species are able to synchronize the time structure of their calls. To what extend this synchronisation could be done was investigated for paired stridulating males of *Sigara striata*.

The stridulation signals were recorded in a small water-filled styrofoam hollow cylinder, which was protected against external noise, with a LC54M1 Hydrophone (Atlantic Res. Com.) at 18–20 °C. The output was preamplified (Tektronix Typ 122a) and recorded at 38 cm/sec with a tape recorder (Uher G 36). The fact that with paired stridulating males it is hard to separate the entry and course of the 2nd animal's signals from the signals of the leading singer on oscillograms and sound pressure level recordings, indicates a good synchronisation of the time structure of the 2 animals' calls.

An audiospectrographic analysis was made from the stridulating signals of several isolated males. 2 males, stridulating with clearly different main frequencies, were selected and put together. With the help of suitable one-third octave filters it was possible to separate their contributions to the recorded pair stridulations. The figure shows that a) the 2nd animal stridulates pulse-train synchronous (1 pulse-train represents 1 stroke of the stridulatory pegs over the edge of the head) to the leading animal and b) the entry of the 2nd animal's 1st pulse-train may already be pulse-train synchronous – if not, the animal synchronises his call after only a few pulse-trains at most.

Present studies are investigating the synchronisation of stridulation signals by 2 or more individuals of *Sigara striata* and other species more quantitatively. Additional studies on the behaviour of the animals in this situation should give some information about the biological meaning of the chorus and the synchronous stridulation.

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Development of photosystem I and onset of generative phase in buckwheat

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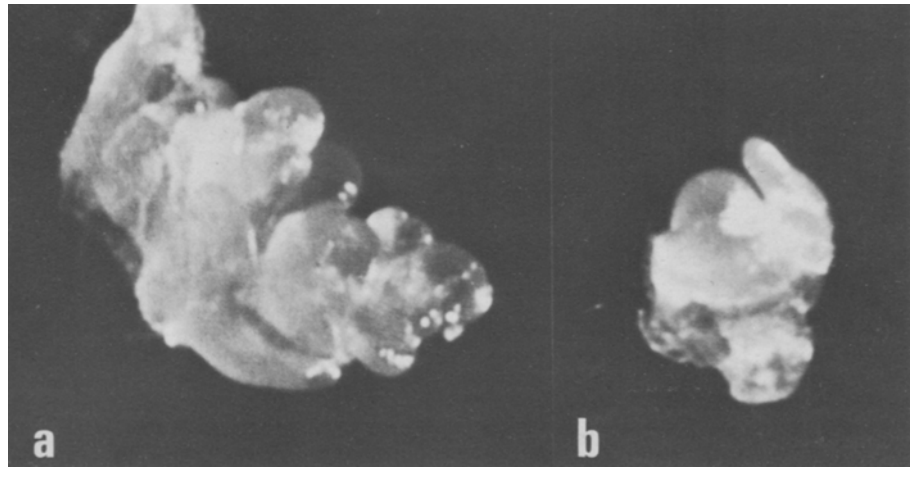
Summary. The length of the generative phase and the development of photosystem I in buckwheat cotyledones were found to be correlated. Increasing days of light exposure help both of these processes. It is presumed that electron transfer during energy absorption probably serves as a prelude to further molecular events leading to the onset of the generative phase.

Recently we reported a closs association between the amplitude of ESR signal I and the onset of the generative phase in a long-day plant, *Iriticum sativum* var. albidum 43[2]. Similar trends have been found in a day-neutral species *Fagopyrum esculentum* var. chatilovskay. These results are reported here, and a general mechanism has been proposed to explain the relationship between the development of the photosynthetic apparatus and the onset of the generative phase in plants with a very short juvenile phase.

Seeds of buckwheat (*F. esculentum* var. chatilovskay) were germinated in pots containing perlait in complete darkness. After the hypocotyl hooks had opened uniformly in all pots, these were divided into groups of 40 pots each. While 1 group was left in darkness, the other one was transferred to continuous light. After every 48 h, for 6 days, 10 pots from the dark were transferred to the light and vice versa. Thus on the 8th day 8 experimental variants (as shown in the table) were available simultaneously for observation. During light and dark treatments, seedlings were maintained at 20 °C in growth chambers and those exposed to various light treatments received 35 W/m^2 light energy at plant level.

Shoot apices of 5 seedlings from each treatment were dissected after 8 days. The length of the apical dome was measured under a dissecting microscope and the stage of development was recorded. Cotyledons from these plants



Dissected shoot apices of buckwheat 8 days after germination under continuous light (a) and continuous dark (b).

were used for electron spin resonance (ESR) studies using an RZ 1306 radio-spectrometer. The methods followed were the same as those described earlier[2,3]. Chlorophyll was measured following Arnone[4].

Results. The results are shown in the table. While in seedlings maintained in continuous light (treatment 5, figure, a) the apices were clearly differentiated into inflorescences, in those kept in continuous darkness (treatment 1, figure, b) or those which received 6 days in darkness followed by 2 in light (treatment 2) or 2 days' light followed by 6 days' darkness (treatment 8) the apices were still vegetative, with transitional stages in other treatments as is evident from the length of the apex (table). The relative amount of PS-I in the cotyledons also increased with increasing days of light exposure. Photosystem-I was completely absent in seedlings kept continuously in the dark (treatment 1). The amount of total chlorophyll also showed similar trends.

The dependence of floral induction on a primary chemical event during photosynthesis has been reported by many workers[5], and a higher energy demand of apices during the onset of the generative phase is also well established[6]. The results reported here confirm our earlier presumption[2], that probably the onset of the generative phase involves energy absorption and a transfer of excitation to reaction centres, and subseuqently primary chemical events during photosynthesis. The electron transfer during energy absorption probably serves as a prelude to further molecular events leading to the onset of the generative phase. Identification of these early biophysical events may be easy only in plants with a very short juvenile phase like buckwheat.

Development of the apex, relative values of PS-I and PS-II, and greening of cotyledons in buckwheat seedlings exposed to different light and dark treatments

Treatment*	Length of apex (μm)	Relative values per mg fresh wt of cotyledons PS-I	PS-II	Total chlorophyll mg/mg fresh wt of cotyledons
1. (8D+0L)	142± 2	0	1.38	0.003
2. (6D+2L)	142± 4	7.17	3.33	0.091
3. (4D+4L)	271± 8	15.76	9.46	0.102
4. (2D+6L)	282±16	21.94	13.10	0.199
5. (0D+8L)	542± 2	24.60	8.04	0.225
6. (6L+2D)	214± 8	21.53	14.46	0.154
7. (4L+4D)	200± 6	18.31	11.49	0.096
8. (2L+6D)	142± 2	7.57	5.08	0.084

*Figures in parentheses indicate days in dark D and in continuous light L and the sequence of light treatments following seed germination.

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The legs of *Musca domestica* and *Glossina morsitans* females as the site of sex pheromone release[1]

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Summary. The site of sex pheromone release in *Musca domestica* and *Glossina morsitans* is the legs. Unicellular glands restricted to the tarsi and to the tibia are proposed as the source of the pheromone. The structure of the glands is described.

Sex recognition pheromones which initiate mating behaviour in the male fly at short range or in contact with females or baited decoys have been described for several musciid and tsetse fly species. In all investigated species, the pheromones were associated with the nonpolar cuticular lipid extracts of adult female flies[2-8]. We present evidence pointing at the site of pheromone excretion as restricted to unicellular glands located on the flies' legs.

Experiments comparing attraction of male flies to whole female flies and to decoys treated with extracts of female body parts are described. The experiments with houseflies followed the general lines of 'pseudofly' decoy technique of Rogoff et al.[9]. *Musca* males and females were separated on the 1st day after emergence and kept at 24–26 °C, 60–80% relative humidity.

In order to demonstrate that the site of pheromone excretion is the legs, it was important to prevent contact between legs and wings and body. For this reason, female flies were immobilized immediately after eclosion by fixing them to a small piece of cardboard. Legs were straightened and placed on a drop of melted paraffin, and wings were similarly attached to each other. The restrained females were capillary fed on 10% sucrose solution for at least 2 days. Males used in mating tests were older than 3 days. Fly extract was prepared by placing 20 females or parts of females in 1 cm^3 absolute ethanol (Merck A.R.) for about 20 h. Extract equivalent to 2 female doses was placed on shoelace knot decoys. After drying, the decoys were placed in 9-cm plastic petri dishes lined with filter paper, containing 5 males. Mating behaviour (number of strikes) was observed during 1 h.

Glossina morsitans pupae were kept at 28 °C and 70% relative humidity. The procedure and scoring method in the tsetse experiments, adopted from Carlson et al.[10] took into account the fact that tsetse flies are not very active. Sexes were separated at eclosion. Males older than 7 days were placed in individual glass tubes of 2.5 × 7 cm. A test object, decoy or female fly, was introduced into the tube. The tube was tapped and moved and several contacts between male fly and the object were observed. Decoys were pieces of cork 2 × 3 × 10 mm with female extract (1 cm^3 hexane, Merck A.R./10 flies). The mating behaviour of the male fly with decoys or with female flies of different ages was recorded: No response was scored as 'nil'; a short arrest of