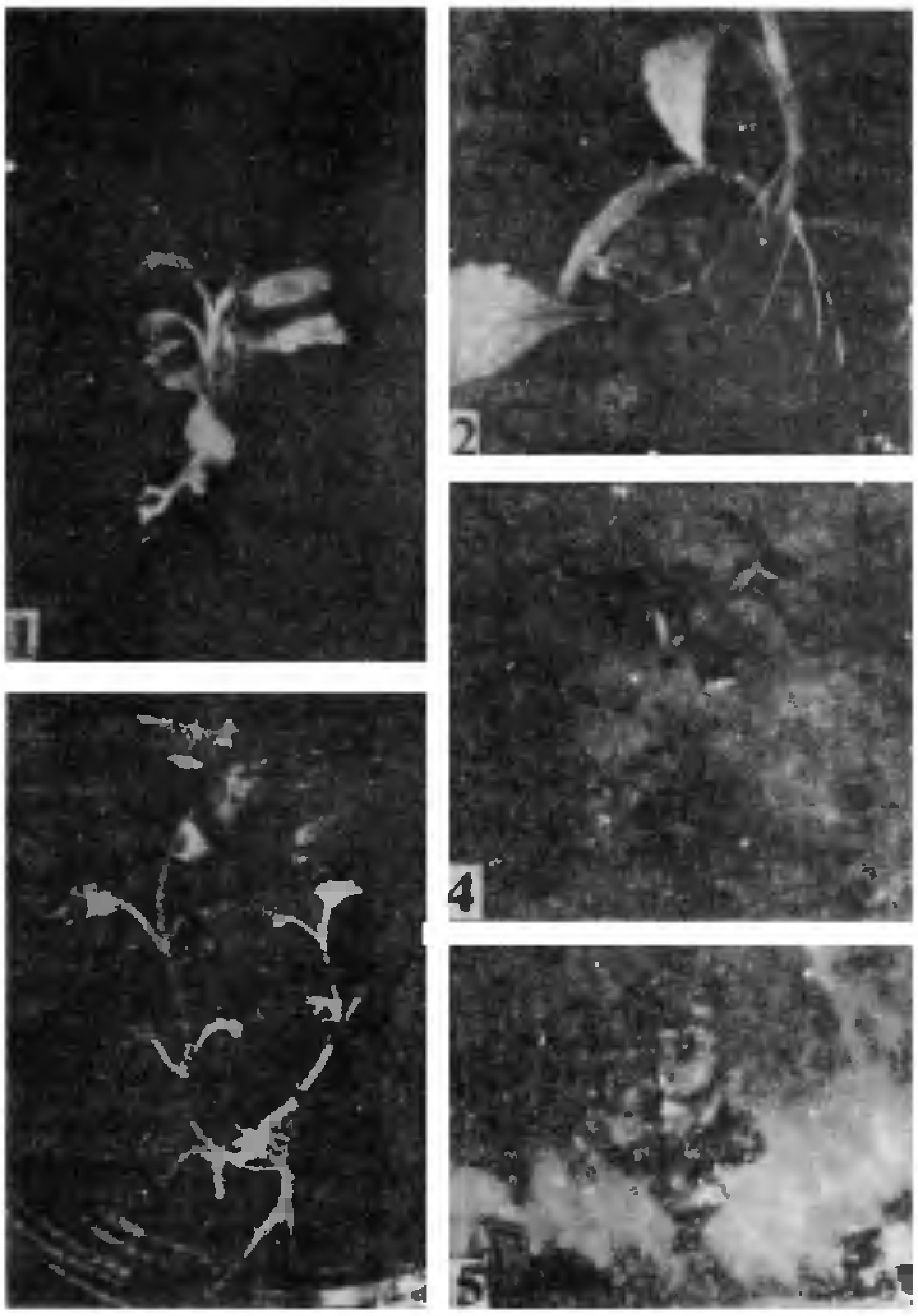

Figures 1–5 *Leucosceptrum canum*. **1.** Shoots with 10 leaves regenerated from apical meristem. **2.** Root formation at the node of meristem regenerated plant. **3.** Plantlet with root and shoot from nodal explant of meristem regenerated plant. **4.** Compact brown callus and 3 new shoots at the base of the main shoot in BAP containing medium. **5.** Isolated compact callus.

with α-naphthyleneacetic acid or IBA at 1,2 and 3 mg/l each, roots were differentiated. Profuse rooting initiated within 10 days in photoperiodic condition, the maximum root initiation taking place in the medium with IBA-2 mg/l. Root initiation also occurred from the base of the shoots when they were maintained for over 4 passages (each of 28 days) in the medium supplemented with BAP-0.5 mg/l plus IBA 0.1 mg/l. In this medium when shoots were maintained for long *i.e.* even after 7th passage multiple shoots (*i.e.* 6 to 9) regenerated from the basal portion of the main shoot. Exploiting such a situation one may get thousands of plants within one year.

It was observed that roots (1–3 in number) were also developed from the nodes of *Leucosceptrum* plants (figure 2) and the rooting proceeds in acropetal order in the shoot axis. Interestingly, presence of such adventitious roots is not noticed in *in vivo* plants. Such nodes with roots when grown as explants on the media containing BAP-0.5 or 1 or 2.5 mg/l alone and in combination with IBA-0.1 mg/l, produced 2–6 new shoot-buds. When these shoot-buds were processed in the way described above, these developed into full-fledged plantlets with roots (figure 3). This technique is also useful for mass propagation of this Labiatae tree.

In all the media containing BAP, a compact brown callus (figures 4,5) was produced from the base of the shoot after 2nd passage. It was interesting that roots when produced in later subcultures from the regenerated plants, they developed only from the base of the shoots and never from the calli. Such calli when isolated and subcultured in all these media neither differentiated shoots nor roots. Though the callus grew on MS basal medium without any hormone when attached to the plant, the isolated callus failed to proliferate when subcultured on MS basal medium without any growth hormones. The growth of isolated callus was stimulated on the MS basal medium containing BAP-2.5 or 5.0 mg/l or BAP-0.5 + IBA-0.1 mg/l, more so in light than in the dark.

6 May 1983; Revised 30 June 1983

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OCCURRENCE OF ALGAE IN THE AERIAL BIOMASS AT BAREILLY (INDIA) AND ITS BEARING ON HUMAN ALLERGY

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The pollen grains and fungal spores are the best understood microplankton in the air that cause bronchial allergy in man. In aerobiological surveys the coexistence of algal materials and other plant parts with pollen and fungal spores and their role in allergy are well-known[1-7]. The present report forms a part of the aerobiological survey made at Bareilly (79° 24′ E long and 28.5° E lat. 177 m a.s.l.): located in the gangetic plains of India.

The air-borne materials were caught on adhesive-coated microscope slides placed in an aeroscope rotated by a wind wane. The slide was replaced after every 24 hr for a period of two years and the exposed area was covered with glycerine jelly and mounted by a cover glass of 12.5 cm^2 area from which the algal counts were made.

The morphology of the various genera recognised from the exposed slides is available in taxonomic literature. They are *Aphanocapsa* Nageli, *Aulosira* Kirchner, *Calothrix* Agardh, *Gloeocapsa* Kutzing, *Gloeothece* Nageli, *Lyngbya* Agardh and *Scytonema* Agardh.

Besides the above taxa miscellaneous algal filaments and resting spores have also been recorded (table 1).

The daily counts of colonies and individual filaments were made for a period of two years (1980-81) and the monthly total has been calculated (table 1). Of the species studied, *Aphanocapsa, Calothrix, Gloeocapsa, Gloeothece* and *Scytonema* have been found during both the years in the atmosphere, while *Aulosira* and *Lyngbya* have been trapped only in the year 1980. Among the filamentous taxa, *Scytonema* occur most frequently and commonly, while *Lyngbya* showed least occurrence. The colonial forms *Aphanocapsa* and *Gloeocapsa*, were dominant. It is clear that both the filamentous and colonial forms appeared

TABLE 1

Occurrence of air-borne algal colonies and filament fragments during 1980–1981.

Algal Taxa	Year	Actual number of colonies/filament fragments												
		Months												
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
Aphanocapsa	80	65	67	27	130	–	44	2	59	156	46	42	76	714
	81	222	248	152	200	202	16	–	–	19	3	–	–	1062
Aulosira	80	73	–	–	–	–	–	–	45	–	–	–	26	131
	81	–	–	–	–	–	–	–	–	–	–	–	–	–
Calothrix	80	73	–	–	10	–	–	–	–	–	–	–		83
	81	2	45	31	170	–	8	–	11	24	–	23	–	314
Gloeocapsa	80	60	–	37	–	–	14	–	–	–	–	–	–	51
	81	–	–	439	74	446	115	27	54	6	–	63	124	1348
Gloeothece	80	150	57	–	–	–	–	–	–	117	65	–	–	389
	81	–	–	–	–	–	–	–	–	–	36	137	–	173
Lyngbya	80	64	–	–	–	–	–	–	–	56	–	–	–	120
	81	–	–	–	–	–	–	–	–	–	–	–	–	–
Scytonema	80	216	60	215	84	134	48	16	8	2	50	68	53	954
	81	24	–	84	117	32	170	10	2	10	40	22	41	552
Miscellaneous algal filament fragments	80	230	60	66	83	255	–	–	2	16	–	–	–	712
	81	22	49	313	294	558	70	–	14	25	58	6	63	1472
Algal resting spores	80	284	93	–	70	228	–	–	–	164	–	–	–	839
	81	44	–	140	36	251	197	–	23	–	146	123	9	696

more during summer than in other seasons, and their frequency of occurrence decreased during rainy season but increased in early winter.

Of the algal taxa presently observed *Aphanocapsa, Calothrix* and *Lyngbya* were also reported in the atmosphere of Delhi[4,5]. Gregory and Sreeramulu[8] reported a very high concentration of *Gloeocapsa* over an estuary of Thorney Island in UK whereas Gregory *et al*[9] found fewer colonies in an interior land site at Harpenden and London. In the present survey it was found that there were two seasons for the incidence of algae in the air at Bareilly, and the climatic factors play a vital part in such occurrence. The higher frequency of air-borne algal forms during the period February-June, is associated with high wind velocity, higher temperature, low relative humidity and low rainfall. In the rainy season (July-August) algal forms were practically absent in the atmosphere as may be normally expected. The algal growth during the rainy times, account for the higher incidence of air-borne algal materials in September-October.

The air-borne algae have been considered to cause bronchial allergy and there is scope for testing allergenicity of the aerial forms presently recorded for the disease. Inspite of being allergenic to human beings, the filaments or spores which are carried by the rain from the air to the earth or to water bodies may also serve as a source of water pollution-eutrophication (increasing the organic matter in water bodies).

The authors thank Dr U. C. Pande, Head of Phsycology Division, Bareilly College, Bareilly for the help in identification of algal forms.

10 May 1983; Revised 2 August 1983

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FRESH WATER TURTLES AS STRONG PREDATORS OF WATER HYACINTH

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The bio-ecology of Indian fresh water turtles has not received any significant attention since almost over five decades[1-4]. In the course of studies on food and feeding habits, it has been realised that most fresh water turtles help in removing harmful organisms by their predatory activities. Smith[5] has revised the earlier contribution made by Boulenger[6] on the reptilian and batrachian fauna of this region. The most common species of fresh water turtles in this region of the country are *Trionyx lethi Gray; Lissemys punctata granosa* (Schoepff); *Geomyda trijuga* (Schweigger) and *Kachuga tectum tentoria* (Gray). This paper deals with the voracious feeding activity of *K. tectum tentoria.*

Specimens collected from the field were allowed to settle in large laboratory glass tanks, cleaned every day. Feeding experiments were conducted to see their dietary habits. Food was offered every day after removing the left overs. Order of preference was determined on the basis of percentage consumption within twenty four hours by the weight of the left over phytal matter.

Among the turtles maintained in this laboratory it was noticed that *K. tectum tentoria* attacked all emergent vegetation. Five species of plants, *Pistia stratioites,* Linn; *Echhornia crassipes,* Solms; *Salvinia natans,* Roxb; *Hydrilla verticillata,* Royle and *Lemna minor*, Linn were tried on selective basis. Each turtle was given a known quantity (250 g) of plant material of single species of mixed variety. Since this is a known vegetarian group, no animals or flesh were offered. It was observed that *K. tectum tentoria* devoured as much 125-250 g of plants daily. This species can climb on the stolons and stems to eat the leaves and more especially the growing apical bud. The destruction of growing apical shoots, the ruthless cutting of stolons, devouring the succulent leaves cripple the plant to lose their gravity. In such an angular position the plants get washed away by the water currents easily.

K. tectum tentoria is strictly phytophagus and eats enormous quantities. What is more amazing is that by its powerful snapping jaws it destroys all the vital parts of the plants and all menacing weeds. Daily observation showed that apical buds were the first target of maceration followed by tender leaves, stems, stolons and root-tips in that sequence. Out of the five species of plants given, 100% each of *E. crassipes, P. stratiotes*, and *H. verticillata* and 60% of *S. natans* and 25%