

The Study of the First-Order Decay of Triplet Naphthalene in Solution.....	S.A.K. LODHI	119
Copolymerization. Part I.—Monomer Reactivity Ratios in the Copolymerization of Acrylonitrile with Vinyl Bromide and of Acrylonitrile with Allyl Alcohol.....	S.U. MULLIK, S.A.A. CHISHTI and (Miss) S. B. KAPADIA	125
Radiation Induced Polymerisation of Acrylonitrile....	FAZAL HUSSAIN, A. RASHID and M. AMJAD	134
Study of Some Binary Interactions in Solvent Extraction Systems Employing the Method of Continuous Variations.....	S.S.M.A. KHORASANI and K. HAZRA	138
β -Leprosol: Attempted Elucidation of Structure by the Synthesis of Resorcinol Derivatives.....	S. F. HUSSAIN	143
Synthesis of Sugar-Amino Acid Model Compounds.....	S.M. AMIR	148
An Efficient Method for Recording Low Temperature X-Ray Diffraction Photograph.....	S. A. CHAWDHURY	151
Buffer Action of Saponins. Part II.—Their Use as Depickling Agent.....	M. ARSHAD A. BEG, M. JAMIL KHAN and SALIM A. JAFRI	154
A Study of Some Soils of Chhatrapur, Mymensingh, East Pakistan....	A. KARIM and S.A. HAQUE	157
Preparation and Study of Acid-Proof Bricks from Indigenous Raw Materials.....	M. SAFDAR, M. SALABATYAR BHATTY and MUSHTAQ AHMAD NAZ	163
Application of Circular Thin-Layer Chromatography in the Analysis of Pakistani Minerals.....	FAZLUR RAHMAN MALIK and BADAR UD DIN	166
Studies on the Reduction of Indigenous Gypsum with Charcoal.....	S.M. ALI, IZHARUL HAQUE and BASHIR AHMED	172
Studies on the Desulphurisation of Barium Sulphide with Hematite and Activated Iron Oxide.....	S.M. ALI, SHAUKAT AZIZ and S.R. SAEEDI	175
Studies on the Nutrition of Fungi. Part III.—Comparative Study of Nutrition Requirements of Some Members of Moniliaceae and Dematiaceae.. (Miss) S. ASJAD HASAN and S. SHAHID HUSAIN		179
Occurrence of <i>Dactylogyrus crucifer</i> Wagener, 1857, <i>D. similis</i> Wegener, 1909 and <i>D. sphyrna</i> Linstow, 1878 (Monogenea: Dactylogyridae) on the Gills of Roach <i>Rutilus rutilus</i> (L.) in Rostherne Mere, Cheshire.....	S.S.H. RIZVI	183
<i>Salimuzzamania uniformis</i> (Champion) Gen. N. Et Sp. Comb. Nov. (Coleoptera: Anthicidae, Eurygeniinae) from Guatemala.....	MOHAMMAD ABDULLAH	188
New Old World Genera of the Eurygeniini (Coleoptera: Anthicidae)..	MOHAMMAD ABDULLAH	190
Zoogeography of Fresh Water Fauna of Indus Valley.....	M.A.H. QADRI	199
A Unique Female Specimen from Upper Burma: A New Genus and Species of Microleptinae (Hemiptera: Alydidae).....	IMTIAZ AHMAD	204
Bottom Fauna of the Streams and Rivers of Hazara District After Summer Rains..	S. RASHID ALI	208

Short Communications:

Nucleophilic Substitution Reactions in Steroid Series. Part. II.....	
.....G. RABBANI KHAN, M. ASLAM, M. RIAZ, M. KHALID and M.A. SAEED	212
Acetate Peels for the Study of Carbonate Rocks.....	SYED A. ALI 213
A Rapid Method for the Estimation of Thiamine in Meat.....	
.....IFTIKHAR ALI SHAIKH, M. ARSHAD and RUHI KITCHLEW	214
<i>Ichthidion</i> Haldeman, 1843 (<i>Insecta, Coleoptera, Anthicidae, Eurygeniinae</i>): Proposed Suppression under the Plenary Powers in Favour of <i>Retocomus</i> Casey, 1895.....	MOHAMMAD ABDULLAH 216
Colour of Pakistan Wools.....	MUKHTAR AHMAD NAQVI and JAMIUL ISLAM 217
A New Simple Method for Protecting Rice Against Rice Weevil (<i>Sitophilus oryzae</i>)....	A. EHSAN 218
Galvanic Influences in Bloating of Fired Ceramics.....	M. SAFDAR 218
Book Notices.....	220

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THE STUDY OF THE FIRST-ORDER DECAY OF TRIPLET NAPHTHALENE IN SOLUTION*

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(Received August 15, 1967)

The first-order decay of triplet naphthalene in solution is not consistent with the theory. Causes of discrepancies have been attributed to impurity quenching processes. The study of triplet decay rate constants of naphthalene in propylene glycol solution from 30° to -85° C has revealed two distinct behaviours of decay. Higher decay rates at room temperatures are accounted in terms of the concurrence of unimolecular decay and a bimolecular-diffusion-controlled reaction between the triplet molecule and an unknown efficient quenching impurity.

Part I.—Monomer Reactivity Ratios in the Copolymerization of Acrylonitrile with Vinyl Bromide and of Acrylonitrile with Allyl Alcohol

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(Received August 10, 1967)

A study of the free radical induced copolymerization of acrylonitrile (M_1) with vinyl bromide (M_2) and that of acrylonitrile (M_1) with allyl alcohol (M_2) has been made. The monomer reactivity ratios, r_1 and r_2 , in both systems have been evaluated by using methods based on both the differential and the integrated forms of the copolymerization composition equation. The values of r_1 and r_2 found by different methods are in good agreement in both cases. By taking mean of all r_1 and r_2 values found by different methods, the results obtained are $r_1=2.8$ and $r_2=0.14$ for the monomer pair acrylonitrile-vinyl bromide and $r_1=1.87$ and $r_2=0.05$ for the monomer pair acrylonitrile-allyl alcohol. The theoretical curves obtained for both systems by using these values in the copolymerization composition equation are found to fit well to the experimental results.

The $Q-e$ scheme of Alfrey and Price has been used to calculate the reactivity ratios for the acrylonitrile-vinyl bromide monomer pair. The calculated values ($r_1=2.73$ and $r_2=0.16$) are in excellent agreement with the observed values. The reactivity ratios for both the monomer pairs have also been calculated by using the theory recently proposed by Bamford, Jenkins and Johnston on the basis of the modified Hammett equation,

$$\log k = \log k_T + \alpha \sigma + \beta$$

The theoretical values obtained by this method for r_1 and r_2 in both cases are regarded to be in reasonable agreement with the observed values.

RADIATION INDUCED POLYMERISATION OF ACRYLONITRILE

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(Received September 9, 1967; revised December 13, 1967)

Polymerisation of acrylonitrile by gamma radiation has been studied at room temperature in the atmosphere of nitrogen or under vacuum. The polymer conversion was estimated gravimetrically. The parameters varied were the pH of the medium, radiation dose and monomer concentration. The effect of sulphate and chloride ions on reaction rate under similar conditions of hydrogen ion concentration was also investigated. It has been seen that the polymer yield is maximum at pH 5.8 and it decreases with the increase or decrease of pH of the medium. The chloride ions decrease the yield to a lesser extent than the sulphate ions. Polymerisation occurs via free radicals formation.

STUDY OF SOME BINARY INTERACTIONS IN SOLVENT EXTRACTION SYSTEMS EMPLOYING THE METHOD OF CONTINUOUS VARIATIONS

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(Received April 1, 1967; revised August 26, 1967)

A rigorous treatment for studying binary interactions in solvent extraction systems by the method of continuous variations has been developed. Employing this method the systems I_2 -KI, I_2 -NaOH, HCl-TBP, HNO_3 -TBP and $HClO_4$ -TBP in water- CCl_4 at $35 \pm 0.1^\circ C$ have been successfully analysed. In all the above systems, excepting HNO_3 -TBP, 1:1 interactions take place.

β -LEPROSOL: ATTEMPTED ELUCIDATION OF STRUCTURE BY THE SYNTHESIS OF RESORCINOL DERIVATIVES

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(Received October 31, 1967; revised December 11, 1967)

An attempt has been made to elucidate the structure of β -leprosol by synthesising on biogenic grounds certain alkyl substituted resorcinol derivatives and comparing their UV spectra and colour reactions with that of the original compound.

SYNTHESIS OF SUGAR-AMINO ACID MODEL COMPOUNDS

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(Received October 24, 1967)

In the course of the synthesis of 6-amino-6-deoxy-1,2-3,4-di-O-isopropylidene-D-galactose, tri-(6-deoxy-1,2-3,4-di-O-isopropylidene-D-galactose) hydrazine was also obtained.

Reactions of 6-amino-6-deoxy-1,2-3,4-di-O-isopropylidene-D-galactose with O-tetrahydropyran-2-yl-N-benzyl sulphonyl-DL-serine and N-benzyl sulphonyl glycine, in presence of dicyclo-hexyl carbodi/imide have been described.

AN EFFICIENT METHOD FOR RECORDING LOW TEMPERATURE X-RAY DIFFRACTION PHOTOGRAPH

S.A. CHAUDHURY

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(Received August 5, 1967)

A new experimental technique has been developed for taking X-ray photograph within the range of gaseous nitrogen temperature. The special Nonius integrated Weissenberg camera was used to record the full range of intensity data. A metal dewar of special design was constructed and a steady temperature anywhere from room temperature down to -185°C or so was obtained.

BUFFER ACTION OF SAPONINS

Part II.—Their Use as Depickling Agent

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(Received October 14, 1967)

Saponin solutions have been evaluated for their depickling properties. These are attributed to their buffer activity, surface activity and to a slight amount of pretannage.

A STUDY OF SOME SOILS OF CHHATRAPUR, MYMENSINGH, EAST PAKISTAN

A. KARIM and S. A. HAQUE

East Pakistan Agricultural University, Mymensingh

(Received September 5, 1967)

The present investigation deals with the study of the soils of Chhatrapur, Mymensingh, East Pakistan. Soils were studied for pH, textural separates and nutrients on 6 in. depth basis from 0 to 18 in. for finding out their distribution pattern.

PREPARATION AND STUDY OF ACID-PROOF BRICKS FROM INDIGENOUS RAW MATERIALS

M. SAFDAR, M. SALABATYAR BHATTY and MUSHTAQ AHMAD NAZ

Glass and Ceramics Division, West Regional Laboratories, Pakistan Council of Scientific and Industrial Research, Lahore

(Received July 23, 1965; revised January 1, 1968)

A number of compositions for acid-proof bricks were formulated and tested for properties like firing shrinkage, water absorption, bulk density, crushing strength and acid resistance. Successful compositions possess properties far superior to the minimum standard specifications.

APPLICATION OF CIRCULAR THIN-LAYER CHROMATOGRAPHY IN THE ANALYSIS OF PAKISTANI MINERALS

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(Received December 15, 1967)

Analysis of ten Pakistani minerals, haematite, magnesite, bentonite, dolomite, gypsum, baryte, bauxite, stibnite, cuprite and chromite was carried out qualitatively by circular thin-layer chromatography. The results thus obtained were compared with the results obtained by emission spectrographic analysis of the same samples. The results are comparable and the circular thin-layer chromatography can be applied safely for routine qualitative analysis of minerals and provides another method for analysis in the laboratory.

STUDIES ON THE REDUCTION OF INDIGENOUS GYPSUM WITH CHARCOAL

S.M. ALI, IZHARUL HAQUE and BASHIR AHMED

North Regional Laboratories, Pakistan Council of Scientific and Industrial Research, Peshawar

(Received December 25, 1965; revised December 6, 1967)

Reduction of Pakistani gypsum with carbon (wood charcoal) has been investigated at different temperatures and percentages of carbon by weight. The optimum conditions found for this reduction are 850–900°C, 20–25% carbon and 0.5–1.0 hr duration.

STUDIES ON THE DESULPHURISATION OF BARIUM SULPHIDE WITH HEMATITE AND ACTIVATED IRON OXIDE

S.M. ALI, SHAUKAT AZIZ and S.R. SAEEDI

North Regional Laboratories, Pakistan Council of Scientific and Industrial Research, Peshawar

(Received June 6, 1966; revised October 30, 1967)

The desulphurisation of BaS with iron oxide has been investigated. A maximum desulphurisation of 72% has been achieved in solution with activated iron oxide at 90°C in 30 min. The ratio of BaS to ferric oxide for this reaction has been found to be 1:5. Solid barium hydroxide of 95% purity is obtained by the fractional crystallisation of the desulphurised BaS solution at 0°C.

STUDIES ON THE NUTRITION OF FUNGI

Part III.—Comparative Study of Nutrition Requirements of Some Members of Moniliaceae and Dematiaceae

(Miss) S. ASJAD HASAN and S. SHAHID HUSAIN

Central Laboratories, Pakistan Council of Scientific and Industrial Research, Karachi

(Received August 17, 1967)

A comparative study of the nutrition requirements of some members of families Dematiaceae and Moniliaceae has been carried out. *Penicillium lilacinum* Thom belonging to Moniliaceae yields the maximum amount of mycelial mat at all the five concentrations of carbon, not only in comparison with the members of Dematiaceae but also within members of Moniliaceae. *Botryotrichum* sp. Saccardo and Marchal a member of Dematiaceae utilized carbon from glucose less profitably as compared to other fungi of both families except *Dactylium fusarioides* Fragoso et Ciferri which at a carbon concentration of 2 per cent produced less growth than *Botryotrichum* sp.

Aspergillus sclerotiorum Huber of Moniliaceae, in general, utilized nitrogen from glycine most profitably while *Penicillium lilacinum* of the same family and *Alternaria tenuissima* (Fr.) Wiltshire of Dematiaceae poorly utilized nitrogen from glycine.

From the above results it appears that members of Moniliaceae are better adapted to the utilization of carbon and nitrogen from glucose and glycine respectively than members of Dematiaceae.

OCCURRENCE OF DACTYLOGYRUS CRUCIFER WAGENER, 1857, D. SIMILIS WEGENER, 1909 AND D. SPHYRNA LINSTOW, 1878 (MONOGENEA: DACTYLOGYRIDAE) ON THE GILLS OF ROACH RUTILUS RUTILUS (L.) IN ROSTHERNE MERE, CHESHIRE

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Department of Zoology, University of Liverpool, Liverpool, England

(Received August 30, 1967; revised October 18, 1967)

Dactylogyrus crucifer, *D. similis* and *D. sphyrna* are recorded for the first time in the British Isles. They occurred on the gills of roach *Rutilus rutilus* in Rostherne Mere, Cheshire, an eutrophic lake. A comparison of the British specimens with those from other countries was made. The dimensions of the hooks and copulatory organs were the same.

SALIMUZZAMANIA UNIFORMIS (CHAMPION) GEN. N. ET SP. COMB. NOV.
(COLEOPTERA: ANTHICIDAE, EURYGENIINAE) FROM GUATEMALA*

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Central Laboratories, Pakistan Council of Scientific and Industrial Research, Karachi

(Received April 8, 1967)

The holotype of *Eurygenius uniformis* Champion was examined and the species transferred to a **new genus**, *Salimuzzamania*. A **new combination** *S. uniformis* (Champion) has been proposed. The new genus differs from all other genera in the Eurygeniini in having a narrow neck.

NEW OLD WORLD GENERA OF THE EURYGENIINI (COLEOPTERA: ANTHICIDAE)*

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(Received April 8, 1967)

Two **new genera** and seven **new specific combinations** are proposed from type material in the British Museum (Natural History) London, Museum National d'Histoire Naturelle, Paris and Zoologisches Museum, Humboldt University, Berlin. A key to 12 genera and 28 species is included.

ZOOGEOGRAPHY OF FRESH WATER FAUNA OF INDUS VALLEY

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(Received October 4, 1967)

**A UNIQUE FEMALE SPECIMEN FROM UPPER BURMA: A NEW GENUS AND SPECIES
OF MICRELYTRINAE (HEMIPTERA : ALYDIDAE)**

IMTIAZ AHMAD

Department of Zoology, University of Karachi, Karachi

(Received October 20, 1968)

A new genus of Micrelytrinae is erected for a new species described from a unique female specimen taken in upper Burma. Its resemblance with *Slateria granti* Ahmad² also taken from upper Burma and its relationship within Micrelytrinae are discussed.

BOTTOM FAUNA OF THE STREAMS AND RIVERS OF HAZARA DISTRICT AFTER SUMMER RAINS

S. RASHID ALI

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(Received August 31, 1967)

The gut contents of 7 species of fishes were studied and it was found that 6 species live primarily on bottom organisms and one i.e. *Nemacheilus botia* lives on diatoms and algae.

SHORT COMMUNICATION

212

NUCLEOPHILIC SUBSTITUTION REACTIONS IN STEROID SERIES. PART II

G. RABBANI KHAN, M. ASLAM, M. RIAZ, M. KHALID AND M. A. SAEED

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(Received October 17, 1967)

ACETATE PEELS FOR THE STUDY OF CARBONATE ROCKS

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(Received August 28, 1967)

A RAPID METHOD FOR THE ESTIMATION OF THIAMINE IN MEAT

IFTIKHAR ALI SHAIKH, M. ARSHAD AND RUHI KITCHLEW

West Regional Laboratories, Pakistan Council of Scientific and Industrial Research, Lahore

(Received August 12, 1967; revised November 9, 1967)

**ICHTHIDION HALDEMAN, 1843 (INSECTA COLEOPTERA, ANTHICIDAE,
EURYGENIINAE): PROPOSED SUPPRESSION UNDER THE PLENARY POWERS IN
FAVOUR OF RETOCOMUS CASEY, 1895**

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(Received November 14, 1967)

COLOUR OF PAKISTAN WOOLS

MUKHTAR AHMAD NAQVI AND JAMIUL ISLAM

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(Received June 28, 1967)

**A NEW SIMPLE METHOD FOR PROTECTING RICE AGAINST RICE WEEVIL
(SITOPHILUS ORYZAE)**

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(Received January 29, 1968)

GALVANIC INFLUENCES IN BLOATING OF FIRED CERAMICS

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