SHORT SCIENTIFIC NOTES

Effect of Hempa on the Last Instar Nymphs of *Chrysocoris purpureus* (Westw.)

The sterilizing effects of hempa (hexamethyl phosphoric triamide) on the reproductive system of various insects was studied by many workers[1-3]. But the details on the general behaviour and bionomics after treatment remains to be fully elucidated. The present communication contains a brief note on the toxic effects of hempa on *Chrysocoris purpureus*, W. (Pentatomidae, Hemiptera) and the side effects thereof.

The early fifth instar nymphs of both sexes were treated with hempa (0·0005, 0·001 and 0·01%) topically at the wing base and intraperitoneally at the pleural region near the 3rd abdominal spiracles (1 μl/nymph). After the treatment each batch of 20 nymphs were kept in a glass beaker covered by white muslin cloth, with a supply of fresh food (*Croton, sparsiflorus*, Euphorbiaceae) every day. Moulting and mortality counts were taken regularly at every 24 hours.

Mortality was very high when injected and 80% were dead in 5 days, while only 20% were dead in the topically treated lot. Survivors remained as 5th instars for quite a long period. In 10 days, only 10% of them in injection and 30% in topically treated were moulted into adults. While in the controls, 80% have emerged into adults in 10 days. Difficulty in moulting was also observed and mortality during the process of moulting was very common. Similar observations were made even at lower concentrations.

Further, the successfully moulted adults were observed for mating and oviposition by leaving them in converging crosses (treated males + virgin females; treated females + virgin males and treated males + treated females). Surprisingly no mating and oviposition were observed even after 10 days of their emerging into adults, while in the control mating and oviposition were observed with in 10 days.

Present studies indicate that the topical application of hempa is superior than the injection method. However, such treatment appears to interfere with the normal growth of both the sexes resulting in delayed moulting, reduced and malformed wings and notable changes in the behaviour of the adults.

The author is grateful to Prof. K. Venkata Ramiah, Director, Post-Graduate Centre, Warangal, for facilities and encouragement.

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1. Chang, S. C. and Borkovek, A. B., *J. Econ. Ent.*, 1969, **62**, 1417.
2. Hafeez, M., Osman, M. F. and Erakey, M. A. S., *Ibid.*, 1970, **63**, 1161.
3. —, Abdul-Nasar, A. E. and Salama, H. S., *Ibid.*, 1970, **63**, 248.

Occurrence of *Achlya* Sp. on a New Host *Mystus* Spp., A Catfish

During the course of rearing experiments conducted on the commercial catfishes, *Mystus aor* (Ham.) and *Mystus seenghala* (Sykes), under the controlled laboratory conditions, occurrence of *Achlya* spp. was noticed.

Morphology of the Fungus

Mycelium diffuse, hyphae slender, branched. The zoosporangia were terminal and abundant, naviculate, 425 μ–510 μ in length and 30–85 μ in breadth. The secondary zoosporangia were coming out from the basal end of the primary zoosporangia. The zoospores were formed within the sporangia in several rows and were encysted at the mouth immediately upon emergence. The encysted spores were 6·9 μ–10·2 μ in diameter. Oogonia terminal on the main hyphae, 41·1 μ–45 μ in diameter. No antheridia could be observed.

Authors are indebted to Dr. V. G. Jhingran, Director for his encouragement and to Shri A. V. Natrajan and Dr. A. G. Jhingran for their interest in the work.

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1. Jhonson, T. W., *The Genus* Achlya: *Morphology and Taxonomy*, Univ. Michigan Press., Ann. Arber, Mich., 1956.
2. Scott, W. W. and O'Bier, A. H., "Aquatic fungi associated with diseased fish eggs." *Progressive Fish Culturist*, 1962, 24, 3.

First Record of Swarm Occurrence and Incipient Breeding of *Locusta migratoria* L. in Kutch District

Jaswant Singh and Charan Singh, Jodhpur, noticed a big size swarm of migratory locust (*Locusta migratoria* L.) over Baran (23° 19′ N 66° 56′ E) of Kutch district on 1-10-1975 which is the first record from deser area in India. Concentrated and incipient breeding by this swarm continued during October-November. Hopper emergence commenced during

20th October and continued upto the end of November. Obviously the swarm split up into small parts for laying in ecologically suitable pockets. During October to December, unprecedented breeding occurred in Kutch district over a gross area of 500 sq. km. affecting 31 villages. The band formation was noted in most of the infested areas in advance instars and thick bands of size upto 80 square metres were seen with a typically gregarious behaviour during November and December. This is the first record of occurrence of gregarious pattern breeding in the desert area of India, as earlier, only scattered or concentrated breeding of this locust was recorded by Rao and Bhatia (1939) and Bhatia and Singh (1964). Control operations were initiated by dusting BHC 10%.

Locust Warning Organisation, Jaswant Singh.
Locust Sub-Station, Jodhpur, Charan Singh.
December 10, 1976.

1. Rao, Y. R. and Bhatia, D. R., *Indian J. agric. Sci.*, 1939 9(1), 79.
2. Bhatia, D. R. and Singh Charan, "Entomology in India". *Indian J. Ent.*, Silver Jubilee issue. 1964, p. 297.

A New Virulence of Rust Culture 104 of Leaf Rust of Wheat and Sources of Resistance

During 1974–75 crop season, an isolate of rust culture 104 of leaf rust (*Puccinia recondita* Rob. ex Desm.) was met with in a sample collected from Patna (Bihar) on HD 1 981 (Janak), a 2-gene dwarf wheat variety. Test isolate of the rust was observed to produce infection types similar to rust culture 104 on the International Differentials[1]. The two cultures, however, differed in their pathogenicity on "Thew", an auxillary differential being susceptible to test isolate and resistant to type culture 104 identified for the first time during 1971–72 crop season[2]. Because of the difference in their pathogenicity, the test isolate has been designated virulence 104–A. In the following crop season, *i.e.*, during 1975–76, the test virulence was met with in rust samples from the states of Rajasthan, Tamil Nadu and Uttar Pradesh, indicating its spread over a large area of the country.

Single spores were picked up from susceptible type of pustules developed on "Thew". Each single spore was inoculated on separate leaves of Agra local wheat. After the single spore cultures were established, each culture was further increased separately on susceptible check, *i.e.*, Agra local wheat. Each single spore culture was tested for patnogenicity on International Differentials along with auxiliary differentials. Each single spore culture produced identical infection types on each of the differentials and were similar to those produced by the test isolate, and the type culture 104, differing in pathogenicity only on "Thew", being susceptible to test isolate and resistant to type culture 104.

It may be added that intermediate infection types were produced on Carina and Webster by test virulence as well as the type culture 104. However, susceptibility is more predominant in the intermediate reactions during winter months (October–March) and resistance being predominant during summer months (April–September).

In order to have information on the resistant donors against the test virulence 104–A, a number of wheat cultivars were tested under glass house conditions in the seedling stage. The information on the resistant varieties of wheat, against test virulence, is given below:

Sonalika, Shailja, Kavkaz, Kiran, Torim–73, Cno-in-Bb, HD 2177, HD 2189, HD 2190, IWP 44, IWP 72, IWP 532, LSW 110, HW 142, UP 108, UP 241, UP 270, UP 278, UP 319, UP 368, CC 62, VL 428, E. 6160 E. 8678, Bajaura–1, WL 716, WL 950, HB 192, M 301–313, L 22, L 28, L 29, L 118, L 119, L 120, NRL–w-314, S 894, CPAN 1529, and CPAN 1555.

Wheat cultivars, *viz.*, IWP 500, IWP 503, HW 153, Burgas-2, Lr 9, Lr 19, NS 879/4, HD 2119, HD 2242, M301–3, M 301–7, E. 8667, CMM 67, KLM 4-8-2-1B, and KLM 4–8–1–3B, which were known to be resistant to all the virulences of leaf rust in India so far, were also found to maintain their resistance against test virulence 104–A also. These resistant stocks of wheat may be used in the hybridization programme or leaf rust resistance.

Authors wish to express their gratitude to Dr. A.B. Joshi, Director, Indian Agricultural Research Institute, New Delhi 110 012, for his keen interest during the course of these studies.

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Flowerdale, Simla 171 002. S. C. Chatterjee.
November 8, 1976. L. B. Goel.

1. Johnston, C. O. and Mains, E. B., *U.S. Dept. Agric. Tech. Bull.*, 1932, 313, 1.
2. Nayar, S. K., Goel, L. B., Singh, S., Sharma, S. K. and Chatterjee, S. C., *Indan J. agric. Sci.* 1974, 44(8), 529.

Discovery of *Giraffokeryx punjabiensis* from the Dhokpathan Formation of Haritalyangar, Bilaspur District (H.P.)

The earliest fossil giraffids known to the Palaeontologists come from the miocene horizons of Africa. In India, fossil giraffids belonging to the genera *Sivatherium Giraffa*, *Giraffokeryx*, *Vishnutherium*, *Brumatherium* and *Hydaspatherium*, etc., are known to occur in the Sivalik sediments which constitute the foot-hill zone of the Himalaya. India was rather a centre of

adaptive radiation of the giraffes during the sedimentation of Śivaliks.

The present communication places on record, for the first time, the occurrence of *Giraffokeryx punjabiensis* from the Dhokpathan Formation exposed in the Haritalyangar basin (H.P.). The same formation in this tract is conformably overlain and underlain by Tatrot and Nagri Formations respectively—the later being highly fossiliferous and particularly known for yielding rich primate fauna[1-2].

The Dhokpathan Formation, which has yielded the species under discussion, lithologically consists of greyish and pinkish clay alternating with brownish and greyish medium to coarse grained sand-stone and conglomerate beds in this terrain. Dhokpathan beds earned world-wide popularity when they yielded a well-known primate *Gigantopithecus bilaspurensis*[2-4] in addition to certain mammalian forms including species of *Crocuta*, *Hipparion*, *Sus*, *Rhinoceros*, *Dinotherium*, *Trilophodon*, *Pentalophodon*, *Stegolophodon*[1], fish remains[5] and also an insectivore[6].

Girraffokeryx punjabiensis was earlier known to occur only in the Nagri Formation of the Haritalyangar basin. The present finding extends the upper limit of this species upto Dhokpathan in this area. In the northwestern foot-hill zone of the Himalaya, the genus is also known from the Middle Śivalik units exposed northwest of Jawalamukh, Lower Śivliks of Ramnagar, and Lower and Middle Śivaliks of Pakistan.

The present discovery consists of an isolated but a typical maxillary second molar which is nearly squarish (length 32·00 mm; width 27·00 mm) depicts a Selenolophodont pattern on a bunodont crown with rugose enamel. The structure and wear of the present molar confirms *Giraffokeryx punjabiensis* to be a forest browser like modern okapi.

Along with other associated mammalian finds, the present discovery further confirms the presence of forests interspersed with open woodlands and grassy plains with meandering streams and river banks during the sedimentation of Dhokpathans, in this basin.

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1. Prasad, K. N., *Pal. Ind. Geol. Surv. Ind.*, 1970, 39, 1.
2. Chopra, S. R. K., *Proc. 66th Ind. Sci. Congr.* 1974, 1.
3. —, *Akashwani*, 33, 9.
4. Simons, E. L. and Chopra, S. R. K., *Posilla*, 1969, 138.
5. Chopra, S. R. K., Suneja, I. J. and Kaul, S., *2nd Conf. Ind. Assoc. Phy. Anthrop.*, 1975 (Abs.).
6. Sahni, A. and Khare, S. K., *Jour. Geol. Soc. Ind.*, 1976, 17, 144.

Chromatographic Examination of Anthocyanins in *Lathyrus sativus* Linn.

In the present note, the anthocyanins in Kesari pulse were studied by paper chromatography and spectrophotometric examination by a Bausch and Lamb spectronic 20 type spectrophotometer. Fresh and sound quality of Kesari pulses were powdered to pass through 25 mesh sieve. About 0·1 gm of the powder was placed in 25 ml cold methanol containing 1% hydrochloric acid for 12 hours. The filtrate containing the pigment was concentrated *in vacuo* below 50° C and stored at 0° C. A few microlitres of this was spooted on Whatman No. 3 filter paper and chromatographed in ascending type for 18 hours, unidimensionally, using *n*-butanol : acetic acid : water = 4:1:5 by volume, upper phase and *n*-butanol : 2N HCl = 1:1 by volume, upper phase as developing solvents.

The chromatogram showed two spots which were identified on the basis of their R_f values, colour reactions and comparison with authentic samples as cyanin (cyanidin, 3:5 diglucoside) ($R_f \times 100$) values are 27 (BAW) and 10 (Bu-HCl) respectively and Pelargonin (Pelargonidin 3:5 diglucoside) ($R_f \times 100$) values are 33 (BAW) and 15 (Bu–HCl) respectively. Authentic samples of cyanin and pelargonin were prepared from red roses[1] and pelargonium flowers respectively and cochromatographed with the pigment. The ($R_f \times 100$) values of the pigment matched with those earlier reported by Harborne[2]. The presence of cyanin and pelargonin in the pigment under study were further confirmed by their acid hydrolysis with NHCl. The aglycones with sugar residues were formed from the glycosides on hydrolysis which were also chromatographed and later subjected to spectrophotometric examination. The aglycones so formed were identified as cyanidin ($R_f \times 100$) = 69 in BAW and absorption maxima 536 mμ in MeOH–HCl and pelargonidin ($R_f \times 100$) = 78 in BAW and absorption maxima 522 mμ in MeOH–HCl. However, the sugar residues were not studied.

The authors are grateful to the authorities of the Corporation of Calcutta for providing facilities for the work.

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July 7, 1976.

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1. Seshadri, T. R., In *The Chemsitry of Flavonoid Compounds*, Ed. Geissman, T. A., Pergamon Press, London, 1962, p. 10.
2. Harborne, J. B., *Phytochemical Methods*, Chapman and Hall, London, 1973, p. 63.