4-tetrahydro-, optical stability, 250.

Naphthyridines. Part III, 212.

Naphthyridines, hydroxy-, prep., 212.

Nemotin, isomerisation, 3767.

Nemotinic acid, isomerisation, 3767.

Nickel, atom polarisation of trans-planar complexes of, 1821. complexes with chelate compounds, 1042.

salts, complex, correlation of absorption spectra of, with exchange reactions and magnetic susceptibility of, 520.

Nicotinic acid, 2-methyl-6-phenyl-, and its ethyl ester, condensation with aldehydes, 1778.

Nicotinic acids, methyl. Part I, 1778.

Niobium, polarography, 1186.

and tantalum, water-soluble complexes of. Part I, α-hydroxy-acids and (2-hydroxyethyl)amines, 4946.

Niobium butoxides, prep. and physical properties, 4439.

penta-n-alkoxides, prep., 2381.

pentyloxides, prep. and physical properties, 4439.

Nitramines and nitramides. Part X, 921.

Nitration of aromatic compounds with nitronium salts, 4257. of aromatic hydrocarbons, partial rate factors, 3581.

of diphenyl, chrysene, benzo[a]pyrene, and anthanthrene, 3572.

of naphthalene and perylene, 1441.

of phenanthrene, 3570.

Nitrations, competitive, 3576.

Nitriles, conversion into ketones, modification, 4695.

unsaturated, addition of bromotrichloromethane and butanal to, 1749.

Nitro-compounds, aromatic, kinetics and mechanisms of colour reactions of, at low temperatures. Parts II-IV, 2528, 2540, 2546.

reduction by hydrazine hydrate, with palladised charcoal as catalyst, 2556.

Nitrogen, perfluoroalkyl compounds (Mason et al.). Parts II, III, 754, 759.

perfluoroalkyl derivatives (R. N. Haszeldine et al.). Parts III, IV, 3416, 3428.

Nitrogen compounds, carcinogenic. Parts XVIII-XX, 1515, 2048, 2593.

Dinitrogen pentoxide, electrical conductances of solutions of, in nitric acid, 4463.

Dinitrogen tetroxide, formation of molecular addition compounds by, with dialkyl sulphoxides, 2705.

mixtures with organic solvents, reaction of copper, zinc,

and uranium with, 3900. molecular addition compounds of, with nitrogen,

oxygen, and aromatic hydrocarbon donors, 1941. molecular addition compounds of, with organic donors,

double melting, 2709. oxidation of dialkyl sulphides and trisubstituted phosphines by, 2705.

structure and reactions, 1784.

Nitric acid, electrical conductances of solutions in. Part I, electrical conductances of solutions of dinitrogen pentoxide and water in, 4463.

self-dissociation, 4463.

Nitrogen compounds, Nitronium salts, stable, nitration of aromatic compounds with, 4257.

Nitrosates, prep., 4271.

Nitrosochlorides, prep., 4271.

Nitrosyl chloride, exchange of 36Cl between and insoluble metal chlorides, 150.

complexes, chemistry. Part II, 150. Nitrous acid, equilibrium with NO+ in aqueous perchloric acid, 3971.

kinetics of oxidation of oxalic acid by, 1143.

and nitric acid, kinetics of oxidation by. Parts III, IV, 1143, 3971.

Non-electrolytes, solid-liquid equilibria in, 2097.

Non-6-en-2-ol, 2-methyl-9-phenyl-, prep. and cyclodehydration, 1238.

(-)-Norecgoninol, absolute configuration of nitrogen atoms in salts of, 873.

Nornidulin, dechloro-, isolation and partial structure, 3545. Norquassin, deoxo-, as an enolic α -diketone, 3280.

Nortropan-3-ols, quaternisation, 1411.

Norway spruce, constitution of a xylan from, 3744.

Nucleic acids. See Pentosenucleic acids, Ribonucleic acids,

Nucleophilic rowers, relative, of common reagents, 254.

Nucleosides, pyrimidine, prep., 1877.
Nucleotides. Parts XXXV—XXXIX, 1371, 1546, 2388,

cyclopentanone oxime p-nitrobenzenesulphonate as intermediate in prep. of derivatives of, 1371.

purine, chemical studies in biosynthesis of. Part I, 2812. sequence of, in deoxypentosenucleic acids. Parts I-III, 2573, 2579, 2584.

Oat-straw, constitution of xylan of, 1072.

Obituary notices.

David Runciman Boyn, 2568.

Philip Rufus CARTER, 1086.

Salah Eldin Said EL WARRAD, 1086.

Meredith Gwynne Evans, 1916.

Bernard Jacques Flurscheim, 1087.

William Godden, 224.

James William McBain, 1918.

Sydney Glenn Preston Plant, 1920.

Robert Henry Aders PLIMMER, 798.

Humphrey Rivaz RAIKES, 1922.

Walter William REED, 799.

Sigmund Otto Rosenheim, 799.

Wallace Frank Short, 2569

Arthur Landauer STERT, 3985.

Ralph William Ewart STICKINGS, 1924.

Harold Augustine TEMPANY, 1090.

Gwyn Williams, 801.

Octadec-8:10:12-trienoic acid, isolation from marigold-seed oil, 777.

trans-Octal-2-one, 1-2'-hydroxyethyl-7:7:10-trimethyl-, prep., 2431.

Octanoic acid, ω -(2-n-octylcycloprop-1-enyl), identity of sterculic acid with, 1818.

bicyclo[2:2:2]Oct-5-en-2-ones, prep. and absorption spectra,

n-Octylamine, system with di(tri-n-butylphosphine)dichloropalladium(II), stability constants, 1115.

Okra. See Hibiscus esculentus, 828.

Oleana-11:13(18)-dien-3-one, prep. from ursa-9(11):12-dien-3-one, 465

Oleananes, steric identity of ring junctions in, 456.

Olean-12-ene, isomerisation with mineral acid, 1377.

Olean-13(18)-ene, prep. by method avoiding use of mineral acid, 1377.

Oleanonic acid, isolation from gum mastic, 4158.

Olefins, formation in ester hydrolysis by alkyl-oxygen fission,

formation of nitrosochlorides and nitrosates by, 4271. ("Olefinic substances"), kinetics and mechanisms addition to. Part III, 3337.

Olefins, reaction with aluminium bromide, 2614.

("Olefinic compounds"), stereochemical studies. Part V,

Olefins, fluoro-, free-radical and electrophilic attack on, 61.

Oleic acid, autoxidation products, 587.

epoxy-, natural, as an optically active cis-epoxide, 1611.

Olibanum, polysaccharides of gum component of, 3953

Oligosaccharides, reducing, determination of degree of polymerisation of, 2258.

Opianic acids, prep., 2443.

Optical antipodes, selective absorption by proteins. Part III,

stability of 1:2:3:4-tetrahydro-2-naphthylamine, 250.

Orange II, absorption by polyglycine, 2940.

Orbitals, molecular, use in treatment of rates of solvolysis of arylmethyl chlorides, and similar reactions, 2789.

d Orbitals, contraction in chemical bonding, 4895.

f Orbitals, possible hybridisation of, in uranyl and related complexes, 3650.

Organomercury compounds, pyrolysis, 106.

Organometallic compounds, of alkali metals. Part VI, 1603. radical exchange in. Part I, 3631.

replacement of methyl by trifluoromethyl in, 3631.

Organophosphorus compounds, effects of substituents on rates of hydrolysis of. Parts I, II, 3796, 3804.

rates of hydrolysis in alkaline solution, 3796; in neutral solutions, 3804.

thermochemistry. Part II, 1401.

Organosilicon compounds. Part XVII, 1436.

hydrides, acidic solvolysis, 1436.

Organic compounds, colour. Part VIII, 1360.

oxidation by solid manganese dioxide, 4685.

Orthanilamides, N-aroyl-, conversion into 2-arylquinazol-4-ones, 4420.

Osazones, formation during attempted Fischer indole syntheses, 4814.

Overpotential, hydrogen, at electrodeposited copper in hydrochloric acid, 3020

Oxacyclobutane, kinetics of polymerisation of, by boron trifluoride, 546.

Oxacyclobutanes, cationic polymerisation. Parts I, II, 542,

Oxalic acid, kinetics of oxidation by nitrous acid, 1143.

Oxaloacetic acid, kinetics of decarboxylation of, 4736.

Oxamide, thermal decomp., 3405.

Oxanil, prep., 1888.

1:2-Oxazetidine, perfluoro-2-n-propyl-, prep. and pyrolysis,

isoOxazoles, 3:5-disubstituted, prep., 3663.

Oxazolopyridines and oxazoloquinolines. Part I, 1781.

Oxazolo(4':5'-3:4)pyridines, 2'-substituted, prep., 1781. Oxazoloquinolines and oxazolopyridines. Part I, 1781.

Oxazolo(4':5'-3:4)quinolines, 2'-substituted, prep., 1781.

Oxidation, anodic, of speculum alloys at very low current

density, 2857. by nitrous and nitric acid, kinetics. Parts III, IV, 1143,

by peroxidase of a mixture of amines, 3814.

involving the manganate and hypomanganate anions, 717.

of 2-O-benzyl-D-arabinose with sodium periodate, benzyloxymalondialdehyde as intermediate in, 3065.

of copper, effect of sulphur dioxide on, 2182.

of cysteine and glycine peptides, 3157.

of derivatives of o-phenylenediamine. Parts I-IV, 888, 893, 896, 3347.

of hydrocarbons and their derivatives, observation of progress of, by pressure change and by analysis, 1795. and their derivatives. Parts I-III, 1795, 1799, 1804.

and their derivatives, rôle of intermediates in, 1804.

of monohydric phenols by alkaline ferricyanide, 2823. of organic compounds by potassium permanganate, stages in. Part VII, 717.

by solid manganese dioxide, 4685.

of organic sulphides. Part VII, 3056.

of oxalic acid by nitrous acid, kinetics, 1143.

of phenols by peroxidase, 940.

N-Oxides, heterocyclic, 1885.

Oximes, polarography, 4180. reaction with Sarin, 3887.

Oxindole and related compounds, infrared spectra and structure, 3809.

Oxonols, meso-ionic, chain substituted, prep. and absorption spectra, 2991.

trinuclear dyes related to. Part II, 2991.

Oxyallobetul-2-ene, isolation from petroleum, 788.

Oxyanions, of transition metals, structure and reactivity. Parts I, II, 3373, 4710.

Oxyayanin-B, prep., 1369.

Oxygen, dissolved, effect of, on diamagnetic susceptibility of organic liquids, 466.

molecular, effect of, in irradiation of aqueousbenzene solutions with X-rays, 832.

Oxygen heterocycles. Parts V, VI, 2408, 4276.

Palladium.

Di(tri-n-butylphosphine)dichloropalladium(II), system with n-octylamine, stability constants, 1115.

Palladium(II), chelate complexes, 437.

Palladium(II), four-, five-, and six-covalent complexes with a di(tertiary) arsine, 4375.

Palladium(π), bridged complexes of, containing chelate ligands, 1989.

See also Charcoal, palladised, 2556.

Paludrine. See Proguanil, 4727.

N-Pantoylamines, model experiments on prep. of pyrophosphates of, 4968.

Parachors, of germanium esters, 4916.

Paraldehyde, conformation and molecular polarisability, 3549. Paramagnetism, anomalous, of cupric acetates, 3837.

Parsnip, carbohydrates of roots of, 220.

Pastinaca sativa, carbohydrates of roots of, 220.

Pelletierine, attempted prep., 2553.

cis-Penta-2:4-dienyl system, introduction by selective hydrogenation, 3963,

cycloPentane, conformation and molecular polarisability, 3549.

cycloPentane, bromo-, thermal decomp., 3855.

trans-1:2-diamino-, reaction with acetylacetone, 2597.

cycloPentanone, 2-3'-acetoxyacetonyl-, prep., 1152.

2-3'-acetoxyacetonyl-5-p-methoxyphenyl-, prep., 1152. 2-acetyl-, prep., 4232.

cycloPentanones, conformation and molecular polarisability, 3549.

experiments with, 4232.

cycloPentanone oxime, Beckmann rearrangement, 4694.

p-nitrobenzenesulphonate, as intermediate in prep. of nucleotide derivatives, 1371.

cycloPenta[c]isoquinoline, 3:4-dihydro-1-phenyl-, prep., 4280. Pent-2-enes, reaction with aluminium bromide, 2614.

Pent-2-enoic acid, 2-bromo-, reactivity, 3472.

cycloPent-2-enone, 2-acetyl-, prep., 4232.

cycloPentenones, prep. from products of Stobbe condensations with aliphatic ketones, 2231.

cycloPenteno(1':2'-2:3)thiophen, 3'-dimethylamino-5'-phenyl-, prep., 698.

Pentosenucleic acids, deoxy-, nucleotide sequence in. Parts I—III, 2573, 2579, 2584.
Parts VII—IX, 154, 158, 303.

See also Ribonucleic acids.

N-neoPentylnitramine, O-methyl-, formation of alkyl cations during decomp., 921.

Peptide bond, heat and entropy of formation of, 1444.

links, specific chemical fission of. Part II, 2076.

Peptides, α -glutamyl, condensation of γ -carboxyl group of, with the peptide chain, 371.

prep. and hydrolysis of 1-acylpyrrolid-2-ones derived from, **2076.**

glycine. Parts II, III, 1444, 2940. Part V, 371.

prep. of benziminazoles from, 673.

protected, of cysteine and glycine, prep., 3148. and proteins, degradative studies. Parts II, III, 188, 192.

Peptising agents, effect on crystal growth of insoluble metal salts. Part I, 2393.

Peracetic acid, tracer studies in formation and reactions of,

Per-acids, organic, tracer studies in formations and reactions of, 1226.

Performic acid, tracer studies in formation and reactions of, 1226.

Perkin reaction with fluoroacetic acid, 1524.

Peroxidase, oxidation of a mixture of amines by, 3814. of phenols by, 940.

studies in action of. Parts X, XI, 940, 3814.

Peroxides, as initiators of polymerisation of methyl methacrylate, 427.

organic (Davies et al.). Parts VI, VII, 665, 4669. reactions of (Webster et al.). Part VIII, 4785.

Perylene, nitration, 1441.

Pethidine, prep. of new analogues of. Part I, 4088.

Petroleum, triterpenoid lactone from, 788.

Petroleum distillates, high-boiling, constituents of. Part III, 603.

Pharmacology, compounds of potential interest in. Parts I_IV, 691, 698, 706, 2928.

Phenanthrene, nitration, 164, 3570.

Phenanthrene, 1-1'- and 4-2'-naphthyl-, prep., 2609.

as octahydro, prep. from the isomeric 2-phenethylcyclohexanols, 1344.

1:2:3:4:4a:9:10:10a-octahydro-1:1-dimethyl-, prep., 1238. 3-isopropyl-, prep. from (\pm) -benzylidenepiperitone, 260.

Phenanthrenes, alkyl-, prep., 350.

3-alkyl-, substituted, prep., 1346.

Phenanthridine, application of Bruckner method to prep. of derivatives of, 4280.

reaction with methyl acetylenedicarboxylate in methanol. 246.

Phenanthridine, 2:7-diamino-, quaternary salts derived from, 337.

2:7-diamino-9-anilino-, quaternary salts derived from, attempted prep., 337.

Phenanthridines, hydroxy-, ionisation constants, 1294. $[2:4:7:9\cdot^{14}C_1]-1:10$ -Phenanthroline, prep., 3975.

4:7-Phenanthroline monomethiodides, 3-substituted, prep., 3087.

Phenazine, 2-amino-3:5-dihydro-5-phenyl-3-phenylimino-, pigments related to, prep., 893.

2-amino-3:5-dihydro-5-phenyl-3-phenylimino-, prep., 888.

2-anilino-3:5-dihydro-3-imino-5-phenyl-, pigments related to, prep., 893.

cis-1:2:3:4:9:10:11:12-octahydro-, prep. of derivatives of, 794. Phenazines, hydroxy-, ionisation constants, 1294.

Phenazine 5:10-dioxide, 2-chloro-, reactions, 2550. Phenazine pigments, action against tuberculosis, 888, 893.

obtained by oxidation of N-alkyl-, N-cycloalkyl-, N-alkyl-

phenyl-, and N-alkoxyphenyl-o-phenylenediamine hydrochloride, 893.

obtained by oxidation of 2-aminodiphenylamine hydrochloride, 888.

obtained by oxidation of chlorinated 2-aminodiphenylamine hydrochlorides, 896.

Phenethyl bromide, m-methoxy-, prep., 4308.

Phenethylamines, 3:4-dihydroxy-, oxidation, 513.

Phenol, bromination with bromine and iodine bromide in acetic acid and carbon tetrachloride, kinetics and mechanism,

Phenols, condensation products of, with ketones. Part X, 2010.

condensation with thionaphthen-2:3-dicarboxylic anhydride,

formation of bis-compounds from, and their reductive scission, 319.

hydrogen bonding properties of, in solution, 559. monohydric, oxidation by alkaline ferricyanide, 2823.

oxidation of, by peroxidase, 940.

reaction with benzoyl peroxide, kinetics, 2948; structural effects in, 2959.

reaction with cinnamic acid in presence of hydrochloric acid, 1382.

secondary mechanisms in halogenation of, 1883.

solvolysis of benzyl phosphates by, 3524.

Phenols, phenylazo, absorption spectra and structure, 2143. 2:4:6-trialkyl., kinetics of retardation of autoxidation by,

Pinastric acid, constitution, 1734.

Phenothiazine 5:5-dioxide, 2:8-diamino-, prep., 793.

Picrotoxinin, possible formulation, 4715.

Pigments, macrocyclic, theoretical studies of. Part I, 1172.

Pinacol-pinacone rearrangement. Part I, catalysis by strong monobasic acids, 3512. Part II, catalysis by sulphuric acid,

3519. Part III, evidence on general acid catalysis, 3674.

```
Phenoxathiin, prep. of derivatives of, 2408.
                                                                 Piperazines, 1:4-dihydroxy-2:5-dioxo-, prep., 4130.
                                                                 Piperidine, kinetics of reaction of, with chloroazanaphthalenes,
Phenyl benzoate, alkaline hydrolysis, 1079.
 iodosobenzoate, reactions with, 1475.
                                                                 Piperidine-4-carboxylic acid, substituted l-alkyl-4-phenyl-,
 radicals, prep. from tetraphenyl-lead, 3319.
Phenylation of toluene, ethylbenzene, and isopropylbenzene.
                                                                   ethyl esters, prep. as analgesics, 4088.
                                                                 Piperitone, (±)-benzylidene-, conversion into 3-isopropyl-
 1463.
o-Phenylenediamine, oxidation of derivatives of. Parts
                                                                   phenanthrene, 260.
 I-IV, 888, 893, 896, 3347.
                                                                 Pivaloyl chloride, decomp. by aluminium chloride, 4558.
o-Phenylenediamine hydrochlorides, N-substituted, prep. of
                                                                     factors influencing elimination of carbon monoxide from,
  phenazine pigments from, 893.
Phenylosazones of carbohydrates, oxidation by periodate,
                                                                 Platinum, dimeric carbonyl complexes, prep., 1860.
                                                                   microelectrode, dipping, 534.
                                                                   Compounds: [(MR_3)_2PtX_2](M = P, As, Sb; X = halogen),
Phoroglucinol, chlorinated derivatives, reactions, 3209.
                                                                     cis-trans isomerisation, 525.
Phosphorescence of aromatic nitro-amines, 4865.
Phosphorus, organic chemistry. Part III, 3043.
                                                                   Platinum(II), amine complexes, stability constants, 2371.
Phosphorus halides, formation of esters, and anilides from, 422.
                                                                     bridged complexes of, containing chelate ligands, 1994.
  pentabromide, non-aqueous solutions of, 4617.
                                                                     chelate complexes, 437.
  pentachloride, action on 1:2-5:6-di-O-isopropylidene-D-
                                                                     chloride, hydrogen bouding in amine complexes of, 2712.
    glucofuranose, 1244.
                                                                     complexes, trans-effect in, 4495.
  trichloride, reaction with bromine. Part I, 4613.
                                                                   Sesquiethylenediaminetrimethylplatinic
                                                                                                              iodide.
                                                                                                                         stereo-
    system with bromine in solution, 4613.
                                                                     chemistry, 948.
  compounds, organic, thermochemistry. Part II, 422.
                                                                 Plutonium hydride, X-ray diffraction, 781.
  Benzyl phosphates, solvolysis by phenols, 3524.
                                                                   nitrate, crystalline, prep., 2565.
  Diethyl phosphorochloridate, hydrolysis, 1005.
                                                                 Plutonium compounds, prep. and properties. Parts III-V,
  Diethyl vinylphosphonate, copolymerisation with styrene,
                                                                     781, 2565, 3358.
                                                                    Plutonium(IV), colloidal, 3358.
                                                                 Poisons, of catalysts, reversibility of adsorption of. Part IV,
  Diisopropyl methylphosphonodithiolate, hydrolysis, 3269.
  o-Hydroxyphenylphosphine oxide group, prep. of compounds
    containing, as complex-forming agents for metals, 4670.
                                                                   of catalysts, strengths of bonds to catalyst surface. Part I,
  Phosphates, ion-exchange studies on. Part I, 269.
  Phosphines, trisubstituted, oxidation by dinitrogen tetroxide,
                                                                 Polarisability, molecular, 708, 2775, 3549.
    2705.
                                                                   molecular of C-C, C-O, C-O, C-Cl, C-Br, and C-I links,
  Phosphinyl chloride and phosphorochloridate series, kinetic
    studies in. Part V, 1004.
                                                                 Polarisation, anodic, of lead in halide solutions, 2966.
  Phosphonate esters, hydrolysis, 2463.
                                                                   atom, of co-ordination compounds of metals, 1821.
  isoPropyl methylphosphonofluoridate, reaction with oximes,
                                                                   dielectric, used to study formation of hydrogen-bond
                                                                     complexes by alcohols, 4507.
  Pyrophosphates, debenzylation, 4968.
                                                                    molecular, in ternary solutions of benzene, pyridine, and an
    ketoxime sulphonates as intermediates in formation of,
                                                                       alcohol, 4499.
                                                                     and the formation of hydrogen-bond complexes by
  Triaryl phosphites, nature of compounds formed with
                                                                       alcohols, 4507.
    halogens, 3043.
                                                                   orientation, of alkylpyridines, 3621.
  Tributylphosphine oxide, thermochemistry, 1401.
                                                                 Polarography, in fused salts, 534.
  Triethyl phosphate, thermochemistry, 1401.
                                                                   of copper malonate complexes, 4847.
  Triphenyl phosphite, reaction with halogens, 3038.
                                                                   of niobium, 1186.
    phosphite tetrabromide, prep., 3038.
                                                                   of oximes, 4180.
  Tripropylphosphine oxide, thermochemistry, 1401.
                                                                   of pyrazines, 4780.
Phosphorylation, studies on. Parts XIII, XIV, 1231, 3524.
                                                                   of triphenyltetrazolium bromide and derivatives, 3130.
  through glyoxalines, and its significance in enzymic trans-
                                                                   of xanthone and methoxyxanthones, 3016.
    phosphorylation, 2812.
                                                                 Polonium, electrochemical studies on, 2770.
Phthalaldehyde, 4:5-dimethoxy-, prep., 2443.
                                                                   halides. Part III, 3385.
Phthalaldehydes and related compounds. Part VII, 2443.
                                                                   selenate, prep., 4579.
                                                                   sulphates, prep., 4579.
Phthalazine, 1-amino-, prep. and reactions, 3509.
  I-hydroxy-, ionisation constants, 1294.
                                                                    tetraiodide, prep., 3385.
Phthalazines. Part I, reinvestigation of prep. by cyclo-
                                                                   Cæsium hexaiodopolonite, prep. and crystal structure,
  dehydration of acylhydrazones, 3927.
                                                                 Hexaiodopolonous acid, evidence for existence of, 3385. Polyazanaphthalenes. Parts III, IV, 1045, 4433.
Phthalazine series, reactions in, 1081.
Phthalic acid, conductivity of tetraethylammonium picrate
      in alkyl esters of, 1424.
                                                                 Polycyclic compounds, prep. Parts I-VI, 350, 355, 1344,
    3-nitro-, half esters, prep., 3679.
                                                                     1346, 1809, 4629.
  esters, half esters, prep., 3679.
                                                                   fluoro-compounds, prep., 3637.
  imidines, N-substituted, reactions with amines, 4135.
                                                                 Polyene aldehydes, \omega-p-methoxyphenyl-, prep. and absorption
isoPhthalic acid, 4-hydroxy-, chemistry, 3099.
                                                                   spectra, 4082.
    4-hydroxy-, dialkyl esters, partial hydrolysis, 4678.
                                                                 Polyenes, researches on. Part IV, 4082.
Phthalide, 7-ethoxy-6-methoxy-, prep., 4980.
                                                                 Polyethyleneimine, ionisation, 2448.
Phthalides, alkylidene-, reaction with hydrazoic and sulphuric
                                                                 Poly(ethylene terephthalate), model systems for pyrolysis of,
  acids, 1627.
Phthalide ring, alkyl-oxygen bond fission in opening of, 3608.
                                                                 Polyglucose, soluble, from sweet corn (Zea mays), 2317.
Physical properties and chemical constitution. Part XXV,
                                                                 Polyglycine, absorption of Orange II on, 2940.
                                                                   heat and entropy of formation of peptide bond in, 1444.
Picea excelsa, constitution of a xylan from, 3744.
                                                                 Polymerisation, cationic, of oxacyclobutanes. Parts I, II,
Picolinhydrazide, 4-n-propyl-, prep., 3684. Picrotoxin and tutin. Part VIII, 4715.
```

542, 546.

III, 3506.

of 6-hexanolactam, 4876.

of N-carboxy-DL-phenylalanine anhydride, 381.

of methyl methracrylate, initiated by peroxides, 427. of thiophen derivatives. Part V, 2609.

radical, mechanisms of inhibition and retardation in. Part

Polymers, high, application of a new chromatographic procedure to fractionation of, 2352. phosphonic. Part I, 4607. Polymethacrylonitrile, separation of coloration and depolymerisation reactions during thermal degradation of, thermal degradation. Part I, 3929. Polymorphism, and infrared spectra of glycerides. Parts I, II, 55, 2522. of 1:3-diglycerides and saturated triglycerides, 2522. of monoglycerides, 55. Polypeptides. Parts II-IV, 3148, 3157, 3642. Polysaccharide, extracellular, of Aerobacter aerogenes A3 (S1) (Klebsiella type 54), structure, 3483. Polysaccharides, chemical synthesis. Part I, 4543. mannose-containing. Part IV, 181. of tamarind seeds, constitution, 2600. Polystyrenes, fractionation by chromatography, 2352. Pongamia glabra, isolation of demethoxykanugin from, 2176. Porphin, octamethyl-, prep., 1655. tetrahydro-, molecular-orbital calculations for, 1172. Potassium iodide, effect of water on conductivity of, in ketones, nitrosyldisulphonate, oxidation of isobutyraldeliyde with free radical from, 1132. Potentials, sedimentation. Part I, measurement in aqueous and non-aqueous media, 22. Potentiometer for measurements of small E.M.F.s developed across high resistances, 1084. Pregnane, 4:4-dimethyl derivatives, prep., 4490. allo Pregnane-11:20-dione, 3β -acetoxy- 17α -hydroxy-, 9:11-dehydrohecogenin as intermediate in prep., 4739. epiPregnanolone, adduct with benzophenone, prep., 2555. allo Pregnan-12-one, $3\beta:2\beta$ -diacetoxy-ll-bromo, prep. 11 oxygenated steroids through, 4744. **Pregn-5-ene**, 3β -dimethylamino-, prep., 3749. Proguanil, prep. and antimalarial activity of hypothetical metabolites of, 4727. Proline peptides, esters, self-condensation, 3642. Propaldehyds, β -hydroxy- $\alpha\alpha$ -dimethyl-, reaction with animonium acetate, 4672. Propane, 1:2-dichloro-2-methyl-, effect of solvent on rate of solvolysis of, 3686. heptafluoronitroso-, prep., and physical and spectroscopic properties, 3416. cycloPropane, structure and mechanism of formation of the polymer obtained from, by mercury photosensitisation, 2241. Propanediols, chloro-, prep. of cyclic sulphites derived from, 1813. Propan-2-ol, 1-chloro-, solvolysis, 76. Propanols, pyridyl-, resolution, 3394. Propene, 3-chloro-2-methyl-, effect of solvent on rate of solvolysis of, and rearrangement in formic acid, 3686. **Propionic acid,** β -p-methoxyphenyl- β -phenyl-, cyclisation, 2928. peroxy-, oxidation of hexose diethyl dithioacetals, 970. acids, β -(7-alkyl-1-naphthyl)-, ring closure, 3857. Propyl bromides, reaction with thiosulphates in aqueous ethanol, 1396. n-Propyl bromide, solvolysis in aqueous ethanol, 1400. n-Propylamine, methylene-, perfluoro-, prep., 3416. Prop-2-ynyl acetates, rearrangement, 1015. Proteins, and peptides, degradative studies. Parts II, III, 188, 192. selective absorption of optical antipodes by. Part III, Prototropic systems, triad. Part IV, 4292. Pteridine, calculated bond lengths in, 3595. crystal and molecular structure, 3586. degradation, 2066. 2:4-dihydroxy-6- and -7-phenyl-, methylation, 2131. Pteridines, prep., 4106.

Pteridines, 4-amino-, prep., 4106.

2066.

(dialkylaminoalkylamino)-, prep. and antimalarial activity,

hydroxy-, methylation, and degradation of the products,

di- and tri-amino-, prep. and solubility, 4621.

di- and tri-hydroxy-, prep. and solubility, 4621

Pteridines, monohydroxy-, and their N-methyl derivatives, structure, 3443. teridine derivatives. Parts II, III, 2131, 3311. studies. Parts VIII—X, 2066, 3443, 4621. Pteridine derivatives. Pulcherrimin, structure, 4130, 4133. (\pm) -Pulegone, prep., 2971. Pummerer's ketone, structure, 2322. Purine, 6-(1:2-dicarboxyethylamino)-, prep., 4659. Purines, pyrimidines, and glyoxalines. Parts II-IV, 1877, 3847, 4118. Purine nucleotides, chemical studies in biosynthesis of. Part I, 2812. ribonucleotides, formation of labile phosphate esters from, by X-irradiation, 3771. Purinyls, bisdihydro-, prep., 3311. Pyrans, 3-chlorotetrahydro-, ring fission, 136. Pyrazines, polarography, 4780. Pyrazines, hydroxy, ionisation constants, 1294. Pyrazole-4-carboxylic acid, 3-methyl-1:5-diphenyl-, esters, prep., 4696. Pyrazole-3-carboxylic esters, 1-phenyl-5-styryl-, prep. and reactions, 3663. Pyrene, nitration, 164. Pyrene, 3:4-diethyl-, prep., 1068. 3:4-dimethyl-, prep., 1068. Pyrethrin I, prep., 3963. Pyrethrins, experiments on synthesis of. Parts X, XI, 126, cis-Pyrethrolone, intermediates for prep., 126. prep., 3963. Pyridazines, hydroxy, ionisation constants, 1294. Pyridine, dipole moments, 1405. localisation theory of radical substitution in, 272. ternary solutions with benzene and an alcohol, molecular polarisation in, 4499. Pyridine, 4-cyano-, prep. of derivatives of, 2253.
4-propyl-, prep. of derivatives of, 3684. Pyridines, alkyl-, orientation polarisation and dipole moments, 3621. hydroxy-, ionisation constants, 1294. 1-oxides, prep., polymorphism, and characterisation by picrolonates, 2404. Pyridine-4-carboxyhydrazide, congeners of. Part I, 2253. Pyridinium iodides, alkyl-, critical concentrations in water and in xylene, 3229. Pyridino(1':2'-2:3)-1-oxa-2:4-diazol-5-one, prep. and properties, 2063. Pyridinoquinolinoglyoxalinium salts, prep., 1158. Pyridyl group, secondary and tertiary alcohols containing, resolution, 3394. Pyrimidine, reactions of. Part I, 2312. Pyrimidine, 2:4-diamino-5:6-dihydroxy-, prep., 2124. 4:6-dichloro-5-nitro-, anomalous reaction of, with diethyl malonate, 1953. 4:5-dihydroxy-, prep. of derivatives of, 2124. 4:5:6-triamino-, prep. and conversion into 4-aminopteridine, See also Di-(6-amino-2:4-dihydroxypyrimidin-5-yl) disulphide, 917. Pyrimidines. Part I, 2033. prep. from malondiamide, 2312. purines, and glyoxalines. Parts II-IV, 1877, 3847, 4118. Pyrimidines, 4-alkyl-5-aryl-, prep., 1019. 2-amino-5-aryl-6-hydroxy-, prep., 1019. 2:6-diamino-5-aryl-, prep., 1019. hydroxy-, ionisation constants, 1294. 5-hydroxy-, prep., 2033. 2-substituted 4:6-diamino-5-phenylazo-, prep., 4106. 4:5:6-triamino-, prep., 4106. 4-substituted 2-dimethylamino-5-amino-, prep., 3232. 2-dimethylamino-5-nitro-, prep., 3232. Pyrimidine nucleosides, prep., 1877. ribonucleotides, formation of labile phosphate esters from, by X-irradiation, 3771. Pyrimidin-5-yl sulphides and disulphides, prep. Part II, 917. imidovl 4-Pyrimidones, 2:3:5:6 substituted, prep. from chlorides and α-alkyl-β-aminocrotonates, 4708. Pyrolysis of acyl cyanides and their dimers, 2628.

Pyrolysis of chloroalkenes. Parts III, IV, 2640, 3092. of organomercury compounds, 106.

of poly(ethylene terephthalate), model systems for, 3563. studies in. Parts VI, VII, 2628, 3563.

4-Pyrones, 2:6-disubstituted, prep., 3663.

y-Pyronoxanthone, prep., 2140.

Pyrophæophorbide-a, oxidation, 2272.

Pyrrocolines, 3- and 5-ethyloctahydro-, prep., 217.

Pyrrole pigment, new type, prep., colour, and fine structure,

Pyrrole rings, directly linked, compounds containing. Parts I, II, 244, 4144.

Pyrrolid-2-ones, 1-acyl-, prep. and hydrolysis, 2076.

Pyruvic acid, fluoro-, and related compounds, infrared studies of, 1519.

Quassin, fusion with alkali to give a lactone C₁₃H₁₄O₄, and structure of the latter, 4850.

Quassin, deoxo-, demethylation to deoxonorquassin, 3280.

Quassin and neoquassin as diterpenoids, 4850. and neoquassin. Parts IV, V, 3280, 4850.

Quinaldines, 4-amino-6-dialkylamino-, prep., and trypanocidal

activity, 3293. Quinazoline, 1:2:3:4-tetrahydro-3-methyl-, and related compounds, 3977.

Quinazolines, amino-, basic strengths and ultraviolet and infrared spectra, 4191.

prep. and properties, and prep. of sulphanilyl derivatives of, 3509.

3:4-dihydro-4-oxo-, substituted, reactions with Grignard reagents, 415.

hydroxy-, ionisation constants, 1294.

Quinazol-4-one, 2-o-aminophenyl-, prep., 4178.

3-4'-quinazolinyl-, hydrolysis, 4178.

Quinazol-4-ones, 2-aryl-, prep., 4420.

2:3-diaryl-, prep., 985.

Quinazolone series, syntheses in. Parts I-IV, 985, 4172, 4178, 4420.

Quinazo[4,3-b]quinazol-8-one, prep., 4178.

Quinazoquinazolones, prep., 4173.

Quinol, crystal structure of addition complex of, with methyl cyanide, 4855.

heat of combustion, and thermodynamic quantities of its redox reaction, 2695.

oxidation to benzoquinone, 2446.

Quinoline, dipole moments, 1405.

heptadecafluorodecahydro-, prep., 783.

8-hydroxy-, intramolecular hydrogen bonding in, 614.

8-hydroxy-5-phenylazo-, tautomerism, 614.

8-mercapto-, prep. and reactions, 3236.

Quinolines, amino-, aptitude for cyclisation, 2048.

hydroxy-, ionisation constants, 1294.

1-substituted 1:2:3:4-tetrahydro-4-oxo-, condensation products with malonodinitrile, 3179.

Quinoline N-oxides, aminoheptyl-, prep., 3079.

heptylhydroxy-, prep., 3079. 3- and 7-nitro-, prep., 1885.

isoQuinoline, complex with sulphur trioxide, ring fission,

dipole moments, 1405.

1:2:3:4:6:7:8:9-octahydro-2-methyl-6-oxo-, prep. and abnormal ultraviolet absorption, 327.

isoQuinolines, 6-oxygenated, prep., 327.

isoQuinolines, amino-, basic strengths and ultraviolet and infrared spectra, 4191.

decahydro-, and related compounds. Part I, 327.

dimethyl-, prep. of picrates of, 808.

hydroxy-, ionisation constants, 1294.

isoQuinoline-2-sulphonic acid, 1:2-dihydro-1-hydroxy-, as product of alkaline attack on isoquinoline-sulphur trioxide, 1269.

Quinolinoglyoxalinium salts, prep., 1158.

Quinolizidines and quinolizines. Part I, 313.

Quinolizidines, 4-oxo-, reduction with lithium aluminium hydride, 313.

Quinolizines and quinolizidines. Part I, 313.

Quinones, as potential radiosensitizers, prep., 1844.

high-potential, selective dehydrogenation of unsaturated alcohols by, 3070.

hydrogen-bonding properties of, in solution, 559.

infrared spectra of monoximes of, 2725.

Quinoquinazolones, prep., 4173.

Quinoxaline, 2-acetamido, quaternisation, 26. Quinoxalines, of biological interest, analogous to pteroic and pteroylglutamic acid, prep., 4731.

Bz-substituted, prep., 2058.

Quinoxalines, hydroxy., ionisation constants, 1294.

and related compounds, prep. as complex forming agents for metals, 2983.

Py-hydroxyalkyl-, -aminoalkyl-, and -carboxy-, prep., 2052.

Quinoxaline N-oxides. Parts IV-VI, 2052, 2058, 2551. 2:3-polymethylene, prep., 2551.

Quinoxaline derivatives, simple, reactions, 26.

R

Radiations, ionizing, chemical action in solution. Parts XV, XVI, 832, 3771.

Radicals, agents for capture of, in tetralin, relative efficiencies and correlation with structure, 4926.

alkylperoxy. Part II, 2215.

free, addition to unsaturated systems. Part XII, 61.

derived from di-tert.-butyl peroxide, reaction with anthracene and 9-methylanthracene, 1108.

from potassium nitrosyldisulphonate, oxidation of isobutyraldehyde by, 1132.

stable, use as inhibitor of polymerisation, 3506.

free alkyl, formation during Wurtz reactions, 1603.

relative stabilising influences of substituents on. Part I, 1749.

Radiolysis in neutron-irradiated bromobenzene, 2101.

Radiosensitizers, potential, 1844.

Raman effect of borohydride ion in liquid ammonia, 1170. See also Spectra, Raman.

Rauwolfia caffra. See Rauwolfia natalensis Sond., 215.

Rauwolfia natelensis Sond., reserpine and ajmaline from,

Rauwolfia alkaloids. Part I, 215.

Reactions, aromatic side-chain, mechanism, with special reference to polar effects of substituents. Part XVI,

organic, localisation theory of. Part III, 272.

Reactivity, aromatic. Part I, 4858.

Rearrangements, at high pressures in the liquid phase, 953.

Rehmannic acid, identity of lantadene A with, 4160.

Reissert reaction, experiments towards elucidation of, 1881.

R-Enzyme, action on waxy-maize starch, 3025.

Replacement, aromatic nucleophilic. Part VI, effect of alkyl groups, 4284.

Reservine, isolation from Rauwolfia natalensis Sond., 215. Resins, anion-exchange, adsorption of complex anions from

uranyl sulphate solution by, 1596.
ion-exchange, absorption of uncharged molecules by,

behaviour with mixed solvents, 1676.

chromatographic separation of organic acids by, 1681.

Resorcinol, dihydro-5-a-naphthyl-, prep., 2679.

dihydro-5-o-nitrostyryl-, influence of nitro-group in, 4803. 5-(4-diphenylyl)dihydro-, prep., 2679.

5-methoxy-, orientation of nitro- and chloro-derivatives of, 1956.

Resorcinols, aryldihydro-. Parts I, II, 2679, 4803.

Retardation of chain-decomp, of benzoyl peroxide by polycyclic aromatic hydrocarbons, 4687.

Rhenium, electron-spin resonance of oxyanions of, 4710. Fluororhenates, quadrivalent, prep. and properties, 1291.

Fluororhenic acid, prep., 1291

Rhodanines, heterocyclyl-, prep., 1644. Rhodium, isocyano-complexes. Part I, 1867.

tetrafluoride, complexes, 1242. Tetraisocyanorhodium(I) salts, prep., 1867. Rhododendron, triterpenes in, 1461.

5036Ribonucleic acid, deoxy-, of calf-thymus, action of mercaptoacetic acid on, 2573. sodium salt, electrophoretic mobility, 303. influence of concentration and ionic strength on electrometric titration of, 158. titration curves, 154. Ribonucleic acids, deoxy-, denaturation by heat in aqueous solution, 2646. deoxy-, sodium salts, electrometric titration. Parts III, IV, 2499, 2646. Ribonucleotides, formation of labile phosphate esters from, by X-irradiation, 3771. D-Ribopyranoside, methyl, condensation with acetone, 2656. D-Ribose and its derivatives. Parts VI, VII, 1192, 2656. isopropylidene and benzylidene derivatives, 1192. Ring fission of 3-chlorotetrahydro-furans and pyrans, 136. Rotenononic acids, structure, 3213. Rubber latex particles, kinetics and mechanism of hydrochlorination of surface of, 3298. Rutaceae of Hong Kong. Part I, 632. Ruthenium, electron-spin resonance of oxyanions of, 4710. Ruthenium carbonyls, prep., 2879. S_N Mechanism in aromatic compounds. Parts XVI, XXI, apoSafranine, anilino-, pigments related to, 893. apoSafranines, anilino-, new series of glyoxalinophenazines derived from, 3347. apoSafranones, obtained by oxidation of chlorinated 2-aminodiphenylamine hydrochlorides, 896. Salts, complex, exchange reactions and magnetic suscepti-bilities of. Part IV, correlation with absorption spectra, fused, polarography in, 534. insoluble metal, effect of peptising agents on crystal growth of. Part I, 2393. reaction-kinetic investigations of incomplete dissociation of. Part IV, 2836. Sanguinarine chelidonine alkaloids, synthetical experiments on, 4539. ψ -Santonic acid, revised structure, 1828. Santonin, chemistry of. Part III, stereochemistry of some reduction products of, 4549. Santonin, dihydro, prep. of an isomer of, 4978. hexahydro, prep., 4549. Santonin D, prep., 4978. ψ -Santonin, chemistry of. Part X, stereochemistry, 1828. Sapogenins and saponins. Part IV, 1167. Saponins and sapogenins. Part IV, 1167. Sarin, See isoPropyl methylphosphonofluoridate (under Phosphorus), 3887. Scandium, reactions, 3113. Scandium complexes, solvent extraction, 3113. salts, solubility, 3113. Schmidt reaction with fluorenones; structure of intermediate in ketonic Schmidt reaction, 1498. Selenium tetrafluoride, reaction with tellurium dioxide, 785. Serine, β -phenyl-, series. Part IV, 1662. Serotonin, new route to, 4589. Sesquiterpenoids. Part VII, 142. Silicon, polyfluoroalkyl compounds of. Part I, 962. tetrafluoride, viscosity and intermolecular potential, 3765. Acids: $p \cdot Me_{4-n}Ph_{n-1}Si \cdot C_6H_4 \cdot CO_2H$, acid strengths, 688. Alkoxysilanes, correlation between certain properties of, and reactivity of 1-carbon atoms of alcohols, 1536. Chlorotriethoxysilane, heat of hydrolysis of, 3355. Ethyl orthosilicate, heat of hydrolysis of, 3355. Phenyltrimethylsilanes, effects of substituents on acid cleavage of, 4858. Polyphenylsilyl compounds, Si-Caromatic bond in, 688. Potassium aluminosilicates, prep., 2882.

Silanes, acidic solvolysis, 1436.

Silicon compounds. Part I, 2779.

Silicates, hydrothermal chemistry of. Part VII, 2882.

Silicon-carbon bond in polyphenylsilyl compounds, 688.

Trichlorosilane, reaction with tetrafluoroethylene, 962.

Silver analcite, use in cæsium-alkali-metal separations, 675. bromide dibenzoate, benzoyloxylation, halogenation, and phenylation of aromatic compounds by, 2264. fluoroborate, properties and interaction with aromatic hydrocarbons, 1855. hexafluoro-phosphate, arsenate, antimonate, niobate, and -tantalate, properties and interaction with aromatic hydrocarbons, 1855. iodide dibenzoate, benzoyloxylation, halogenation, and phenylation of aromatic compounds by, 2264. nitrate, conductivity in non-aqueous and mixed solvents. Part IV, ethylene glycol and its mixtures with water, pyridine, and quinoline, 473. isoBut-1-enylsilver, co-ordination properties, 3640. isoBut-1-enylsilver, formation of isobut-1-enyl radicals from. Part II, 3640. Cell: H₂(Pt)|HCl|AgCl-Ag, E.M.F. measurements in acetone-water mixtures, 3168. Silver salts, insoluble, precipitation in aqueous solution, 2393. Smoke, city, prep. of hydrocarbons possibly related to carcinogenic factors in, 1068. Soaps, aluminium, 1972; dielectric properties in toluene solution, 3463. Sodium, wetting of zinc by, 1454. Sodium chloride, effect on electrometric titration of sodium deoxyribonucleates, 2499. iodide, action on methyl 4:6-O-benzylidene-3-deoxy-3-iodo-2-O-toluene-p-sulphonyl-α-D-glucoside, 471. thiophenoxide, reaction with tert. butyl chloride, 41. Solids, active, production (preparation) by thermal decomp. Parts VIII, 1X, 1506, 3612. Solid-liquid equilibria in solutions of non-electrolytes, 2097. Solubilities, relation to specific conductivity of anhydrite, Solutions, in which the solvent molecule is "large," conductivity. Parts I, II, 1424, 2428. Solvents, effect on a simple ion-dipole reaction. Part I, 2110. effect on molecular complexities of tantalum n-alkoxides, 5. influence on aromatic nucleophilic substitution, 469. ketonic, conductimetric studies in. Part II, 998. non-polar, solutions of alcohols in. Part III, 200. Solvolysis of arylmethyl chlorides, molecular-orbital treatment, 2789. Sonoluminescence in aqueous solutions, 4442. Sorption, of water and methanol by carbon, statistical thermodynamic interpretation, 3307. Sparteine, 2:3-dehydro-2-methyl-, prep., 3390. Spectra, absorption, anomalous, of bicyclo[2:2:1]heptane derivatives, 4073. correlation with exchange reactions and magnetic susceptibilities of complex nickel salts, 520. of 2-acylcyclohexane-1:3-diones, 3495. of amino-isoquinolines, cinnolines, and quinazolines, of compounds containing 5-membered rings, 3438. of ketones. Parts IV, V, 2302, 3675. of monosubstituted benzenes, 4960. of ω -p-methoxyphenyl-polyene aldehydes, 4082. of nitrous acid in aqueous perchloric acid, 3971. of γ -substituted $\alpha\beta$ -unsaturated ketones, 3675. of trinuclear dyes related to oxonols, 2991. and stability of complex ions, 8. electronic, of formaldehyde, 858. of organic molecules, and their interpretation. Part II, 4314. of solid hydroxyazo-compounds, 2143. steric effects in, 3779. electron-spin resonance absorption, investigation of oxyanions of transition metals with, 4710. infrared, characterisation of triterpenoid 3-hydroxy-groups by, 4868. of carbonyl group in methoxyanthraquinones, 4811. of cobaltic nitroammines and other cobaltic complexes in 2—15 μ region, 2849. of 1:3 diglycerides and saturated triglycerides, 2522. of fluoropicrin, chloropicrin, and bromopicrin, 759. of fluoropyruvic acid and related compounds, 1519.

of gaseous trifluoronitrosomethane, 754.

XXVII—XXXV, 1054,

```
Spectra, infrared, of halogenobenzenes, 1350.
                                                                   Steriods, 1-oxygenated, prep., 3289.
                                                                     11-oxygenated, prep. through 3β:20β-diacetoxy-11-bromo-
allopregnan-12-one, 4744.
    of halogeno-steroids, 331.
    of heptafluoronitrosopropane and related compounds,
                                                                     3-(tertiary amino)-, structure and stereochemistry, 573.
    of isatin and substituted isatins, 2202.
                                                                     urinary, and related compounds. Part I, 4825.
    of liquid and solid formic acid, 225.
                                                                     and Walden inversion. Parts XXVII—XX 1059, 1064, 1649, 1893, 2488, 2492, 4817, 4821.
    of metal ammines and deuteroammines, 3108.
    of metal ammines and related compounds. (Part I,
                                                                     See also p-Homo-18:19-bisnorsteroids, 4909.
                                                                   Steroids, 17a:21-dihydroxy-20-oxo-, removal of 17-hydroxyl
     3108.) Part II, 4495.
    of monoglycerides, 55.
                                                                       group from, 517.
    of natural products. Parts V, VI, 1007, 4868.
                                                                     4:4 dimethyl. Part II, 4490.
    of N-H stretching modes of vibration in co-ordination
                                                                     5α:6α-epoxy-3-oxo-, prep., 4417.
      compounds of ammonia and amines, 2712.
                                                                     halogeno-, infrared absorption, 331
    of oxindole and related compounds, 3809.
                                                                   \Delta^4-Steroids, 4-bromo-3-oxo-, prep., 627.
    of pentacyclic triterpenoids, 1007.
                                                                     4-chloro-3-oxo-, prep., 1184.
                                                                   Steroid 20:21-ketols, prep., 517.
    of perfluoroalkyl isocyanates and carbamates, 3428.
    of quinone monoximes, 2725.
    of solid hydroxyazo-compounds, 2143.
    and polar effects. Part III, internal spectral relationships,
      2753; Part IV, steric restrictions, 3704.
    and polymorphism of glycerides. Parts I, II, 55, 2522.
  nuclear-resonance, of boron trifluoride hydrates, 3870.
  Raman, and constitution of solid hydrates: hydroxonium
     perchlorate, nitrate, hydrogen sulphate, and sulphate, 2913.
    of borohydride ion in liquid ammonia, 1170.
    of fused gallium dichloride, 3723.
    of halogenobenzenes, 1350.
                                                                     soluble salts, 3941.
    of tetrachlorogallate ion in aqueous solution, 3721.
  ultraviolet, of 5-p-aminoarylacridinium ions, 484.
    of aromatic aza-hydrocarbons, n-\pi^*-transitions in, 122.
    of chloro- and hydroxy-cinnolines, 4207.
    of 4-di-(2-chloroethyl)aminoazobenzenes in neutral and
                                                                   Styryl dyes, prep., 1480.
     acidic ethanol solutions, 1719.
    of 2:4-dinitrophenylhydrazones of conjugated alkene-
                                                                     4858.
     diones, 1083.
    of 3-O-methylglycerosazone, 3979.
    of monocrystals. Parts I, II, 2658, 2662.
        1:2:3:4:6:7:8:9-octahydro-2-methyl-6-oxoisoquinoline,
    of 1-phenylnaphthalene-2:3-dicarboxylic anhydrides, 395.
    of unsaturated cyclobutane derivatives, 2208.
                                                                       845, 850, 855.
Speculum, anodic oxidation at very low current density,
Spirostan 11:12-ketols, prep., 4330.
5\alpha:25D-Spirostan-11-one, 3\beta:12\beta-diacetoxy-, prep. from heco-
  genin, 4330.
22a-Spirostan-2\alpha:3\beta:5\alpha-triol, isolation from Agapanthus species,
Spongouridine, prep., 2388.
Stability constants of amine-platinous complexes, 2371.
Starch, enzymic synthesis and degradation. Parts XX-
    XXII, 44, 53, 3025.
                                                                    pounds, 2443.
 floridean, molecular structure, 2831.
  waxy-maize, evidence of multiple branching in: a cor-
   rection, 3025.
                                                                     acetates, 235.
Stearic acid, metal salts, magnetic properties, 3948.
Stearic acids, 9:10:12:13-tetrahydroxy., prep. of eight, 1611.
                                                                     ethylamino)-, 4659.
Steels, low-carbon, accurate determination of carbon in, 3398.
Stephen reaction, 1686.
Sterculic acid, oxidative degradation, 2550.
   structure, 1818.
                                                                     ation of, 1883.
Stereochemistry, of a-amyrin, 456.
 of butyrospermol, 3272
                                                                     acid, 1635.
  of friedelin and cerin, 2419.
 of cyclohexane derivatives. (Part II, 805.) Parts III, IV,
                                                                       spectral evidence, 4954.
   2363, 4384.
  of masticadienonic acid, 4150.
 of octahedral substitutions. Parts IV, V, 1691, 1707.
  of olefinic compounds. Part V, 136.
 of reduction products of santonin, 4549.
 of sesquiethylenediaminetrimethylplatinic iodide, 948.
 of tazettine, 4749.
 of tervalent arsenic compounds. (Part I, 1195.) Part II,
                                                                         tetroxide, prep., 2705.
 of tropane alkaloids. Parts VIII, IX, 873, 1411.
Steroid dibromides, rates of rearrangement of, 932.
Steroids, epoxidation, 4689.
 identification in wool wax, 1740.
                                                                       970.
```

```
hormones, hydroaromatic. Part V, 4909.
    modified. Parts I-III, 627, 1179, 1184.
    and related substances, partial reduction. Part II, 517.
3:5-cycloSteroid rearrangement, 2488.
9-Stibiafluorenes, substituted, prep., 1195.
Stigmastane, 5\alpha:6\beta:22\xi:23\xi-tetrabromo-, rate of mutarotation,
Stilbene, 3:4:3':5'-tetra- and 3:4:5:3':5'-penta-hydroxy-, oc-
  currence in Vouacapova species, 4477.
Stilbene-2:2'-disulphonic acid, 4:4'-diamino-, bisquaternary
  ammonium salts, prep., and use for interconversion of
Stobbe condensations with aliphatic ketones, prep. of cyclo-
  pentenones from products of, 2231.
Styrene, copolymerisation with diethyl vinylphosphonate,
Substituents, effect on acid cleavage of phenyltrimethylsilanes,
Substitution, aromatic. Part II, 4257.
    stereochemical aspects. Parts 1, II, 2335, 2340.
    halogen, kinetics and mechanisms. Part II, 36.
    nucleophilic, effect of solvent on, 469.
  studies in. Parts IV, V, 254, 469. at a saturated carbon atom, mechanism. Parts L—LII,
  electrophilic. Parts I-VI, 164, 1441, 3570, 3572, 3576,
  homolytic aromatic. Parts XI, XII, 1463, 1475.
 octahedral, mechanism, kinetics, and stereochemistry. Parts IV—VI, 1691, 1707, 2862.
  radical, in pyridine, localisation theory of, 272.
  unimolecular, steric retardation in, 850.
Succinic acid, aa-dipropyl-, prep., 797.
   tetrafluoro, reaction with phosphorus oxychloride, 3199.
Succinimide, N-bromo-, application in syntheses of gladiolic
 acid, opianic acids, phthalaldehydes, and related com-
Succinimidine, products of condensation of, with cyano-
"6-Succinoaminopurine." See Purine, 6-(1:2-dicarboxy-
Sulphanilamide, derivatives of, 3509.
Sulphidimines, isomerisation. Part III, 1755.
Sulphonamides, aromatic, secondary mechanisms in halogen-
Sulphonation, aromatic, mechanism in aqueous sulphuric
Sulphur, expansion of valency shell of, in aromatic sulphides,
  perfluoroalkyl derivatives. Parts IV, V, 173, 2684.
Sulphur dioxide, effect on oxidation of copper, 2182.
 trioxide, complex with isoquinoline, ring fission, 1269. Arenesulphonates, hydrolysis. Part II, kinetics, 3240.
  Dialkyl sulphides, oxidation with dinitrogen tetroxide, 2705.
    sulphites, reaction with sodium iodide in acetone, 2589.
    sulphoxides, molecular addition compounds of dinitrogen
  Disopropyl methylphosphonodithiolate, hydrolysis, 3269.
  Disulphides, thermochromism, 15.
  Disulphones derived from oxidation of hexose diethyl
    dithioacetals, prep., and conversion into aldopentoses,
```

Sulphur perfluoroalkanesulphonic acids, 173.

Sodium alkyl sulphates, critical micelle concentrations,

Sulphates, of univalent metals, cryoscopic measurements on, in sulphuric acid, 80.

Sulphides, aromatic, cryoscopic measurements on, in sulphuric acid, 3850.

spectral evidence for expansion of valency shell of sulphur in, 4954.

organic, oxidation. Parts V, VII, 489, 3056.

Sulphites, cyclic, derived from chloropropanediols, 1813.

Sulphones, aromatic, cryoscopic measurements on, in sulphuric acid, 3850.

Sulphoxides, aromatic, cryoscopic measurements on, in sulphuric acid, 3850.

Sulphuric acid, aqueous, mechanism of aromatic sulphon-ation and desulphonation in, 1635.

catalysis of pinacol-pinacone rearrangement, 3519. cryoscopic measurements on aromatic sulphides, sulphoxides, and sulphones in, 3850.

esterification of 2:4-dinitrobenzyl alcohol by, 1304.

formation of tetra(hydrogen sulphato)boric acid in, 1925.

hydrolysis of esters in, 1572.

ionisation of carboxylic anhydrides in, 607.

organic reactions in. Part I, 1572.

partial rate factors for hydrogen isotope exchange reactions of, with toluene, 2743.

reaction with 2-acylbenzoic acids and alkylidenephthalides, 1627.

solutions in. Parts XVII-XX, 80, 607, 1925, 3850. Thiosulphates, conductivity in aqueous methanol and ethanol, 1392.

reaction with propyl bromide in aqueous ethanol, 1396. Trichloromethyl sulphones, and related compounds, 508. Trimethylene sulphite, 2-chloro-, prep. and infrared spectra,

1813. Sulphur compounds, organic. Part I, 4245.

Sultones, prep., 4414.

Suramin, analogues, prep., and lack of trypanocidal activity,

Susceptibility, diamagnetic, of organic liquids, effect of dissolved oxygen on, 466.

magnetic, and exchange reactions of complex salts. Part IV, correlation with absorption spectra, 520. of zinc chloride, 217.

Sweet corn, soluble polyglucose from, 2317.

Syntheses, organic, acrylonitrile in. Part II, 959.

т

Tamarind seeds, polysaccharides and xylan from, 2600. Tantalum and niobium, water soluble complexes of. Part I, α-hydroxy-acids and (2-hydroxyethyl)amines, 4946.

Tantalum n-alkoxides, effect of solvents on molecular complexities of, 5.

pentabutoxides, structure, 1139.

pentapentyloxides, structure, 1139.

Tazettine, structure and stereochemistry, 4749.

Tellurium, fluorination, 3454.

Tellurium dioxide, reaction with selenium tetrafluoride. 785.

oxyfluorides, prep. and physical properties, 3454.

tetrafluoride, prep., 785.

Cæsium hexaiodotellurite, crystal structure, 3385.

Ditellurium decaffuoride, prep. and physical properties, 345; viscosity, 3681

Tenulin, constitution, 142.

Terminalia ivorensis, structure of terminolic acid from, 4469.

Terminolic acid, structure, 4469.

Terpene compounds. Parts VIII—X, 260, 358, 2179.

Terpyridyl, quinquecovalent complexes of, with bivalent metals. Part I, 594.

Testosterone, 16\alpha-hydroxy-, prep., 297.

16-oxo-, prep., 297.

1:2-3:4-8:9-10:11-Tetrabenzopentacene, prep., 1833.

3:4-5:6-10:11-12:13-Tetrabenzoperopyrene, prep., 3875.

Tetralin, radical-capture agents in, measurement of relative efficiencies and correlation with structure, 4926.

Tetralones, peri-hydroxy-, hydrogen bonding in, 3600.

peri-hydroxy-, prep., 1585.

1:7:10:15-Tetraoxadispiro[5:2:5:2]hexadecane, prep., 1146.

Tetrazen, tetramethyl-, photolysis and pyrolysis, 3677. Tetrazolium bromide, triphenyl-, and substituted derivatives, polarography, 3130.

Tetrazolium compounds. Part V, 3130.

Tetritols, 2-deoxy-2-fluoro-, prep., 2150.

Tetronic acids and related compounds. Part I, prep. from α-hydroxy-esters, 4103. Parts II, III, 4661, 4665.

Thallium, co-ordination compounds with ethylenediaminetetra-acetic acid, 4701.

Thallium(I), kinetics of reaction of, with cobalt(III) in aqueous perchloric acid, 343.

Trimethylthallium, co-ordination complexes, 3351.

Thebaine, condensation with dienophils, 1863.

isoThebaine, non-identity of methyl ether of, with 2:3:6-trimethoxyaporphine, 1732.

Theophylline, 7-(2:3-dihydroxypropyl)-, prep., 3975. Thermochemistry of ethyl nitrate, 210.

of organic phosphorus compounds. Part II, 422. of organophosphorus compounds. Part II, 1401.

Thermochromism of compounds containing thiocarbonyl and disulphide functions, 15.

Thermodynamics of hydrocarbon mixtures. Parts II, III, 3708, 3713.

of ion association. Part II, 744.

9-Thia-1:2-benzofluorene, prep., 3435. 9-Thiabenzonaphthofluorene 9:9-dioxides, dihydro-, prep.,

Thiadiazoles. Parts III, IV, 2345, 4524.

1:2:4-Thiadiazoles, 5-amino-3-aroylamino-, prep., 4524.

3-amino-5-aryl-, prep., 4524.

3-amino-5-arylamino-, prep., 2345.

3:5-di(aralkylamino)-, prep., 2345.

Thiadiazolines, aryl-, prep., 3189.

Thianthren, crystal and molecular structure, 4886.

Thiazole, 2-cyano-, prep. of derivatives of, 2253. Thiazoles derived from chrysean and isochrysean, 1870.

Δ4-Thiazolines, 3-aryl-2-arylimino-4-2'-phenoxathiinyl-, prep.,

Thiocarbonyl compounds, thermochromism, 15.

6:8-Thioctic acid, prep., 3074.

isoThiocyanates, acyl. Part I, 4458.

Thioglycollic acid, anhydro-compounds from nitrogencontaining derivatives of. Part II. 361.

Thiolacetic acid, addition to ethynylcarbinols and the conversion of adducts into aldols and $\alpha\beta$ -unsaturated aldehydes, 116.

Thiols, optically active, prep. via thiuronium salts, 2983.

Thionaphthen, prep. of derivatives of. Parts I, II, 2603,

3-o-toluoyl-, pyrolysis, 3435.

Thionaphthens, prep. by cyclisation of acetonyl aryl sulphides and aryl phenacyl sulphides, 4791.

prep. from arylthioacetaldehyde diethyl acetals, 2603.

Thionaphthen-2:3-dicarboxylic anhydride, condensation with hydrocarbons and phenols, 1429.

Thionaphthenopyrazole dioxides, molecular rearrangement during reduction, 4974.

Thiophen, heats of adsorption on platinum, 2635. polymerisation of derivatives of. Part V, 2609.

Thiophen, 3-hydroxy-, prep., 4985.

Thiophen chemotherapeutics, potential. Part V, 4114.

Thiophenoxide ion, reactivity, 254.

Thiophen-2-sulphonamides, 5-amino-, prep. and proof of

structure of, 4114. Thiosemicarbazones, of substituted phenyl- and pyridyl-

benzaldehydes, chemotherapeutic action, 100. prep., 713.

Thiourea, derivatives of, having potential antivirus activity,

Thioureas, N (aroylamidino), oxidation, 4524. aryl, conversion into aryl isothiocyanates, 659.

Thiuronium salts, as intermediates in prep. of optically active thiols, 2987.

Thorium dioxide, system with uranium dioxide and oxygen, magnetochemical study, 78.

tetra(primary alkoxides), prep., 2260. tetra(secondary alkoxides), prep., 3469.

Thymus, calf, deoxyribonucleic acid of, and aldehydoapurinic acid di(carboxymethyl) dithioacetal of, 2573, 2579, 2584.

Tigogenin, $5\alpha:6\beta$ -dibromodeoxy-, rate of mutarotation, 932. 11-oxo., 9:11-dehydrohecogenin as intermediate in prep., 4739.

prep., 4344.

Tin, alloys with copper, anodic oxidation at very low current density, 2857.

Stannic chloride, catalysis of polycondensation of benzyl chloride by, 4768.

Titration, electrometric, of sodium deoxyribonucleates. Part III, 2499.

Toddalia aculeata, alkaloids of, 769.

Toddaline, identity with chelerythrine, 769.

Toluene, heats of mixing with benzene, cyclohexane, heptane, and hexane, 3708, 3713.

partial rate factors for bromination of, by hypobromous acid, 36.

partial rate factors for hydrogen isotope exchange reactions of, with sulphuric acid, 2743.

phenylation, 1463.

thermal decomp. of ketones and of hexafluoroazomethane in presence of, 2136.

2:4:6-trinitro-, kinetics and mechanism of colour reactions of, at low temperatures: a second reaction with ethoxide ion, 2546.

Toluene-p-sulphonamides, N-substituted, hydrolysis and oxidation, 1755.

p-Toluidine, oxidation by peroxidase in presence of aniline,

o-Tolyl acetate, Fries rearrangement, 2222.

 $n-\pi^*$ -Transitions in spectra of aromatic aza-hydrocarbons, 122. Transphosphorylation, enzymic, 2812.

Transport to surface of a rotating disc, 3756.

1:4:6-Triazanaphthalene, lability, 4683.

1:3:5- and 1:3:8-Triazanaphthalenes, prep. of derivatives of, 1045, 4433.

Triazanaphthalenes, hydroxy., ionisation constants, 1294. 1:3:5-Triazine, 2:4-dihydroxy-, ionisation constants, 1294.

Trichloromethylthio-derivatives of biological interest, 3139. Trideca-6:10-dien-2-ol, 2-methyl-13-phenyl-, prep. and cyclodehydration, 1238.

Triglycerides, saturated, infrared spectra and polymorphism,

Trimethylamine, reaction with methyl iodide in carbon tetrachloride, kinetics, 1035.

1:4:7-Trioxa-9b-azaphenalene, dodecahydro-3:3:6:6:9:9-hexamethyl-, prep., 4672.

Trioxan, depolymerisation in aqueous acids, 1286.

Triphenylene, nitration, 164. prep., 796.

Triphenylene, 2-methyl-, prep., 796.

Triterpenes, approach to total synthesis of. Part I, 2431. neutral tetracyclic, of dammar resin, constitution, 2196. occurrence in Aquifoliaceae and Ericaceae of Hong Kong, 1461.

of friedelane series. Parts I, II, 2115, 2119.

pentacyclic, steric identity of all ring junctions in ursane and oleanane groups of, 456.

and related compounds, chemistry of. Parts XXVIII, XXIX, 2904, 3172.

Triterpenoids, characterisation of equatorial and axial 3-hydroxy-groups in, by infrared spectra, 4868. pentacyclic, characterisation of carbonyl groups in, 1007.

(Barton et al.) Parts XXI—XXIII, 788, 4150, 4160. (Spring et al.) Parts XLVI—LIII, 465, 456, 1377, 1949, 2029, 2417, 2419, 3272.

Tropanols, optically active, absolute configurations of nitrogen atoms in, 873.

Tropan-3-ols, quaternisation, 1411.

Tropeines, α-hydroxymethyleneacetyl-, prep. and geometrical isomerism, 310.

Tropine, new derivatives, prep., 938. Tropine, α-methyltropic ester, prep., 938.

 ψ -Tropine, α -methyltropic ester, prep., 938.

Tropine series, enol isomerism in, 310.

Tropolones. Part IX, 2620.

Tropylium ion. Parts I, II, 2021, 2026.

salts, prep., 2021, 2026.

salts, methyl-, prep., 2021.

Trypanocides, new. Parts I-III, 337, 3293, 3739. Trypanosomiasis, cinnolines and other heterocyclic types in relation to chemotherapy of. Part XI, 26.

Tryptamines, carbolines, and related compounds. Parts II, III, 4589, 4593.

prep., 4589.

Tryptamines, 1:N-dimethyl-, prep., 4593.

1-methyl-, prep., 4593.

L-Tryptophan, uniformly labelled, prep., 3784.

Tubercle bacilli, constituents of lipids of. Part VII, 2036. Tuberculosis, action of phenazine pigments against, 888, 893, 896.

chemotherapy. Part VII, 100.

Tungsten hexafluoride, complexes, 1242.

trioxide, solubility in hydrochloric acid, 3248.

Tutin and picrotoxin. Part VIII, 4715.

U

Ultrasonic waves, chemical action of, 4442.

Undecanoic acid, 11-sulpho-, prep., 2560.

Unsaturated systems, addition of free radicals to. Part XII,

Uracil, $3 \cdot \beta$ -D-arabofuranosyl-, prep., 2388.

5:6-diamino-, condensation with phenylglyoxal, 2131.

Uracils, cyano-, prep. from amines and amino-acids, 4118. 3-methyl-, prep., 1877.

2-thio-, prep., 3847.

Uranium, reaction with organic solvent-dinitrogen tetroxide mixtures, 3900.

Uranium dioxide, system with thorium dioxide and oxygen, magnetochemical study, 78.

trioxide, system with water, 3531.

Uranyl complexes, possible f-orbital hybridisation in, 3650. sulphate, adsorption of complex anions from solutions of, by anion-exchange resins, 1596.

Urethanes, infrared spectra, 3432.

Uridine, 5' O benzyl., prep., 3459. O²-2'-cycloUridine, 5' deoxy 5' iodo., X-ray crystallographic study, and structure of the parent compound, 4873.

Uridine-diphosphate-glucose, improved prep., 3459.

Uridylic acids a and b, structure, 2388.

Ursa-9(11):12-dien-3-one, conversion into oleana-11:13(18)dien-3-one, 465.

Ursanes, steric identity of ring junctions in, 456.

Ursolic acid, occurrence in Aquifoliaceae and Ericaceae of Hong Kong, 1461.

Usnic acid. Part XII, 2322.

prep., 530.

Vibrational frequencies, correlations in heterocyclic molecules. (Part I, 2202.) Part II, 3809.

Vinyl 2-benzoyloxyethyl ether, pyrolysis, 3563.

Vinyl ethers, pyrolysis, 3563.

Viscosity, of dilute solutions of primary alcohols in benzene, heptane, and cyclohexane, 200.

of iodine pentafluoride and ditellurium decafluoride, 3681. relation to b. p. for homologous liquids, 2740.

Vitamin A, alleged occurrence in baker's yeast, 4094.

[2-14C]Vitamin A, prep. of all-trans., 2-cis(or neo)., and 6-cisisomers, 3234.

Vouacapoua species, occurrence of 3:4:3':5'-tetrahydroxy- and 3:4:5:3':3'-pentahydroxy-stilbene in, 4477.

Vulpinic acid, 2-methoxy-, prep., 1734.

Water, hydrogen bonding properties of, in non-aqueous solution, 559.

structure, in relation to ionisation of cyanoacetic acid, 2798.

Walden inversion and steroids. Parts XXVII—XXXV, 1054, 1059, 1064, 1649, 1893, 2488, 2492, 4817, 4821. Wedelia calerdulacea, chemical examination. Part I, 629. Wedelolactone, structure, 629.

Wessely-Moser rearrangement with chromonols and flavonols, 4409.

with xanthones, 4455.

Wetting of zinc by sodium, 1454.

Wetting temperature, critical, significance in wetting of zinc by sodium, 1454.

Wheat-straw, constitution of a hemicellulose from, 3830.
Wool wax, components of. Parts III, IV, 1736, 1740.
presence of 7-oxocholesterol and cholestanol in, 1736.
steroidal derivatives in, 1740.

Wurtz reactions, formation of free alkyl radicals during, 1603.

X

X-Rays, irradiation of aqueous benzene solutions with, effect of molecular oxygen on, 832.

Kanthen, 9-dimethylamino-, prep., 698.

9-Xanthenylacetic acid, basic esters and their quaternary salts, prep., 812.

Xanthine oxidase, chemistry. Parts II, III, 1212, 1219.
 Xanthine oxidase—xanthine system, rate of reduction of substituted 4-di-(2-chloroethyl)aminoazobenzenes by, 1724.

Xanthone, polarographic reduction, 3016.
 Xanthone, 1:4-dihydroxy-7-methoxy-, Wessely-Moser rearrangement, 4455.

1-hydroxy-, prep. of derivatives of, 2140.

Xanthones, methoxy-, polarographic reduction, 3016.

Xanthone series, studies in. Part I, 2140.

Xylan of Norway spruce (*Picea excelsa*), constitution, 3744.

Xylan of oat straw, constitution, 1072. of tamarind seeds, constitution, 2600.

3:5:1-Xylidine, N-toluene-p-sulphonyl-, anomalous chlorination, 3244.

Xylobiose, degradation by alkali, 4807.

Xyloisosaccharinolactone, prep., and occurrence in degradation products of xylobiose and xylotriose, 4807. β-D-Xylose, 2:3-di-O-methyl-, crystalline, prep., 219.

Xylotriose, degradation by alkali, 4807.

Y

Yeast, baker's, alleged occurrence of vitamin A in, 4094.
Yohimbine and related alkaloids, constitution. Part IX, 771.

Yuccagenin, isolation from Agapanthus species, 1167.

\mathbf{z}

Zanthoxylum species, flavonoid glycosides and hesperetin from, 632.

Zea mays, soluble polyglucose from, 2317.

Zeolites, containing potassium as only interstitial cation, prep., 2882.

Zinc, reaction with organic solvent-dinitrogen tetroxide mixtures, 3900.

wetting of, by liquid sodium, 1454.

Zinc aluminate, free energy of formation of, 3922. chloride, melting point and magnetic susceptibility, 217. ferrite, free energy of formation of, 3924. Terpyridylzinc chloride, stereochemistry, 594.