Authors are thankful to Dr. Prem Nath, Sr. Geneticist of the Indian Institute of Horticultural Research for gift of leaf material for the present investigation.

Indian Institute of Horticultural Research,
Bangalore-6, *May* 30, 1973.

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SHORT SCIENTIFIC NOTES

Synthesis of Indan-1-Ones

In connection with the synthesis of some oxygen containing heterocyclic compounds we required indanone derivatives, having alkyl and alkoxy substituents in the aromatic ring, as startings materials. One of the methods for their synthesis is through the nuclear cyanoethylation of the phenol ether with acrylonitrile followed by hydrolysis of the resulting propionitrile to the corresponding propionic acid and cyclisation of the latter with a suitable reagent like PPA to yield the indanone.

This method apart from being elaborate is not suitable for the synthesis of indanones having alkyl or phenyl substituents in the cyclopentane ring since the corresponding substituted acrylonitriles are not easily available.

A convenient method reported here is to heat the appropriate xylenol methyl ethers and acrylic acid in equimolar amounts in the presence of PPA at 100° for 3–4 hours. The indanones are obtained in about 35–40% yield. The structure of the latter is confirmed by their identity with the indanones prepared thro' nuclear cyanoethylation as described above. The indanones form crystalline 2, 4-DNP derivatives and their i.r., spectrum shows a ketone band around 1692 cm^{-1}. In the above reaction other α, β unsaturated acids like α-methyl acrylic, crotonic, β, β-dimethyl acrylic acids could be used to furnish indanones having alkyl and phenyl substituents in the cyclopentane ring. The indanone structure of these compounds is evident from their nmr spectrum which clearly distinguishes them from the isomeric open-chain vinyl ketones. In the spectrum of the indanones, apart from the absence of vinyl ketones, there is only one aromatic proton which appears as a singlet.

Indanones have been successfully prepared from the methyl ethers of 2, 3-; 2, 4-; 2, 5- and 3, 4-xylenols by the above procedure. A similar reaction with other phenol ethers is in progress.

Institute of Science,
Bombay-32, *July* 28, 1973.

J. R. MERCHANT.
MEERA KAMATH.

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Cardenolides from the Seeds of *Corchorus olitorius* Linn.

Corchorus olitorius (family : Tiliaceae) is extensively cultivated for its fibre along with *C. capsularis*. The seeds of *C. olitorius* were reported to contain cardenolides[1,2]. Abubakirov *et al.*[3,4], recorded the occurrence of corchoroside A, corchorosol (olitorin)[5], and olitoriside in the seeds of *C. olitorius*. Schmersahl[6,7] isolated helveticoside and corchoroside from both *C. olitorius* and *C. capsularis*. As part of our work on *Corchorus* species[8-10] we have taken up the re-investigation of *C. olitorius* and the results are recorded herein.

The powdered seed material after defatting with petroleum ether was subjected to autofermentation and extracted with methanol and worked up for

monosides[10]. This resulted in the isolation of the previously reported strophanthidin, strophanthidol, corchoroside A, helveticoside and olitorin, identified by hydrolytic studies and direct comparison with authentic samples.

Direct extraction of the seeds, without subjecting to autofermentation, as described earlier[9] yielded three polar glycosides A, B and C. Glycosides A crystallised from methanol-ether, m.p. 180–82°, $(\alpha)_D = +21{\cdot}5°$ (methanol) and analysed for the formula $C_{35}H_{52}O_{14}$. In U.V. it showed λ_{max} 220 nm (log ϵ 4·2) and 290 nm (log ϵ 1·6). Mild acid hydrolysis of the glycoside gave a crystalline aglycone, identified as strophanthidin, and the sugar digilanidobiose. These properties indicated that glycoside A is storophanthidin-3 β-D-digitoxoside-β-D-glucoside (erysimoside) and the identity was confirmed by direct comparison with an authentic sample. Erysimoside has not been previously reported from the seeds of *C. olitorius*.

Glycoside B crystallized from methanol-ether, m.p., 205–8°; $(\alpha)_D = -3°$ (methanol), analysed for the formula $C_{35}H_{52}O_{14}$ and had λ_{max} 218 nm (log ϵ 4·2) and 290 nm (log ϵ 1·6). It was identified as olitoriside by acid and enzymic hydrolytic studies and by direct comparison with an authentic sample.

Glycoside C crystallized from isopropanol-methanol-ether, m.p., 200–10°/218–25°; $(\alpha)_D = -6{\cdot}5°$ (methanol), analysed for the formula $C_{41}H_{62}O_{19}$; λ_{max} 218 nm and 270 nm (log, ϵ, 4·2 and 1·6). Mild acid hydrolysis[11] of the glycoside gave a crystalline aglycone, identified as strophanthidin by direct comparison. Crystallization of the sugar residue was not successful. Controlled enzymic hydrolysis with β-glucosidase showed the presence of olitoribiose, boivinose and glucose in paper chromatography suggesting the nature of the sugar residue as glucoolitoribiose. Enzymic hydrolysis of the glycoside with β-glucosidase gave olitoriside and glucose initially and when the action of enzyme was allowed to continue further, corchoroside A and glucose were the products. Estimation of glucose after energetic hydrolysis of the glycoside which destroyed the 2-deoxy sugar showed the presence of two glucose units per mole of the glycoside. Thus it was found to be glucoolitoriside. The same constitution was reported[12] recently for the new polar glycoside isolated by us from *C. capsularis*. The identity was confirmed by direct comparison of the two samples.

Dept. of Pharmacy, Andhra University, Waltair, *August* 24, 1973.

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A Record of a Predacious Spider *Stegodyphus sarasinorum* Karsch, Trapping and Feeding of the Adults of Lemon Butter-Fly *Papilio demoleus* Linn., in Citrus Gardens Near Parbhani

The senior author during his visit to a village Hatta, District Parbhani, found the webs of the spider on orange trees in a citrus garden, entrapping the dead bodies of the adult lemon butter-flies *P. demoleus* Linn. Few of the webbed branches were collected and brought in the laboratory. Each of the web was kept under a bell jar with a piece of cotton swab dipped in chloroform. The living spiders came out of web one by one and died. These spiders were counted and preserved in 70% alcohol. The webs were then cut, the butterflies separated and counted. It was observed that in the bigger webs on an average 58 spiders and in the smaller webs, 26 spiders live almost in the heart of the web. On an average 18 and 8 adult lemon butterflies were collected from the bigger and smaller webs respectively. The abdomen of the butterflies were completely eaten. Tothill, Taylor and Paine (1930) have also credited a spider, *Ascyltus pterygodes* Koch. feeding upon the caterpillars and pupae of levuana coconut moth in Fiji.

These spiders were sent to the Zoological Survey of India, Calcutta, and were identified by Dr. B. K. Tikader as *Stegodyphus sarasinorum* Karsch (Family: Eresidae). The legs of the spider are yellowish brown while the cephalothorax is tanned and covered

with white hair. The abdomen is hairy, white with longitudinal black strips laterally and ventrally.

While identifying this spider Dr. Tikader wrote, "This spider is gregarious in its habit. It spins a labyrinthine tube which ends blindly at one end and other end expands into a broad sheet (some times), which, however, is smaller than that spun by genus Hippasa, family Lycosidae. This species does not sting the prey to death, feeds on the captive alive, all members of the colony sharing the same victim. This species generally lives in bushes on *Ziziphus* and *Acacia* sp." These observations were made by him during his trip of Rajasthan in the year 1957. The biology and ecology of this interesting spider is yet to be worked out.

The authors are thankful to Dr. A. P. Kapoor and Dr. Tikader, of Zoological Survey of India, Calcutta, for indentifying the spider and sending their remarks. We are also thankful to Shri L. Sreenivas, College of Agriculture, Parbhani for his interest in this matter and for providing necessary facilities.

Entomology Section,
College of Agriculture,
Parbhani (Maharashtra),
April 7, 1973.

A. K. RAODEO.
D. T. TIKAR.
ABDUL MUQUEEM.

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Parthenium Weed in Bihar State

Parthenium weed (*Parthenium hysterophorus* Linn.), a native of Tropical America, was introduced into India about two decades ago. It is reported that the seeds of this weed came to India with imported foodgrains. The weed was first noted in the neighbourhood of Poona in 1951 as stray plants on rubbish heaps and was reported by Rao[1] in 1956 as a new record for the country. Since then, it has spread to Dharwar (Bombay-Karnatak region), Kashmir (Jammu), Delhi, Khandala, Itarsi, Nagpur, Amravati, Nallamalais, Kurnool District, A.P., Aliyar submergible area, Coimbatore District, Tamil Nadu, Rae Bareli District, U.P., Jhansi, Manali (Kulu Valley) on way to hot springs at Vashisht, Mysore State, Muzaffarpur District, etc. (*see* Ladwa and Patil[2], Hakoo[3], Maheshwari[4-6], Santapau[7], Ellis and Swaminathan[8], Vaid and Naithani[9], Jayachandra[10], Chandra[11]). Thus, within about two decades, this noxious weed has become naturalized in many parts of the country. Recent study of the material collected from Motihari, Narkatiaganj town and Balmikinagar (Bhainsalotan) in Champaran District of Bihar showed that the weed has further extended its adventive range in Bihar State. Specimens of *Parthenium hysterophorus* Linn. collected from Bihar State are conserved in the Herbarium of National Botanic Gardens, Lucknow (Bhainsalotan, Champaran District, Bihar, along roadsides and water streams, R. S. Pandey 517, Herb. LWG).

The weed is spreading at a fast rate and is encroaching on cultivated lands and grasslands. It is also making further ingression and ascending into the hilly regions of N.W. Himalayas. The weed has become naturalized in South Africa, the Islands of Mauritius, Rodriguez, Seychelles, Bourbon, etc., in the Indian Ocean and further away to North Vietnam. Transport seems to be the best means of dispersal of the weed over long distances. Locally, the fruits are very efficiently disseminated by wind and water. The weed causes allergic types of diseases such as asthma, fever and dermatitis, and is imposing a serious threat to agriculture and public health (*see* Maheshwari[6], Jayachandra[10], Chandra[11]). Bromacil (at the rate of 2 kg/ha), Diquat (at the rate of 0·5 lb/ac) and MSMA (at the rate of 4 lb/ac) are reported to be effective in killing the weed (*see* Jayachandra[10]). This note adds a new adventive area for an aggressive and obnoxious weed in the country.

Vern. Names: Safed topi; Chatak chandani; Osadi; Gajri.

National Botanic Gardens,
Lucknow-226001,
July 16, 1973.

J. K. MAHESHWARI.
R. S. PANDEY.

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Two Species of *Leptosphaeria* New to India

Following is the description of two species of *Leptosphaeria*, which have not earlier been recorded from India.

Leptosphaeria coniothyrium (Fuckel) Sacc.—*Nuovo Giorn. bot. Ital.* 7 : 317, 1875.

On twigs of *Lantana camara*, collected from Shillong; specimen deposited with C.M.I., Kew (Herb. IMI 170446 type) and Botany Department, University of Jodhpur (J.U.M.L. 250).

Pseudothecia gregarious, immersed in the host cortex, sub-globose, 250–320 μ in diam., black, covered by a small blackish clypeus; asci numerous, cylindric-clavate, 54–70 × 6 μ, 8-spored; ascospores biseriate, ellipsoidal, guttulate, 13–16 × 3·5–4·5 μ, 3-celled, middle cell broadest, pale olive-brown.

Leptosphaeria graminum Sacc.—*Michelia*, 1 : p. 119.

On *Dendrocalamus* sp., collected from Shillong; specimen deposited with C.M.I., Kew (Herb. IMI 170449 type) and Botany Department, University of Jodhpur (J.U.M.L. 253).

Pseudothecia usually in groups, immersed in the host, sub-globose, smooth, black, upto 310 μ in diameter; asci numerous, 45–55 × 9–10 μ, cylindric-clavate, 8-spored; ascospores biseriate, sub-cylindrical, 13–16 × 4–5 μ, 3-septate, hyaline.

We are thankful to Dr. Sivanesan for the help in the identification of the fungi. Thanks are also due to Prof. H. C. Arya for providing laboratory facilities.

Mycology and Plant Pathology Laboratory, Department of Botany, Univ. of Jodhpur, Jodhpur, *July* 30, 1973.

K. S. PANWAR.
C. S. GEHLOT.

***Pleospora allii* on Onion from Varanasi**

A severe leaf blight disease of onion (*Allium cepa* L.) incited by a species of *Stemphylium* Wallroth has been recurrently observed in Varanasi, Uttar Pradesh. The infection appears on the radical leaves of transplanted seedlings during December-January as small, pale yellow flecks or streaks expanding to ovate-elongate spots surrounded by a pinkish margin. The spots later turn brown to dark olive brown in the center. In March-April, perithecia appear on the blighted leaves and peduncles as small, dark pin head-like raised bodies.

Conidiophores arising in groups of 8–10 are simple, smooth, unbranched with the swollen end cells, bearing conidia singly and measure 36–63 × 4–8 μ. Conidia are oval to ellipsoidal, light to deep brown, phaeodictyosporic and measure 22–42 × 12–25 μ. They have a dark basal scar and finely distinct echinulations over the entire surface.

Perithecia are globose, gregarious, erumpent and measure 233·5–355·5 μ. The asci are octosporus, cylindrical to clavate, bitunicate and measure 110–150 × 24–38 μ. Numerous hyaline filiform pseudoparaphyses are intermixed with the asci. Ascospores are uniseriately arranged, ellipsoidal, rounded at ends, light to olive brown and measure 33·0–43·5 × 15·0–19·5 μ. Transverse and longitudinal septa vary from 3–7 and 6–14 respectively.

Pathogenicity tests on the host seedlings with the conidia and ascospores gave positive results developing typical symptoms 7–8 days after inoculation. Cross isolations of the conidia and ascospores indicated their genetic relation mutually.

Morphology of the pathogen under study indicated its identity in the conidial stage to *Stemphylium vasicarium* (Wallroth) Simmons[1] and in its perithecial stage to *Pleospora allii* (Rabenh.) Ces. and de Not.[2], to which they are referred respectively. Occurrence of the fungus has hitherto been unreported from this country, constituting the first record for India.

Faculty of Agric., Banaras Hindu Univ., Varanasi-5, *August* 6, 1973.

N. N. RAGHAVENDRA RAO.
M. S. PAVGI.

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Recently Introduced Exotics in the Flora of Meerut District

For sometime past the author has been engaged in a study of the flora of Meerut District, a part of the Indo-Gangetic Plain of north-west India. This study has revealed that a number of aliens which have recently been introduced are naturalized in the flora of Meerut District. This note enumerates such 23 foreign weeds of which 6 are native of Tropical America, 3 of Mexico, 10 of South America, 2 of Eurasia, and 2 of Africa.

I. TROPICAL AMERICAN: *Euphorbia prostrata* Ait., *Gomphrena celosioides* Mart., *Nicotiana plumbaginifolia* Viv., *Portulaca parvula* Gray, *Ruellia tuberosa* L., *Volulopsis nummularia* (L.) G. Roberty.

II. MEXICAN: *Argemone ochroleuca* Sweet, *Chenopodium ambrosioides* L., *Oxalis latifolia* H.B. & K.

III. SOUTH AMERICAN : *Acanthosperumum australe* (Loefl.) Ktze. *Alternanthera paronychioides* St. Hill., *A. repens* Link., *Croton bonplandianum* Baill., *Eichhornia crassipes* (Mart.) Solms., *Erigeron bonariensis* L., *Hyptis suaveolens* Poit, *Opuntia dillenii* Haw., *Oxalis maritiana* Zucc., *Solanum torvum* Sw.

IV. EURASIAN : *Mentha piperita* L., *Trifolium resupinatum* L.

V. TROPICAL AND SOUTH AFRICAN : *Carthamus oxyacantha* Bieb., *Cryptostegia grandiflora* R.Br.

School of Plant Morphology, V. SINGH.
Meerut College,
Meerut, *July* 16, 1973.

REVIEWS AND NOTICES OF BOOKS

Pesticide Formulations. Edited by Wade Van Valkenburg. (Marcel Dekker, Inc., 95 Madison Avenue, New York, N.Y. 10016), 1973. Pp. x + 481. Price not given.

Pesticides in spite of their recently recognised harmful effects on the environment have done a lot to reduce starvation in the world. And they will continue to be so for a long time to come. But several factors affect the crop protective ability of the pesticides in the field.

Once any substance is mixed with a pesticide the preparation now becomes a pesticide formulation. For a most optimizing effect, several materials like fillers, detergents, etc., are added to a candidate pesticide and these affect the physical, chemical and biological properties of the pesticide.

The book deals with the basic principles involved in making a pesticide formulation. It does not give any 'thumb rules' but treats rather lucidly the fundamental and theoretical issues aimed at giving an insight into, formulating a pesticide preparation with minimum side effects.

As such there are chapters on Correlating biological activity with physical and chemical properties ; emulsifiers and emulsification ; pesticide-fertiliser combination ; formulation of granules and wettable powders ; drift and its control ; adsorption, distribution, movement, and translocation of pesticides in soil and plants, etc.

All the chapters are written by competent men and give useful information on the subject.

Residue pollution due to drift is now realized to be more menacing than originally conceived. The chapter on 'Reducing Drift' deals interestingly on the various parameters affecting drift and ends with a clear warning. "Unless better control of aerial transport of drift is not made in the very near future, the increasing evidence of pollution will force greater restriction on the use of many valuable but potentially hazardous chemical." The authors (W. E. Yates and N. B. Akeson) go on to suggest "..It should be obvious that rapidly degradable chemicals, and use of non-hazardous biological means such as microbial or virus sprays and other non-chemical pest control techniques must ultimately become of greater importance in the total system of plant protection".

The book will be a great source book and be of immense use to pesticide manufacturers, policy makers in governments, students of plant protection as well as environmentalists. But I feel the book has one serious drawback. Though this is a book on 'pesticide formulations'—biodegradability, degradation in soil as well as environmental hazards of pesticides should have been given a full length rather than the cursory treatment meted out in the book. For at the end these are the factors that should govern the final judgement on deciding upon the particular formulation. V. N. VASANTHARAJAN.

Annual Review of Entomology (Vol. 18). (Annual Reviews, Inc., 4139, El Camino Way, Palo Alto, California 94306), 1973. Pp. viii + 512. Price $ 10.00 U.S.A. ; $ 10.50 elsewhere.

The reviews cover a wide range of interests with emphasis on recent developments that have wide applicability. Some of the topics covered are : Biology, control and eradication of the Boll Weevil, *Anthonus grandis*, the superpest of cotton ; bionomics of *Diabrotica longicornis* and *B. virgifera*, the corn root worms of Northern and Western parts of U.S.A. respectively ; bionomics of apple feeding Tortricidae ; recent developments in the control of 'Blackflies' and coffee insects and their control by chemical insecticides and biological methods. The ecology reviews deal with trophic relations of aquatic insects ; changing trends in insect pollination of commercial crops as influenced by major trends in bee-keeping ; ecology of the true spiders (Araneomorphae), and *variability in tetranychid mites.*

The important area of insect communication by chemicals is discussed in 'Behavioral responses to insect pheromones' and 'Neurohormonal control of