

be used for selecting monploids for commercial purposes such as conversion of inbreds with normal cytoplasm to sterile cytoplasm.

TABLE I

Results of the seed screening for paternal monploids in $C^1 C^1 \times C C$ crosses

| Female parent | Male parent | No. of ears pollinated | No. of kernels observed | Coloured scutellum cases | Paternal monploids |
|------------------|-------------|------------------------|-------------------------|--------------------------|--------------------|
| Ganga 101/6 .. | 6 | 295 | 68,693 | 3 | 3 |
| Stock 3/6/6 .. | 6 | 210 | 42,647 | 0 | 0 |
| Stock 2/6 .. | 3/6 | 30 | 4,155 | 0 | 0 |
| Monghyr 6/6 .. | 3/6 | 215 | 59,200 | 2 | 1* |
| Ganga 101/6/6 .. | gl, 3/6 | 53 | 14,580 | 1 | 1 |
| Total .. | | | 189,275 | 6 | 5 |

* Only one out of the two cases germinated.

The senior author is grateful to Dr. S. B. Chattopadhyay, Dean, Faculty of Agriculture, University of Kalyani, Kalyani, for providing facilities to carry out part of the work at the University of Kalyani.

Division of Genetics, K. R. SARKAR.
Indian Agricultural J. K. S. SACHAN.
Research Institute, D. S. MATHUR.
New Delhi-12, November 15, 1971.

1. Chase, S. S., *J. Hered.*, 1963, 54, 162.
2. —, *Bot. Rev.*, 1969, 35, 117
3. Coe, E. H., Jr., *Amer. Nat.*, 1939, 93, 381.
4. — and Sarkar K. R., *J. Hered.*, 1964, 55, 231.
5. Goodsell, S. F., *Crop Sci.*, 1961, 1, 227.
6. Kermicle, J. L., *Science* 1969, 166, 1422.
7. Sarkar, K. R. and Coe, E. H. Jr., *Genetics*, 1966, 54, 453.

SHORT SCIENTIFIC NOTES

Presence of Lawsone in *Ammania baccifera* Linn. and *Woodfordia fruticosa* Salisb.

The distribution of hydroxy and methyl derivatives of 1:4 naphthoquinones is restricted in twelve families of flowering plants such as Juglandaceae, Balsamaceae, Ebanaceae, Boraginaceae, Plumbaginaceae, Droseraceae and Lythraceae. Lawsone, 2-hydroxy 1:4 naphthoquinone is reported to be present only in *Lawsonia inermis* Linn. and the present study deals with the investigations on the presence of 1:4 naphthoquinones in two species of Lythraceae, viz., *Ammania baccifera* Linn. and *Woodfordia fruticosa* Salisb. The aerial parts of *A. baccifera* and leaves of *W. fruticosa* were extracted by the method of Karawya *et al.* Thin layer chromatographic (Silica Gel G. Ethyl Acetate : Methanol : Ammonium hydroxide 65 : 15 : 5) and colorimetric comparison with authentic sample of Lawsone and the isolated colouring matter showed its presence in both the species. The presence of 2-hydroxy 1:4 naphthoquinone in different genera shows a close chemotaxonomic affinity in the members of Lythraceae. It would be worthwhile to investigate further in the other members of this phylogenetically interesting family.

We are thankful to Dr. Karawya, Pharmacognosy Department, Cairo University, for the

supply of authentic sample of Lawsone and to Prof. A. K. Dorle, Head of the Department of Pharmaceutical Sciences, Nagpur University, for providing the facilities for the work.

Dept. of Pharmaceutical A. G. SAOJI.
Sciences, A. N. SAOJI.
Nagpur University V. K. DESHMUKH.
Campus,
Amravati Road,
Nagpur, January 24, 1972.

1. Karawya, M. S., Abdel Wahab, S. M. and Zaki, A. Y., *Lloydia*, 1969, 32, 76.
2. Swain, T., *Comparative Phytochemistry*, Academic Press, N.Y., 1966, p. 248.

Observations on the Matrix of Siwalik Sediments of a Part of the Kumaun Himalaya

Data on the matrix of Siwalik clastics is meagre considering the importance of this constituent in the 'graywacke problem'¹⁻⁴. About eighty thin sections of these clastics occurring in parts of Naini Tal and Almora Districts reveal matrix content ranging from 10.0-72.6% (commonly 20-40% in the Lower Siwalik), 1.0-58.2% in the Middle Siwalik, and 0.4-6.2% in the Upper Siwalik. The finer grained clastics are composed largely of matrix materials which, compositionally, are

clay minerals, micaceous hash, and comminuted detrital quartz.

Lower Siwalik thin sections display solid flowage of material under pressure involving grain fracture and distortion. Rock fragments show by their blurred outlines that reconstitution has taken place. Decrease in rock fragment content in relation to increased matrix in the Lower Siwalik indicates mechanical breakdown of the soft metamorphic rock fragments. Cummins⁵ favours, in general, a secondary origin for the matrix of graywackes, though Kuenen⁶ and Brenchley⁷ suggest secondary derivation for part of it only. Mayer⁸ relates secondary increase in the amount of matrix in graywackes to the presence of particular grain sizes, and on the ability of sediments to withstand shear stresses. He assumes a higher primary content in fine and medium grained rocks, which together with the secondary derivation for part of the lutum reasonably explains the higher matrix content in the Lower Siwalik clastics.

However, most of the matrix of Middle and Upper Siwalik sediments may be considered to be of primary nature. There seems to exist an inverse relationship between the percentage of matrix and straining of the detrital quartz in the Middle and Upper Siwalik sandstones. Such phenomenon has been explained by Whisonant⁹ to more effective absorption of strain by large volumes of matrix.

Middle and Upper Siwalik lutum is essentially of primary origin, but at least part of it is of secondary character in the Lower Siwalik clastics.

Wadia Institute of
Himalayan Geology,
Delhi University
Campus,

Delhi-7, January 27, 1972.

S. K. TANDON.

Some Endogenous Stages of *Eimeria faurei* in a Lamb

A variety of asexual and sexual stages of some of the eimerian species in sheep are known². As far as could be ascertained, there is as yet no report of small epithelial schizonts in caecum of sheep though Singh and Pande⁴ detected gametocytes and oocysts in this region. The present communication, based on the histologic study of the suspected eimerian lesions in the caecum and colon of an experimental lamb, deals briefly with the occurrence of small epithelial schizonts amongst gametocytes and oocysts identified as belonging to *Eimeria faurei*.

Grossly, granular, raised and congested patches of irregular shape were detected in the caecum and colon. Fresh scrapings from such lesions showed typical egg-shaped oocysts identical to *E. faurei* and a large number of gametocytes. The rectal contents also revealed oocysts of this species alone. Stained serial sections revealed: small epithelial schizonts, of $13.3-16.0 \mu \times 9.3-12.0 \mu$ (av. $15.0 \times 10.33 \mu$) size, containing 12-16 elongate merozoites of $6 \times 1.33 \mu$ size; macrogametocytes, $20.0-26.5 \mu \times 20.0-22.5 \mu$ (av. $22.5 \times 20.53 \mu$); microgametocytes, of $18.5-25.3 \mu \times 14.5-20.0 \mu$ (av. $21.6 \times 17.2 \mu$); and oocysts, of $20.0-29.3 \times 13.3-20.0 \mu$ (av. $23.5 \times 16.6 \mu$) size.

Information on the life-cycle of *E. faurei* is meagre^{1,3}. Lotze³ reported schizonts of 100μ diameter while Dzerzhinskii and Svanbaev¹ detected, in lambs given large doses of sporulated oocysts, large schizonts, macrogametes and microgametocytes in the small intestine—the latter measuring $26.8 \times 22 \mu$.

Parasitological Unit, B. B. BHATIA.
U.P. College of S. S. AHLUWALIA.
Veterinary Science P. P. S. CHAUHAN.
and Animal Husbandry,
Mathura, January 31, 1972.

1. Sikka, D. B., Bhatia, S. B., Saxena M. N. and Jain, S. P., *Nature*, 1961, 192, 61.
2. Cummins, W. A., *Ibid.*, 1962 a, 196, 1085.
3. Ganju, P. N. and Srivastava, V. K., *Ibid.*, 1962, 194, 566.
4. Saxena, M. N., Bhatia, S. B. and Pande, I. C., *Res. Bull. Panj. Univ.*, 1968, 19, 255.
5. Cummins, W. A., *Lpool. Manch. Geol. J.*, 1962 b, 3, 51.
6. Kuenen, Ph. H., *Sedimentology*, 1966, 7, 267.
7. Brenchley, P. J., *J. Sed. Pet.*, 1969, 39, 1297.
8. Mayer, W., *N.Z.J. Geol. Geophys.*, 1969, 12, 412.
9. Whisonant, R. C., *J. Sed. Pet.*, 1970, 40, 1018.

1. Dzerzhinskii, V. A. and Svanbaev, S. K., *Izv. Akad. Nauk Kazakh. SSR. Ser. biol. Nauk*, 1970, No. 5, 45.
2. Levine, N. D. and Ivens, V., *The Cecilian Parasites (Protozoa, Sporozoa) of Ruminants*, Illinois Biol. Mono 44, Univ Illinois Press, Urbana, Chicago and London, 1970, p. 278.
3. Lotze, J. C., *Proc. Am. vet. Med. Assoc.*, 1954, 1953, 141.
4. Singh, N. and Pande, R. P., *Ann. de Parasit. Hum. et comp.*, 1967, 42, 291.

Root Galls in Chicory (*Cichorium intybus* L.)

Exotic varieties of chicory (*Cichorium intybus* L.) are being cultivated in India to use the chemical ingredients of the roots for coffee blending. In the commercial planting of chicory var. Belgium during 1969-70 and 1970-71, a severe root gall disorder amounting to 15-20% infestation was observed in the experimental area of Punjab Agricultural University, Ludhiana, India. Morphological, anatomical, and cultural studies revealed that these galls on the roots were incited by root knot nematode *Meloidogyne*.

Symptoms on the plants consisted of stunted growth, deficiency of nutrient elements, smaller and chlorotic leaves and sterile seeds. The infection started during the vegetative phase on the primary root causing prosoplastic type of galls, which were in the form of irregular, lobed, smooth, sessile, yellowish-green to brownish solid swellings on the lateral side of the basal part of the conical tap root. Infected roots had poor quality losing market value. This appears to be a new record of root gall on chicory caused by *Meloidogyne*.

Dept. of Botany and Plant Pathology,
Punjab Agricultural University,
Ludhiana-4, India, January 25, 1972.

VIJAY K. SHARMA.
O. S. SINGH.

The Extraction of Jasmine Concrete from *Jasminum auriculatum*, Vahl.

Jasmine flower oil prepared from the "Concrete of Jasmine" is much valued in modern perfumery. Earlier experiments in India on the extraction of concrete of jasmine involved *Jasminum grandiflorum*^{1,2}. There is, however, no record of similar work on *J. auriculatum*. This species (Juhie or Mullai) is more commonly cultivated in South India and is a prolific yielder.

In the present studies fully open flowers of *J. auriculatum* were picked in the morning between 6 and 8 A.M. and were soaked in petroleum ether and N. hexane (B.P. 60-80° C) in two separate lots for 24 hours. The solvent was decanted and distilled under controlled temperature (60-75° C). The resultant concentrate (Concrete) was dissolved in absolute alcohol and the plant waxes and other extraneous matter were removed by precipitation at 0° C. The filtrate (alcoholic solution of jasmine oil) was again distilled under vacuum

and the final product, the alcoholic oil, was centrifuged and separated from alcohol by a separating funnel. The quantity of flower and solvent used and the quantity of concrete and absolute obtained are summarised below:

| Sl. No. | Particulars | Solvent | |
|---------|--------------------------|-----------------|----------|
| | | Petroleum ether | N-Hexane |
| 1 | Quantity of flowers used | 3.750 kg | 2.500 kg |
| 2 | Quantity of solvent used | 2700 ml | 1500 ml |
| 3 | Weight of concrete .. | 15.25 gm | 8.90 gm |
| 4 | Per cent of concrete .. | 0.40 | 0.35 |
| 5 | Weight of oil .. | 1.0 gm | 1.3 gm |
| 6 | Per cent of oil .. | 0.03 | 0.05 |

The recovery of concrete from the flowers of *J. grandiflorum* in France is reported to range from 0.24 to 0.38% on the weight of flowers³. The present work has shown that the recovery of concrete from flowers of *J. auriculatum* is about a tenth of that from *J. grandiflorum*. Earlier work has also shown that the former has a superior scent factor¹.

Tamil Nadu Agric. S. MUTHUSWAMY.

University, W. MOHAMMED ALI KHAN.
Coimbatore, S. SAYED.
February 2, 1972.

1. Bal, S. N. and Gupta, B., "Production of jasmine absolute in India," *Essential Oils and Aromatic Chemicals—A Symposium*, C.S.I.R., New Delhi, 1958.
2. Goldstein, C., "Manufacture of concretes and absolutes from Indian flowers," *Ibid.*, C.S.I.R., New Delhi, 1958.
3. Guenther, E., "Essential oils of the plant family *Oleaceae*," *The Essential Oils*, Chapter 12, E. Van Nostrand Company, Inc., New York, 1952, 5, 319.

***Aspergillus* Rot of Mango Fruit in Gujarat, India**

Bulsar District is known for different varieties of mango fruits in Gujarat State, India. The author has observed *Aspergillus* rot of Alphonso, Pairi and Totapuri (varieties of mango) as mainly due to *Aspergillus niger*. The estimated loss due to this infection may be 4 to 16%.

That *Aspergillus niger* causes the disease in mango was reported by Srivastava *et al.*¹ who studied the loss in all the other States of the country. Deterioration in mango fruits in India during marketing had been estimated by Chenulu and others. The author has now allowed the loss due to *Aspergillus niger* infection in storage, transit and market in

Gujarat State. Methods adopted for collection and isolation were similar to those of Srivastava *et al.*¹. Morphology of this fungus was studied under natural and cultural conditions. Potato dextrose agar and Czapek agar were used for the cultural studies. Pathogenicity was tested by Granger and Horne's method². The symptoms were found to be similar to those described by Srivastava *et al.*

The percentage loss due to *Aspergillus niger* in the three varieties of mango studied is: Alphonso 10%, Pairi 4% and Totapuri 16%. Of interest is the observation that the Totapuri variety is highly susceptible to *Aspergillus* rot. Organisms isolated from the packing materials and from the air of the store-room were identical. Injured fruits were found to be more infected than the healthy fruits.

The author is thankful to Principal V. J. Trivedi for providing necessary facilities.

Microbiology Section, R. B. PATEL.
Gujarat College,
Ahmedabad, India,
February 5, 1972.

1. Srivastava M. P., Tandon, R. N., Bilgrami, K. S. and Ghosh, A. K., *Phytopath.*, 1964, **z**, 50 (3), 250.
2. Granger, K. and Horne, A. S., *Ann. Bot.*, 1924, 38, 212.

ANNOUNCEMENTS

Short Course in Field Emission and Ion Microscopy

The Department of Metallurgical Engineering, Institute of Technology, Banaras Hindu University, Varanasi-5, will be offering a short course in FIELD EMISSION AND ION MICROSCOPY from 20th to 25th March 1972. The course is sponsored by the Indian Society for Technical Education, New Delhi, and also supported by the Indian Vacuum Society, Bombay. Dr. S. Ranganathan and Dr. C. Suryanarayana will be the Coordinators of this Short Course.

The principal speakers will be Dr. J. K. Trolan (Visiting Professor from University of Redlands, California, U.S.A.), Dr. K. Bahadur (Institute of Nuclear Medicine and Allied Sciences, Delhi), Dr. R. Krishnan (Bhabha Atomic Research Centre, Bombay), Dr. S. Ranganathan, Dr. C. Suryanarayana (Banaras Hindu University, Varanasi) and Shri P. Vijendran

(Bhabha Atomic Research Centre, Bombay). The formal lectures will be supplemented by laboratory demonstrations and extensive problem-solving sessions.

The course is meant to impart the latest knowledge in the areas of Field Emission and Ion Microscopy to teachers and researchers having chemistry, electronics, metallurgy or physics background.

Requests for participation should be addressed to Dr. C. Suryanarayana, Department of Metallurgical Engineering, Banaras Hindu University, Varanasi-5.

All-India Symposium on Animal Physiology

An All-India Symposium on Animal Physiology will be held in the Department of Zoology, Sir Theagaraya College, Madras-21, on May 22nd and 23rd, 1972. Contributions are invited from intending participants. Further information can be had from the Convener, Dr. G. Madan Mohan Rao, Professor of Zoology, Sir Theagaraya College, Madras-21.

Seminar on Extrusion Processing of Thermoplastics

The Plastics Institute (Indian Section), Delhi Centre, is organizing a seminar on "Extrusion Processing of Thermoplastics" in collaboration with the Small Industries Service Institute on the 3rd April 1972 at Shri Ram Institute and a conference on 'Development of Processing Machines' in collaboration with the National Research Development Corporation of India on the 4th April 1972. There will also be a plastic exhibition jointly organized by the Development Commissioner, Small Scale Industries, The Director of Industries, Delhi and Shri Ram Institute. This will coincide with the above seminar and conference. Those who are interested in participating in the above may contact Dr. R. T. Thampy, c/o Shri Ram Institute, 19, University Road, Delhi-7.

Symposium on Teaching of Biological Sciences at Undergraduate and Postgraduate Levels Date: March 26-March 29, 1972.

Department of Biological Sciences, Birla Institute of Technology and Sciences, PILANI (Rajasthan). Director of the Symposium: Dr. A. K. Datta Gupta.