
Contents

Volume 1, Part 1, 1973

LECTURE

The Fifth Keilin Memorial Lecture	PAGE
Electron transfer and oxidative energy. <i>By</i> R. J. P. Williams	1
<i>Appendix: Connexion between oxidation-reduction and acid-base reactions</i>	24

ABSTRACTS OF COMMUNICATIONS

Metalloenzymes Conference, Oxford

Biological properties of iron-sulphur proteins. <i>By</i> F. R. Whatley	27
Structures of two non-haem iron proteins: rubredoxin at 0.15 nm (1.5 Å) resolution and ferredoxin at 0.20 nm (2.0 Å) resolution. <i>By</i> L. H. Jensen, L. C. Sieker, K. D. Watenpaugh, E. T. Adman & J. R. Herriott	27
Tryptic cleavage of <i>Clostridium acidi-urici</i> apoferrredoxin, and reconstitution of the separated fragments. <i>By</i> W. H. Orme-Johnson	30
Nuclear-magnetic-resonance studies on iron-sulphur proteins. <i>By</i> W. D. Phillips	31
A new look at the electron-transfer system of heart mitochondria. <i>By</i> H. Beinert, N. R. Orme-Johnson & R. E. Hansen	32
Kinetic studies on mammalian cytochrome <i>c</i> oxidase. <i>By</i> E. Antonini, M. Brunori, C. Greenwood & M. T. Wilson	34
The structure and function of nitrogenase of <i>Clostridium pasteurianum</i> : electron-paramagnetic-resonance studies. <i>By</i> L. E. Mortenson, W. G. Zumft, T. C. Huang & G. Palmer	35
The nitrogenase of <i>Klebsiella pneumoniae</i> . <i>By</i> R. R. Eady, B. E. Smith, R. N. F. Thorneley, D. A. Ware & J. R. Postgate	37
Recent aspects of coenzyme B ₁₂ -dependent enzymic reactions. <i>By</i> H. A. O. Hill	39
Current status of the mechanism of action of vitamin B ₁₂ coenzyme. <i>By</i> R. H. Abeles	39
Methaemoglobin and the problem of haem-haem interaction. <i>By</i> M. F. Perutz	42
Equilibrium kinetic and electron-paramagnetic-resonance studies of the reversible oxygenation of cobalt-substituted myoglobins and haemoglobins. <i>By</i> T. Yonetani, H. Yamamoto, F. Kayne & G. Woodrow	44
Redox state and polypeptide chain folding in cytochrome <i>c</i> . <i>By</i> R. E. Dickerson, T. Takano & O. B. Kallai	45

	PAGE
Kinetic studies on modified cytochrome <i>c</i> . <i>By</i> M. Brunori, M. T. Wilson & E. Antonini	45
Catalytic mechanisms for copper-containing oxidases. <i>By</i> B. G. Malmström	47
Superoxide radical and superoxide dismutase. <i>By</i> I. Fridovich	48
Superoxide dismutase: studies of the catalytic mechanisms and of the cobalt-substituted protein. <i>By</i> G. Rotilio	50
Mechanism and inactivation of superoxide dismutase activity. <i>By</i> E. M. Fielden, P. B. Roberts, R. C. Bray & G. Rotilio	52
The study of electron-transfer mechanisms of redox proteins by pulse radiolysis. <i>By</i> I. Pecht & M. Faraggi	53
531st Meeting, Lancaster	
Regulatory mechanisms of sodium and potassium ion transport through membranes. <i>By</i> V. Schwarz	55
Some aspects of the role played by calcium ions in muscle contraction. <i>By</i> P. C. Caldwell	60
Biochemistry of bone mineralization. <i>By</i> P. G. Walker	62
Magnesium requirement for enzymes and hormones. <i>By</i> F. W. Heaton	67
Absorption and storage of iron. <i>By</i> J. R. P. O'Brien	70
Chairman's introductory remarks to symposium on the clinical and biochemical aspects of lithium therapy. <i>By</i> H. McIlwain	73
The role of lithium carbonate in the treatment and prophylaxis of the affective disorders. <i>By</i> A. Coppen	74
Effects of lithium salts on amine metabolism and electrolytes. <i>By</i> D. M. Shaw	78
Possible mechanisms of action of lithium salts: approaches and perspective. <i>By</i> M. Schou	81
Biochemical studies on the effects of lithium salts: excretion of tricarboxylic acid-cycle intermediary metabolites, inhibition of vasopressin and distribution of other ions in the body. <i>By</i> F. A. Jenner	88
Animal models for behavioural and biochemical studies on the effects of lithium salts. <i>By</i> H. Steinberg	93
The effects of thiol-group inhibitors on the efflux of calcium and magnesium ions from single muscle fibres. <i>By</i> C. C. Ashley & J. C. Ellory	96
Effect of hypervitaminosis D ₃ on magnesium metabolism of the chick. <i>By</i> J. E. H. Stafford & N. A. Edwards	97
Magnesium status and thyroid activity. <i>By</i> H. P. Humphray & F. W. Heaton	97
Effect of magnesium deficiency on alkaline phosphatase and inorganic pyrophosphatase activities of rat tissues. <i>By</i> B. W. Loveless & F. W. Heaton	99
The effect of zinc deficiency on intestinal and salivary mucins. <i>By</i> J. Quarterman, W. R. Humphries, J. Morrison & F. A. Jackson	101
Inhibition by zinc ions of ferritin <i>in vitro</i> . <i>By</i> I. G. Macara, T. G. Hoy & P. M. Harrison	102
Preparation and properties and analysis of a zinc ion-binding protein from the benign hypertrophic human prostate gland. <i>By</i> M. J. Reed, S. R. Stitch, J. G. Heathcote & R. J. Washington	104
Labelling of sodium ion channels in transporting epithelia with [¹⁴ C]amiloride. <i>By</i> A. W. Cuthbert	105

	PAGE
Effects of ouabain on muco-substance secretion in cell culture. <i>By</i> R. Duguid & J. C. Marsden	106
The place of copper in nutrition. <i>By</i> H. A. Kareem	107
The effect of lithium salts on the urinary excretion of some dicarboxylic acids. <i>By</i> C. R. Lee & R. J. Pollitt	108
Lithium ions and insulin: effects on carbohydrate and electrolyte metabolism. <i>By</i> E. T. Møllerup, P. Plenge & O. J. Rafaelsen	109
Effects of lithium ions in a pharmacological concentration on potassium and sodium ions in rat brain-cortex slices. <i>By</i> C. S. Kjeldsen, H. Lund-Andersen & L. Hertz	111
Erythrocyte sodium and potassium ions in mania and depression. <i>By</i> A. I. M. Glen & L. Bellinger	114
Potassium ion homeostasis in the cerebral cortex. <i>By</i> L. Hertz	115
A preliminary investigation into the effects of lysergic acid diethylamide and lithium ions on the amine and amino acids in the snail central ganglia. <i>By</i> N. N. Osborne, M. Maier & V. Neuhoff	118
Brain electrolytes and lysosomal enzymes in the asphyxiated five-day-old rat: effect of pretreatment with dexamethasone. <i>By</i> B. P. F. Adlard & S. W. De Souza	120
Diffusion-limited (extracellular) and non-diffusion-limited (intracellular) movements of inulin in brain-cortex slices. <i>By</i> H. Lund-Andersen & L. Hertz	123
Effects of quaternary ammonium compounds on brain sodium-plus-potassium ion-stimulated adenosine triphosphatase. <i>By</i> Z. Abdul-Cader, C. T. Eaves, P. J. Wood & P. T. Nowell	126
Mechanism of the inhibition by ascorbate of the sodium-plus-potassium ion-stimulated adenosine triphosphatase in rat brain. <i>By</i> R. R. Boxall & P. J. R. Phizackerley	129
The association of recently synthesized acetylcholine with synaptic vesicles. <i>By</i> R. M. Marchbanks & M. Israël	131
The role of 4-aminobutyrate in the lower auditory system of the guinea pig. <i>By</i> W. E. Davies	134
Development of respiration in fresh and cultivated brain-cortex cells. <i>By</i> L. Dittmann, L. Hertz, H. Fosmark, M. Sensenbrenner & P. Mandel	136
Purine uptake from erythrocytes by rabbit tissues <i>in vivo</i> . <i>By</i> A. Adams & R. A. Harkness	138
The electrophoretically separable forms of dopa decarboxylase. <i>By</i> D. A. Bender & W. F. Coulson	140
Fatty acid patterns of serum lipids in multiple sclerosis and other diseases. <i>By</i> W. C. Love, M. Reynolds, A. Cashel & N. Callaghan	141
Transport of calcium ions in relation to the β -adrenergic receptor site and to conformational actin transitions in heart muscle. <i>By</i> I. M. Gillibrand	143
Effect on brain respiration <i>in vitro</i> of conjugated and unconjugated bile salts and their possible role in hepatic coma. <i>By</i> C. P. Williams & W. H. Taylor	146
Prenatal diagnosis of anencephaly. <i>By</i> D. J. H. Brock & R. G. Sutcliffe	149
Dopamine β -hydroxylase activity in five cases of pheochromocytoma. <i>By</i> C. Bohuon, F. Guerinet, P. Tcherdakoff & M. Bonnay	152
Epithelial mucins of the atlantic salmon (<i>Salmo salar</i> L.) <i>By</i> J. Harris & S. Hunt	153
Fractionation of soluble egg-shell mucopolysaccharides. <i>By</i> D. S. Robinson & R. K. Heaney	155

	PAGE
Studies of the cross-linking regions of whelk egg-capsule proteins. <i>By</i> N. R. Price & S. Hunt	158
Structure and mechanism of β -lactamase from <i>Escherichia coli</i> . <i>By</i> G. K. Scott	159
<i>N</i> -Terminal amino acid sequences of cytochromes c_4 from <i>Azotobacter vinelandii</i> and denitrifying pseudomonads. <i>By</i> R. P. Ambler & S. Murray	162
The amino acid sequence of <i>Chlorella fusca</i> plastocyanin. <i>By</i> J. Kelly & R. P. Ambler	164
Amino acid sequence of cytochrome c_5 from <i>Pseudomonas mendocina</i> . <i>By</i> R. P. Ambler & E. Taylor	166
The interactions of aflatoxin B ₁ and 4-hydroxycoumarin with human serum albumin. <i>By</i> E. A. Bababunmi & O. Bassir	169
The effects of icterogenin and sporidesmin on the isolated perfused rat liver and on the adenosine triphosphatases of rat liver plasma membranes. <i>By</i> M. N. Eakins, T. F. Slater, B. Sawyer & G. Bullock	170
The radioimmunoassay of ovine prolactin during pregnancy. <i>By</i> D. W. Wilson, C. G. Pierrepoint & K. Griffiths	172
The effects of certain stilboestrol analogues on plasma prolactin and testosterone concentrations in the rat. <i>By</i> V. Danutra, M. E. Harper, A. R. Boyns, B. G. Brownsey & K. Griffiths	175
Some observations on the measurement of oestradiol-17 β in human plasma by radioimmunoassay. <i>By</i> E. H. D. Cameron & D. A. Jones	179
Further studies on the properties of the enzyme system involved in the conversion of C ₂₁ steroids into 16-unsaturated C ₁₉ steroids in boar testis. <i>By</i> P. J. Brophy & D. B. Gower	181
Brain protein metabolism after forced exercise <i>in vivo</i> and <i>in vitro</i> . <i>By</i> B. Tiplady, A. K. Sinha & S. P. R. Rose	184
Anaerobic metabolism of aromatic substrates by certain micro-organisms. <i>By</i> R. J. Williams & W. C. Evans	186
Methylation of rat liver deoxyribonucleic acid <i>in vivo</i> by methyl methanesulphonate or <i>NN</i> -dimethylnitrosamine: evidence for the excision of methylated products. <i>By</i> M. J. Capps, P. J. O'Connor & A. W. Craig	187
Depression of the stimulation of ethanol oxidation by fructose or pyruvate in liver cells from hyperthyroid animals. <i>By</i> M. N. Berry & H. V. Werner	190
The effects of ethanol on the activity of rat liver tryptophan pyrrolase. <i>By</i> A. A.-B. Badawy & M. Evans	193
Investigation of the 5-hydroxylation of thiabendazole in rat liver microsomal preparation. <i>By</i> C. G. Wilson, D. V. Parke & M. A. Cawthorne	195
The relationship between locust gut β -glucosidase and β -galactosidase activities. <i>By</i> M. R. J. Morgan	196
Use of ion-exchangers for the purification of β -glucan hydrolases. <i>By</i> J. J. Marshall	198
Interaction between 5,5'-dithiobis-(2-nitrobenzoic acid) and cholinesterases complicating the coupled assay. <i>By</i> C. Brownson & D. C. Watts	200
Photosensitization of isolated lysosomes. <i>By</i> D. S. Williams & T. F. Slater	200
The influence of Triton WR-1339 on the distribution of Trypan Blue and ¹²⁵ I-labelled albumin in rat liver. <i>By</i> M. Davies	202
Biphasic effect of Trypan Blue on pinocytosis. <i>By</i> K. E. Williams, J. B. Lloyd, M. E. Kidston & F. Beck	203
Radio-calcium balance studies after acute myocardial infarction. <i>By</i> D. J. Usher, T. Deegan & C. E. Sissons	206

	PAGE
Calcium and magnesium metabolism after myocardial infarction and surgical trauma. <i>By</i> D. J. Usher & T. Deegan	209
A homocysteine-containing peptide in homocystinuric urine. <i>By</i> P. C. Sherlock, A. J. Robins & G. M. Komrower	213
Chlorinated and brominated tyrosine residues in molluscan scleroprotein. <i>By</i> S. Hunt & S. W. Breuer	215
Dye-binding to protamine. <i>By</i> S. Hunt	216
Ultrastructure and composition of pseudoscorpion silk. <i>By</i> S. Hunt	218
Regulation of the shikimic acid pathway in a chloramphenicol-producing streptomycete. <i>By</i> D. A. Lowe & D. W. S. Westlake	219

532nd Meeting, Dublin

Aspects of the functions of proteoglycans. <i>By</i> T. C. Laurent	223
The antigenicity of extracellular proteoglycans: implications for structure and biosynthesis. <i>By</i> H. Muir, E. Baxter & K. D. Brandt	223
The biosynthesis of chondroitin sulphate. <i>By</i> L. Rodén & N. B. Schwartz	227
Genetic errors of mucopolysaccharide degradation. <i>By</i> G. Bach, M. Cantz, C. W. Hall & E. F. Neufeld	231
Pathways of genetic recombination of bacteria and their viruses. <i>By</i> A. J. Clark	234
Studies <i>in vitro</i> of the enzyme controlled by the <i>recB</i> and <i>recC</i> genes of <i>Escherichia coli</i> K12. <i>By</i> S. Linn, A. E. Karu & P. J. Goldmark	237
Viability of <i>polArecBshcA</i> and <i>polArecBshcB</i> mutants of <i>Escherichia coli</i> K12. <i>By</i> P. T. Emmerson, P. McAthey & P. Strike	239
Possible roles of the enzymes of recombination and repair of deoxyribonucleic acid during normal growth. <i>By</i> W. J. Harris	240
The possible role of deoxyribonucleases in recombination in eukaryotes: hypotheses and observations. <i>By</i> R. Holliday & W. K. Holloman	245
A search in fungi for some proteins possibly involved in recombination of deoxyribonucleic acid. <i>By</i> G. R. Banks	245
Comparative aspects of xanthine-oxygen oxidoreductase systems. <i>By</i> T. J. Hayden, J. P. Ryan & E. J. Duke	247
Purification and properties of one of the multiple forms of peptide hydrolases from guinea-pig intestinal mucosa. <i>By</i> J. Donlon & P. F. Fottrell	250
The partial purification and some properties of D-alanine aminotransferase from <i>Rhizobium japonicum</i> . <i>By</i> J. P. Gosling & P. F. Fottrell	252
Molecular weights of mammalian sera A-type carboxylic ester hydrolases. <i>By</i> B. K. Farrell, W. K. Downey & E. R. Tully	254
Relationship of the lipase and lipoprotein lipase activities of bovine milk. <i>By</i> M. C. T. Hoynes & W. K. Downey	256
A preliminary study on the production, purification and properties of a xylan-degrading enzyme from a <i>Bacillus</i> sp. isolated from water-stored sitka spruce (<i>Picea sitchensis</i>). <i>By</i> W. M. Fogarty & O. P. Ward	260
Some observations on the production and elaboration of extracellular enzymes by <i>Bacillus polymyxa</i> . <i>By</i> W. M. Fogarty & P. J. Griffin	263
Extracellular carbohydrases from thermophilic bacteria. <i>By</i> U. Egan, M. G. Harrington & R. Letters	266
Kinetic inhibition patterns of neutral glucosidase. <i>By</i> M. D. O'Donnell & K. F. McGenney	266

	PAGE
The nature of the adenosine triphosphatase activity of rumen epithelium. <i>By</i> P. Mooney & D. J. O'Donovan	269
Effects of reaction conditions on the deoxyribonuclease and adenosine triphosphatase activities of an adenosine triphosphate-dependent deoxyribonuclease from <i>Mycobacterium smegmatis</i> . <i>By</i> F. G. Winder, P. A. Sastry & G. R. Campbell	270
An alternative pathway from the enzymic degradation of [³⁵ S]heparin by <i>Flavobacterium heparinum</i> . <i>By</i> G. Embery & J. M. Day	271
Enzymic <i>O</i> -sulphation of heparan sulphate. <i>By</i> T. Foley & J. R. Baker	274
Desulphated keratan sulphate. <i>By</i> M. McCarthy & J. R. Baker	277
Amino acid sequences of peptides from the linkage region of chondroitin sulphate. <i>By</i> A. H. Johnson & J. R. Baker	277
Comparative studies on proteoglycans extracted from bovine nasal cartilage with low-ionic-strength and high-ionic-strength salt solutions. <i>By</i> R. M. Mason & R. W. Mayes	279
Hyaluronic acid in cartilage. <i>By</i> T. E. Hardingham & H. Muir	282
The effects of infusions of normal plasma in three patients with Sanfilippo's syndrome. <i>By</i> M. F. Dean, P. F. Benson & H. Muir	284
Canine articular cartilage in natural and experimentally induced osteoarthritis. <i>By</i> C. A. McDevitt, H. Muir & M. J. Pond	287
Spacer-arms in affinity chromatograph: the need for a more rigorous approach. <i>By</i> P. O'Carra, S. Barry & T. Griffin	289
Enzyme-kinetic analogy for yeast flocculation data. <i>By</i> N. J. Williams & A. Wiseman	291
Progesterone synthesis by superfused ovarian tissue. <i>By</i> J. Watson & J. T. S. Leask	293
Subfractionation of rabbit skeletal-muscle microsomal fraction. <i>By</i> D. R. Headon & P. F. Duggan	294
Distribution of pteroylpoly- γ -L-glutamates in rat liver. <i>By</i> C. M. Houlihan, G. E. Davidson, J. M. Scott & J. P. Brown	297
The effects of fatty acid concentration on esterification in liver and adipose tissue. <i>By</i> T. Dalahunty & W. C. Love	299
Effect of amino acid supplementation on growth of <i>Pseudomonas putida</i> A.3.12. <i>By</i> J. K. Collins & S. Condon	303
Specific sulphate binding in <i>Aspergillus nidulans</i> during sulphate transport. <i>By</i> B. Spencer & B. G. Moore	304
Ordered conformations and their role in the associations of glycosaminoglycan chains. <i>By</i> I. C. M. Dea, R. Moorhouse, D. A. Rees, N. G. Pryce, T. E. Hardingham & H. Muir	307
BOOK REVIEWS	309