Species of *Cuscuta* are not easy to determine. The monograph by T.G. Yuncker (Memoirs of the Torrey Botanical Club 18 (2):113-331) is most helpful although it was published in 1932.

Flowers and capsules are necessary for proper identification. Taxonomic characters include: distinct or united styles, circumscissile or non-circumscissile capsules, degree of fusion of the sepals, and acute or obtuse petal tips. A distinct feature of many species in the genus is the presence of infrastaminal scales apposite the stamens. The margins of these scales may be fringed. *Cuscuta campestris* has infrastaminal scales; *C. hyalina* which lacks them is frequent in the Khartoum and Val Medani regions of Sudan where it usually parasitises *Tribulus terrestris* although it is not restricted to this host.

Workers should be aware of the features of *C. campestris* for comparison with similar appearing native species.

**Cuscuta campestris**

In Sudan, a heavy infestation of *Cuscuta* was found on a test plot of *Medicago sativa* at the university of Khartoum, Faculty of Agriculture, Shambat. It had previously been determined as *Cuscuta hyalina* Heyne ex Roth but a careful examination showed it to be *Cuscuta campestris* Yuncker. This species is not included in Andrew's "The Flowering Plants of the Anglo-Egyptian Sudan". It is native to the United States, but has been widely spread throughout the world probably by contamination of legume seed.

**Cuscuta campestris**

**CONNECTION BETWEEN THE VASCULAR TISSUE OF STRIGA HERMONTHICA AND ITS HOST**

The vascular tissues in the region of *Striga hermonthica* and its host, sorghum, were studied using fluorescence microscopy. Haustoria were fixed in formalin-acetic-alcohol (1:1:8) and cleared and softened in IN NaOH for one hour in a water bath at 60°C; stained in a 0.1% aqueous solution of aniline blue dissolved in IN NaOH.
K₂PO₄. The haustoria were gently squashed and examined through a fluorescent microscope, using blue light (incident) for exciting the dye.

Xylem elements in the roots of S. hermonthica and sorghum fluoresced reddish-yellow, due to their lignified cell walls, while the phloem fluoresced greenish-yellow, characteristic for callose-containing tissues. In the haustoria both types of fluorescence were observed and it was possible to follow the xylem and phloem of the parasite in the haustorium and to see their direct attachment to the xylem and phloem of the host root respectively.

The separate link between xylems and of phloems in the haustorial region supports Roger's and Nelson (1959) view of separate pathways for the translocation of organic matter and for the passage of water from host to parasite.

It does not support Okonkwo's (1964) evidence in favor of a dual function of the xylem in S. hermonthica.

Sabir S. Safa and B.M.G. Jones
Royal Holloway College, UK

EFFECT OF BURIAL ON SEED VIABILITY IN STRIGA HERMONTHICA

Seeds were placed in "nitrex" cloth bags and suspended in perforated metal pipes at soil depths of 0, 5, 10, 20, 40 and 80 cm. Two "strains" of seeds were used, Shambat and Abu Naana. The experiment will run for two years with seeds removed and tested at 0, 1, 3, 6, 12, 18 and 24 months. Early results indicate that germination is normal in seeds removed after one month from all depths except 80 cm where no seeds germinated. However, if the seeds from the 80 cm depth which had remained in the soil for one month were stored at room temperature for four months, normal germination ensued. Seeds that had been buried for three months at 80 cm have given no germination even after five months. Hopefully these findings may be of some applied value in establishing maximum ploughing depths for Striga infested fields.

Ali El Awad Mazlum
University of Khartoum

ALBINO STRIGA HERMONTHICA

Albinism, the total lack of chlorophyll (not to be confused with the presence of white flowers on plants which normally have non-white flower: is well known in many angiosperms. is, of course, lethal in non-parasitic plants. This phenomenon has not previously been reported in the genus Striga where albinism would have special significance due to the obligate parasitism of this species. Mr. Ham Tag El Sir found some albino Striga plants in the test plot at Shambat. These were observed carefully but failed to flower. After two weeks, they withered and died. However, when examining a field near Sinnar in the Blue Nile Province, Mr. El Sir found flowering albino plant. This has been used to make crosses with normal Strigas in the hopes of preserving the albinism for future experimentation. An albino strain of Striga could be of considerable value to researchers as all foci of-stuffs in the albino strain of necessity have been transferred from the host plant.

L.J. Musselman
University of Khartoum

POLLINATORS OF HYDNORA ABBYSSINICA

The genus Hydnora (Hydnoraceae) is one of the most bizarre of all genera of flowering plants due to its cryptic subterranean parasitic nature and tropical distribution. Hydnoraceae contains only two genera, Hydnora and Prosopanche. Prosopanche is New World while Hydnora is palaeotropical and reaches its greatest diversity in Africa. The family has been monographed by Harms (1935) and included in Kuijt's treatment of Scleranthus flowering plants (1969). Recently, Visser (1981) has included Hydnora africana in his volume on South Africa parasitic seed plants. Information on the biology and parasitism of Hydnora is, however, sorely lacking. We present here our observations on Hydnora abbyssinica near Wad Medani in Central Sudan during September 1982. The site was along the Blue Nile in an area dominated by Acacia — and — seyal. The parasite was abundant in fine river silt soil beneath these trees.
The flowers emerge from the soil as a cone-like bud approximately 10 cm long and 2 cm wide. The perianth consists of four (rarely five) petals. In the bud stage the perianth parts begin separating at the level of the soil; opening proceeds acropetally. Unlike H. africana, Hydnora abyssinica perianth parts are separate at maturity and lay on the ground. The inner surface of the perianth tips are light orange and smooth, the lower part of the lobes as well as the inside of the tube is hairy. The outside of the flower is a rusty-brown color.

The flowers have a pronounced strongly fetid odor. We estimate that the flowers last for two days. After this, the fleshy perianth parts rapidly decay.

Pollination is apparently by beetles as we observed numerous pollen laden beetles in many flowers. The flower is so designed that beetles enter the tube, crawl to the very large nectar and then proceed to the floor of the flower which is the stigmatic surface.

About three different types of beetles were recovered from the flowers and are being identified. Insects, perhaps including these beetles, deposit eggs in the flower. These mature and the larvae feed on the decaying flowers.

Hydnora abyssinica is a plant well known to the residents of the Gezira Province where it is called by its Arabic name, tartous. Dried, it is used as charcoal for fires and is considered to be superior to regular charcoal. It is also used medicinally for stomach ailments; portions of the rhizomes are boiled and the decoction drunk. This use is not surprising considering the astrangent flavor of the fresh rhizome, perhaps attributable to a concentration of polyphenols.

MA S Siddig and L J Musselman
University of Khartoum

The 'Golden Bough' emulates HAUSTORIUM as a newsletter about parasitic plants, but aims to provide a broader forum for the interchange of ideas and information relating just to the mistletoes - Loranthaceae, Viscaceae and near relatives. The first number was issued in November 1982 and has been sent to subscribers of HAUSTORIUM known to have a special interest in these families, but anyone else would like a copy write Dr. Roger Polhill, Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AB, UK.

LITERATURE

Dell, B., Kuo, J., and Burbridge, A.H. 1982. Anatomy of Pilostyles hamiltonii C.A. Gardner (Rafflesiaceae) in stems of Davlesia, Aust. J. Bot. 30:1-9. The Rafflesiaceae is a remarkable family of obligate parasites representing the ultimate in vegetative reduction. The flowers of Rafflesia are the largest known, those of Pilostyles are minute. Despite the intriguing nature of these plants, little is known about them so that this short paper, including the first study of Pilostyles, is a welcome addition. The work reported here largely corroborates the study by Rutherford on North American Pilostyles. In the vegetative state, Pilostyles occurs as thin strands of parenchyma cells in the secondary phloem of the host. At flower initiation Pilostyles forms "pegs" that connect with the host xylem although the pegs themselves contain no xylem.

Pesch, C. and Pieterse, A.H. 1982. Inhibition of germination in Striga by means of urea. Excerpta 38, 559-560. In vitro, urea at 200 and 400 mg/l caused severe inhibition of radicle growth in S. hermonthica. Manganese sulphate had a moderate effect only at 800 mg/l and sodium nitrate had none.

Babiker, A.G.T. and Hamdoun, A.M. 1982. Factors affecting the activity of GR7 in stimulating gexmination of Striga hermonthica (Del.) Benth. Weed Research 22 (2) 111-115. The strigol analogue GR7 was shown to last less than 24 hours in the local alkaline (pH 8.5-9.5) soil when mist. It was also confirmed that the presence of GR7 during
pre-conditioning, reduced responsiveness to a later application of stimulant.

Stangle, CM and Misselman, L.J. 1981. Some growth aspects of Cassiopeia cassioides. Research Note SO 276 USDA Forest Service, Southern Forest Experiment Station, pp 3. G. cassioides seedlings grow long roots before attachment to host but the shoots only elongate after attachment. Shading the parasite (leaving the host in the light) results in death, suggesting it relies on its own photosynthesis for its carbon nutrition.

Magnus, V., Simaga, S., Iskric, S. and Koeder, S. 1982. Metabolism of tryptophan, indole-3-acetic acid, and related compounds in parasitic plants from the genus Orobanche. Plant Physiol. 69. 853-858. Studies on three Orobanche spp including O. renosa confirm that they have their own mechanisms for synthesis of IAA from tryptophan. Metabolic systems may even be more complex than in autotrophic plants.

Mesa-Garcia, J. and Garcia-Torres, L. 1982. Effects of bean (Vicia faba L.) planting dates on broomrape (Orobanche crenata Forsk.) phenology and competition. Proceeding 1982 British Crop Protection Conference - Weeds, 757-764. Also: Broomrape (Orobanche crenata Forsk.) control in bean (Vicia faba L.) with glyphosate as affected by infection intensity: ibid 765-770. Beans planted in mid-November in S. Spain were more severely attacked by O. crenata than beans planted in mid-December or mid-January but still yielded better. Early planting gave long spread of emergence of the weed requiring more than two glyphosate applications for control.


HAUSORIUM is edited by C. Parker and L. Misselman and typed by P.A. Brown. Material should be sent to either C. Parker and L. Misselman for requests for copies. Photocopies of number 1-9 are available from IPPC at US$1 per issue. Material from HAUSORIUM may be reprinted provided that appropriate credit is given.

C. Parker: Weed Research organization, Begbroke Hill, Sandy Lane, Yarnton, Oxon OX5 1PF, UK.

L.J. Misselman: Box 120, American Embassy, Khartoum, APO New York 09668 / USA.