PREVIOUS WORK
Schacht (1950) for the first time dealt with the embryology of the genus *Pedicularis* (*P. silvatica* and *P. palustris*). He partly misinterpreted fertilization but his other observations proved to be correct on subsequent investigations. According to him the endosperm was formed exclusively from the middle part of the embryo sac with "rooms with no cells" on both ends. Moreover, he noted an appendix like structure in the direction of funicle and in this bulge of *Pedicularis silvatica* he observed "Sap circulation" and cellulose formation. The cellulose plexus reinforced the 'bulge' forming an appendage on the ripe seed.

Hofmeister (1855) described 2 - 3 "Keimblaschen" at the end of the embryo sac of *Pedicularis silvatica*. He considered that the embryo developed from such a "Keimblaschen", which had been fertilized by the pollen tube. He also described the small radially elongated cells (endothelium) in the inner part of the integument.

Deecke (1864) produced a preparation of the embryo sac of *Pedicularis silvatica* and upheld
the reliability of the Horkel Scheilden Theory.

In the year 1655, Pedicularis silvatica was investigated by Schaht (1855), Hofmeister (1855), Von Mohl (1855), Schacht (1855), and Deecke (1855) in March, May, June, August, and September, respectively.

Hofmeister (1858) published two surveys on the embryology of Phanerogams and in both he described the construction of embryo sac, fertilization, and development of endosperm and embryo in Pedicularis silvatica. He also described the morphology of the mature seed coat.

The external seed coat morphology was dealt with in detail by Lange (1870-1871). He compared seeds from 32 species of Pedicularis and those of P. silvatica and P. palustris in particular.

Groenlund (1870-1871) examined the anatomy of the ripe seeds of Pedicularis silvatica and P. palustris. Jonsson (1879-80) described the megaspores and the embryo sac of Pedicularis. He worked on P. oederi, P. lapponica, and P. silvatica, basing his investigations on the results, which Warming and Strasberger had recorded.
in the previous year i.e. 1978.

Bachmann (1882) worked on the seed coats of Scrophulariaceae and focussed his attention on the seed coats of Pedicularis verticillata L., P. portenschlagii Sant., P. flammea Wulf., P. versicolor Wanbg., P. myriophylla Pall. and P. Friederici Augusti Tommasin. He concluded that the seed coat of these plants consisted of two layers: innermost a brown lamella of compressed sub-epidermal integument tissue, the outermost an epidermis of large thick-walled cells. Berthhold (1886) reported the formation of cellulose strands in the haustoria of Pedicularis.

Tischler (1899) examined these strands very closely and on chemical analysis found cellulose impregnated with pectin in Pedicularis silvatica and P. palustris. Tischler maintained that there existed no fundamental difference between the seeds of these two species.

Balicka - Iwanoska (1899) dealt with the development of the embryo sac of Pedicularis sceptrum-carolinum L. and P. palustris. She was
particularly interested in the development of endosperm haustoria and the integumentary tapetum, and considered these to be physiologically nutritive.

Schmid (1906) wrote a comprehensive treatise on the embryology of *Pedicularis palustris*, *P. verticillata*, *P. caespitosa* Sleb., *P. recutita* L., *P. tuberosa* L. and *P. foliosa* L.

Lundqvist (1915) put forth a detailed description of the development of embryo sac of *Pedicularis sceleratum - carolinum* but described only the post fertilization changes.

Krishna Iyengar (1942 c) gave a concentrated account of the embryo sac, the embryo, the endosperm and the endosperm haustoria of *Pedicularis zeylanica* Benth.

Berg (1954) studied the development and dispersal of the seed of *Pedicularis silvatica* and published a comprehensive account. He described campylotropous ovule, multicelled female archesporium, 8 - nucleate monosporic Polygonum type of embryo sac, cellular endosperm and endosperm haustoria; and Onagrad type of embryo in *Pedicularis silvatica*. 
The studies on the structure and function of the pollination mechanism of *Pedicularis* by Sprague (1962a, b), Macior (1965a, 1968b, 1969, 1970, 1973, 1974, 1975, and 1977), Faegri and Van der Pijl (1971), Maclnnes (1972), and Kolmankwak (1973) indicated a close interrelationship of floral form and pollinator behaviour. Train (1891), Pennell (1943) and Li (1948, 1949) have also indicated a great degree of variation in floral forms among numerous species of the genus.

Ryvarden (1974) studied reproductive capacity and distribution of *Pedicularis hirsuta* and *P. flammea*. *Pedicularis hirsuta* was found to have a far wider distribution than *P. flammea* in Norway. According to him, the reproductive capacity could be the clue to the limited distribution of *Pedicularis flammea* as compared with that of *Pedicularis hirsuta*.

Weber (1973), Weber and Weberling (1975), Musselman (1973); and Musselman and Dickison (1975) studied the morphology and anatomy of haustoria in some Scrophulariaceae particularly with respect to Rhinanthoideae.
Weber (1975) also studied the host-parasite relation in 27 Middle European genera of Rhinanthoideae (= Pedicularieae) and none of them could be found host-specific. Most of the Rhinanthoideae studied by Weber have haustoria at the main root also, causing no serious injury to the host plants under natural condition. The 27 Rhinanthoideae studied by him included 9 species of Pedicularis and their host ranges have been described. Weber (1976a,b) also studied the haustorial anatomy in some Central European parasitic Scrophulariaceae including Pedicularis silvatica.

Stephens (1912a,b) studied the structure and development of haustoria of Striga lutea Lour. Boodle (1913) reported this structure in Buttonia natalensis Macken. and Julg as early as 1916 examined the haustoria of Alectrolophus and Melampyrum but failed to find any evidence that the haustoria are analogous to, or have the same function as, the bacterial nodules of Leguminosae. Andrews (1945) worked on the parasitism of Striga hermontica on Sorghum sp. and studied the effect of heavy and light irrigation on Striga attack.