

be concluded that this organ is a primitive structure found in the lower tribes of the family, but in the more specialized forms, where it is either altogether absent or occurs only as a very short stalk at the base of the ovary, it has undergone suppression. The occurrence of a gynophore as an abnormality in one of the most highly evolved genera of the family is evidently a reversion to ancestral character found normally in the primitive members of the Cruciferae; this reversion has probably taken place as a result of hypertrophy caused by the disease.

Further support for the conclusion that absence of the gynophore is an advanced character is found in the Capparidaceae, a family with well-acknowledged affinities towards the Cruciferae and one regarded as more akin to ancestral forms from which both the families have arisen. In some species of *Cleome*, notably *C. monophylla* and *C. Stocksiana*, the ovary is either sessile or it may bear a very small stalk at its base. In *Cleome viscosa* the ovary, as a rule, is sessile, but occasionally one comes across a rudimentary stalk at its base. In the primitive tribes of the Capparidaceae the gynophore is not only well developed but is of a very common occurrence.

In the end I wish to record my most grateful thanks to Professor B. Sahni, sc.D., F.R.S., and my friend, Dr. V. Puri, D.Sc., of the Meerut College, for helpful suggestions and expert advice. I am also thankful to Dr. R. R. Stewart, Principal, Gordon College, Rawalpindi, who went through this note and kindly confirmed the identification of the specimen.

Dept. of Botany & Geology,
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October 22, 1945.

* Schulz, O. E., *Cruciferae in Engler's Pflanzen reich*, 1919, 5, 105, and *Cruciferae in Engler-Prantl Natürliche Pflanzen Familien.* 1936, Band 17B, 244-266.

D. D. T. AND CATTLE TICKS

IN view of the encouraging results reported to have been obtained with D.D.T. in various spheres of entomological research, the author, at the suggestion of Major Ch. Williamson, Animal Husbandry Commissioner with the Government of India, carried out some preliminary trials at the Imperial Veterinary Research Institute, Mukteswar, to determine the effect of this drug on cattle ticks in India.

Emulsions of D.D.T. were prepared in turpentine and in kerosene oil, using liquid soap as an emulsifying agent in each case. The concentrations employed were 0.1, 0.2, 0.5 and 1.0 per cent. Cattle heavily infested with ticks (*Boophilus australis* Fuller) were sprayed in batches with different concentrations of these emulsions. It was found that (i) D.D.T., in emulsion with turpentine at concentrations of 0.2 and 0.5 per cent., destroyed ticks in their larval, nymphal and male adult stages. The percentage of ticks destroyed varied from 80 to 90 per cent. on sprayed cattle. Engorged female ticks did not seem to be affected, except that they failed to oviposit when incubated at 22° C. or 37° C. after each spraying; (ii) a single spray of D.D.T., in emulsion with kerosene oil and

liquid soap at a concentration of 0.5 per cent., destroyed all stages of ticks within a period of a few minutes. In this case cent. per cent. tick mortality was observed. Turpentine or kerosene oil in emulsion with liquid soap when sprayed without the D.D.T., have practically no tickicidal value.

Experiments showed that, in the case of ticks, D.D.T. acted as a stomach poison and not as a contact poison or a repellent. The drug is non-poisonous to human beings and livestock.

As a point of practical utility, it may be mentioned that D.D.T. emulsion can be used in the form of a hand-dressing, thereby eliminating the cost and complications involved in cattle-dips and sprays.

The writer is indebted to Major Williamson for his occasional suggestions during the progress of these experiments.

Imperial Veterinary Research
Institute, Mukteswar,
October 18, 1945.

B. N. SONI.

IMPORTANCE OF YELLOW CHANG-SHAN AND ITS PLAN FOR MASS PRODUCTION

THE term 'Yellow Chang-Shan' (*Dichroa febrifuga* Lour.) is Chinese classic and for thousands of years this plant has been the sole remedy for malaria. Owing to negligence very few Chinese medical men have ever adopted its use. Quinine from overseas has been decreasing in quantity on account of war and Chinese scientists have now come to give their special attention to this particular plant.

'Yellow Chang-Shan' is in reality the true variety of 'Chi-ku Chang-Shan' meaning 'Chicken bone Chang-Shan' in the 'Pen-Tsao', the well-known Chinese medical book.

This plant is adopted to shady place where soil is rich in humus. It grows well in wooded valleys above sea-level of from 1,000 to 1,800 metres. So Golden-Buddha Mountain of Nan-Chuen Hsien, Szechwen Province, is the ideal place for growing this plant.

The medical property of this plant is in its roots but its stems and leaves are also used by country people to cure malaria.

This plant is reproduced asexually but seeding process is now also under experimentation.

For mass production of this medical plant, the Ministry of Forestry and Agriculture and the Rear Service Corps agree to take the whole responsibility.

The plan for the production of this plant comes under two main divisions: plant-breeding and four-year plantation. When these come to completion this plant drug will suffice for the use of all who have malarial attack in this country.

To execute this plan 'The Golden-Buddha Mountain Chang-Shan Experimental Station', established by the Ministry of Forestry and Agriculture, has been assigned the special responsibility.

Moses S. D. SWEN.

The Golden-Buddha Mountain
Chang-Shan Experimental Station,
The Ministry of Forestry and
Agriculture, China.