

A Short Report on the Economic Value of *Artemisia* growing in the North-West Frontier Province.

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ARTEMISIA is very common in the North-West Frontier Province. Successful investigation of the Kurram *Artemisia* for the manufacture of santonin inspired great hopes of finding out additional sources of santonin in other parts of the country, where *Artemisia* resembling very much the Kurram material in appearance, grows in great abundance. It was therefore considered absolutely essential to carry out a thorough examination of the available material in these localities with a view to determining its economic value definitely. On the recommendation of Lt.-Col. F. W. C. Noel, C.I.E., D.S.O., the Director of Agriculture and Allied Departments, North-West Frontier Province, facilities were provided by the local Government for investigating promising regions in Waziristan, Tirah, Khyber and Malakand Agencies. Specimens and samples were collected from different localities at different times. The specimens were studied botanically and the samples were examined chemically for their santonin contents. The results of the findings are briefly mentioned below:—

(i) *Tirah, Khyber and Dir.*—*Artemisia maritima* grows in great abundance in the areas under review. It is very much similar to the santonin-containing *Artemisia* of the Kurram Valley in appearance but differs from it considerably in diagnostic characters. The full details of these characters will appear later. Samples were collected from different localities at intervals of a fortnight. They were examined for their santonin contents. Careful examination showed that the available material in these areas is commercially of no value as it contains no santonin.

(ii) *Waziristan.*—In South Waziristan, *Artemisia* is very abundant in the Wana plains, but the material in question is of no commercial value as it is without santonin.

In North Waziristan, *Artemisia maritima* is found at Datta Khel, Tut Narai, Shirina and Kazi. The areas in question are very small but the plant material growing in these areas contains a very good percentage of santonin. Samples collected during the end of September showed an average of 1.2 per cent. santonin.

(iii) *Chitral.*—*Artemisia* grows very abundantly

throughout the country and forms a conspicuous feature of the indigenous flora. There are several species, the principal ones being:—(a) *Artemisia sacrorum*; locally known as "Pispuk". (b) *A. scoparia*; locally known as "Zia". (c) *A. laciniata*; locally known as "Gudraun". (d) *A. Thomsoniana*; locally known as "Daraun". (e) *A. maritima*; locally known as "Maizini Daraun".

The chemical examination of several samples of each of *A. sacrorum*, *A. scoparia*, *A. laciniata* and *A. Thomsoniana* from different regions collected at different times of the growing period, showed that they do not contain any santonin.

Artemisia maritima collected from Drosh and its neighbourhood gave positive results, but the percentage of santonin is very low and is therefore not of much commercial value. It is, however, noteworthy in this connection that the samples submitted to chemical examination were not collected at the time when the plant contains the maximum amount of santonin. If the collections are made at the proper time, the percentage of santonin is very likely to show an increase.

The regions lying beyond Shaghour Valley on the East side could not be visited last year. The question of the economic value of *Artemisia* species growing there could not be taken up for want of time at the disposal of the writer. These regions have ecological conditions suitable for the occurrence of santonin-containing species of *Artemisia* such as *Artemisia brevitolia*, which grows abundantly in Kashmir and which, in certain selected areas, especially shows a good percentage of santonin. It is therefore very much desirable to carry on further investigations in this direction. This might ultimately lead to finding out species of *Artemisia* with a good percentage of santonin and establishing a permanent source of revenue for the Chitral State. A suitable area could then be selected for the cultivation and extension of the most desirable varieties of *Artemisia* for commercial purposes.

¹ Clarke, C. B., *Compositae Indicae*.

² Duthie, J. F., *Records of the Botanical Survey of India*, Calcutta, 1898, 1, No. 9.

³ Qazilbash, N. A., *Bulletin des Sciences Pharmaceutiques*, March 1935, No. 3.

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THE Trustees of the Lady Tata Memorial Fund announce that on the recommendation of the Scientific Advisory Committee they have made the following awards of scholarships and grants for the academic year 1935-36. These awards are open to suitably qualified persons of any nationality for research work in diseases of the blood

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