divided precociously. Though the taxon had 31·25% pollen stainability there was no seed setting.

A cytological screening of *Sansevieria* species revealed different chromosome status such as diploids, tetraploids, hexaploids and aneuploids[2]. *S. gracilis* is a diploid with 20 II in the PMC's ($2n = 40$) however, the triploid clone showed $2n$ as 60. The maximum possible chromosome association, *i.e.*, 20 trivalents indicate the autoploid nature of the taxon. Spontaneous triploids are reported in different plant genera such as Guava[3], *Lilium*[4], *Hemerocallis*[5], Pineapple[6] and *Rubus*[7]. In nature, usually triploids originate as a result of hybridization between tetraploids and diploids or through the union of unreduced diploid gametes with normal haploid ones. The complete homology of the genomes in the present triploid suggests that it might have originated through the fusion of a normal gamete with an unreduced gamete as was the case in *Oenothera*[8], *Tulipa*[9] and *Tradescantia*[10].

The author is thankful to Dr. T. N. Khoshoo for guidance and encouragement.

Cytogenetics Laboratory,
National Botanical Research Institute,
Lucknow 226 001, *August* 10, 1979.

M. A. Nazeer.

1. Brown, N. E., *Kew Bull of Misc. Inf.*, 1915, **5**, 185.
2. Nazeer, M. A., *Curr. Sci.*, 1979, **15**, 686.
3. Kumar, L. S. S. and Ranade, S. G., *Ibid.*, 1952, **21**, 75.
4. Chandler, C., Porterfield, W. M. and Stout, A. B., *Cytologia*, 1937, Fuji. Jub. Vol. 2, 756.
5. Takenaka, Y., *Cytologia*, 1929, **1**, 76.
6. Collins, J. L., *Ibid.*, 1933, **4**, 248.
7. Longley, A. E., *Amer, J. Bot.*, 1924, **11**, 249.
8. Capinpin, J. M., *Cytologia*, 1933, 4, 355.
9. Newton, W. C. F. and Darlington, C. D., *J. Genetics*, 1929, **21**, 1.
10. King, E., *J. Heredity*, 1933, **24**, 253.

IMMUNOLOGICAL EVIDENCE ON THE UTILISATION OF STORAGE PROTEINS DURING SEED GERMINATION AND SEEDLING GROWTH IN *TEPHROSIA PURPUREA* (L.) PERS. (FABACEAE)

Storage proteins in legume seeds were immunologically demonstrated to be tissue specific, found only in the extracts of the cotyledons, epi and hypocotyles and radicles; they are absent from other parts of the seed including the seed coat[1]. Storage proteins are synthesised during seed development along with reserves of carbohydrates and lipids and occur within cells in discrete protein bodies. They are expected to be utilised in providing nitrogen and carbon skeletons to the developing seedlings[1]. The present work provides immunological evidence in support of this assumption, for which there was no direct evidence so far.

Seeds of *Tephrosia purpurea* (L.) Pers., collected from a single population at Waltair, were germinated in a mixture of garden soil and sand. The cotyledons were removed from the seedlings on the 2nd, 4th, 6th, 8th, 10th, 14th and the 20th day of germination. Since the rates of growth of the seedlings varied considerably from sample to sample, the ages of the seedlings given here are only an approximate reference to the stage of their development. Antibodies were raised in a rabbit against defatted extract of dry seeds following standard methods[2,3]. A part of this seed extract was used as a standard for comparative purposes in the subsequent studies. Ouchterlony's[4,5] double diffusion technique was employed loading the antiserum in the central well and the standard and the protein extracts of cotyledons and parts of the seedlings of different ages in neighbouring peripheral wells cut in 1·5% Difco bacto agar plates. The standard immunodiffusion pattern for the species was obtained by plating the antiserum against seed protein extracts of 18 populations of *T. purpurea* from different parts of peninsular India, four of which are shown in Fig. 1.

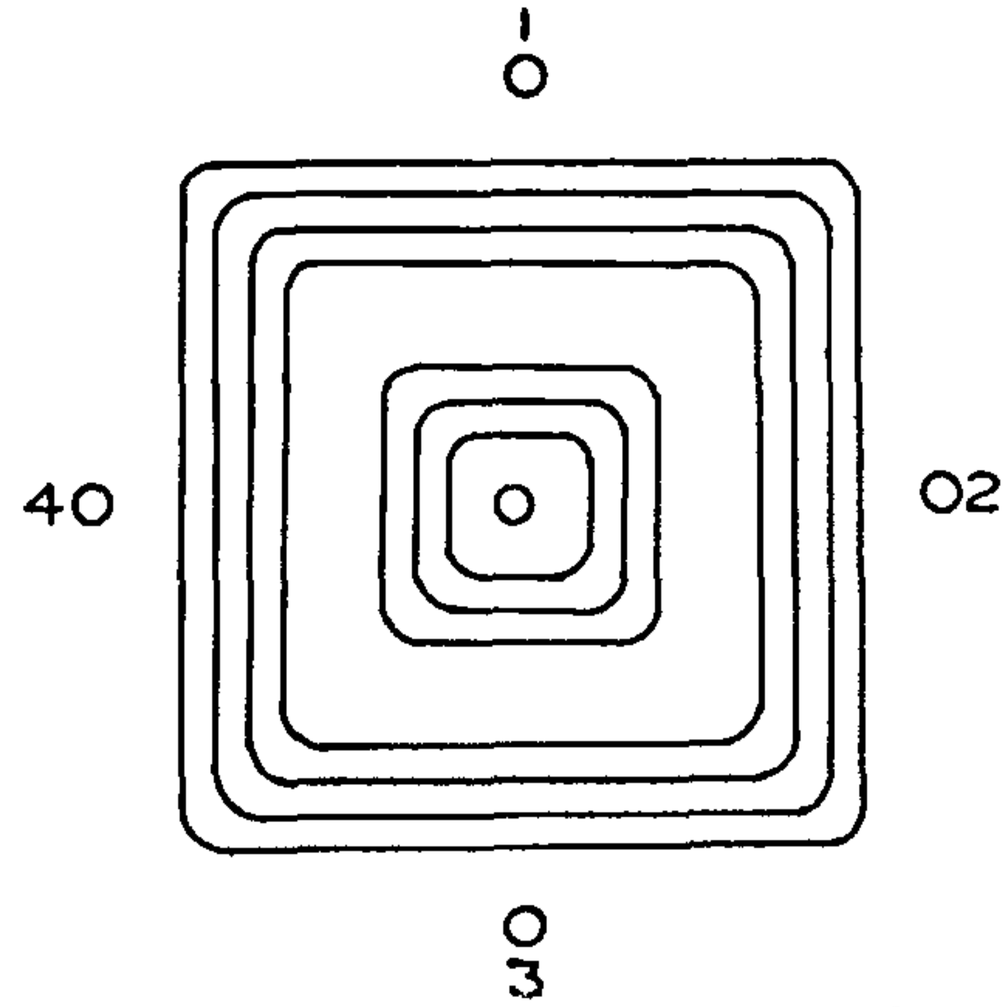

Fig. 1. Standard immunodiffusion pattern (schematic) of *T. purpurea*. Central well: antiserum; well at 1: standard (Waltair); wells at 2, 3 and 4: protein extracts of populations from Bangalore (2), Rameswaram (3) and Markhandi-Udadoan (4). The smooth arcs of confluence at the corners indicate total identity of the respective protein components.

Cotyledons of 10 seedlings of the same age were used to obtain protein extracts in each case. Five replicates were maintained. The deterioration of definition or the disappearance of the respective immunoprecipitin lines as compared with those formed by the standard was taken as an indication of degradation of the protein components.

The standard immunodiffusion pattern of the species consists of seven immunoprecipitin lines, three proximal to the antiserum (central) well and four proximal to the antigen (peripheral) well (Fig. 1). A comparison of immunoprecipitin lines formed by the extracts of the cotyledons of different ages with those of the standard, revealed no specific sequence of degradation of the different components. The lines became gradually faint with the age of the cotyledons and disappeared at later stages. The three lines proximal to the central well disappeared first by the 6th day, probably because the concerned protein components were present in small quantities. Even after the first leaf was well formed (by about 10th day) the cotyledonary extracts formed one or two very faint lines proximal to the peripheral well indicating the presence of traces of these components. No precipitin lines formed with the extracts from the 20th day onwards, by which time the cotyledons became shrivelled and dry. Extracts from the root, shoot and leaf of the 6th and 10th day seedlings formed no precipitin lines showing that the storage proteins are not transported to other parts of the seedlings but are broken down *in situ*.

The author thanks Professor M. Nagaraj, Head of the Department, for facilities and encouragemnt and Dr. M. R. Suresh for help with methodology.

Department of Botany, C. K. RAO.
Bangalore University,
Bangalore 560 001, *August* 23, 1979.

1. Millerd, A., *Ann. Rev. Plant Physiol.*, 1975, **26**, 53.
2. Ackryod, J. F., *Immunological Methods*, F. A. Davis, Philadelphia, 1964.
3. Kwapinski, J. B., *Methods for Serological Research*, John Wiley and Sons, New York, 1965.
4. Ouchterlony, O., In : *Immunological Methods*, Ed. J. F. Ackryod, Blackwell Sci. Publ, Oxford, 1964.
5. —, In : *Handbook of Experimental Immunology*, Ed. D. M. Weir, Blackwell Sci. Publ., Oxford, 1967.

THE OCCURRENCE OF LUMINESCENT BACTERIA IN *PENAEUS INDICUS* FROM THE BACKWATERS OF COCHIN

OF the prawn samples collected for microbiological study from the Cochin backwaters of South-West coast of India, *Penaeus indicus* showed luminescent bacteria in its head region. The investigation was done in four spp. of prawns, *viz.*: *Penaeus indicus*, *Metaponaeus dobsoni*, *Metapenaeus monoceros*, and *Metapenaeus affinis*.

Two isolates belonged to the genus *Neisseria*, based on their morphological and biochemical characteristics. The luminescence was observed in the dark room.

They were found to emit a greenish bright luminescence after 24 hrs of incubation in nutrient agar, with the following composition: 1% Bacto-peptone, 0·5% Sodium chloride, 0·3% Beef extract, 1·8% Agar, with the water of salinity 2·5%. Final pH is 7·1 ± 0·2. No special medium was used in the present study either for culturing or subculturing the isolates.

Of the two strains isolated, one was luminescent both during day and night (strain-1) and the other was luminescent only during the night (strain-2). Both were cultured and subcultured at 27° C on the same medium. The luminescence was observed in both cultures for four days; however, after two days, the intensity of luminescence started decreasing comparatively, luminescence was high in the strain-1. Both isolates were Gram negative, non-motile cocci, oxidase-catalase positive and were found to grow on distilled water agar.

Both isolates were characterised by the following features. Both the strains reduce nitrates, produce indole, liquify gelatin, lysine decarboxylase positive, produce no acid and gas from sugars like Lactose, L. Rhamnose, D(+) Xylose, and H_2S is not produced (after 24 hrs of incubation of TSI agar).

Strain-1 differed from strain-2 in the following respects: It produced acid without gas from glucose, maltose and mannitol. It was both oxidative and fermentative without gas production in HL medium. There was no acid and gas formation from sucrose. This strain was sensitive to 2·5 IU of Penicillin disc. Strain-2 produced acid and gas from glucose, maltose, mannitol and sucrose. The strain was oxidative and fermentative, producing gas in HL medium and was not sensitive to 2·5 IU Penicillin disc.

It may be mentioned that the *Neisseria* spp. is genital commensal, with or without venereal significance in man. It is exclusively a parasite on animals (Salle[1] and Stainer *et al.*[2]). The occurrence of this genus in prawns is rare and it does not seem to affect the organoleptic qualities of prawns.

The author is thankful to Dr. V. D. Ramamurthy for suggestions and encouragement and MPEDA for providing him the facilities.

Inspection Laboratory, V. KRISHNAMURTHY.
Marine Products Export
Development Authority,
1st Main Road, Willingdon Island,
Cochin 682 003, *September* 3, 1979..

1. Salle, A. J., *Fundamental Principles of Bacteriology*, Tata McGraw Hill, 1974, p. 930.
2. Stainer, R. Y., Doudoroff, M. and Adelberg, E. A., *General Microbiology*, Macmillan, India, 1974, p. 618.