

Contents

Contents of Number 1/2

Invited Trends Article

- Towards an Understanding of Plant Gene Regulation: The Action of Nuclear Factors
K. WEISING and G. KAHL 1

Original Communications

- Chemical Constituents of the Lichen *Cladonia macaronesica*
A. G. GONZÁLEZ, J. B. BARRERA, E. M^A R. PÉREZ, and C. E. H. PADRÓN 12
- On the Chemistry of the Lichen Genus *Lasallia* Mérat (In German)
B. POSNER, G. B. FEIGE, and CH. LEUCKERT 19
- Growth and Secondary Product Formation of *in vitro* Cultures from the Liverwort *Reboulia hemisphaerica*
R. M. S. C. MORAIS and H. BECKER 28
- Enantioselective Multidimensional Gas Chromatography of Some Secondary Alcohols and Their Acetates from Banana
V. SCHUBERT, R. DIENER, and A. MOSANDL 33
- UV Radiation Dependent Flavonoid Accumulation of *Cistus laurifolius* L.
TH. VOGT, P.-G. GÜLZ, and H. REZNIK 37
- Elicitor-Induced Formation of Pterocarpan Phytoalexins in Chickpea (*Cicer arietinum* L.) Cell Suspension Cultures from Constitutive Isoflavone Conjugates upon Inhibition of Phenylalanine Ammonia Lyase
U. MACKENBROCK and W. BARZ 43
- Characterization of Pectic Enzymes from the Chickpea Pathogen *Ascochyta rabiei*
R. TENHAKEN and W. BARZ 51
- Elicitor Induction of Cytochrome P-450 Monooxygenases in Cell Suspension Cultures of Chickpea (*Cicer arietinum* L.) and Their Involvement in Pterocarpan Phytoalexin Biosynthesis
W. GUNIA, W. HINDERER, U. WITTKAMPF, and W. BARZ 58
- Ascorbic Acid as Indicator of Damage to Forest. A Correlation with Air Quality
H. B. STEGMANN, P. SCHULER, H.-J. RUFF, M. KNOLLMÜLLER, and W. LORETH 67
- On the Accessibility of Essential Tyrosines in Isolated and Activated Chloroplast H⁺-ATPase
S. BICKEL-SANDKÖTTER, K. ESSER, and M. HORBACH 71
- Local Anesthetic Binding to Thylakoid Membranes. Relation to Inhibition of Light-Induced Membrane Energization and Photophosphorylation
G. GÜNTHER and H. LAASCH 79
- Inhibitory Effect of Crown Compound on Photoelectron Transport Activity of Beet Spinach Thylakoid Membranes
S. C. SABAT, V. VIJAYAVERGIYA, B. C. TRIPATHY, and P. MOHANTY 87
- X-Ray Structure Analysis of a Cyanoacrylate Inhibitor of Photosystem II Electron Transport
H. G. MCFADDEN, D. C. CRAIG, J. L. HUPPATZ, and J. N. PHILLIPS 93
- Characterization of Reaction Center-B875 Complex of *Rhodocyclus gelatinosus*: Q_B Site Properties Derived from Reconstitution Experiments
I. AGALIDIS, E. RIVAS, and F. REISS-HUSSON 99
- Cytoplasmic pH and Abscissic Acid Transport across Guard Cell Membranes
M. BAIER and W. HARTUNG 106
- Identification by Gas Chromatography-Mass Spectrometry of 150 Compounds in Propolis
W. GREENAWAY, J. MAY, T. SCAYSBROOK, and F. R. WHATLEY 111



- Composition of the Surface Lipids from the European Mole (*Talpa europaea*)
J. JACOB and U. HOPPE 122

- Biogenic Amine Levels in the Haemolymph of the Cabbage Armyworm Larvae (*Mamestra brassicae*) Following Injection of Octopaminergic Insecticides
T. SHIMIZU and N. TAKEDA 127

- X-Ray Studies on Phospholipid Bilayers. X. Interactions with Chlortetracycline Hydrochloride
M. SUWALSKY, F. NEIRA, and I. SÁNCHEZ 133

- Product Release is Not the Rate-Limiting Step during Cytochalasin B-Induced ATPase Activity of Monomeric Actin
P. DANCKER, L. HESS, and K. RITTER 139

- Incorporation of a *Calliphora* Arylphorin Gene into the Germ Line of *Drosophila* by P-Element-Mediated Transformation
M. DORSCH and K. SCHELLER 145

- Glycogen Phosphorylase in the Fat Body of Two Cockroach Species, *Periplaneta americana* and *Nauphoeta cinerea*: Isolation, Partial Characterization of Three Forms and Activation by Hypertrehalosaemic Hormones
G. GÄDE 149

- Haemocyanin Synthesis in the Crayfish, *Astacus leptodactylus*: *in vitro* Production by the Midgut Gland after Addition of Oxygen Binding Modulators and Exogenous Copper
R. HENNECKE, G. GELLISSEN, and K.-D. SPINDLER 163

Notes

- Dimethyldithiolanes in the Anal Sac Secretion of the Weasel, *Mustela nivalis*
A. J. BUGLASS, F. M. C. DARLING, and J. S. WATERHOUSE 166

Contents of Number 3/4

Original Communications

- Lepistirones, Major Volatile Metabolites from Liquid Cultures of *Lepista irina* (Basidiomycotina)
W.-R. ABRAHAM, H.-P. HANSSEN, and I. URBASCH 169

- Prenylated Flavanone Production in Callus Cultures of *Sophora flavescens* var. *angustifolia*
H. YAMAMOTO, S. KAWAI, J. MAYUMI, T. TANAKA, M. IINUMA, and M. MIZUNO 172

- A New Investigation on Constituents of *Aloe* and *Rhamnus* Species, XV. Homonataloins A and B from *Aloe lateritia*: Isolation, Structure and Configurational Determination of the Diastereomers (In German)
H.-W. RAUWALD and D.-D. NIYONZIMA 177

- Occurrence of (-)-Geosmin and Other Terpenoids in an Axenic Culture of the Liverwort *Symphyogyna brongniartii*
J. SPÖRLE, H. BECKER, N. S. ALLEN, and M. P. GUPTA 183

- Time-Course Studies of Phytoalexins and Glucosinolates in UV-Irradiated Turnip Tissue
K. MONDE, M. TAKASUGI, J. A. LEWIS, and G. R. FENWICK 189

- The Formation of Hydroxylated Phenazines by *Pseudomonas fluorescens* Y₄ upon Addition of Be²⁺ to the Culture Medium – a Defense Mechanism? (In German)
K. TARAZ, E. M. SCHAFFNER, H. BUDZIKIEWICZ, H. KORTH, and G. PULVERER 194

- Marine Biosurfactants, I. Screening for Biosurfactants among Crude Oil Degrading Marine Microorganisms from the North Sea
D. SCHULZ, A. PASSERI, M. SCHMIDT, S. LANG, F. WAGNER, V. WRAY, and W. GUNKEL 197

- Marine Biosurfactants, II. Production and Characterization of an Anionic Trehalose Tetraester from the Marine Bacterium *Arthrobacter* sp. EK 1
A. PASSERI, S. LANG, F. WAGNER, and V. WRAY 204

Marine Biosurfactants, III. Toxicity Testing with Marine Microorganisms and Comparison with Synthetic Surfactants K. POREMBA, W. GUNKEL, S. LANG, and F. WAGNER	210	Cataract Induction by 1,2-Naphthoquinone. I. Studies on the Redox Properties of Bovine Lens Proteins E. KLEBER, R. KRÖNER, and E. F. ELSTNER	280
The Expression of a Third Nitrogenase in the Cyanobacterium <i>Anabaena variabilis</i> T. KENTEMICH, G. HAVERKAMP, and H. BOTHE	217	Cataract Induction by 1,2-Naphthoquinone. II. Mechanism of Hydrogenperoxide Formation and Inhibition by Iodide R. KRÖNER, E. KLEBER, and E. F. ELSTNER	285
Significance of the Non-Oxidative Pentose Phosphate Pathway in <i>Aspergillus oryzae</i> Grown on Different Carbon Sources M. L. PELEATO, T. MUIÑO-BLANCO, J. A. CEBRIAN PÉREZ, and M. J. LÓPEZ-PÉREZ	223	Stochastic Treatment of Bump Latency and Temporal Overlapping in <i>Limulus</i> Ventral Photoreceptors R. LEDERHOFFER, J. SCHNAKENBERG, and H. STIEVE	291
Resonance Raman Spectroscopic Evidence for the Identity of the Bacteriochlorophyll <i>c</i> Organization in Protein-Free and Protein-Containing Chlorosomes from <i>Chloroflexus aurantiacus</i> P. HILDEBRANDT, K. GRIEBENOW, A. R. HOLZWARTH, and K. SCHAFFNER	228	On the Relationships between the Genetic Code Coevolution Hypothesis and the Physicochemical Hypothesis M. DI GIULIO	305
Analysis of Light-Induced Absorbance Changes in the Near-Infrared Spectral Region. I. Characterization of Various Components in Isolated Chloroplasts CH. KLUGHAMMER and U. SCHREIBER	233	Temperature Dependence of the Rotational Mobility of the Sugar and Water Molecules in Concentrated Aqueous Trehalose and Sucrose Solutions N. KARGER and H.-D. LÜDEMANN	313
Turnover of the D-1 Reaction Center Polypeptide from Photosystem II in Intact Spruce Needles and Spinach Leaves D. GODDE, H. SCHMITZ, and M. WEIDNER	245	<i>Notes</i>	
Synthesis and Biological Behavior of a Boronated Analogue of the Antiestrogen U23,469-M F. WELLMANN, R. ABRAHAM, R. MÜLLER, and D. GABEL	252	Accumulation of the Phytoalexin Glyceollin I in Soybean Nodules Infected by a <i>Bradyrhizobium japonicum nifA</i> Mutant M. PARNISKE, H.-M. FISCHER, H. HENNECKE, and D. WERNER	318
Epoxyheptadecadienes Identified as Sex Pheromone Components of <i>Tephрина arenacearia</i> Hbn. (Lepidoptera: Geometridae) M. TÓTH, G. SZÖCS, C. LÖFSTEDT, B. S. HANSSON, F. SCHMIDT, and W. FRANCKE	257	Partial Characterization of anti-HLA Class II Antibodies Isolated by Aid of Sepharose-Peptide Immunoabsorbents A. CHERSI, M. C. MORGANTI-KOSSMANN, M. EVANGELISTA, and C. CENCIARELLI	321
Pheromone Blends of Predaceous Bugs (Heteroptera: Pentatomidae: <i>Podisus</i> spp.) J. R. ALDRICH, J. P. KOCHANSKY, W. R. LUSBY, and M. BORGES	264		
Characterization of Two Thioredoxins in Pig Heart Including a New Mitochondrial Protein J. BODENSTEIN and H. FOLLMANN	270	Contents of Number 5/6	
		<i>Original Communications</i>	
		New Frond Exudate Flavonoids from Cheilantheid Ferns E. WOLLENWEBER and J. N. ROITMAN	325

Naturally Occurring Coumaranochroman-4-ones: a New Class of Isoflavonoids from Lupins and Jamaican Dogwood S. TAHARA, M. MORIYAMA, S. ORIHARA, J. L. INGHAM, J. KAWABATA, and J. MIZUTANI	331	Oligomeric Forms of Pyruvate Kinase from <i>Chlo-</i> <i>rella</i> with Different Kinetic Properties G. RUYTERS, N. GROTHJAHN, and W. KOWAL- LIK	416
Substrate Specificity in the Fungal Metabolism of Prenylated Flavonoids S. TAHARA, J. L. INGHAM, and J. MIZUTANI	341	Calorimetric Study on the Interactions of 5- <i>n</i> - Heptadec(en)ylresolcinols from Cereal Grains with Zwitterionic Phospholipid (DPPC) A. B. HENDRICH and A. KOZUBEK	423
Novel Bisabolanoids in <i>Rosa rugosa</i> Leaves Y. HASHIDOKO, S. TAHARA, and J. MIZUTANI	349	Ions Modify the Strength of Interaction of Diquat and Paraquat with Some Proteins and Cellulose T. CSERHÁTI and Z. SZIGETI	428
Highly Oxygenated Bisabolanoids in <i>Rosa rugosa</i> Leaves Y. HASHIDOKO, S. TAHARA, N. IWAYA, and J. MIZUTANI	357	Slit Scan Flow Cytometry of Isolated Chromo- somes Following Fluorescence Hybridization: an Approach of Online Screening for Specific Chromosomes and Chromosome Transloca- tions M. HAUSMANN, G. DUDIN, J. A. ATEN, R. HEI- LIG, E. DIAZ, and CH. CREMER	433
Cell Free Synthesis of <i>o</i> -Succinylbenzoic Acid in Protein Extracts from Anthraquinone and Phyl- loquinone (Vitamin K ₁) Producing Plant Cell Suspension Cultures. Occurrence of Interme- diates between Isochorismic and <i>o</i> -Succinyl- benzoic Acid M. SIMANTIRAS and E. LEISTNER	364	Podoscyphic Acid, a New Inhibitor of Avian Mye- loblastosis Virus and Moloney Murine Leuke- mia Virus Reverse Transcriptase from a <i>Podos-</i> <i>cypha</i> Species G. ERKEL, T. ANKE, R. VELTEN, and W. STEG- LICH	442
Hydroxyphenylpyruvate Reductase from Cell Sus- pension Cultures of <i>Coleus blumei</i> Benth. E. HÄUSLER, M. PETERSEN, and A. W. ALFER- MANN	371	Electrogenic Na ⁺ –Ca ²⁺ Exchange Contributes to the Light Response of Fly Photoreceptors P. HOCHSTRATE	451
Further Studies of Sequestration of Alkaloids in <i>Papaver somniferum</i> L. Latex Vacuoles M. F. ROBERTS, B. C. HOMEYER, and T. D. T. PHAM	377	Single Photon-Evoked Events of the Ventral Nerve Photoreceptor Cell of <i>Limulus</i> . Facilita- tion, Adaptation and Dependence of Lowered External Calcium H. STIEVE, H. REUSS, H. T. HENNIG, and J. KLOMFASS	461
Biosynthesis of Gallotannins. β -Glucogallin-De- pendent Galloylation of 1,6-Digalloylglucose to 1,2,6-Trigalloylglucose G. G. GROSS and K. DENZEL	389	Shear Deformation of the Spherical Shell Acted on by an External Alternating Electric Field: Possi- ble Applications to Cell Deformation Experi- ments P. PAWŁOWSKI and M. FIKUS	487
Biotransformation of β -Damascone by <i>Botrytis</i> <i>cinerea</i> E. SCHWAB and P. SCHREIER	395	Notes	
On the Genesis of the Dicarboxylic Acids Bound Amidically to the Chromophore of the Pyover- dins (In German) H. SCHÄFER, K. TARAZ, and H. BUDZIKIEWICZ	398	Flavonoid Aglycones from the Bud Exudates of Three Betulaceae E. WOLLENWEBER, K. MANN, and J. N. ROIT- MAN	495
The Effect of Activated Oxygen Species on Nitro- genase of <i>Anabaena variabilis</i> S. N. BAGCHI, A. ERNST, and P. BÖGER	407		

- Squaric Acid Diethylester: A Simple and Convenient Coupling Reagent
K.-H. GLÜSENKAMP, W. DROSDZIOK, G. EBERLE, E. JÄHDE, and M. F. RAJEWSKY 498

- Phosphoenolpyruvate Carboxylase Activity in Norway Spruce Needles: Effects of Air Pollutants under Controlled Conditions
H. HOHLFELD, C. LÜTZ, and D. STRACK 502

Contents of Number 7/8

Original Communications

- New Triterpenes from the Frond Exudate of the Fern *Notholaena rigida*
F. J. ARRIAGA-GINER, J. RULLKÖTTER, T. M. PEAKMAN, and E. WOLLENWEBER 507
- New Isoflavone Glucosides from White Lupin (*Lupinus albus* L.)
Y. SHIBUYA, S. TAHARA, Y. KIMURA, and J. MIZUTANI 513
- Identification of Tropane Alkaloids in Hairy Root Cultures of *Hyoscyamus albus*
K. DOERK, L. WITTE, and A. W. ALFERMANN 519
- Variants of Pseudobactin and Pseudobactin A: New Pyoverdinin Type Peptide Siderophores from *Pseudomonas fluorescens* "E2" (In German)
K. TARAZ, D. SEINSCHKE, and H. BUDZIKIEWICZ 522
- Ferribactins – the Biogenetic Precursors of Pyoverdins
K. TARAZ, R. TAPPE, H. SCHRÖDER, U. HOHLNEICHER, I. GWOSE, H. BUDZIKIEWICZ, G. MOHN, and J. F. LEFÈVRE 527
- Two Pyoverdins from *Pseudomonas aeruginosa* R. (In German)
S. GIPP, J. HAHN, K. TARAZ, and H. BUDZIKIEWICZ 534
- Control by Light Quality of Chlorophyll Synthesis in the Brown Alga *Desmarestia aculeata*
F. LÓPEZ-FIGUEROA 542
- Photophysical and Photochemical Properties of 2,3-Dihydro-4(1H)-quinolinones. Part II. Rates and Mechanism of Primary Processes
SN. BAKALOVA, L. BICZÓK, and T. BÉRCES 549
- A Contact Site between the Two Reaction Center Polypeptides of Photosystem II Is Involved in Photoinhibition
A. TREBST 557
- Photoautotrophic Cultured Plant Cells: A Novel System to Survey New Photosynthetic Electron Transport Inhibitors
F. SATO, Y. YAMADA, S. S. KWAK, K. ICHINOSE, M. KISHIDA, N. TAKAHASHI, and S. YOSHIDA 563
- Long-Term Effect of Diuron on Chlorophyllous Callus of *Bromus erectus*: Lipid Composition
M. EL KAOUA, E. DUVAL, and D. LAVAL-MARTIN 569
- Activity of Photosystem II Herbicides Is Related with Their Residence Times at the D1 Protein
J. D. NABER and J. J. S. VAN RENSEN 575
- Volatile Constituents from *Crotalaria ochroleuca* and Their Effect on Pest Insects (In German)
H. J. BESTMANN, M. PIETSCHMANN, K. STEINMEIER, and O. VOSTROWSKY 579
- o*-Succinylbenzoate: Coenzyme A Ligase, an Enzyme Involved in Menaquinone (Vitamin K₂) Biosynthesis, Displays Broad Specificity
H.-J. SIEWEKE and E. LEISTNER 585
- Induction of Nitrate Reductase Activity by Arginine in the Filamentous Cyanobacterium *Oscillatoria chalybea*
J. BEDNARZ and G. H. SCHMID 591
- Activities and Regulation of Enzymes of Carbohydrate Metabolism in Spruce (*Picea abies*)
M. BOLL 597
- Plant ADP-Glucose Pyrophosphorylase – Recent Advances and Biotechnological Perspectives (A Review)
L. A. KLECZKOWSKI, P. VILLAND, A. LÖNNEBORG, O.-A. OLSEN, and E. LÜTHI 605
- Two Separate Genes Encode the Catalytic 70 kDa V-ATPase Subunit in *Psilotum* and *Equisetum*
TH. STARKE, T. P. LINKKILA, and J. P. GOGARTEN 613

Effect of Azide on the ATPase Activity of Isolated CF_1 I. B. MINKOW and H. STROTMANN	621	Directed Cell Movement with Steric Exclusion H. GRULER	697
Mass Spectrometric Analysis of N_2 -Formation Induced by the Oxidation of Hydrazine and Hydroxylamine in Flash Illuminated Thylakoid Preparations of the Filamentous Cyanobacterium <i>Oscillatoria chalybea</i> P. HE, K. P. BADER, and G. H. SCHMID	629	Notes	
Contrasting pH-Optima of Light-Driven O_2 - and H_2O_2 -Reduction in Spinach Chloroplasts as Measured <i>via</i> Chlorophyll Fluorescence Quenching U. SCHREIBER, H. REISING, and CH. NEUBAUER	635	No Correlation between Plasmid Content and Ability to Reduce Nitrate in Wild-Type Strains of <i>Rhodobacter capsulatus</i> A. WITT and J.-H. KLEMME	703
Monosaccharides and Disaccharides Decrease the K_m for Phosphorylation of a Membrane-Bound Enzyme ATPase E. N. CHINI, J. R. MEYER-FERNANDES, and M. SOLA-PENNA	644	Growth Inhibitions on Human Cancer Cell Cultures with the Indole Sulphur-Containing Phytoalexins and Their Analogues CH. TEMPÊTE, M. DEVYS, and M. BARBIER	706
X-Ray Studies on Phospholipid Bilayers. XI. Interactions with Chloramphenicol M. SUWALSKY, M. A. ESPINOZA, I. SÁNCHEZ, and F. VILLENA	647	Contents of Number 9/10	
Phenotypic Traits and Regulatory Role of RNA Folding in Molecular Selection A. FERNÁNDEZ	656	Invited Trends Article	
Specific Crystal Chemical Interactions between Carcinogenic Aromatic Compounds and Cholesterol B. CONTAG	663	Duplicated Sequence Elements and Their Function in Plant Mitochondria B. WISSINGER, R. HIESEL, W. SCHOBEL, M. UNSELD, A. BRENNICKE, and W. SCHUSTER	709
Studies in Enteric Anthelmintics: Activity Profile of Prodrug of a Bisbenzimidazole A. M. KHAN, S. GUPTA, J. C. KATIYAR, S. K. SING, V. L. SHARMA, S. SHARMA, and A. P. BHADURI	673	Original Communications	
Cyclic Glycerol Acetals from the Abdominal Hair Pencil Secretion of the Male African Sugarcane Borer <i>Eldana saccharina</i> (Lepidoptera: Pyralidae) B. V. BURGER, A. E. NELL, D. SMIT, and H. S. C. SPIES	678	UV-VIS Absorption Spectra at High Pressure of C-Phycocyanin and Allophycocyanin from <i>Mastigocladus laminosus</i> S. SCHNEIDER, TH. WOKUSCH, H. TILTSCHER, R. FISCHER, and H. SCHEER	717
Propagation of Voltage Transients in Arborized Neurites of Retzius Cells of the Leech in Culture P. FROMHERZ and TH. VETTER	687	Isoflavone Glycoside Formation in Transformed and Non-Transformed Suspension and Hairy Root Cultures of <i>Lupinus polyphyllus</i> and <i>Lupinus hartwegii</i> J. BERLIN, L. FECKER, C. RÜGENHAGEN, C. SATOR, D. STRACK, L. WITTE, and V. WRAY	725
		Effects of Culture Conditions on Isoflavonoid Levels of Transformed and Non-Transformed Cultures of <i>Lupinus</i> – a Comparison of Suspension and Hairy Root Cultures J. BERLIN, C. RÜGENHAGEN, M. RIPPERT, and S. ERDOGAN	735

Surface Structure and Chemical Composition of Epicuticular Waxes during Leaf Development of <i>Tilia tomentosa</i> Moench. P.-G. GÜLZ, R. B. N. PRASAD, and E. MÜLLER	Dithiocarbamate Derivatives as Herbicide Safeners G. MATOLCSY, Á. TOMBOR, and A. GIMESI
743	815
Are Bacterial Sensory Systems Models for Phytochrome Action? Hydrophobic Cluster Analysis of the Phytochrome Module Related to Bacterial Transmitter Modules H. A. W. SCHNEIDER-POETSCH, CH. SENSEN, and S. HANELT	An Overview of the Mechanisms of Action of Herbicide Safeners K. K. HATZIOS
750	819
Subunit δ of Chloroplast F_0F_1 -ATPase and OSCP of Mitochondrial F_0F_1 -ATPase: a Comparison by CD-Spectroscopy S. ENGELBRECHT, J. REED, F. PENIN, D. C. GAUTHERON, and W. JUNG	Comparative Effectiveness and Mode of Action of Safeners for Chloroacetamide Herbicides in Maize Seedlings Z. EKLER and G. R. STEPHENSON
759	828
Sequence Analysis of the D1 and D2 Reaction Center Proteins of Photosystem II B. SVENSSON, I. VASS, and ST. STYRING	Basis for Differential Chemical Selectivity of MG-191 Safener against Acetochlor and EPTC Injury to Maize I. JABLONKAI
765	836
Inhibition of Oxygen Evolution by Cacalol and Its Derivatives B. LOTINA-HENNSSEN, J. L. ROQUE-RESÉNDIZ, M. JIMÉNEZ, and M. AGUILAR	Influence of the Safener Benoxacor on the Metabolism of Metolachlor in Corn C. K. COTTINGHAM and K. K. HATZIOS
777	846
N-Acetyl- β -D-hexosaminidases of the Brine Shrimp <i>Artemia</i> : Partial Purification and Characterization K.-D. SPINDLER and B. FUNKE-HÖPFNER	Glutathione S-Transferase Activity in Nontreated and CGA-154281-Treated Maize Shoots J. V. DEAN, J. W. GRONWALD, and M. P. ANDERSON
781	850
Protein Drugs Stabilized by Heavy Water (D_2O). For Example: Human Cholinesterase (In German) CH. HEYDE and M. WENZEL	Effect of Temperature and Safeners on Glutathione Levels and Glutathione S-Transferase Activity in Maize D. L. KUNKEL, J. C. STEFFENS, and R. R. BELLINDER
789	856
Milestones in the Development of Herbicide Safeners G. R. STEPHENSON and T. YAACOBY	Effects of the Herbicide Pretilachlor and the Safener Fenclorim on Glutathione Content and Glutathione-Dependent Enzyme Activity of Rice S. HAN and K. K. HATZIOS
794	861
Chemistry and Structure-Activity Relationships of Herbicide Safeners T. KÖMIVES and K. K. HATZIOS	Effects of Phenylamide Pesticides on the GSH-Conjugation System of <i>Phytophthora</i> spp. Fungi G. OROS and T. KÖMIVES
798	866
Bioactive Chemical Bond Systems in Safeners and Prosafeners F. DUTKA	Enhanced Inducibility of Antioxidant Systems in a <i>Nicotiana tabacum</i> L. Biotype Results in Acifluorfen Resistance G. GULLNER, T. KÖMIVES, and L. KIRÁLY
805	875
Chemical Reactivity and Safener Activity of Acetal Compounds Z. EKLER and F. DUTKA	The Effect of BAS 145138 Safener on Chlorimuron Ethyl Metabolism and Toxicity in Corn G. L. LAMOUREUX and D. G. RUSNESS
810	882

Mode of Safener Action of Dimepiperate, a Thiocarbamate Herbicide, on Bensulfuron Methyl Activity T. YUYAMA, S. SHIRAKURA, and K. ISHIZUKA	887	Oxabetrinil Reversal of Metolachlor and Acid Soil Stress R. E. WILKINSON and R. R. DUNCAN	950
Mode of Action of Naphthalic Acid as a Safener for Imazethapyr D. L. SHANER	893	Antagonism by Clopyralid of Picloram-Induced Ethylene Biosynthesis in Rapeseed Plants J. CH. HALL and M. SONI	957
Naphthalic Anhydride Induces Imazethapyr Metabolism and Cytochrome P-450 Activity in Maize M. BARRETT and J. M. MAXSON	897	<i>Notes</i>	
Metabolism of the Aryloxyphenoxypropanoate Herbicide, CGA 184927, in Wheat, Barley and Maize: Differential Effects of the Safener, CGA 185072 K. KREUZ, J. GAUDIN, J. STINGELIN, and E. EBERT	901	Iridoid Glucosides from <i>Plantago altissima</i> L., <i>Plantago lanceolata</i> L., <i>Plantago atrata</i> Hoppe and <i>Plantago argentea</i> Chaix. N. HANDJIEVA, H. SAADI, and L. EVSTATIEVA	963
Influence of Safeners on the <i>in vivo</i> and <i>in vitro</i> Metabolism of Bentazon and Metolachlor by Grain Sorghum Shoots: a Preliminary Report D. E. MORELAND and F. T. CORBIN	906	The Inhibition of Glutathione Reductase by Quinones D. A. BIRONAITÉ, N. K. ČENAS, J. J. KULYS, A. G. MEDENTSEV, and V. K. AKIMENKO	966
Antagonistic Interactions of Mefenacet with Inhibitors of Monooxygenases C. FEDTKE	915		
Effect of the Safener Dichlormid on Maize Peroxygenase and Lipxygenase E. BLÉE	920		
Effects of EPTC and Dichlormid on Membrane Lipid Composition of Maize Leaves and Roots I. CS. BARTA	926		
Effect of a Safener Towards Thiocarbamates on Plant Lipid Metabolism K. O. ABULNAJA and J. L. HARWOOD	931		
Effects of the Herbicide Sethoxydim and the Safener Dichlormid on Lipid Synthesis and Acetyl-CoA Carboxylase Activity of Grain Sorghum K. K. HATZIOS	934		
Influence of BAS-145138 on the Activity of Sulfonylurea and Imidazolinone Herbicides R. M. DEVLIN and I. I. ZBIEC	939		
Safeners as Corn Seedling Protectants against Acetolactate Synthase Inhibitors H. M. MILHOMME, CH. ROUX, and J. BASTIDE	945		
		Contents of Number 11/12	
		<i>Invited Trends Article</i>	
		Plant Resistance Genes for Fungal Pathogens – Physiological Models and Identification in Cereal Crops W. KNOGGE	969
		<i>Original Communications</i>	
		Quantitative Characterization of Soil Organic Matter and Its Fractionation Products by Solid State High Resolution C-13 (CPMAS) Spectroscopy R. FRÜND and H.-D. LÜDEMANN	982
		Omphalone, an Antibiotically Active Benzoquinone Derivative from Fermentations of <i>Lentihellus omphalodes</i> A. STÄRK, T. ANKE, U. MOCEK, and W. STEGLICH	989

- Isolation and Spectroscopic Characterization of the Pyoverdin Chromophore and of Its 5-Hydroxy Analogue (In German)
J. MICHELS, H. BENONI, G. BRISKOT, J. LEX, H. SCHMICKLER, K. TARAZ, H. BUDZIKIEWICZ, H. KORTH, and G. PULVERER 993
- Iridoids from *Plantago carinata* Schrad.
H. SAADI, N. HANDJIEVA, A. IVANOVA, and S. POPOV 1001
- UDP-D-Xylose: Flavonol 3-O-Xylosyltransferase from Young Leaves of *Euonymus alatus* f. *ciliatodentatus*
N. ISHIKURA and Z. YANG 1003
- Acceleration of Enzyme-Dependent Carthamin Formation by Manganese with Diversed Valence States
K. SAITO 1011
- Studies on Porphobilinogen-Deaminase from *Saccharomyces cerevisiae*
S. R. CORREA GARCÍA, M. V. ROSSETTI, and A. M. DEL C. BATLLE 1017
- Inactivation of Photosynthetic O₂ Evolution in the Cyanobacterium *Anacystis nidulans* PCC 6301: Influence of Nitrogen Metabolites and Divalent Cation Concentration
G. WÄLZLEIN and E. K. PISTORIUS 1024
- The Flash Pattern of Photosynthetic Oxygen Evolution after Treatment with Low Concentrations of Hydroxylamine as a Function of the Previous S₁/S₀-Ratio. Further Evidence that NH₂OH Reduces the Water Oxidizing Complex in the Dark
J. MESSINGER, S. PAULY, and H. T. WITT 1033
- Is the *in vivo* Photosystem I Function Resistant to Photoinhibition? An Answer from Photoacoustic and Far-Red Absorbance Measurements in Intact Leaves
M. HAVAUX and M. EYLETTERS 1038
- Functional Complementation in *Escherichia coli* of Different Phytoene Desaturase Genes and Analysis of Accumulated Carotenes
H. LINDEN, N. MISAWA, D. CHAMOVITZ, I. PECKER, J. HIRSCHBERG, and G. SANDMANN 1045
- The Greening Process in Cress Seedlings. III. Age-Dependent Changes in the Capacity of the Tetrapyrrole Pathway
U. OSTER, I. BLOS, and W. RÜDIGER 1052
- Thiazolylidene-Ketonitriles are Efficient Inhibitors of Electron Transport in Reaction Centers from Photosynthetic Bacteria
W. OETTMEIER, S. PREUSSE, and MICHAEL HAEFS 1059
- Replication of ColE1-Related Plasmids at Increased Growth Temperature in Dependence on the Rom Function (In German)
S. RIETHDORF, A. ULRICH, and M. HECKER 1063
- Aromatherapy: Evidence for Sedative Effects of the Essential Oil of Lavender after Inhalation
G. BUCHBAUER, L. JIROVETZ, W. JÄGER, H. DIETRICH, CH. PLANK, and E. KARAMAT 1067
- Semiochemicals of the Scarabaeinae, III: Identification of the Attractant for the Dung Beetle *Pachylomerus femoralis* in the Fruit of the Spineless Monkey Orange Tree, *Strychnos madagascariensis*
B. V. BURGER and W. G. B. PETERSEN 1073
- Uresiphita reversalis* (Lepidoptera: Pyralidae): Carrier-Mediated Uptake and Sequestration of Quinolizidine Alkaloids Obtained from the Host Plant *Teline monspessulana*
M. WINK, C. B. MONTLLOR, E. A. BERNAYS, and L. WITTE 1080
- Hormonal Regulation of Acetylcholinesterase in an Epithelial Cell Line from *Chironomus tentans*
M. SPINDLER-BARTH 1089
- Teratogenic and Metamorphosis-Inhibiting Activity of Retinoic Acid in *Ciona intestinalis* (In German)
J. M. DENUCE 1094
- Studies on Uroporphyrinogen Biosynthesis in Pig Liver
S. A. FUMAGALLI, M. L. KOTLER, M. V. ROSSETTI, and A. M. DEL C. BATLLE 1101
- The Modulation of the Calcium Transport by Skeletal Muscle Sarcoplasmic Reticulum in the Hibernating European Hamster
B. AGOSTINI, L. DE MARTINO, B. SOLTAU, and W. HASSELBACH 1109

<i>Notes</i>		Synchronized Activity in the Insect Brain K. KIRSCHFELD	1134
Occurrence of Jasmonic Acid in the Red Alga <i>Gelidium latifolium</i> M. V. KRUPINA and W. DATHE	1127	Subject Index	1137
A Simple Method for Counting Small Numbers of Cells by Flow Cytometry S. BLASS and K. LENNARTZ	1130	Authors Index	1160