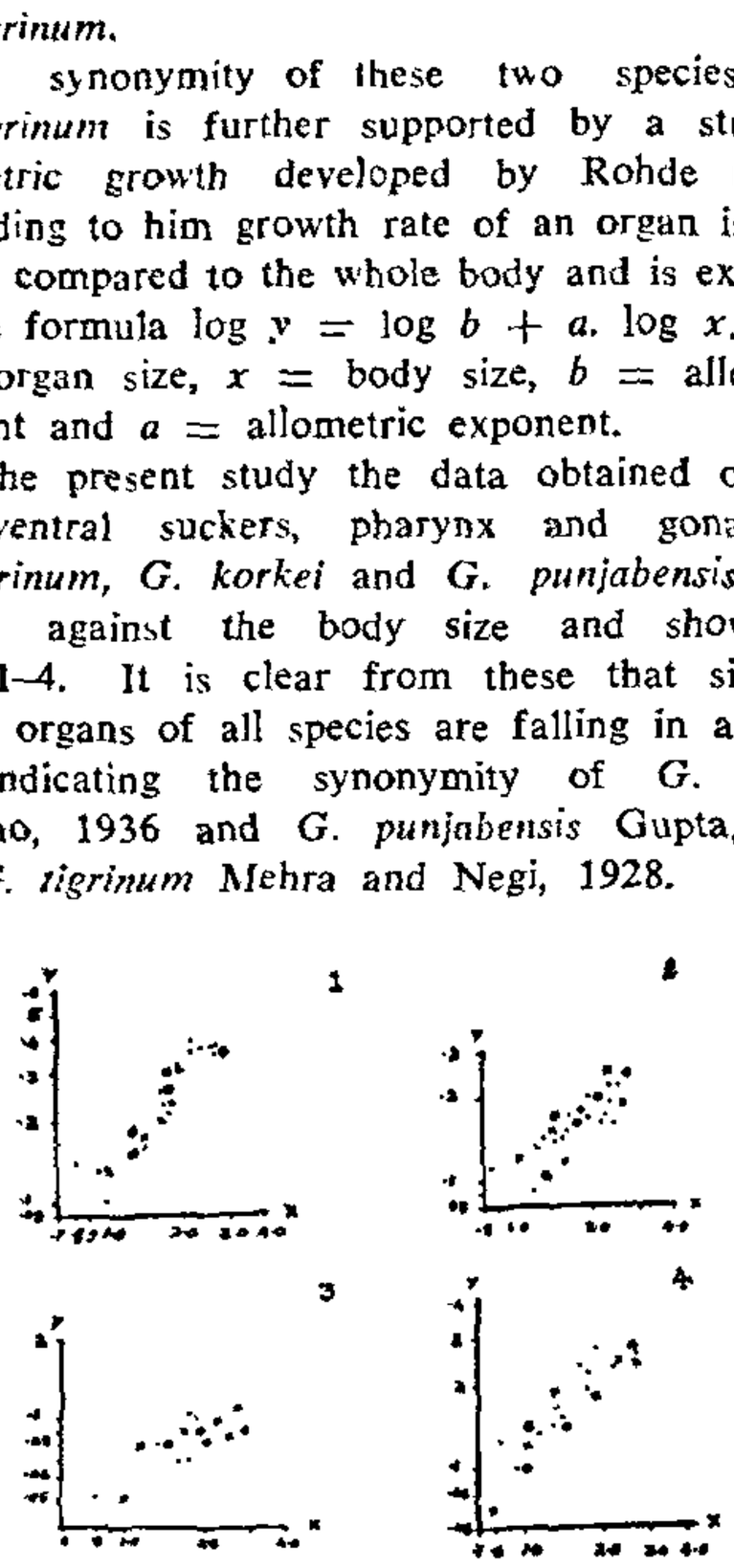
pseudocirrus sac is absent. Hence this particular parameter is not of much taxonomic importance as discussed elsewhere (Rao, 1974) and as such *G. korkei* and *G. punjabensis* become synonym to *G. tigrinum*.

The synonymity of these two species with *G. tigrinum* is further supported by a study of allometric growth developed by Rohde (1966). According to him growth rate of an organ is much slower compared to the whole body and is expressed by the formula $\log y = \log b + a. \log x$, where y = organ size, x = body size, b = allometric constant and a = allometric exponent.

In the present study the data obtained on oral and ventral suckers, pharynx and gonads in *G. tigrinum, G. korkei* and *G. punjabensis* were plotted against the body size and shown in Figs. 1–4. It is clear from these that sizes of similar organs of all species are falling in a linear line indicating the synonymity of *G. korkei* Bhalerao, 1936 and *G. punjabensis* Gupta, 1954 with *G. tigrinum* Mehra and Negi, 1928.



FIGS. 1–4. Fig. 1. Body size *vs.* oral sucker. *Fig.* 2. *Body size vs. ventral sucker. Fig.* 3. *Body size vs. testes.* Fig. 4. Body size *vs.* ovary. (· *G. tigrinum* ; *o*, *G. korkei* ; *x*, *G. punjabensis.*)

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BIOLOGICAL CONTROL FOR THE PERNICIOUS WEED *PARTHENIUM HYSTEROPHORUS* LINN.

THE 'congress grass' *Parthenium hysterophorus*, whose seeds reached India with the wheat imported from Canada and U.S.A. has become naturalized in many parts of our country[1-4]. The weed is also harmful to human beings[5]. It causes eczema and affects lungs, eyes and nose[6]. The pollen grains of the weed floats in the air and cause several allergic diseases like dermatitis, fever and asthma[7]. Parthenin, one of the constituent principles characterized, is said to produce depressant effect on the nervous system[1]. Therefore it is high time that effective control measures are -launched for the eradication of this pernicious weed.

Several herbicides have been tried to check the growth of this weed[2]. Ansar 529 is a chemical based on arsenic that can prove fatal to human beings and cattle. The Indian tea board has banned the use of this chemical in tea gardens. Therefore it is not desirable to employ this in *Parthenium* control. The other herbicides, however, can cause less harm to animals, but these are expensive. In this context it may be of interest to note that a biological control has been successfully evolved to check this harmful weed by employing bugs of the species *Aphis fabae* (Fig. 1).

These hemipterans are well known for their quick fecundity ; the life cycle is completed in a few days and the females are parthenogenetic in most stages[8]. Kennedy and Booth[9] and Kennedy *et al.*[10] have already reported the remarkable ability of adaptation of these pests to new plant hosts.

These plant bugs are commonly present in *Ipomioea purga* growing in the environs of Coimbatore. When transferred to *Parthenium* they adapted well to the weed and produced desirable effects. Figure 2, presents photographs of two *Parthenium* plants grown under identical conditions in a green-house out of seeds planted at the same time. When they grew about 25 cm tall, the bugs were released on one of the plants. The infected plant grew only about 6 cm more in 4 months while the other plant reached 134 cm and started flowering profusely and in the normal way the fruits and seeds were also produced. In the infected plant, on the other hand, only a few flowers appeared and they never yielded fruits and seeds. This can be an ideal and most desirable effect. Experiments conducted in the field has also

produced similar results. Further, since the viviparous females and males of the bugs are winged[8], they easily spread and cover larger areas within a short period.

FIG. 1. A nymph of *Aphis fabae* which affects the weed more effectively than the adults.

FIG. 2. *Parthenium hysterophorus* infected with *Aphis fabae* (right) and an uninfected plant (left).

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HISTOCHEMICAL LOCALIZATION OF NON-SPECIFIC ESTERASE ACTIVITY IN *PARAMPHISTOMUM CERVI* (TREMATODA : PARAMPHISTOMIDAE)

IN recent years much attention has been focussed on the histo-physiology of helminth parasites. Although studies have been made on various enzymes in digenetic trematodes, a few attempts have been made on the histochemical localization of esterase activity[1-6]. *Fasciola hepatica* has been studied extensively for carboxylic esterase activity[7-10]. The present work describes the histochemical localization of non-specific esterase activity and its probable significance in the digenetic trematode, *P. cervi*.

Live adult worms from the intestine of sheep were collected and washed in saline water for further processing. They were frozen rapidly with dry ice and sections were cut at 8 μ in Pearse–Slee Cyrostat (maintained at — 20° C). To detect the esterase activity the sections were incubated in the indoxyl acetate (0-acetyl-5-bromoindoxyl) medium[11] at 37° C for one hour. Sodium fluoride ($7{\cdot}5 \times 10^{-2}$ M) was used to inhibit the esterase activity.

The sites of the enzyme activity were marked by the deposition of dark blue granules in the tissues of the worm. The esterase activity in the oral sucker was moderate and the activity was restricted to the outer part of this organ revealing thereby that oral sucker has an important role in ingestion of host tissue as speculated by Becejac *et al.*[12]. Further, Allen and Reinard[6] attributed the secretory function of oral sucker to internal and/or extracarporeal digestion. The acetabulum