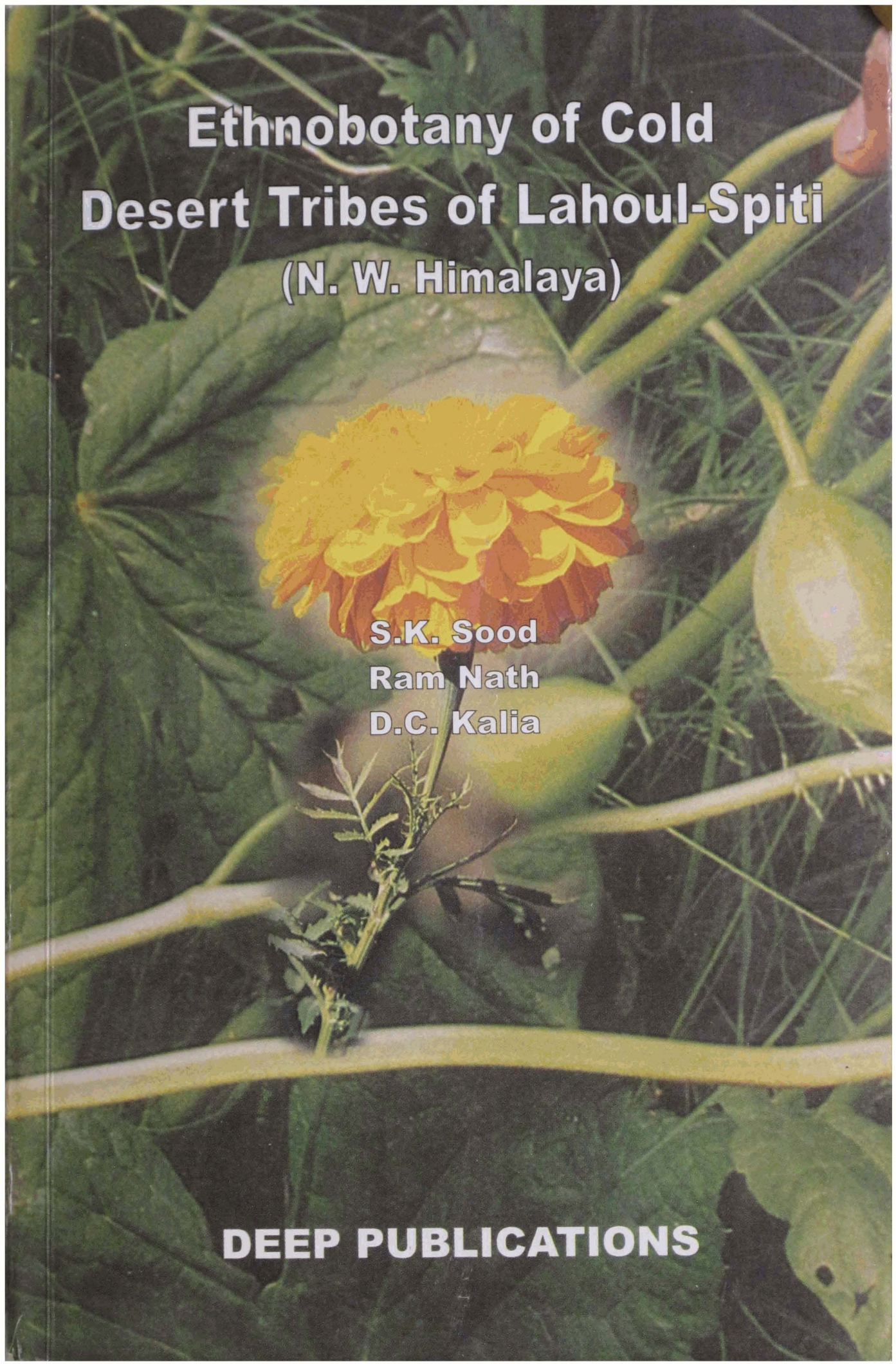
# Ethnobotany of Cold Desert Tribes of Lahoul-Spiti

## (N. W. Himalaya)



S.K. Sood
Ram Nath
D.C. Kalia

DEEP PUBLICATIONS

# Ethnobotany of Cold Desert Tribes of Lahoul-Spiti (N.W. Himalaya)

**S.K. Sood**
*Associate Professor*
*Department of Biosciences*
*H.P. University, Shimla - 171 005, India*

**Ram Nath**
*Lecturer in Botany*
*Government Degree College, Kullu, H.P., India*

**D.C. Kalia**
*Associate Professor*
*Department of Biosciences*
*H.P. University, Shimla - 171 005, India*

DEEP PUBLICATIONS
2001

## Caution

This work is meant only to provide information and leads or clues for laboratory, clinical or other research. It is not a work for prescribing curatives for any diseases or disorders. No plant should be tried by a layman for treatment of a disease.

**Price:** Rs. 400
$ 60



**ISBN:** 81-85622-10-8

**Published by:** ***DEEP PUBLICATIONS***
A-3/27A, Green Apartments
Paschim Vihar, New Delhi – 110063
Tel.: 5579514, 5584726, Fax: 6519849
E-mail: Deep_pub@hotmail.com

**Printed at :** ***Deep Printers, 3/26, Ramesh Nagar, New Delhi – 110015***

*Dedicated to*

***Dr. S.K. Jain***

***and***

***Prof. Richard Evans Schultes***

# PREFACE

The tribal people are the repository of accumulated experience and knowledge on indigenous flora and fauna. Unfortunately, this traditional wisdom, developed over years of observation, trial and error, is vanishing rapidly due to the assault of modern civilization into tribal areas. It is, therefore, extremely desirable to document the traditional knowledge before it is lost for ever. The present book-'*Ethnobotany of Cold Desert Tribes of Lahoul – Spiti* (*N.W. Himalaya*), has been written with a view to giving a glimpse of the rich treasure posssessed by this great region in its ethnic diversity. Unlike a large majority of ethnobotanical researchers who confine themselves either to ethnomedicine or to one or more socio-economic aspects in their works, the present manual deals with almost all aspects of ethnobotany. Besides information on the land and the people and ethnobotanical uses of 128 plants, indices to uses, families and local names as well as a glossary of words used by tribal people of Lahoul and Spiti are also appended. The data presented are based on actual ethnobotanical surveys conducted by the authors for a period spread over more than three years (1993-96) to collect a first hand account of ethnobotanically interesting species at flowering or fruiting stage. The description is supported by 3 figures and 218 photographs. As far as possible, technical terms have been avoided in plant descriptions to make reading interesting for the lay reader.

The authors are grateful to the Council of Scientific and Industrial Research, New Delhi for financial support. They are indebted to the Director, Forest Research Institute, Dehradun (U.P.), for permission to use the library and herbarium facilities and to Dr Sumer Chand, Scientist, Botany Division, Forest Research Institute, Dehradun (U.P.), for help in the identification of some of the plants.

For the present edition, we have benefited from the criticism and valuable suggestions offered by Professor T.N. Lakhanpal ( Chairman, Department of Biosciences, Himachal Pradesh University), Professor Daleep Malhotra ( Department of Behavioural Sciences, Himachal Pradesh University, Shimla), Professor Mangleshwar Sharma (Department of Botany, Punjabi University, Patiala) and Professor M. L. Sharma (Department of Botany, Panjab University, Chandigarh) and we acknowledge this with immense gratefulness.

Sincere appreciation and thanks are due to all traditional practitioners in general and more particulary to Mr Sonam and Mr

Norphel ('Larjey' from Lahoul) and Mr Nawang Chhering and Mr Tashi Gonpo ('Amchi' from Spiti), herb traders, and the tribal folk of Lahoul and Spiti for their help and cooperation in various ways without which it would not have been possible to complete this arduous task.

The authors also thank Mr Vipul Jain of M/s Deep Publications, New Delhi for readily agreeing to publish this work.

Well deserved appreciation is due to Dr Neelam Kumar, Dr Lal Singh and Mr Ashwani Kumar who rendered assistance in several ways towards the completion of the work.

Thanks are due to authors of books and papers listed in the literature.

Last but not the least, the authors are indebted to their parents and wives – Mrs. Anjoo Sood (SKS), Dr. (Mrs.) Shashi Kalia (DCK) and Mrs. Ajeeta (RN) – for encouragement, moral support and unflinching patience during the course of the work.

Despite our sincere efforts, some errors and omissions might have escaped our attention. We shall appreciate these being brought to our notice for possible rectification. We do hope, this venture will stimulate further interest and urge among budding ethnobotanists as well as in those engaged in work in different disciplines of plant sciences.

**S.K. Sood**
**Ram Nath**
**D.C. Kalia**

Shimla
July, 2000

# CONTENTS

# LIST OF ILLUSTRATIONS

## FIGURES



## PHOTOGRAPHS

# ABBREVIATIONS USED

| | |
|---|---|
| Afg. | Afghanistan |
| Afr. | Africa |
| A.D. | Anno domini (In the year of the Lord) |
| Arab. | Arabic |
| Ass. | Assam |
| Baluch. | Baluchistan |
| B.C. | before Christ |
| Beng. | Bengal |
| Bomb. | Bombay |
| B.P. | blood pressure |
| Braz. | Brazil |
| C | Central |
| °C | Degree Celsius |
| cm | Centimetre |
| CNS | Central Nervous System |
| Cant. | Cantonese |
| Dan. | Danish |
| Dist. | District |
| E | east/ eastern |
| Eng. | English |
| et al. | et alia (and other authors) |
| etc. | et cetera (and so on) |
| Fig.(s) | Figure(s) |
| Fr. | French |
| g | gram |
| Garh. | Garhwal |
| Ger. | German |
| Grk. | Greek |
| Guj. | Gujarat |
| H.P. | Himachal Pradesh |
| " | inches |
| Ital. | Italian |

| | |
|---|---|
| ITBP | Indo-Tibet Border Police |
| Kan. | Kannada |
| Kash. | Kashmir |
| Kum. | Kumaon |
| L. | Lahoul |
| m | metre |
| Mal. | Malaya |
| mg | milligram |
| ml | millilitre |
| m.s.l. | mean height above sea level |
| N | north/ northern |
| N.W.P. | North- West Province |
| % | per cent |
| Pb. | Punjab |
| Pers. | Persian |
| Phil. | Philippines |
| Pl.(s) | Plate(s) |
| Pol. | Polish |
| Port. | Portuguese |
| Rom. | Romanian |
| Russ. | Russian |
| s | south/ southern |
| S | Spiti |
| Sans. | Sanskrit |
| Sing. | Singapur |
| sq. km. | square kilometre |
| ssp. | subspecies |
| Swed. | Swedish |
| syn. | synonym |
| Tam. | Tamil |
| Tel. | Telugu |
| Turk. | Turkish |
| U.P. | Uttar Pradesh |
| var. | variety |
| V.I.P.s | Very important persons |
| vit. | vitamin |
| viz. | videlicet (namely) |

# 1

# Introduction

Ethnobotany, an interdisciplinary science, encompasses the entire realm of useful relationship between plants and tribals (Ford, 1978; Jain, 1986; Martin, 1994; Schultes, 1962). Alcorn (1984) regarded ethnobotany as the study of contextualized plant use. Recently, Wickens (1990) defined ethnobotany as "The study of useful plants prior to their commercial exploitation and eventual domestication; it includes the use of plants by both tribal and non-tribal communities without any implication of primitive or developed societies". These studies comprehend their taboos, religious rites, folklore, material uses of plants, community-habitat relationship, etc. (Jain, 1987a), and also unveil valuable information on unexplored or unexploited natural resources and new uses of existing resources as sources of food, medicine, fibre and fodder to the people of modern society (Anonymous, 1984; Schultes, 1960). Of late, there has been a sudden resurgence of interest in this field to promote the utilization and conservation of plant genetic resources held by the tribals (Anonymous, 1986a; Arora, 1996; Boef, 1992; Cohen *et al.*, 1991).

India is endowed with a rich biological heritage. It has more than 53 million tribal people under 300 tribal communities, constituting about 8% of the total population of the country (Anonymous, 1994; Maheshwari, 1987b). About 15% of the total geographical area of the country is inhabited by the tribals (Gupta, 1987). These communities inhabit mostly remote and inaccessible parts of the country, and depend largely on plants for their sustenance. Most of the Indian tribals are centered in central and peninsular region and in the northeast, with sporadic pockets in the northwestern plains, the Himalayas in the north and in the Andaman and Nicobar Islands in the extreme south. As many as 106 different languages and 227 subsidiary dialects are spoken by tribals in India (Arora, 1987, 1995).

Considerable information on the traditional uses of plants is still intact with the tribals. Their knowledge regarding the uses of plants for various purposes indicates their general awareness, and intimate

dependence on the surrounding plants. This information is generally passed on verbally from one generation to another. According to Mittre (1981): "The utility of all the wild plants for various purposes was not recognised in one day or in one century; it is the result of the progressive development of human cultures". Besides, all tribals from time immemorial have better understanding of the ecological relationships that exist between the human societies and their immediate environment (Anonymous, 1983). Moreover, these groups of people are not to be pitied for primitive existence; they rather deserve to be honoured and respected for their richness of human existence in harmony with nature (Chandra, 1990). Agenda 21 of the Rio Earth Summit (1992) also emphasized the vital role of indigenous people in environmental management and development. In this regard, Maheshwari (1987a,b) states: "Tribal knowledge of plants is important not just for the tribal people themselves, but for the wider world". Unfortunately, many of these age-old customs, traditional skills and beliefs are getting lost due to modernization, industrialization, changes in sustenance economy and the tendency among younger generation to discard their traditional lifestyle. One of the foremost and challenging tasks before the world community is to inventorise and record all ethnobiological information among the diverse ethnic communities before the traditional cultures are lost for ever (Rao, 1996).

Himachal Pradesh, one of the hilly states of India located in the northern region, abounds in awe-inspiring landscapes and rich folk arts and culture, and is situated in the lap of Western Himalaya between 30° 22'–33° 12' N and 70° 47'– 79° 04'E. It is regarded as a rich repository of herbals, and is inhabited by a number of diverse ethnic communities, viz., Gaddis, Gujjars, Kinners or Kanaurs, Jads, Lahoulis [(tribes inhabiting Lahoul (Lahoulas) and Spiti (Spitians)], Pangwals and Swangalas with distinct differences in socio-economic and socio-cultural conditions which have been protected and practised for centuries and offer immense scope for ethnobotanical investigations. The present study is centered on two tribes, Lahoulas and Spitians, inhabiting Lahoul-Spiti district, an area regarded as the cold desert for being snow-bound for more than six months in a year.

## WORK ON LAHOUL-SPITI (HIMACHAL PRADESH)

The earliest account on the flora and vegetable products of Lahoul was given by Aitchison in 1868. His observations were based primarily on the collections of Rev. Heinrich Jaeschke of the Moravian mission. Later, Watt (1881) further contributed towards the vegetation of British Lahoul. The future prospects of Kuth cultivation in Lahoul were described by Singh (1950). In the beginning of the second half

of the present century, Joshi (1952) gave a concise account of the aquatic vegetation of Lahoul Valley. Based upon botanical tours to the areas around the Rohtang Pass, Rau (1960) and Nair (1964) gave a general account of the collected plants. In 1961, Rau also recorded the use of 67 medicinal plants from the fascinating valley of Lahoul. Sarin *et al.* (1963) discussed the importance of *Physochlaina praealta* in shaping Lahoul's economy. Sarin (1967) gave a succinct account of the vegetable raw material resources of Lahoul with focus on the possibilities for their industrial exploitation. Uniyal *et al.* (1973) described the uses of 69 medicinal plants from Lahoul-Spiti forest division. The pioneering ethnobotanical work of Koelz (1979) gave sketchy information on Lahoul only. Kapahi & Sarin (1979) contributed towards the botany of Lahoul. Arora *et al.* (1980) made observations on the economic importance of *Inula racemosa*. Bhattacharya & Uniyal (1982) enumerated 235 species of flowering plants and ferns from Pangi – Triloknath area. Aswal & Mehrotra (1987) gave ethnobotanical information on the tribal people of Lahoul valley and in 1994 published a book on the '*Flora of Lahoul-Spiti (A Cold Desert in North West Himalaya)*'.

Books dealing with anthropological aspects are: '*The History of Punjab Hill States*' (1933) by Hutchinson & Vogel; '*The Himalayan Abtreit of Kooloo, Lahoul and Spiti*' (1972) by Harcourt; '*The Himalayan Wonderland* (1972) by Gill; '*Ladakh and Western Himalayas*' (1973) by Datta; '*Himachal Pradesh District Gazetteers (Lahoul & Spiti)*', (1975) by Mamgain; '*History and Culture of Himalayan States, Vol.* II' (1979) by Charak; '*History and Religions of Lahoul*' (1984) by Tobdon; '*Lahoul-Spiti–A Forbidden Land in The Himalayas*' (1987) by Bajpai; '*The Mystery Land in the Himalayas*' (1994) by Sahni. Barring a few, these books deal mainly with events in the historical perspective.

A perusal of the existing ethnobotanical literature (Jain, 1991; Maheshwari & Singh, 1965) reveals paucity of a comprehensive account on the ethnobotany of Lahoul and Spiti but for the cursory reports of Koelz (1979) and Aswal & Mehrotra (1987). Thus, the 'Spitians' have remained ethnobotanically unexplored. Recognizing the paucity of information, the present investigation was undertaken with the following objectives: (i) Folklore survey, collection and identification of plants used by Lahoulas and Spitians for food, fodder, fibre, fuel, human and veterinary medicine, implements, dyes, etc.; (ii) Preparation of an inventory of folklore plants of the tribals; (iii) Documenting the traditional medicinal practices and beliefs, art, culture and agriculture of Lahoulas and Spitians; (iv) Study of the impact of tribal culture on the conservation of vegetation; and (v) Role of plants in the socio-economic development of tribal communities.

# 2

# Field Work, Presentation and Arrangement of Data

## FIELD WORK

The present work is based on the outcome of ethnobotanical explorations conducted in 133 villages (104 in Lahoul; and 29 in Spiti) inhabited by these tribes (Figs 1-3). Regular visits to different tribal villages were made for a period spread over more than three years (1993-96) to collect a first hand account on ethnobotanically interesting species either at flowering or fruiting stage (Table 1). Due to snow for most parts of the year in Lahoul and Spiti, the field trips were undertaken especially during June-October of the proposed years of study. In each village, family heads, elderly villagers, village head, experienced informants, village herbalist and traditional healers were interviewed for getting a better understanding of local customs, beliefs and habits. Answers to specific questions based upon the proforma designed by Jain & Goel (1995) were sought and the information supplied by the informants as also the name of locality, altitude and local name were recorded in the field notebook for future reference and use. Although local informants accompanied the authors (one of the authors himself a Lahoula), data pertaining to therapeutic value of the plants could be acquired with great difficulty because of their reticence in divulging the secrets of identity of plants of great traditional reputation. There is a traditional notion among the tribes that if any secret about the therapeutic value is revealed to anyone outside their own heirs, the efficacy of the plant will vanish.

The data were verified in different villages among the interviewers showing the same plant sample, and even with the same informants on different occasions. The information was considered notable only if the author observed actual application, or similar application was reported

by at least three informants in different villages and ethnic groups.

Names of the prevalent diseases and disorders among the tribals were noted. An attempt was also made to note whether the village herbalists prepare pastes, pills, powders, aqueous extracts, infusions or decoctions from medicinal plant parts for the treatment of various diseases and disorders. The approximate dose given was worked out in terms of teaspoons in the case of internal use of a drug.

Festivals and other ceremonial occasions, when plants are sometimes used, were also attended and information obtained was documented. Photographs of the ethnically important plants in natural habitats were clicked. Articles of various plant materials used by Lahoulas and Spitians were also collected and in many cases brought for keeping in the museum.

## IDENTIFICATION

The plants collected were identified with the help of treatises on Indian flora, latest floras of adjoining areas and various monographic and revisionary works (Aswal,1985; Aswal & Mehrotra,1994; Chowdhery & Wadhwa, 1984; Ghildiyal & Aswal, 1985; Naithani & Aswal,1984; Polunin & Stainton, 1984; Stainton, 1988) and carefully matched with authentic specimens housed in the herbarium of Northern Circle of Botanical Survey of India (BSID) and Forest Research Institute (FRID), Dehradun. One set of voucher specimens has been deposited in the herbarium section of Ethnobotanical Laboratory, Department of Biosciences, Himachal Pradesh University, Shimla, for future reference.

## PRESENTATION AND ARRANGEMENT OF DATA

Data on geomorphological and anthropological aspects have been grouped under the head 'Land & the People', whereas empirical knowledge about the tribal uses of more than 102 plants in Lahoul and 39 plants in Spiti is included under 'Ethnobotanical Uses of Plants'. The species have been arranged alphabetically. Specific epithets are followed by name of the family in parentheses, plate number, vernacular name, common names, systematic account, reproductive cycle, habitat ecology, distribution, material examined (locality and voucher specimen number) and folk uses.

Under folk uses, the first paragraph provides observations made in the present study. The second paragraph pertains to information gathered from earlier literature (Aitchison, 1868; Anonymous, 1948-1976, 1986 b; Aswal & Mehrotra, 1994; Chopra *et al.*, 1956, 1969; Jain, 1991; Koelz, 1979; Singh *et al.*, 1983). The third paragraph describes the 'Biological Activity', if known.

Besides the Epilogue, Indices to Uses, Families, Local Names and Glossary of Words are appended.

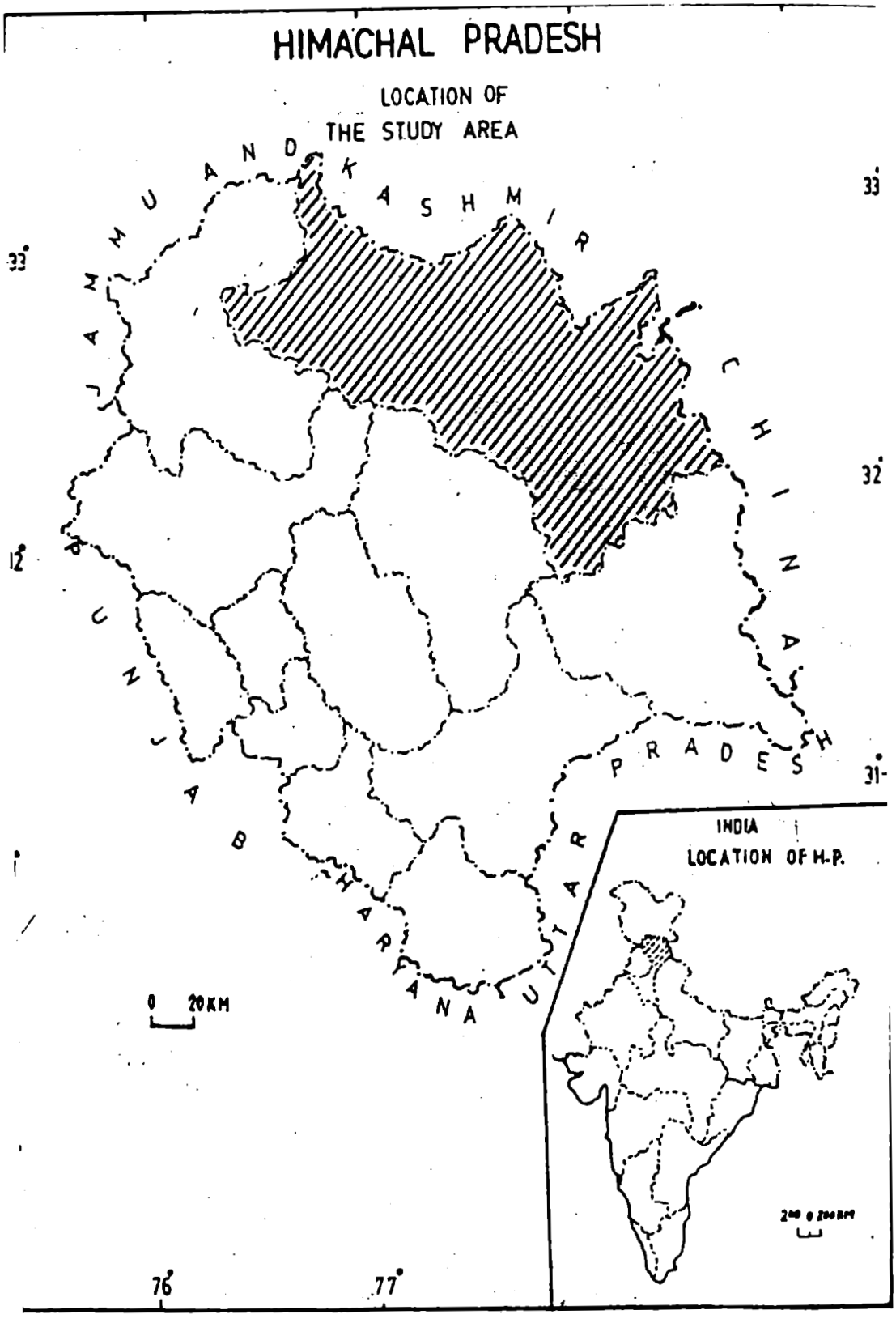



**Fig. 1. Map of Himachal Pradesh showing location of the study area**

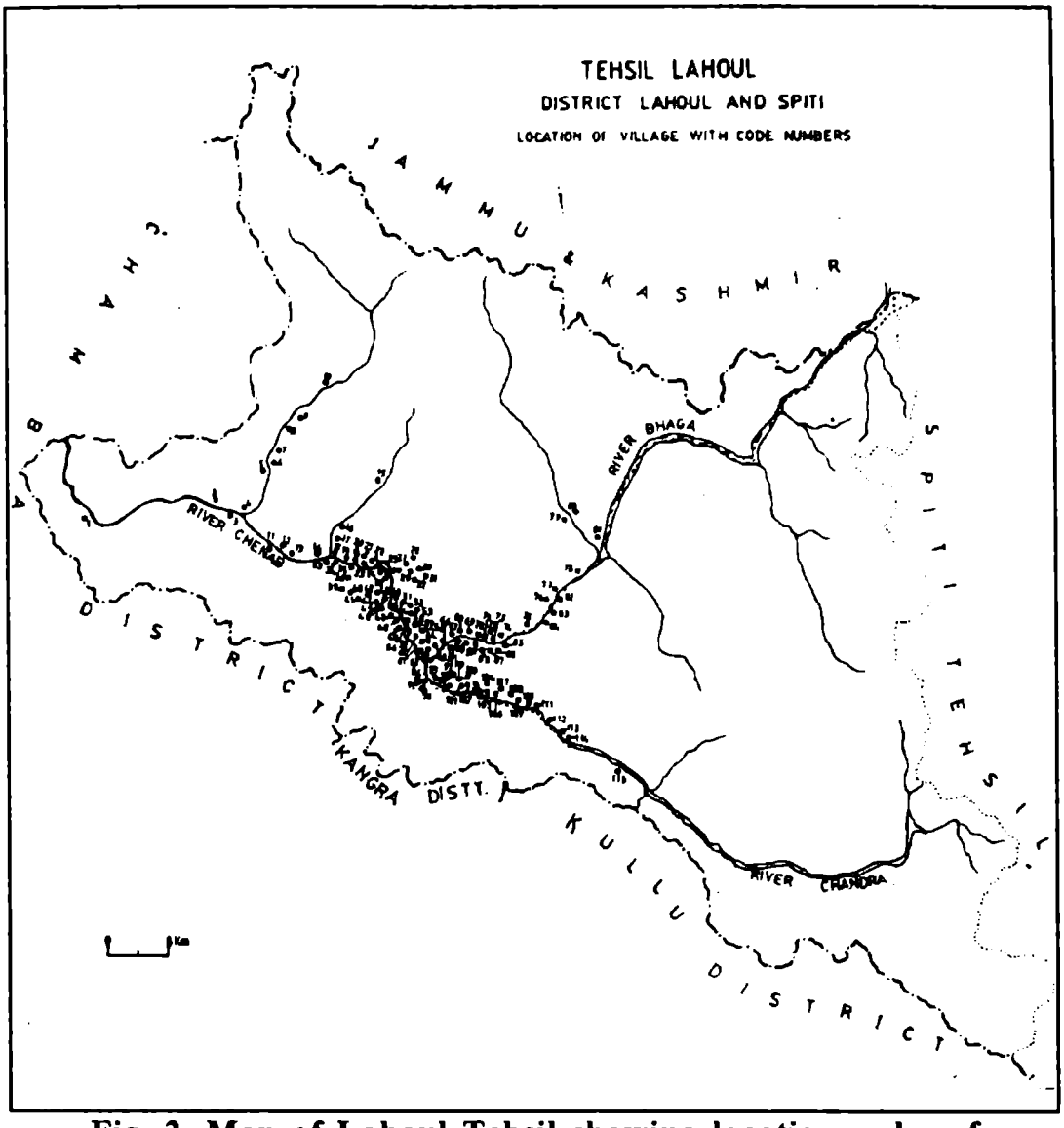



**Fig. 2. Map of Lahoul Tehsil showing location codes of villages explored ethnobotanically**

Adat, 13; Bargul. 95; Baring, 26; Beeling. 68; Bakta. 67; Boktra. 110; Chewar. 27; Chhaling. 8; Chhika, 79; Chhogzing. 16; Chimrat. 6; Chokhang. 17; Dalang. 93; Dandak. 20; Darcha. 78; Dawansha. 57; Delda, 22; Funkiar. 66; Gemur, 76; Gompathang. 106; Gondhla. 99; Gorma. 51; Gumling. 71; Guskiar. 70; Jaben, 35; Jahalman, 50 Jasrat, 37; Jholing-I, 33; Jholing,-II, 34; Jispa. 77; Jobrang, 49; Jundha. 32; Kacharag. 73; Kamring. 19; Kardang, 91; Karpat. 7; Kauth, 23; Kewang. 102; Keylong. 69; Khangsar. 103; Khanjar. 9; Khinang. 100; Khoksar. 115; Kirting. 59; Kothi. 53; Kukumseri, 12; Kuwang, 24; Kyor, 74; Laling, 112; Lapchang, 87; Lingar. 46; Lote. 61; Madgram. 2; Mooring. 96; Mooring. 21; Naingar, 15; Nalda. 36; Namchi, 88; Othang. 31; Pasparag. 89; Phuktal. 104; Phura. 54; Purad. 101; Pyaso. 86; Pyukar. 85; Raling. 98; Rapay. 48; Rapring. 52; Rarik. 80; Ruding, 60; Salpat. 3; Sarkhang. 65; Shakoli. 5; Shansha. 56; Shansha Gompa. 55; Shashin. 107; Sheling. 28; Shewar. 25; Shipting. 94; Shooling. 105; Sindwari. 14; Sissu. 108; Sitingri. 75; Sumdo. 81; Sumnam. 65; Taljon. 29; Tandi. 63; Taylangway. 64; Teling. 113; Thabak. 58; Thirot. 18; Tholang. 62 Thorang. 97; Tindi. 1; Tino. 84; Triloknath, 11; Udaipur. 4; Udgos. 10; Yandrag, 114; Yangthang. 30; Yoche. 83; Yuramurthi. 109; Yurnad. 72.

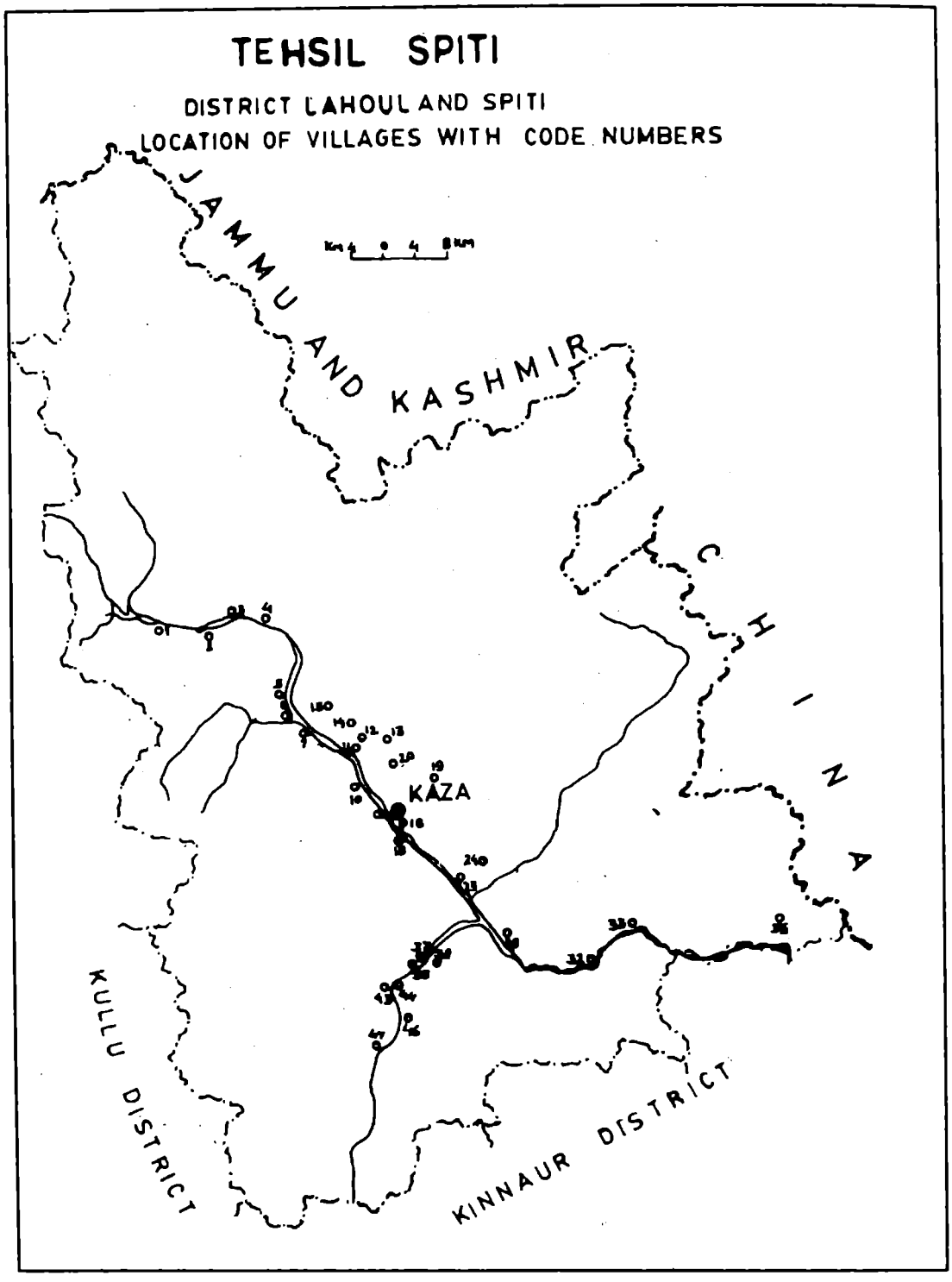



**Fig. 3. Map of Spiti Tehsil showing location codes of villages explored ethnobotanically**

Chichim. 15; Dankhar, 29; Demul. 24; Gette. 12; Giu. 35; Guling, 38; Hal. 6; Hansa. 3; Hikkim. 20; Kaza. 16; Keuling. 18; Khar. 44; Kiamo. 2; Kiato. 4; Kibber. 14; Komic; 19; Kungri. 47; Kye. 11; Lidang. 23; Losar. 1; Morang. 7: Pangmo. 5; Rangrik. 10; sagnam. 43; Shichiling. 37; Tabo. 33; Tangti. 39; Tashigang. 13; Tlling. 46.

**Table 1. Flowering and Fruiting Seasons for Ethnobotanically Important Species Collected from Lahoul and Spiti**

| Name of the species | Place and altitude | Flowering and fruiting season |
|---|---|---|
| *Aconitum heterophyllum* Wall. ex Royle | Pyukar, 3250m | June - August |
| *Allium carolinianum* DC* | Hikkim, 4050m | July - September |
| *Allium stracheyi* Baker*. | Komic, 4020m | July - September |
| *Amaranthus paniculatus* Linn. | Kishori, 2850m | July - September |
| *Anaphalis nubigena* DC.* | Beeling, 3150m | July - September |
| *Arctium lappa* Linn. | Pasparag, 3300m | June - September |
| *Arnebia euchroma* (Royle ex Benth.) I.M. Johnston* | Komic, 4020m | June - August |
| *Artemisia absinthium* Linn.* | Kibber, 3950m | July - September |
| *Artemisia glauca* Pallas ex Willd. | Beeling, 3150m | July - September |
| *Artemisia maritima* var. *neercha* Linn. | Beeling, 3150m | July - September |
| *Artemisia maritima* var. *seski* Linn. | Jahalman, 2900m | July - September |
| *Aster heterochaeta* Clarke* | Kibber, 3950m | July - September |
| *Astragalus grahamianus* Royle ex Benth. | Bokta, 3150m | July - September |
| *Astragalus himalayanus* Klotzsch* | Losar, 3800m | July - September |
| *Astragalus marschallianus* Fisch.* | Kaza, 3350m | |

*Contd.....*

**Table 1. *Contd*.....**

| | | |
|---|---|---|
| *Astragalus rhizanthus* Royle ex Benth.* | Losar, 3800m | June - August |
| *Barbarea intermedia* Boreau | Tandi, 3000m | June - August |
| *Berberis jaeschkeana* C.K. Sch. | Tandi, 3000m | June - August |
| *Berberis vulgaris* Linn. var. *aetnensis* sensu Aitchison | Sumnam, 3100m | July - August |
| *Bergenia stracheyi* Engl. | Lindoor, 3250m | July - September |
| *Betula utilis* D. Don. | Ghandal, 3350m | July - September |
| *Brassica erucastrum* Linn. | Sumnam, 3100m | July - September |
| *Cannabis sativa* Linn. | Gozang, 3300m | July - September |
| *Capparis spinosa* Linn.* | Tabo, 3050m | July - September |
| *Carum bulbocastanum* W. Koch.** | Sumnam (L), 3100m, | June - August |
| | Kaza (S), 3350m | June - August |
| *Carum carvi* Linn.** | Wari (L), 3250m, | June - August |
| | Hansa (S), 3650m | June - August |
| *Chaerophyllum villosum* Wall. ex DC. | Tozing, 3000m | June - August |
| *Chenopodium album* Linn.** | Rawaling (L), 3200m, | June - August |
| | Kaza (S), 3350m | July - August |
| *Chenopodium botrys* Linn. | Tozing, 3000m | June - September |

*Contd*.....

**Table 1.** ***Contd.....***

| | | |
|---|---|---|
| *Chenopodium foliolosum* (Moench) Asch.* | Kaza, 3350m | June - August |
| *Christolea crassifolia* Chambers* | Kibber, 3950m | July - September |
| *Cicer microphyllum* Benth.** | Guskiar (L), 3250m | July - September |
| | Losar (S), 3800m | June - September |
| *Cnicus argyracanthus* (DC.) C.B. Clarke | Sumnam, 3100m | July - September |
| *Codonopsis clematidea* (Schrenk) C.B. Clarke* | Kibber, 3950m | July - September |
| *Convolvulus arvensis* Linn. | Garang, 2950m | June - September |
| *Cotoneaster microphylla* Wall. ex Lindley | Malang, 3150m | June - September |
| *Cotoneaster vulgaris* Lindl. | Sumnam, 3100m | June - September |
| *Cousinia thomsoni* C.B. Clarke** | Mooling (L), 3150m | July - September |
| | Losar (S), 3800m | July - September |
| *Crataegus soongarica* G.Koch. | Rashil, 3050m | June - September |
| *Cynoglossum wallichii* G. Don. | Sumnam, 3100m | June - September |
| *Dracocephalum heterophyllum* Benth.* | Kibber, 3950m | July - September |
| *Ephedra gerardiana* Wall. ex Stapf.** | Sumnam (L), 3100m, | July - September |
| | Hurling (S), 3150m | June - August |
| *Epilobium angustifolium* Linn. | Jahalman, 2900m | July - August |
| *Eremurus himalaicus* Baker | Near Beeling 3250m | June - August |

*Contd.....*

**Table 1.** ***Contd.....***

| | | |
|---|---|---|
| *Erigeron alpinus* Linn. | Beeling 3150m | July - August |
| *Erigeron monticolus* DC. | Keylong, 3300m | July - August |
| *Fagopyrum tataricum* (Linn.) Gaertn. | Mayling, 3300m | June - September |
| *Ferula jaeschkeana* Vatke | Sumnam, 3100m | June - September |
| *Fragaria indica* Andr. | Mooling, 3150m | June - August |
| *Fraxinus xanthoxyloides* (Wall. ex G. Don.) DC. | Udaipur, 2700m | July - September |
| *Gentianella moorcroftiana* Airy Shaw ** | Beeling (L), 3150m,<br>Hansa (S), 3650m | August - October<br>June - August |
| *Gentianella paludosa* (Hook) Harry Smith* | Kibber, 3950m | July - September |
| *Geranium pratense* Linn.** | Rashil (L), 3050m,<br>Losar(S), 3800m | June - August<br>June - September |
| *Habenaria arcuata* Hook. f. | Sissu, 3150m | June - August |
| *Heracleum candicans* Wall. ex DC. | Bargul, 3200m | June - September |
| *Hippophae rhamnoides* Linn. ssp. *turkestanica* Ronsi* | Kungri, 3350m | June - September |
| *Hippophae salicifolia* D. Don | Chokhang, 3050m | July - October |
| *Hyoscyamus niger* Linn. | Shipting, 3150m | July - September |

*Contd.....*

**Table 1.** *Contd.....*

| | | |
|---|---|---|
| *Impatiens gegantia* Edgew | Khangsar, 3250m | June - August |
| *Inula racemosa* Hook. f. | Shashin, 3250m | July - September |
| *Iris kemaonensis* D. Don ex Royle | Taylangway, 3500m | May - August |
| *Jaeschkea oligosperma* (Griseb) Knobl. | Beeling, 3150m | June - August |
| *Juglans regia* Linn. var. *kamaonia* C. DC. | Thirot, 2950m | June - October |
| *Juniperus macropoda* Boiss. | Yurnad, 3300m | October - August |
| *Lactuca macrorhiza* (Royle) Hook. f.* | Losar, 3800m | June - August |
| *Lactuca polycephala* Benth. | Yurnad, 3300m | June - August |
| *Lactuca viminea* F.W. Schmidt.* | Kaza, 3350m | June - August |
| *Lepidium latifolium* Linn.* | Losar, 3800m | June - August |
| *Lindelofia anchusoides* (Lindley) Lehm. | Sumnam, 3100m | June - August |
| *Lomatogonium carinthiacum* (Wulfen) Reichb | Hills of Sumnam, 4050m | August - October |
| *Lonicera hypoleuca* Decne | Sumnam, 3100m | June - August |
| *Lychnis himalayensis* Edgew* | Losar, 3800m | June - August |
| *Malva verticillata* Linn. | Beeling, 3150m | June - September |
| *Meconopsis aculeata* Royle | Mountains of Beeling, 3600m | June - September |

*Contd.....*

**Table 1.** *Contd.....*

| | | |
|---|---|---|
| *Mentha longifolia* (Linn.) Hadson var. *royleana* Benth. | Tandi, 3000m | June - September |
| *Morina coultcriana* Royle | Khinang, 3250m | June - August |
| *Myricaria germanica* (Linn.) Desv. ssp. *alopecuroides* (Schrenk) Kitamura** | Jispa (L),3350m,<br>Kaza (S), 3350m | July - September<br>July - August |
| *Onosma bracteatum* Wall. | Goshal, 2950m | May - August |
| *Origanum vulgare* Linn. | Sumnam, 3100m | July - September |
| *Pedicularis bicornuta* Klotzsch* | Losar, 3800m | July - August |
| *Pedicularis longiflora* Rudolph. ssp. *tubiformis* (Klotzsch) Pennell* | Kibber, 3950m | July - September |
| *Peperomia reflexa* A. Dietr | Karga, 3050m | June - August |
| *Physochlaina praealta* (Decne) Miers. | Bargul, 3200m | July - September |
| *Plantago major* Linn. var. *angusta* (Pilger) Yamazaki | Sumnam, 3100m | June - September |
| *Podophyllum hexandrum* Royle | Khinang, 3250m | June - September |
| *Polygonum affine* D. Don | Beeling Nallah, 3500m | July - September |
| *Polygonum alpinum* All. | Sumnam, 3100m | June - August |
| *Polygonum tortuosum* D. Don* | Kibber, 3950m | July - September |
| *Polygonum virginianum* Linn. | Ropsang, 3200m | June - August |
| *Polygonum vivipara* Linn. | Kibber, 3950m | July - September |

*Contd.....*

**Table 1.** ***Contd.....***

| | | |
|---|---|---|
| *Prunus cornuta* (Wall. ex Royle) Steud. | Rashil, 3050m | June - September |
| *Pyrus baccata* Borkh. | Jobrang, 3050m | June - September |
| *Ranunculus wallichianus* Wight | Sumnam, 3100m | June - August |
| *Rheum emodi* Wall. ex Meissn. | Kardang, 3350m | July - September |
| *Rhododendron anthopogon* D. Don ssp. *hypenanthum* (Balf. f.) Cullen. | Drilbu, 4250m | July - September |
| *Ribes alpestre* Wall. ex Decne | Keylong, 3300m | June - September |
| *Ribes grossularia* Linn. | Barbog, 3350m | May - September |
| *Ribes orientale* Desf.** | Karga (L), 3050m | July - October |
| | Mountains of Kaza (S), 3800m | June - September |
| *Rosa foetida* Herrm. | Sumnam, 3100m | June - September |
| *Rosa jacquemontii* Crep. ex Hook. f. | Funkiar, 3200m | June - September |
| *Rosa webbiana* Wall. ex Royle | Shansha, 2925m | June - September |
| *Rosularia alpestris* (Karelin & Kir.) Boriss. | Sumnam, 3100m | June - August |
| *Rubus saxatilis* Linn. | Rashil, 3050m | June - August |
| *Rumex acetosa* Linn. | Khangsar, 3250m | June - August |
| *Rumex patientia* Linn. ssp. *orientalis* (Bernh ex Schult. f.) Danser** | Tholang (L), 3050m | June - August |
| | Hansa (S), 3650m | June - August |

*Contd.....*

**Table 1.** ***Contd.....***

| | | |
|---|---|---|
| *Rumex scutatus* Linn. | Rohtang, 3978m | July - September |
| *Salix elegans* Wall.* | Kiato, 3700m | June - September |
| *Salix fragilis* Linn. | Lote, 2950m | April - June |
| *Saussurea albescens* (DC.) Sch. | Sumnam, 3100m | July - September |
| *Saussurea lappa* (Decne) Sch. Bip. | Shashin, 3200m | July - October |
| *Saussurea sorocephala* (Shrenk) Sch. | Rohtang, 3978m | July - September |
| *Scorzonera virgata* DC.* | Rangrik, 3500m | June - August |
| *Selinum tenuifolium* Wall. Ex C.B. Clarke | Kardang, 3350m | June - September |
| *Senecio chrysanthemoides* DC. | Keylong, 3300m | June - August |
| *Senecio hewrensis* Hook. f. * | Kibber, 3950m | July - September |
| *Senecio nudicaulis* Ham ex D. Don | Marvel, 3250m | July - September |
| *Senecio pedunculatus* Edgew. var. *albus* Ghosh ex Bhattacharya | Beeling Nalah, 3500m | July - September |
| *Silene vulgaris* (Moench) Garcke | Kirting, 2950m | June - August |
| *Sonchus oleraceus* Linn. | Sumnam, 3100m | June - August |
| *Tagetes erecta* Linn. | Gozang, 3300m | July - October |
| *Taraxacum officinale* Wigg.** | Sumnam (L), 3100m | May - September |
| | Kibber (S), 3950m | July - September |

*Contd.....*

**Table 1.** ***Contd.....***

| | | |
|---|---|---|
| *Thlaspi arvense* Linn. | Tozing, 3300m | June - August |
| *Thymus linearis* Benth. | Sumnam, 3100m | June - September |
| *Tragopogon dubius* Scop. | Ruding, 2950m | June - September |
| *Trigonella emodi* Benth. ** | Malang (L), 3150m, Kaza (s), 3350m | June - August |
| *Trigonella polycerata* Linn. | Sumnam, 3100m | June - August |
| *Verbascum thapsus* Linn. | Sumnam, 3100m | June - August |
| *Viburnum cotinifolium* D. Don | Kirting, 2950m | June - August |

* Plants from Spiti only

** Plants commonly occurring in Lahoul and Spiti

Names without asterisks are from Lahoul only.

# 3

# The Land, People and Their Socio-biology

## NOMENCLATURE

The district, one of the 12 districts of Himachal Pradesh, derives its name from the names of its two constituent subdivisions, Lahoul and Spiti. Both the names have different origins. The word Lahoul is presumably composed of two Tibetan syllables 'Lah'/'Loh' and 'Yul' which mean "the land/abode of gods", or "the land surrounded by passes", respectively. The name Spiti, also pronounced Piti, means "Middle Country" in Tibetan dialect and seems to have been used for a territory between Tibet, Ladakh, Kinnaur, Lahoul and Kullu (Fig. 3).

## PHYSIOGRAPHY

Lahoul-Spiti district, a conglomeration of two geographical units beyond Rohtang and Kunzam passes on India and Tibet border, lies between latitudes 31° 44° 57° and 32° 59° 57° north and longitudes 76° 46° 29° and 78° 41° 34° east (Pl. 1A-C; 2A-C; 6D). This district comprises an area of 13, 835 sq. km. and is a cold desert. It is bounded by Tibet on the east, Jammu and Kashmir on the north, Kullu on the south, Chamba on the west and Kinnaur on the south-eastern boundary (Fig. 1). The total population, according to 1991 census, is 30,820, men outnumbering women. The entire population of the valley is rural, with an average density of 2 persons per sq. km. People are simple, good-natured, hospitable and honest.

## RIVER SYSTEMS

The valley of Lahoul is drained by three rivers, Chandra, Bhaga and Yunan, which originate in the south-east, north-west and north parts, respectively in Baralacha pass (5200 m; 8 km long, known also as 'Pass with cross roads at summit', where roads from Zanskar, Ladakh, Spiti and Lahoul meet); of these, the two rivers, Chandra and Bhaga, flow separately through narrow valleys on opposite sides of the central

ridge to meet at Tandi and form the main stream Chandra-Bhaga beyond which lies the famous Pattan valley (2800 m) upto 'Tindi' . The river, after flowing about 18 km north-west, passes through 'Tindi' into Chamba, where it gets the name of Chenab and thereafter it goes further to Kishtwar and Punjab plains.

Spiti river (Pl. 2B, C) with its tributaries forms the major watershed source of this subdivision. It has its origin in the far north in the Kunzam range. After flowing within Spiti for about 130 km in the south-east, it continues in Kinnaur district, where it joins river Satluj at Khabo. The main stream of this river is fed by a number of perennial glaciers.

## CLIMATE AND VEGETATION

The soil is a sandy loam in Lahoul. On the other hand, its nature may be clayey loam, sandy loam, grave-sandy loam or silty loam in Spiti. Contents of the nitrogen and phosphate range from medium to high. The upper stratum of the earth abounds in partially decomposed roots of grasses and herbaceous annuals.

There is considerable variation in the climate of this district. The seasonal cycle is like that of the dry temperate and alpine zones. Spring begins about the middle of April and lasts upto the end of May, and the ensuing period of four months is mostly regarded as spell of the summer season with rich crops, lush green meadows and a mass of alpine flowers. Both regions of the district have clear and cloudless summers. Precipitation during the winter months of December to middle of April is three times that during the monsoon period.

Rainfall in the area is scanty. The average precipitation at Keylong is 23" per year. Though the monsoon commences through the summer from May to September, the total rainfall for this period is about 6". The snowfall in Lahoul is often heavy as compared to Spiti. Fog covers the valley in winter.

Temperature variation between lower portions of Lahoul and higher reaches of Spiti is considerable. At times it goes even below 0°C in January, which is, generally, regarded as the coldest; August is the hottest month. Records of temperature for Keylong show that the maximum temperature ranges from 6.1°C in February to 26.7°C in August and the minimum from –17.8°C in February to 6.7°C in August.

Except the periods of rain or snowfall, the air is very dry in both summer and winter. Comparatively, the air in Spiti is more dry than in Lahoul.

Strong winds blow almost throughout the year. The winds are

strong at higher elevations as compared to the valley. Winds blow northerly to north-easterly during the summer and are westerly to north-westerly during the rest of the year.

On account of the scanty rainfall, low humidity, extremely cold climate, high altitude and the capacity of the substratum to retain low moisture, the flora of Lahoul and Spiti is of dry alpine type. Comparatively, the vegetative cover in the entire Spiti valley is sparse and mainly includes grasses, small shrubs and short and stunted trees of junipers and rhododendron.

## COMMUNITIES AND DIALECTS

Unlike Spiti, the caste rigidities and social restrictions are more evident in the subdivision of Lahoul. Here, the castes are based upon race, religion and occupation. Brahmins (or Swanglas - the agriculturists), Thakurs (or Rajputs - the landlords), Bodhs (or Kanets - the agriculturists), Shipis (the cultivators or people who assist Brahmins and Bodhs at marriages and funerals), Lohars (ironsmiths), Sunyars (goldsmiths), and Hessis (landless labourers or musicians or the minstrel caste) and Balras (basket-makers) constitute the population in the valley of Lahoul. Of these, the first three form the principal communities, and the Brahmins inhabit only Chandra Bhaga region of Pattan valley. Generally, Bodhs are of Mongoloid stock and follow Buddhism, whereas Brahmins, Shipis and Lohars are Aryans with Hinduism as their religion. As a matter of fact, the people of Dagis, Lohars, Sunyars, Balras and Hessis, are scheduled castes and as such have no inter-marital or inter-dining relations with the Brahmins, Thakurs and Bodhs who regard themselves to be of the upper castes. The landlord families in Lahoul are called Wazirs, and they trace their lineage to the people from Bara Bangahal.

In Spiti, caste taboos are more or less non-existent. The principal communities are 'Nono' families which once formed the local nobility, the agriculturists called 'Cha-zhang' and the 'Pyipa' (the menial classes, viz., carpenters, smiths and musicians). As such, people of the upper castes have no inhibition to eat with the lower classes, but marriages are not permitted.

The dialects used in Lahoul-Spiti district are listed in Table 2. All these dialects are spoken languages only. As none of them has a script of its own, they do not enjoy the status of true languages.

Of the six dialects spoken in Lahoul subdivision, Pattani dialect is very easy to learn, as it is well structured in syntax and grammar. About 80% of the people of Lahoul can understand and/or speak this dialect. Very few people can understand and/or speak all the six dialects.

**Table 2. Dialects Used in Lahoul-Spiti**

| Dialect | Area/s | Comments |
|---|---|---|
| **Lahoul** | | |
| Pattan | Pattan Valley | This dialect is understood by about 80% of the people of Lahoul. |
| Gahari | Ghar valley | – |
| Tinan | Gondhla valley | – |
| Todh or Khampa | Tod valley | – |
| Chan or Shipi | People reside in all valleys | – |
| Lohari or Dombiali | People reside in all valleys | Dialect specifically used by 'lohars' (blacksmiths) and 'sonars' (goldsmiths) |
| **Spiti** | | |
| Spitian | Spiti subdivision | These people can only understand Todh dialect of Lahoul subdivision. |

## RELIGIOUS BELIEFS AND MONASTERIES

It is generally believed that the most ancient religion in this area pertains to 'phallus' and 'snake worship', the two representing the creative powers of the sun and water. Presently, Hinduism, Buddhism, and an admixture of Hinduism and Buddhism are practised by the people of different valleys of Lahoul-Spiti. In fact, Hinduism is the dominant religion in Lahoul subdivision, while Buddhism, with its symbols represented by 'chhortens', prayer wheels (Pl. 3F) and 'mani' walls (Pl. 5A), predominates in Spiti subdivision. Apart from these, many animistic deities in the shape of boulders ('Sabdag'), bushes ('Yulsad'), caves ('Brogmo') and trees ('Phala'); travelling deities– represented by tree-trunks covered with multi-coloured pieces of cloth; tribal deities, viz., Ghepang, Dabla and Tangzar, etc., mummy (Pl. 4D) and family-deities– represented by commemorative stone slabs, horns and holy scriptures are also worshipped (Pl. 6G). Of these, the family-deities are worshipped every day with smoke of juniper leaves. Prior to the advent of Buddhism around the fourth century A.D. in the valley, human sacrifices were regularly offered to appease gods of evil spirits residing in or near old pencil-cedar trees, rocks and hill-tops. The pile

of horns (rams and ibex) (Pl. 6F) generally seen near the dwellings signifies god's boundary.

The people are deeply religious. The places of worship are called Gompas, temples and Langs ( Pl. 3A-F; 6A,E,H). The important among them are: Guru Ghantal, Shashur, Othang, Triloknath, Margul, Kye, Tabo, Dhankar, Kungri (Pl. 3 B-F; 6 H) and Tangyud (Table 3). Most of these monasteries/Gompas contain giant images of Buddha and other deities, devil masks ( Pl. 12B), swords, paintings of saints, demons, beasts, holy stamps, drums and other instruments (Pl. 3B; 4 A; 16E,G). It is interesting that in Triloknath temple, one of the very rare places in the world, the same deity is worshipped both by Hindus and Buddhist. The former regard it as a form of Shiva and the latter as that of Avalokiteshwara. Atmosphere of worship pervades the entire district of Lahoul-Spiti. Besides, one commonly finds a large number of abandoned natural caves at Tabo (Pl. 6B,C) indicative of the fact that these were used for meditation and other religious purposes.

**Table 3. Monasteries, Temples and Holy Places of Lahoul and Spiti**

| Monasteries | Height in metres (m.s.l.) |
|---|---|
| **Village-level Monasteries** | |
| Bokar Gompa | 3250 |
| Gemur Gompa | 3250 |
| Giu Gompa* | 3200 |
| Gozang Gompa | 3300 |
| Hansa Gompa* | 3600 |
| Jholing Gompa | 2750 |
| Jispa Gompa | 3300 |
| Kaurik lang* | 3280 |
| Kaza Gompa* | 3490 |
| Keuling lang* | 3470 |
| Khinang Gompa | 3210 |
| Kibber Gompa* | 3930 |
| Kolong Gompa | 3300 |
| Labrang Gompa | 3300 |
| Lapchang Gompa | 3250 |
| Lara lang* | 3420 |
| Lidang lang* | 3400 |

**Table 3. *Contd.....***

| | |
|---|---|
| Lindoor Gompa | 3280 |
| Mane lang* | 3350 |
| Maning Gompa | 3160 |
| Mud lang* | 3350 |
| Pyaso Gompa | 3250 |
| Sagnam lang* | 3350 |
| Shansha Gompa | 2800 |
| Sila Gompa | 3150 |
| Tangti lang* | 3380 |
| Tinno Gompa | 3300 |
| Yorzang Gompa | 3300 |
| **Famous Monasteries** | |
| Dhankar Gompa* | 3500 |
| Guru Ghantal Gompa | 3250 |
| Kardang Gompa | 3500 |
| Kungri Gompa* | 3500 |
| Kye Gompa* | 3810 |
| Othang Gompa | 2950 |
| Pyukar Gompa | 3200 |
| Shashur Gompa | 3450 |
| Tabo Gompa* | 3180 |
| Tangyud Gompa* | 4050 |
| Tayul Gompa | 3650 |
| Tupchiling Gompa | 3000 |
| **Famous Temples** | |
| Margul Temple | 2600 |
| Shashin Temple | 3000 |
| Triloknath Temple | 2750 |
| **Famous Holy Places** | |
| Chandratal lake* | 4050 |
| Drilburi | 4225 |
| Neel Kant | 4000 |
| Surajtal lake | 4900 |

* Monasteries of Spiti

The stones of 'mani' wall or stone dykes (Pl. 5A) on either side

of villages are actually votive offerings from all classes of people for the attainment of some physical object. Chhortens, on the other hand, are pyramid-like, lime-plastered receptacles built of stones. Bones and ashes of the head Lama are kept inside the 'Chhorten' at the time of its construction and represents five elements. The square base corresponds to the element of Earth; the stylised dome symbolises element of Water; the chimney-like shaft represents Fire; the crescent symbolises the element of Air and the accuminated circle, element of Ether. The distribution of these elements in a 'Chhorten' corresponds to the distribution of these elements in the body of Buddha. It is generally believed that by making a clock-wise parikarma of these structures, the person becomes pure.

The people in this region are superstitious and believe in ghosts, witches and evil spirits. They stack horns of livestocks (Pl. 6F) or mud and stones (Pl. 6G) outside the village to ward off evil spirits. Often, they sacrifice animals for propitiating them or perform a curious function 'Tana Mana' or 'Kurim' to exorcize them. 'Rolance' (rising of the dead) and 'Mit-Shale' (a ceremony to deceive the angel of death) are some of the commonly prevalent beliefs in this part of the world. Besides, if a person has a dreadful dream, the next morning he should go to a tree or a temple and speak aloud in order to undo its ill effects.

## DWELLINGS

In Lahoul, the houses are smaller than those in Spiti (Pl. 7A, C). Normally, these are two- or three-storeyed, rectangular in shape, flat roofed with five metres high walls made of stone and wood, and are built on a level ground with the plinth area of 10 × 12 metres. Ground floor is used for cattle and the first floor for living. It consists of a small winter room, 'Tandoor', an outer larger summer room 'Shelcha', a guest room 'Banchhinna', a small bath room 'Chada' and a prayer room 'Gunchha' or 'Chhokang'. Mostly, local deities and holy scriptures are kept in the prayer room. The roofs are composed of rafters laid close together (Pl. 7B). The toilets are constructed outside the houses. The entrance door for each storey is separate. Also, the windows of the ground storey are of smaller size than those in the upper storeys (Pl. 7 C). The timber used for construction of houses, doors and windows is largely obtained from *Juniperus macropoda*, *Salix elegans* and *S. fragilis*. The houses are designed on the utilitarian concept of leading a comfortable life during winters.

All these dwellings with attractive smooth exteriors are perched

together, well maintained and present a beautiful look (Pl. 2A,C; 3A). The walls are mud plastered, which in Spiti are given an additional coating with lime water (Pl. 2A,C; 6 E). The houses are repaired twice a year. Species of poplar and willows are commonly planted near the habitations (Pl. 7A). Unlike the Lahoulian houses, the Spitian houses have neat white-washed exteriors with a compulsory red-ochre band just below the roof and around the windows (Pl. 7 C). Further, the Spitians stack bundles of branches of poplars and willows on the border of the flat roofs of their modestly furnished houses (Pl. 7C).

Sun-dried cowdung cakes (Pl. 11 C), fuelwood (Pl. 11 D) and coal are burnt in a 'Tandoor' to keep their dwellings warm during winter. Mostly the people try to clear the snow after the fall from the roofs of their dwellings and the pathways connecting to various dwellings in the village.

The articles of utility are the utensils, 'Tal-khuti', 'Shin', furniture and mattresses (Table 4) (Pl. 8A-F; 9 A-H; 10B,C,E; 15E).

The utensils normally used these days for cooking are made of brass, copper, aluminium and/or stainless steel (Pl. 10A). In earlier days, these were made out of local stones. Contrary to the dwellings in Lahoul valley, the Spitian's house lacks beds, chairs and tables, and are ill-maintained. Even if a family possesses cots, the members love to sleep on the floor. 'Thulpa' is used as a quilt and as a bedsheet for spreading over the mat. The woollen carpets with beautiful designs are spread in the guest room. 'Thultans' are found in every house in front of which is placed a small low wooden table. Ordinary sitting seats are made of goat hair and wool.

## FOODS AND BEVERAGES

The people are non-vegetarian and their food consists of wheat, barley and buckwheat. Pulses are taken rarely. Besides, the people relish meat for which a few sheep and goats are slaughtered at the beginning of the winter and stored after drying for consumption throughout the winter. During summer, i.e. from May to September, potatoes, turnips, cabbage, peas and radish, are grown in the villages and cooked as vegetables to which are also added garlic, asafoetida, coriander seeds and carum (*Jeera*) for flavouring. Vegetable oils and fats are used as the cooking medium. The women-folk prepare several varieties of soups and food preparations, viz. Lowad, Aktori, Tishkori, Gangthur, Degdeg chhati, Thukpa, Boti-kuldu, Kholag, Doo, Marpini, Nudoo, for their morning (Ken or Sud or Tshema), mid-day (Chhiken or Shodh) and night (Gongal or Yag or Yangskin) meals; barley and/or buckwheat

**Table 4. List of Household Accessories and Their Utility**

| Name of the article | Utility (used for)/preparation (used as) |
|---|---|
| **Utensils** | |
| Ardig/ Throg | Distilling liquor |
| Degchi | Thukpa (porridge) |
| Dhandu | Churning milk or curd |
| Dongmo | Saltish tea |
| Kubad | Soups |
| Silver cups with stands and lids | Drinking saltish tea |
| Tandoor | Heating the living rooms |
| Tawa | Chapatis |
| **Furniture** | |
| Datha (wooden trunk) | Storage of wheat or barley grains |
| Singam (wooden trunk) | Keeping the clothes |
| Soltag (wooden table) | Used on auspicious occasions for the guest |
| **Mattresses** | |
| Planza (cushion stuffed with pieces of clothes and sack pieces) | Cushion |
| Thobi (matting woven with yarn made of goat and yak hair) | Mat |
| Thulpa (skin of sheep) | Bedsheet |
| Thultan (mats filled with straw) | Mat |
| **Miscellaneous** | |
| Spinning wheels | Spinning yarn |

form the principal components of these. Sweet dishes are not prepared. Butter-milk is generally taken almost after every meal.

The delicious butter tea, 'Chhakoo cha', a speciality of this area, is prepared by churning tea, butter, milk and salt in special jars, 'Dongmo' (Pl. 8B), and is taken at frequent intervals. 'Chhang' or 'Chakti' (lugri), a local beer, and 'Arak' or 'Sara', the local whisky, are the favourite intoxicants among both the sexes in Spiti and among men-folk in Lahoul.

Basically, the requirements for preparing the above two intoxicants are the same for which they use boiled barley grains. These, after drying, are mixed with a pinch of dried yeast called 'Phab' or 'Phay' and kept in a sack for fermenting. Consequently, the fermented material is preserved in an earthen vessel with a tight lid. To get 'Chhang', water is added and the fermented barley is squeezed, whereas 'Arak' or 'Sara' is prepared by the indigenous process of distillation for which every house has its own still (Pl. 10A).

## DRESS AND ORNAMENTS

The traditional dress of the people of Lahoul region consists of a long, gown-like woollen coat reaching almost to the knee and usually a dark coloured trouser of the same material as the coat. The men wear a Kullu-type cap. The ladies' coat, 'Cholu' or 'Katar' has a lining which is sometimes embroidered with 'zari' along the margins; the trousers are tight-fitting (Pl. 12A, C). A shirt like the Punjabi Kurta is worn as an undercloth beneath the coat and the latter is secured at the waist with a 'sash'. Women generally wear a jacket over the coat and their favourite colours are red, crimson or black and those of men are light cream, grey or white. Only women belonging to Swangla, Chan, Shipi, Lohar or Domba wear round caps almost as flat as disks. The hair is plaited (Pl. 12A) and hangs down the back with a tassel or some shells attached to the end. Woollen socks and 'Pulah' (winter shoes) are their footwears (Pl. 10D).

In Spiti, the basic attires of both men and women, i.e. coat, sash and boots, accord well with those of the Lahoulian but for a loose necklace of rough lumps of turquoise, amber and other stones mixed with coral beads worn by every man, the loose trouser of the women with its ends tucked into the boots, and a shawl over their shoulders. Astrologer's dress is red from head to foot and the monks wear a rosary of beads instead of a necklace (Pl. 4B,C). Generally, women do not wear any head dress, but in the winters they sometimes put on high-domed, fur-lined caps called 'Shamo' (Pl. 13B).

In Lahoul-Spiti district, both men and women like to adorn themselves with jewellery made from silver or gold inlaid with uncut gems and semi-precious stones (Pl. 12A). But the ornaments adorned by married women are different from those of unmarried ones (Pl. 12A, C). Comparatively, the Spitians wear a number of ornaments. Nevertheless, the use of gold finds little favour with them (Pl. 13 A-C). Details of different ornaments worn by the people of this district are given in Table 5.

**Table 5. Ornaments Worn by People of Lahout-Spiti**

| Name of the ornament | Shape | Material | Body part on which it is worn | Remarks (Worn by men, women or both) |
|---|---|---|---|---|
| | | **Ornaments of Lahoula Tribe** | | |
| Along (Tarka) | Ring | Gold, brass, silver | Ear (Temple) | Married women |
| Bari | Ring | Silver, gold | Sides of the head attached to hair | Women |
| Chhakchi (Murki) | Ring | Gold | Ear (Temple) | Old men |
| Dunkertsa (Dunkri) | Square | Silver, coral | Waist, at the back | Women of all ages, especially on festive occasions |
| Guithab | Ring | Gold, silver, brass | Finger | Both |
| Kanthi | Long necklace | White beads, corals, turquoises and gold | Neck | Women-As an ornament of daily use |
| Kerag | Belt | Silver | Waist | Women |
| Kirkirtsi | Saucer | Silver | Head | Women (married and unmarried) |
| Kochi – phuli | Pin | Gold | Nose | Women |
| Moday – phuli | Plug | Gold | Nose | Women |
| Nang (Nangchi) | Bangle | Silver | Wrist | Women of all ages |
| Pholunu | Chain | Silver | Attached to the dress (Cholu) in the back | Women |

*Contd.....*

**Table 5.** ***Contd.....***

| | | | | |
|---|---|---|---|---|
| Poshal | Round | Amber | Forehead and sides of the head | Women, especially on festive occasions |
| Shamsham | Chain | Silver | Attached to the dress (Cholu) in the front | Women (attached to the Shamsham are different tools of silver for cleaning ears, nails and teeth) |
| Yutod | Round cap | Cotton cloth embedded with turquoises and silver | Head | Women of all ages, especially on festive occasions |
| | | **Ornaments of Spitian Tribe** | | |
| Bhavarak | Strip | Strip of padded red cloth studded with turquoises and silver | Forehead | Married women |
| Chhokshung | Oval | Silver | On the back | Men (folk-dancers |
| Chimkut | Bead | Beads, amber | Hair | Women |
| Dhocha | Chain with half moon and sun | Silver | Abdomen | Women (folk-dancers) |

***Table Contd.....***

**Table 5.** *Contd.....*

| | | | | |
|---|---|---|---|---|
| Dhunglak | Bangle | Hollow shell | Wrist | Women |
| Digra | Hexagonal ring with chain | Silver | Waist to abdomen | Women |
| Doo | Bangle | Silver | Right arm | Men |
| Ganglong | Ring | Amber, turquoise set in silver | Ear | Men |
| Ghyool | Flat | Turquoise | Hair | Unmarried women |
| Giun | Rectangular | Silver, gold | Neck | Women |
| Konda | Ring | Silver, gold | Ear | Women |
| Namden | Square, oval | Silver | Back | Male child (especially first son of the family) |
| Nayaktag | Chain | Silver | Waist to abdomen | Women |
| Nilda | Chain | Silver | Sides of the head | Women |
| Perag | Flat | A large piece of padded cloth studded with turquoises, silver and beads | Forehead and the ears | Women |
| Pichup | Oval | Silver | Abdomen | Women (folk-dancers) |
| Surtup | Ring | Silver, gold | Finger | Women |
| Uldig | Necklace | Turquoises, corals and ambers | Neck | Both |

## RITUALS

### Routine rituals

On account of the harsh climatic conditions, the people, especially women, have to face numerous problems. Comparatively, men are idle and lethargic and enjoy at the cost of their women's hard work. Houses are well maintained by the women. Besides fetching fuelwood and drinking water and attending to other household affairs, the women also perform most of the agricultural operations like hoeing, weeding, irrigation in the fields (Pl. 6I, J), harvesting and threshing of crops (Pl. 11D; 16 J). While doing work, the women carry their children tied to their backs (Pl. 13D) and look after them properly. Activities like wool spinning and weaving and 'Pulah' – making are also carried out at home by the women, especially during the winters. Tea with salt and butter added are frequently taken. Most of the tribals do not take a bath daily. Clothes are washed infrequently. Their staple diet is very poor. Meat of sheep and goats is very much relished. Wearing woollen dress most of the time is essential, though their healthy body needs no personal decoration. Women, especially of the lower castes, indulge in smoking. Prostitution does not exist here. By and large, the people are honest, hospitable, peace-loving and deeply religious.

### Birth rituals

Usually, delivery is attended by an experienced elderly woman from the same village. The news of the birth of a male child in a family brings happiness and culminates in a celebration called 'Gochi'. Immediately after delivery, milk with hot 'ghee' added is given to the mother to help overcome the birth fatigue. To keep mother's body strong, a daily oil massage is given, followed by a hot water bath for at least 15 days after delivery. A wooden tub made of salix or willow wood is used for giving hot water bath to the child (Pl. 8 D).

Generally, the period of seven days after child birth in a family is considered as an unclean period and no food is cooked for the males who either prepare their food outside the house or eat at a neighbour's house. The purification rituals are performed by a Lama from the nearest monastery,

## MARRIAGES

But for some exceptions, all the communities in Lahoul-Spiti are endogamous. Most of the marriages are performed between 15 and 25 years of age. Premarital sex or love are greatly looked down upon. There is no system of compulsory dowry. Widow remarriages are allowed.

The system of polyandry prevails in Lahoul, but the Spitians are by and large monogamous.

## DIVORCE

The procedure of divorce in Lahoul-Spiti is simple. The husband and the wife hold a piece of thread and break it by pulling in opposite directions in the presence of some elderly persons. This ritual is called 'Kupacha cha' or 'Chhud-thawagchi.' The reasons for divorce can be adultery, barrenness, incompatibility, or the habit of gambling, etc. If both the partners agree to the divorce, no money is paid to anybody, but if one party is interested, payment is made to the other party. After the divorce, both are free to marry again.

## DEATH RITES

Like the Hindus, the people of this area cremate their dead, and immerse the ashes into the river. However, the infants are buried or their bodies are thrown into the river. Among the 'Brahmins' and the 'Harijans', the dead body is cremated on the day of the death. The funeral procession is led by the 'Bhat' (priest) and the 'Chan' or 'Shipi' beat the drums. Besides the other rituals like bathing and dressing of the corpse, a cow or a calf is taken three times around the corpse and finally donated to the 'Bhat'. A 'havan' for purification is performed after 13 days of death.

At the death of a Spitian, the family members consult a 'Jhoya' (an astrologer), who directs whether the body should be burnt, buried, thrown into the river or cut up and placed on the hills to feed the wild birds and beasts. It seems this system was necessitated by the perpetual shortage of wood.

## DANCES, FAIRS AND FESTIVALS

All men and women of all age groups are avid dancers. Whatever be the occasion, the people rejoice by singing, dancing and drinking (Pl. 12B, C). Music instruments are played in these dances by 'hessies', a kind of nomad tribe. These professionals generally use trumpets, conchshells, horns, cymbals, gongs, flutes and drums. However, these are now fast vanishing. In Spiti, all people, except Lamas, dance together, irrespective of their social or economic status. Unlike the Spitians, men and women in Lahoul do not dance together, since dancing by women particularly with men, or in their presence, is traditionally considered to be below the dignity of respectable women. Details of some of the important dances of Lahoul and Spiti are given in Table 6. Irrespective of participation by the women and the type of dance, the dance formation can be a circle, a semi-circle or a concentric circle and involves simple,

rhythmic and stereotyped footwork. Mythological stories from the epics of Ramayana, Mahabharata and Puranas, legends and folk-tales form the main basis of the songs and dances. Most of the dances performed by the Lamas are for the general well-being of the locals. Especially on festive occasions, the chief guest is invited and given a traditional welcome through offering of a local cap with totems (Pl. 5 C).

Fairs and festivals in Lahoul-Spiti are the only means of amusement and are mostly observed with dancing, singing and drinking (Pl. 12B, C). Some of the important festivals of this region are listed in Table 7.

The winter festivals are: 'Losar' (the festival of the new year); 'Gyalto' (ringing out of the old year); 'Chheshu' (to celebrate the birthday of Lama Chan Ri zi); 'Da Chang' (the festival of the arrow); and 'Thon-Thon' (to celebrate the end of winter). Some of the summer festivals are: 'Lapsol' (to worship the deities after the sowing); 'Namkhar (the festival of horse-riding and hitting of targets); 'Yane' (to worship the god Trilokinath and ask for forgiveness for the sins committed by them during the preceding year); and 'Namgan' (to celebrate the ripening of the harvest). Besides these, 'Bhingri' is celebrated on the birth of a son or first daughter.

## RECREATION

Besides dancing, the children and young folk are fond of playing various indoor and outdoor games. Of these, horse race, archery with long bow and hitting stuffed lamb's skin with arrows and 'Langtag' (a tug of war with the rope tied around the necks of the participants) are the common outdoor games. 'Chholo,' a game of dice, is the only indoor game played by males of all ages (Pl. 5B). Some of the common games of the children are: Lumboo' (played by girls with small shells); 'Shumti' or 'Narag' (played by girls with pebbles); 'Thank-khuls' (played with striking fingers); and 'Mugloo' or 'Mangola' (played with bones). The teenagers mix up freely without any inhibitions and organise week-long excursions into the countryside, while the elderly people amuse themselves by sipping 'Chhang' or 'Arak' and gossiping. Stories of gods and evil spirits are the usual bed-side or fireside tales.

## AGRICULTURE AND AGRICULTURAL IMPLEMENTS

The economy of the whole of the district is based on agriculture, as is the case elsewhere in the country, with wheat, barley, peas and sarson (Pl. 6I) grown as 'Rabi' crops and buckwheat and 'Cheena' as 'Kharif' crops. The agricultural operation begins with the melting of snow in April and ends in September every year. Of the agricultural

**Table 6. Important Dances of Lahoul–Spiti**

| Name of the dance | Type of dance | Participant | Remarks, if any |
|---|---|---|---|
| Bhuchan | Professional dance | Bhuzhens | To display swordmanship and a sort of jugglery |
| Bukum | Professional dance | Lamas | The pacing is slow |
| Chham or Devil dance | Religious dance | Lamas | The dancers wear the masks resembling some evil spirits. |
| Gar | Ceremonial dance | Betas | The dance is performed by males and females separately with slow pacing |
| Garphi | Group dance | Locals | The dancers move in a circle with the beating of drums and playing of flute. |
| Jabru | Professional dance by males and females but without music | Betas | The hands are crossed over the backs and thus linked to form a long chain. The gents sing a line of the song which is announced by the ladies |
| Shini | Group dance | Locals | The dancers give loud cheers accompanied by the clapping of hands. |
| Shon | Group dance | Locals | The dance is without music; it involves arm-linking with the dancers, forming a circle. |

Table 7. Important Festivals of Lahoul-Spiti

| Name of the festival | Places where celebrated | Occasion/s | Duration of the festival, No. of days | Remarks, if any |
|---|---|---|---|---|
| **Lahoul** | | | | |
| Gotsi (Gochi) | Chandra and Bhaga valley | Celebrated in the month of February in the houses where a son was born during the preceding year | 1 | To appease the village god, a dough of 'sattu' especially prepared for this occasion is broken with fingers and thrown away thrice. |
| Halda (Losar, Khogla) | All over Lahoul | New year day in Gahar valley | 2–3 | It is a festival of lights and festivities centre around 'Shiskar Apa', the goddess of wealth |
| Phagli (Kuhn, Kus, Koon) | Pattan valley | Worship of snake and the village elders by the young generation by offering flowers | 3–7 | An image of 'snake' called 'Baraza' from 'sattu' is prepared and worshiped by all members of the family. On this occasion, people especially eat a kind of dosa, 'manna'. |

**Table 7.** *Contd.....*

| | | | | |
|---|---|---|---|---|
| Pori | Triloknath temple | Pilgrimage; celebrated in the month of August | 1 | It is led by the Rana and attended with ancient rites. |
| Shekchum | Pattan valley | Celebrated in the month of March | 1 | New year day in Pattan valley |
| **Spiti** | | | | |
| Chakhar | Tabo monastery | A festival celebrated after every four years | 2 | The festival is attended by people from the entire valley. |
| Gutor | Kye, Dhakar, Tangyud, Kungri Gompas | Held in the month of November to protect people from diseases and epidemics and ensure their happiness and all-round prosperity | 4 | Two or three days are spent in joint prayer and on the fourth day the Lamas perform the devil dance |
| Ladarcha | Kaza | A trade fair generally held in the second week of August | — | Traders from Lahoul, Kinnaur, Ladakh and Spiti sell their respective produces |
| Sonchot | Pin valley | Past death ceremony | 4 or 5 | It is celebrated by each 'Khangchan' once every six or seven years |

activities, only ploughing is done by men and the rest are done by women. Generally, night soil and animal dung are used as manure and are carried in special baskets called 'Chewo' (Pl. 16F).

Due to scarcity of rain and dry soil, the entire cultivable land, which accounts for 25% of the total area, is irrigated by an elaborate 'Kuhl' system numbering more than 326 in the whole district. This comprises long irrigation channels which serve to connect small rivulets and gushing torrents that are near the land to the fields. During periods of scarcity, the water brought through these channels is stored in the tanks ('Yons') from where its flow is regulated.

Barley, wheat, buck wheat (*Fagopyrum esculentum*), sarson, peas, potato and hops (*Humulus lupulus*) are some of the important crops of this area; of these, the last three form the main cash crops and have been a good source of income to the people. 'Cheena' (*Panicum miliaceum*) and tobacco are the additional crops raised here.'Kuth' (*Saussurea lappa*) is also cultivated in Lahoul valley, but the area under it is fast receding due to its shrinking demand. Due to the intense cold climate, potatoes produced here are of good quality and are used as seed in the rest of the country. The area under 'hops' cultivation has multiplied manifolds due to its economic value.

Carpenters and blacksmiths mostly prepare the tools and storage containers for use in agriculture (Pl. 14A-F; 15A-E; 16A-D). Wooden plough with a pointed iron piece is the most important implement (Pl. 15D). Though comparatively smaller, Spitian plough has a better direct pull than that made in Lahoul. Birch wood is employed for its fabrication. It comprises a straight piece into which is set the pole and a vertical post with handle framing its tail. Ploughing is done with the help of a pair of bulls or yaks. 'Trawak-tra' is used to tie the rope to the nose of the bull (Pl. 15B).

The uses to which some of the other implements are put in the district are listed in Table 8 (Pl. 14A-F; 15A-D; 16 A-D).

## HORTICULTURE AND LIVESTOCK

The weather conditions are not congenial for profitable horticulture ventures and as such, horticulture plays no role in the socio-economic life of these tribals. Apples and pears produced here are small-sized and their quality as such is much inferior to that of apples grown in other regions of Himachal Pradesh. Some of the common wild fruits are crab apples, apricots, strawberry, small cherry, wild gooseberry and walnuts.

The common livestock in this district are cow, yak, equine, mule,

**Table 8. Uses to Which Agricultural Implements Are Put**

| Name in English | Local name/s | Used for |
|---|---|---|
| Axe | Karji, Laktar | Cutting wood |
| Basket | Kirti, Chewo | Carrying the manure and cow dung |
| Hammer | Thowa, Ghana | Breaking big stones |
| Iron rod with a sharp end | Thabbal | Digging out big stones |
| Mattock | Kahti | Making embankments |
| Pick | Khieum, Surmo | Hoeing and weeding |
| Pick | Ogten/Tockchay | Digging out stones |
| Scythe | Dranti | Harvesting the crop |
| Separator | Shin | Separating wheat from chaff |
| Sickle | Dach | Cutting branches of trees. |
| Sickle | Zatum | Harvesting the crop and grass |
| Wooden plough with an iron rod | Ngal, Hadh | Ploughing |
| Wooden spade | Walza | Removing snow from roof tops |
| Yoke | Jumh | Yoking the bullock for ploughing |

donkey, sheep and goats, horses, oxen or hybrids of yak and poultry. The harsh climatic conditions and absence of forest-based fodder necessitate the cultivation of grass for hay on land unsuitable for the production of cereals to sustain their livestock. Hay is stacked in the form of neat piles near the dwellings (Pl. 11A,B). Even potato shoots are harvested and used as fodder (Pl. 11A). During winter, the livestock are kept indoors and fed on hay, leaves and twigs of the willow and thoroughly crushed straw and husk of wheat and barley.

# 4

# Ethnobotanical Uses of Plants

***Aconitum heterophyllum*** Wall. ex Royle (Ranunculaceae)

Pl. 17A

Vern. (L): Boa.

Common Names:

Guj-Ativakh; Hindi & Mumbai- Atis, Atvika; Kash.-Hongisafed, Mohandigujsafed; Mar.-Atavish; Pb.-Bonga, Chitijari, Patis, Patris, Sukhihari; Sans.-Amrita, Aruna, Ataicha, Atisaraghni, Ativisha, Bhangura, Bhringi, Ghunavallabha, Kashia, Madri, Mahoshadha, Mridvi, Prativisha, Pravisha, Shishubhaishyajja, Shokapaha, Shringi, Shringika, Shuklakanda, Shvetakanda, Shvetavacha, Shyamkanda, Upvisha, Vira, Virupa, Visha; Tam.- Atividyam; Tel.-Atvasa.

Ger.-Ateesknollen; Pers.-Vaijeturki.

**Systematic Account**

Erect herbs; roots biennial, tuberous, paired, older tuber wrinkled, younger tuber smooth; stem rarely branched, leafy; leaves shortly petaloid or sessile, cordate 3-4 lobed, teeth acute or obtuse, upper leaves stem clasping; flowers dull green with purple veins, in slender raceme or a loose leafy panicle.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Grassy meadows; Pyukar (L), 3250m.

**Distribution:** Common in subalpine and alpine Himalaya.

**Material Examined:** EBH-39, 22-7-94.

**Folk Uses**

Powdered root, one teaspoon, thrice a day, given orally for 5-7 days for the treatment of fever, abdominal pain and diarrhoea.

Known in India as an anthelmintic, aphrodisiac, tonic, and for cough, diabetes, diarrhoea, dysentery, digestive disorders, fever, piles, stomachache and vomiting (Anonymous, 1986b; Chopra *et al.*, 1956;

Jain, 1991). Koelz (1979) reported its use for fever only in Lahoul.

Root contains antisine, heteratisine, histisine, heterophyllidine, atidine, hetidine, benzotheteratisine, F-dihydroatisine and hetisinone (Anonymous, 1986b).

***Allium carolinianum*** DC. (Liliaceae)*

**Pl.** 17B

**Vern.** (S) : Lo–adh.

**Common Names**

Garh.-Ladam, Markua.

**Systematic Account**

Bulbous herbs; bulbs large-sized, oblong-cylindric, tunicated; leaves several, blunt, 5-12 mm broad; inflorescence umbels, 2-3.5 cm across; flowers pinkish; petals shorter than the stamens; spathe lobes shorter than umbel; capsule globose.

**Reproductive Cycle:** July-September.

**Habitat Ecology:** Dry stony slopes; Hikkim (S), 4050 m.

**Distribution:** Afghanistan to Central Nepal.

**Material Examined:** EBH-217, 21-7-95.

**Folk Uses**

Fresh flowering tops and leaves used in soups and for seasoning a local dish 'Thukpa'. Dried flowering tops used as a condiment. Locals sell it to 'Kinnauras', 'Lahoulas' and 'Tibetans' and believe that this condiment keeps the body warm during winter.

Known in India as a vegetable (Kaul *et al.*, 1985; Rawat & Pangtey 1987; Uniyal, 1968), stimulant, diuretic (Gaur *et al.*, 1983), and for seasoning food (Rawat & Pangtey, 1987).

***Allium stracheyi*** Baker (Liliaceae)*

**Pl.** 38B

**Vern. (S) :** Kechay, Gyamen.

**Systematic Account**

Bulbous herbs; bulbs small–sized, coats coriaceous; leaves 3–5, linear, cylindrical, flowering scapes 15–35 cm tall; flowers pinkish, in terminal umbels; filaments exserted.

**Reproductive Cycle:** July–September.

**Habitat Ecology:** Dry stony slopes; Komic (S) 4020 m.

**Distribution:** Afghanistan to Himachal Pradesh

**Material Examined:** EBH–240, 12–7–96.

**Folk Uses**

Flowering tops and leaves used as a condiment.

***Amaranthus paniculatus*** Linn. (Amaranthaceae)+

**Pl.** 17C

**Vern. (L):** Sarada.

**Common Names**

Beng.-Natya; Bomb.-Kaholabhaji; Guj.-Chuko, Rajgaro, Rajagaro; Hindi-Chaulai, Chua; Kan.-Kire soppu; Kash.-Bustanafroz, Chug, Marsa; Mar.-Rajagira; Sans.-Rahadri, Rajagiri, Rajashakini; Tam.-Pungi kirai.

Arab.-Hamaham; Eng.-Red Amaranth; Pers.-Angoza, Bustanafroz, Tajekhurus; Peshawar-Tajekhurus; Zulu-Im Buya.

**Systematic Account**

Herbs, upto 80 cm long; stem grooved and streaked; leaves elliptic-lanceolate, long petaloid, grey on the ventral side; flowers numerous, small, in dense spikes; spikes light red with spreading, recurved, needle-like bracts; sepals pointed; seeds densely black or brown.

**Reproductive Cycle:** July-September.

**Habitat Ecology:** Weed of cultivated areas; common; Kishori (L), 2850 m.

**Distribution:** Cultivated or an escape in E. and W. Asia and Afr.; occurs in India, chiefly in mountainous tracts, and upto 9000 ft. in the Himalaya.

**Material Examined:** EBH-58, 5-8-94.

**Folk Uses**

Tender leaves used as vegetable. Seed powder made into gruel–'Sidu' (a bread), whose size varies from one village to another.

Known in India as a diuretic in 'strangury', purgative, vegetable, food and in dropsy, biliousness and for chest congestion, piles and local application in scrofulous sores (Anonymous, 1986b; Chopra *et al.*, 1956; Jain, 1991; Kirtikar & Basu, 1935; Watt, 1889–1896).

The plant contains choline and betaine (Asolkar *et al.*, 1992). Leaves rich in oxalic acid (Anonymous, 1986b).

***Anaphalis nubigena*** DC. syn. *A. nepalensis* (Spr.) Hand-Mazz. (Asteraceae)

**Pl.** 17D

**Vern. (L):** Shepusha.

**Systematic Account**

A small tufted plant upto 25 cm tall; leaves elliptic-lanceolate,

acute, woolly on both surfaces; heads in terminal corymbs, often crowded; involucral bracts acute; achenes pointed at the ends.

**Reproductive Cycle:** July-September

**Habitat Ecology:** Roadsides, grazing grounds; quite common; Beeling (L), 3150 m.

**Distribution:** Alpine Himalaya, Tibet. 4000-5300 m.

**Material Examined:** EBH-102, 10-8-95.

**Folk Uses**

Sun-dried flowering tops are dyed and used ornamentally.

Koelz (1979) also made a similar observation about use of the plant.

***Arctium lappa*** Linn. (Asteraceae)

**Pl.** 17E

**Vern. (L):** Pichawag.

**Systematic Account**

Coarse herbs upto 1.5 m high; ovate-cordate, stalked, sinuate-toothed, cottony beneath; heads globose, purple-white, in terminal clusters; involucral bracts hooked; achenes oblong, angled, ribbed.

**Reproductive Cycle:** June-September.

**Habitat Ecology:** Cultivated areas, wastelands; common; Pasparag (L), 3300 m.

**Distribution:** Pakistan to C. Nepal. 2000-4000 m.

**Material Examined:** EBH-37, 20-7-94.

**Folk Uses**

Burs (fruits) used for repelling rodents by keeping these over foodgrain jars and rat holes. Hooked bristles of the fruits prevent the rodents from visiting that place again.

Known in India for gastric problems (Rawat & Pangtey, 1987), skin affections and gout (Anonymous, 1986b), and for repelling rodents (Koelz, 1979).

Arctin, arctigenin, mateiresinol, a lappaol isolated from fruits. Seeds yield sesquilignans, lappaol A & B. Root extract inhibits tumour growth (Asolkar *et al.*, 1992).

***Arnebia euchroma*** (Royle ex Benth.) I.M. Johnston. syn. *Macrotomia perennis* Boiss. (Boraginaceae)*

**Pl.** 17F

**Vern. (S):** Dimug, Khamed.

**Common Names**

Hindi-Ratanjot

China-Zi Cao

**Systematic Account**

An erect, perennial, hairy herb; roots purple; stems many, arising from the axil of basal leaves, forming a cluster; basal leaves with long bristly hair; stem leaves many, usually shorter, stalkless; flowers pale pink or purplish on subcapitate spikes; corolla funnel- shaped; corolla tubes longer than the subtending bracts; nutlets tuberculate.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Dry areas, rocks; Komic (S), 4020 m.

**Distribution:** Alpine Western Himalaya, Western Tibet, Nepal. 3300-4500 m.

**Material Examined:** EBH-201, 4-7-95.

**Folk Uses**

Purple coloured roots used for dyeing woollen clothes, for imparting pleasing red colour to foodstuffs, for propitiating deities and evil spirits, and for the preparation of hair tonic (by mixing with sarson oil). Powdered root used as an antiseptic for burns/cuts; approximately 3 g per dose given thrice a day for purifying blood.

So far known in India for bodyache (Gupta *et al.*, 1981; Srivastava *et al.*, 1981) and as a tonic for brain and hair (Rawat & Pangtey, 1987).

Plant shows anticancer activity (Anonymous, 1986b).

***Artemisia absinthium*** L. syn. *Absinthium vulgare* Gaertn.; *A. officinale* Lam. (Asteraceae)*

**Pl.** 18A

**Vern. (S):** Bhurse.

**Common Names**

Beng. and Guj.- Mastaru; Hindi- Vilayatiafsantin; Kan- Uruvalu, Urittige; Kash.- Tethwen; Mal.-Nilampala, Tirunitripachcha; Mar.-Serpana; Sans.-Damar, Indhana; Tam.-Machipattri; Tel.-Tartiha, Moshipatri.

Arab.-Afsantin, Bologna-Zicus; Catalan-Donsell; Como.-Medegh; Danish-Malurt; Dutch-Alsem; Eng.-Absinth, Madderwort, Mingwort, Mugwort, Old women, Warmot, Wermuth, Wormwood; Fr.-Absin menu, Absinthe, Absinthe commune, Absinthe vulgaire, Alliene, Aluine, Aluyne, Alvine, Aoussin, Armoise amere, Grande Absinthe, Herbe sainte, Herbe

aux vers; Ger.-Aelsch, Allsam, Allsei, Alsam, Alsch, Baermede, Bitteralsen, Wermuth, Wormeth, Wraemte, Wurmei, Wurmtod; Grk.- Apsinthion; Ital.- Assenzio; Malta-Assenzio, Assenziu, Wormwood; Norwegian-Malurt; Pers.-Afsantin; Russ.- Polin; Spanish-Ajenjo.

**Systematic Account**

Erect, silk hoary, aromatic, perennial herbs; stems ribbed, upto 90 cm tall; leaves ovate, unequally 2-3 pinnatifidly cut into obtuse segments; flower heads numerous, globular, 3-4 mm; flowers yellow; outer involucral bracts green with woolly hair, the inner papery; anthers acuminate; achenes obovoid.

**Reproductive Cycle:** July-September.

**Habitat Ecology:** Open slopes, cultivated areas; Kibber (S), 3950 m.

**Distribution:** Pakistan to Kash., W. Asia, Europe. 1500-3950 m.

**Material Examined:** EBH-228, 17-8-95.

**Folk Uses**

Powder made from sun-dried above-ground plant parts used as an incense by putting a pinch of it in the fire.

Known in India as an anthelmintic, aphrodisiac, antiseptic, tonic and diuretic, and for chronic fever and dandruff, and also in debility and rheumatism (Anonymous, 1986b; Dar *et al.*, 1984; Gupta *et al.*, 1981; Kirtikar & Basu, 1935; Watt, 1889–1896).

Plant contains 'artemitin' and 'rutin' (flavonoides); 'absinth' or wormwood oil; essential oil and 'absinthin' (guaianolide lactone). Leaf oil antibacterial and antifungal in 1:1000 dilution (Asolkar *et al.*, 1992).

***Artemisia glauca*** Pallas ex. Willd. (Asteraceae)+.

**Pl.** 18 B

**Vern. (L):** Khunyurcha.

**Systematic Account**

Erect, perennial pubescent herbs; leaves trifid; heads, subglobose, 3 mm across, in short racemes; involucral bracts glabrous, scarious with a narrow green disk.

**Reproductive Cycle:** July-September.

**Habitat Ecology:** Meadows, road sides, cultivated areas; common; Beeling (L), 3150 m.

**Distribution:** Western Himalaya. 2300-3200 m.

**Material Examined:** EBH-84, 30-8-94

**Folk Uses**

Powdered root (2 g) given twice a day to cure asthma.

***Artemisia maritima*** Linn. var. ***neercha*** syn. *A. brevifolia* Wall., *A. fragrans* Willd., *A. spicigera* C. Koch (Asteraceae)+.

**Pl.** 18C

**Vern. (L):** Nyurcha.

**Common Names**

Bomb.-Kiramaniova; Garh.-Purcha; Guj.-Chhuvariajamoda, Kirmanidinechi; Hindi-Ajavayana, Chhuari, Kirmala; Kash.-Moorni; Mar.-Kirmaniova, Surabandi; Sans.-Chhara, Chauhara, Gandha, Jantunashana, Khurapushpika, Parasi, Yavani, Yavaniya; Urdu-Darmanah.

Eng.-Santonica, Sea Mugwort, Sea Wormwood, Wormseed.

**Systematic Account**

An erect, much branched, hoary or tomentose, aromatic, perennial herb or undershrub with woody rootstock; leaves pinnatisect, white tomentose on both surfaces; flower-heads reddish, 2-3 mm. across, in axillary clusters; heads obovoid; flowers homogamous; involucral bracts woolly haired.

**Reproductive Cycle:** July-September.

**Habitat Ecology:** Drier areas, open slopes; Beeling (L), 3150 m.

**Distribution:** Western Himalaya; common in Ladakh and Lahoul. 2100-4200 m.

**Material Examined:** EBH-9, 13-7-94.

**Folk Uses**

Fresh plants used as fodder. Sun-dried above-ground plant parts and leaves of *Juniperus* used as an incense. Tribals also keep this plant in their boxes containing clothes to repel insects.

Known in India as an anthelmintic, aphrodisiac, antiseptic, laxative, febrifuge, blood purifier, stomachic, tonic, vulnerary, antidote to snake-bite and scorpion-sting, and for gastric problems (Anonymous, 1986b; Baruah & Sarma, 1987; Gupta *et al.*, 1981; Kirtikar & Basu, 1935), and fuel and fodder (Aswal & Mehrotra, 1987). Koelz (1979) reported its use in Lahoul as a cover for fermentation pot, in veterinary applications and for filling cushions.

Unopened flower buds yield santonin (Asolkar *et al.*, 1992).

***Artemisia maritima*** Linn. var. ***seski*** (Asteraceae)+

**Pl.** 18D

**Vern. (L):** Seski.

**Common Names**

Bomb.-Kiramaniova; Garh.-Purcha; Guj.-Chhuvaria jamoda, Kirmanidinechi; Hindi-Ajavayana, Chhuari, Kirmala; Jammu & Kumaun-Seski; Mar.-Kirmaniova; Sans.- Gadadhari, Gandha; Urdu-Darmanah.

Arab.-Afsantin-ul-bahr, Sariqun, Shih; Eng.-Drooping Sea Wormwood, English Sea Worm Wood, Fr. Sea Wormwood, Levant Sea Wormwood, Sea Mugwort, Sea Wormwood, Worm seed; Fr.-Barbotine, Semecine, Semen Contra; Pers.- Afsanthinulbarh, Darmaneh, Sariqun, Shih; Spanish- Ajengo maritimo.

**Systematic Account**

Very much like *A. maritima* var. *neercha*, but differing in having slightly darker green colour and being more aromatic.

**Reproductive Cycle:** July-September

**Habitat Ecology:** Open slopes, road sides, irrigated areas; Jahalman (L), 2900 m.

**Distribution:** W. Himalaya upto 3500 m.

**Material Examined:** EBH-68, 13-8-94.

**Folk Uses**

Decoction of leaves and flowers given orally to remove abdominal parasites, especially in children. Powder prepared from sun-dried above-ground plant parts used as an incense by putting a pinch of it in fire.

***Aster heterochaeta*** Clarke syn. *A. flaccidus* Bunge. (Asteraceae)*

**Pl.** 18E

**Vern. (S):** Lugmig.

**Systematic Account**

An erect hairy perennial upto 20 cm tall; radical leaves oblanceolate entire, acute; stem short; flower heads solitary, blue, 3-4 cm across; involucral bracts woolly-haired; pappus double, outer shorter than the inner series; achenes glabrate.

**Reproductive Cycle:** July-September.

**Habitat Ecology:** Open slopes, moist and drier areas; Kibber (S), 3935 m.

**Distribution:** Alpine Himalaya, W. Tibet. 4500-6000 m.

**Material Examined:** EBH-234, 19-8-95.

**Folk Uses**

Mixture (2-3 g) prepared from powdered seeds and flowers given with water thrice a day to cure weakness and giddiness.

Known to be used in the treatment of malarial fever (Aswal & Mehrotra, 1994).

*Astragalus grahamianus* Royle ex Benth. (Fabaceae)+

**Pl.** 18F

**Vern. (L):** Rangchawag.

**Systematic Account**

A spiny shrub with spreading form; leaves pinnately compound, ending in spiny rachis; leaflets 8-14, each 3-5 mm; stipules amplexicaul; flowers yellow, 2-3 cm across; pods oblong, densely silky.

**Reproductive Cycle:** June-September.

**Habitat Ecology:** Open slopes, drier areas; common; Bokta (L), 3150 m.

**Distribution:** Temperate and Alpine regions. 1500-3300 m.

**Material Examined:** EBH-54, 2-8-94.

**Folk Uses**

Fine paste made from leaves employed as a substitute for soap. Roots, especially during winter, are dug and used as fodder for cattle, sheep and goats. Dried aerial parts used as fuel.

*Astragalus himalayanus* Klotzsch (Fabaceae)*

**Pl.** 19A

**Vern. (S):** Kayabachhutup.

**Common Name**

U.P.-Semuel.

**Systematic Account**

Herbs, 30-60 cm high; stem slender, glabrous with adpressed hairs; leaves 3-5 cm; leaflets many, pubescent; flowers pink coloured, in axillary, pedunculate racemes, each 1-1.5 cm long; calyx clothed with black and white hairs; pods linear-oblong, 9-13 mm, with black hairs.

**Reproductive Cycle:** July-September.

**Habitat Ecology:** Meadows, cultivated areas; Losar (S), 3800 m.

**Distribution:** W. Himalaya, Nepal. 1700-4300 m.

**Material Examined:** EBH-220, 25-7-95.

**Folk Uses**

Powdered seeds and flowers given approximately 2 g per dose thrice a day in strangury.

Reported in India for colic and leprosy (Gaur *et al.*, 1983).

*Astragalus marschallianus* Fisch. (Fabaceae)*

**Pl.** 19B

**Vern. (S):** Zomoshing, Keechu

**Systematic Account**

A spiny shrub with spreading form, leaves pinnately compound, ending in spiny rachis; branches thick, woolly and spiny. Plant does not bear any flowers in the region during the whole season.

**Habitat Ecology:** Open slopes, drier areas; Kaza (S), 3350 m.

**Distribution:** Temperate and Alpine regions 3000–3800 m.

**Material Examined:** EBH-21, 27-7-95.

**Folk Uses**

Roots used as nutritious fodder for livestock. Root and branches used as fuelwood.

***Astragalus rhizanthus*** Royle ex Benth. (Fabaceae)*

**Pl.** 19C

**Vern. (S):** Zomoshing

**Systematic Account**

Tufted, perennial herbs; stemless; leaves 10-15 cm; imparipinnately compound, arranged in radiating manner; leaflets many, bluish-green; stipules longer than the internodes; flowers yellow, in a stalkless cluster; pods 1.2-2 cm, oblong, silky.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Stony slopes, screes, drier areas; quite common; Losar (S), 3800 m.

**Distribution:** W. Himalaya, temperate and Alpine regions. 3000-3800 m.

**Material Examined:** EBH-214, 14-7-95.

**Folk Uses**

Roots used as nutritious fodder for 'Churu'/ 'Zomo'; and for the manufacture of paper.

***Barbarea intermedia*** Boreau (Brassicaceae)+

**Pl.** 19D

**Vern. (L):** Marchhalam.

**Common Names**

Eng.-Winter Cress.

**Systematic Account**

Erect herbs, upto 60 cm high; biennial; stem angled; leaves pinnately-lobed, upper stem leaves deeply dissected; flowers yellow, 5-6 mm

across, in terminal spike-like clusters; sepals purple-tipped; fruit oblong, 1-3 cm, glabrous.

**Reproductive Cycle:** June-August.

**Habital Ecology:** Cultivated areas, moist slopes, marshy ground; Tandi (L), 3000 m.

**Distribution:** Pakistan to Bhutan. India. C. Asia. Europe. N. Afr. 3000-4300 m.

**Material Examined:** EBH-97, 18-7-95.

**Folk Uses**

Tender leaves consumed as vegetable.

***Berberis jaeschkeana*** C.K. Schneider (Berberidaceae)+

**Pl.** 19E

**Vern. (L):** Kaymali.

**Common Name**

U.P.-Dam

**Systematic Account**

Thorny shrub with yellow-brown, angular stem; stem spines 3-fid; leaves 2-3 cm, sessile, oblong-elliptic; spineless; flowers yellow, 3-8 in a sub-umbellate cluster; fruit red, ovoid; seeds dark purple.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Dry slopes, meadows; Tandi (L), 3000 m.

**Distribution :** Pakistan to E. Nepal. 2700-4000 m.

**Material Examined:** EBH-80, 27-8-94.

**Folk Uses**

Powdered roots used for fever, stomach disorders and skin diseases. Tender leaves and flowers eaten.

Known in India as an astringent, diuretic, blood purifier, and used for jaundice, eye and skin diseases, menorrhagia, and also edible (Gaur *et al.*, 1980; Rawat & Pangtey, 1987). Aswal & Mehrotra (1987) reported the use of its roots in Lahoul for eye troubles, and of ripe fruits for edible purposes.

***Berberis vulgaris*** Linn. var. ***aetnensis*** sensu Aitchison syn. *B. kunawurensis* Royle, *B. thunbergii* DC. (Berberidaceae)+

**Pl.** 19F

**Vern. (L):** Kaymali.

**Common Names**

Pb.-Chachar, Kashmal, Zirishk.

Arab-Ambar-baries; Eng.-The True Barberry, Common Barberry; Ger.-Berberitzen; Italy-Berbero.

**Systematic Account**

A deciduous thorny shrub upto 1.5 m high; stem spines 1-3 fid; leaves oblong- lanceolate, acutely serrate; flowers in 15-20 flowered racemes, pendulous; berries oblong- ovoid, red, 2-5 seeded.

**Reproductive Cycle:** July-October.

**Habitat Ecology:** Open slopes, drier areas; Sumnam (L), 3100 m.

**Distribution:** W. Himalaya, 3000-4000 m. Afghanistan to Europe.

**Material Examined:** EBH-106, 6-7-95.

**Folk Uses**

Tender leaves and ripe fruits eaten.

Known as an astringent, antibilious, diuretic, refrigerant, demulcent, and for nausea (Watt, 1889-1896).

Alkaloids berberine, berbamine, isotetrandrine, jatrorrhize, magnoflorine picrate, oxyberberine and oxycanthine isolated from the plant and characterised. Berberine in 0.1 or 1.0% solution as sulphate or phosphate has a pronounced stimulant effect on isolated guineapig or cat uterus (Chopra *et al.*, 1956, 1969).

***Bergenia stracheyi*** Engl. syn. *Saxifraga stracheyi* Hook. f. & Thomas.; *S. ciliata* Lindl. non Royle (Saxifragaceae)+

**Pl.** 20A .

**Vern. (L):** Shilpada.

**Common Names**

U.P.-Ghee-pati, Silphari.

**Systematic Account**

An erect perennial herb with stout rootstent; leaves large, 4-15 cm long, thick, oblong-obovate, margin toothed and glandular punctate; leaf stalks sheathing at the base; flowers in a drooping cluster, pink; pedicel and calyx pubescent; styles long.

**Reproductive Cycle:** July-September.

**Habitat Ecology:** Moist rocky slopes; Lindoor (L), 3250 m.

**Distribution:** Western Himalaya. 2400-4800 m.

**Material Examined:** EBH-75, 21-8-94.

**Folk Uses**

Dried leaves and rootstock mostly used as fuel.

Known in India as an astringent, antiscorbutic, diuretic, febrifuge,

and for cuts, wounds and eye diseases (Gaur *et al.*, 1983; Rawat & Pangtey, 1987), and also for menorrhagia (Anonymous, 1984). From Lahoul, Aswal & Mehrotra (1987) described the use of its root for poulticing in stiff joints (see also Koelz, 1979) and removal of kidney stones. Root powder has been used as a diuretic.

Rhizome contains bergenin (0.75%), β–sitosterol and (+) catechin 3- gallate (Asolkar *et al.*, 1992).

***Betula utilis*** D. Don (Betulaceae)

**Pl.** 20B

**Vern. (L):** Shag.

**Common Names**

Bhutia-Takpa; Bomb.-Bhojpatra, Bhurjapatra; Garh.-Bhuj; Guj.-Bhojpatra; Hindi-Bhujpatar, Bhujpattra; Pb.-Bhuj, Burj, Burzal, Phurz; Sans.-Bahulavalkala, Bahutvaka, Bhuja, Bhurja, Bhurjapatraka, Bindupatra, Charmi, Charmmadruma, Chhatrapatra, Dalanismoka, Mriducharmi, Mridupatra, Mriduvaka, Padmaki, Patrapushpaka, Rakshapatra, Shitri, Sthirocchada, Sucharma, Valkadruma, Vichitraka, Vidyadata.

Eng.-Birch tree; Malaya-Khan pie; Nepal-Bujapat.

**Systematic Account**

A small deciduous tree; bark white-brownish, papery which peels off; leaves ovate, base rounded, margins irregularly serrated, woolly haired beneath when young; female spikes solitary; male flowers in catkins reddish, upto 10 cm; fruiting bracts 3-lobed; nutlets winged.

**Reproductive Cycle:** July-September.

**Habitat Ecology:** Drier mountainous zones, usually forms forests; Ghandal (L), 3350 m.

**Disribution:** Temperate Himalaya, W. Tibet. 2700-4300 m.

**Material Examined:** EBH-27, 17-7-94.

**Folk Uses**

Bark used as an antiseptic, and for wrapping food, lighting fire; and in religious ceremonies; also used for curing redness in eyes by burning a piece of it before the eyes of a patient in the morning and quickly extinguishing it in water contained in a bronze vessel. Twigs used as a broom to sweep verandas and cow sheds.

Known in India as an antiseptic, aromatic, carminative, contraceptive, and applied on cuts, burns, and for ear complaints, hysteria, jaundice, veterinary ailments, thatching, religious ceremonies; also used as broom (see Asolkar *et al.*, 1992., Jain, 1991). Koelz (1979) recorded the use of its wood for making bridges in Lahoul.

Bark exhibits antifertility activity due to presence of betulin. Outer bark contains leucocyanidin, betulin, lupeol, oleanolic and Ac-oleanolic acids (Asolkar *et al.*, 1992).

***Brassica erucastrum*** Linn. (Brassicaceae)+

**Pl.** 20C

**Vern. (L):** Vanonyunger

**Systematic Account**

An annual or biennial herb, slightly hairy, stem 15-40 cm across. Leaves usually pinnatifid, lobes narrow; upper leaves smaller, sometimes nearly entire; flowers pale-yellow, in racemes; pods very slender, 2.5-7.5 cm, glabrous, curved, nearly erect.

**Reproductive Cycle:** June–September.

**Habitat Ecology:** Sides of roads, near habitations; Sumnam (L), 3100 m.

**Material Examined:** EBH–91, 6–9–94.

**Folk Uses**

Paste of powdered seeds applied on affected part in case of backache.

***Cannabis sativa*** Linn. (Cannabaceae)

**Pl.** 20D

**Vern.(L):** Bhang.

**Common Names**

Beng.-Bhang, Ganja, Sidhi; Guj.-Ganja; Hindi-Bhang, Charas, Ganja, Ganje- ka- per, Gur, Kinnab, Phulganja, Sabzi, Siddhi; Kan.-Bhangi; Kash.-Bangi; Mar.-Bhangacha- jhada; Pb.-Bhang, Bengi, Charas, Kas, Sabzi; Sans.-Bhanga, Chapola, Ganja, Ganjika, Hursini, Indrasana, Jaya, Vajradru-Vrikshaha, Vnunda, Vrijpatta; Tam.-Bhangi-ilai, Ganja-chedi, Ganja-ilai, Ganja-phal, Ganja-rasham; Tel.-Bangi-aku, Ganjai, Ganjari- chettu, Kalpam-chettu.

Arab.-Hinab, Kanab, Kinnab, Nabatul-qunnab; Burma-Ben, Bhenbin, Bin, Sejav- bin; Eng.-Marihuana, Marijuana, Soft Hemp, True Hemp; Sing.-Ganja-gaha, Kansa-gaha, Matkansha.

**Systematic Account**

Aromatic herb; stem grooved, branched, hairy, with slender branches; leaves palmate, long-stalked, gland-dotted, 5-7 foliate or partite; upper leaves simple; leaflets somewhat elliptic, coarsely-toothed, variable in size, 3-10 cm; flowers yellow-green, unisexual; male and female flowers in axillary clusters on different plants; stamens 5, with thread-like

filaments; styles 2, protruding; achenes flattened, glandular hairy, enclosed in persistent perianth.

**Reproductive Cycle:** July-September.

**Habitat Ecology:** Frequent on wastelands, edges of fields; Gozang (L), 3300 m.

**Distribution:** Throughout India, wild in N.W. Himalaya. Cultivated throughout temperate and tropical regions. 2100-3300 m.

**Material Examined:** EBH-35, 20-7-94.

**Folk Uses**

Stem fibres used for making ropes, shoes and hand bags. Seeds edible.

Known in India as an anthelmintic, appetiser, laxative, narcotic, nerve stimulant, sleep-inducing pills, and in dyspepsia, epilepsy, skin troubles, and also for bowl complaints, bronchitis, cough, cold, convulsions, cramps, delirium, cuts, ear complaints, eye diseases, gonorrhoea, hydrocoel, paralysis of tongue, piles, sores and tetanus (Jain, 1991).

Chief active principles are cannabinol, pseudo-cannabinol, cannabinin; resin, cannin. 0.5 mg resin produces sensory hyperesthesia in fish, followed by somnolence and paralysis. However, cannin fraction of resin, when orally administered to a dog in 0.1 mg/kg dose causes incoordination of movements after 2 h which persists for 4 h (Chopra *et al.*, 1956).

***Capparis spinosa*** Linn. (Capparidaceae)*

**Pl.** 20E,F

**Vern. (S):** Rohtokpa-Martokpa

**Common Names**

Bomb.-Kabar; Hindi-Ber, Kabra; Kumaon-Bussar, Vltakanta; Ladakh-Kabra; Pb.- Bandar, Barar, Barari, Bassar, Bauri, Ber, Kabarra, kabra, Kabri, Kander, Kaur, Keri, Kiari, Taker; Tel.-Kokilakshamu; Urdu-Kabar.

Afg.-Kabarra, Kabawa; Arab.-Kabar, Kabur; Dutch-Kapperboom; Eng.-Caper; Fr. -Caprier, Tapenier; Ger.-Kapernbaum; Hebrew-Ezov; Ital.-Capparo, Cappero; Pers.-Kabar, Kebir, Kurak; Port.-Alcaparra; Russ.-Kapersovyi Kust; Sind-Kalvari; Spanish-Alcaparra, Alcaparro; Syria-Kabar ; Turk.-Kabarish.

**Systematic Account**

Straggling pubescent shrubs; branches spiny, prostrate or trailing; leaves leathery, spine-tipped; stipules of 2 hooked spines; flowers white,

long-peduncled, axillary, asymmetrical; petals 4; stamens much longer; fruits fleshy, 2-5 cm, many-seeded.

**Reproductive Cycle:** June-September.

**Habitat Ecology:** Roadsides, rocky slopes, drier areas, Tabo(S), 3050 m.

**Distribution:** Afghanistan to E. Nepal. W. Asia. Europe. 2000-3000 m.

**Material Examined:** EBH-239, 23-8-95.

**Folk Uses**

Ripe fruits edible, young leaves used as a pot herb and powdered bark for urinary problems and in affections of liver.

Known in India for paralysis; toothache, rheumatism, scurvy and as a vegetable, diuretic, expectorant and tonic (Anonymous, 1986b; Baruah & Sarma, 1987; Kaul *et al.*, 1985; Singh & Singh, 1981; Vartak, 1981).

Seeds contain 34-36% of a pale yellow fatty oil. Flower buds yield rutin (glucoside) 4% pentosans on dry weight basis, rutic acid, pectic acid, a volatile emetic constituent, saponin (Chopra *et al.*, 1956).

***Carum bulbocastanum*** W. Koch. (Apiaceae)*+

**Pl.** 21A

**Vern. :** Zeera (L); Zira (S).

**Common Names**

Hindi-Kalajirah, Shahjira; Kan.-Gunyun; Kash.-Gunyun; Ladakh-Umbhu; Mal.-Shimejeerige; Tam.-Pilappu-Shiragam, Shemai-Shiragam; Tel.-Shima-Jirakam.

Eng.-Black caraway, Earth-Chestnut, Earthnut, Pignut; Fr.-Noix de terre, terre- noix; Ger.-Aardkast-anje, Eerdakers, Meerschnoot.

**Systematic Account**

Erect, branched, glabrous, annual herbs; roots tuberous; stems 30-40 cm high; leaves 2-3 pinnate finely dissected; flowers in umbels of 10-12 rays, white; fruits yellowish to reddish brown, 2-4 mm.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Meadows, open slopes, drier areas; Sumnam (L), 3100 m; Kaza (S), 3350 m.

**Distribution:** Baluchistan-N. Asia. Europe. N. Afr.

**Material Examined:** EBH-7, 11-7-94 (L); EBH-226, 6-8-95 (S).

**Folk Uses**

Lahoula tribe use the seeds for back pain, gastric, liver problems and for flavouring curries; after mixing with curd or mustard oil given

to domestic animals for digestive disorders and dysentery. Seeds used as a condiment; powdered seeds (approx. 2 g per dose) given thrice a day in Spiti to cure body weakness.

Known in India as a vegetable, spice, carminative, lactagogue and stomachic (Chopra *et al.*, 1956).

Fruit yields 2% essential oil containing 18% aldehydes (Anonymous, 1986b).

*Carum carvi* Linn. (Apiaceae)*

**Pl.** 21B

**Vern:** Gonyorog (L), Gonyod (S).

**Common Names**

Beng.-Jira; Bomb.-Vilayatizirah; Guj.-Shajiru; Hindi-Shiajira, Zira; Kash.- Gunyan; Ladakh-Umbu; Mar.-Shahajire; Pb.- Zirasiyah; Sans.-Bahugandha, Bhedanika, Hridya, Jarana, Krishna, Nila, Patu, Ruchya, Sugandha, Sushavi; Tam.-Kekkuvirai, Simaishembu; Tel.- Shimaisapu; Urdu-Shahjirah.

Eng.-Caraway; Fr.-Anis des vosges, Carobin, Cumin de montagne, Cumin despres; Germ.-Feldkuemmel, Fischkuemmel, Gemeiner kuemmel, Kalm, Kuemmel, Kramkuemmel, Makenn, Makinisch, Mattenkammi, Mattenkuemmel, Wegkuemmlich; Ital.-Caro, Carvi, Comino, Comino dei prati, Comino tedesco, Cumino tedesco; Morocco-Karuya; Norway-Karve; Pers.-Jirah rumi, Karoya; Pol.-Karny; Port.-Alcarana, Alcarona, Alchirivia, Chirina; Roumanian-Chimion de camp, Chimien, Chinisor, Secarico; Russ.-Timon; Spanish-Alcaravea, Carvi, Cominos de prado; Swed.-Kummin.

**Systematic Account**

An erect perennial, stem glabrous, branched, 50-70 cm; leaves pinnate; segments filiform to lanceolate; upper leaves smaller and less divided, base sheathing; flowers white, in umbels of 7-10 rays; fruits oblong, slightly curved, yellowish brown, with prominent ribs.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Meadows, very common in shady and moist places; Wari (L), 3250 m; Hansa (S), 3650 cm.

**Distribution:** N.W. Himalaya.

**Material Examined:** EBH-11, 13-7-94 (L); EBH-206, 7-7-95 (S).

**Folk Uses**

Lahoulas use powdered seeds as a spice and for back pain; on mixing with butter–milk prescribed especially for gastric problems in animals. Spitians give powdered seeds (2 g) thrice a day for 3-4 days to cure body weakness.

Known in India as a carminative, mild stomachic, lactagogue, spice, and for cold, cough, dyspepsia (Anonymous, 1986b; Koul, 1941; Srivastava *et al.*, 1981). In Lahoul it is used as a vegetable and in gonorrhoea, and also for stomach disorders (Koelz, 1979).

Essential oil contains a mixture of ketone, carvone (45-66%), a terpene and traces of carvacorol (Chopra *et al.*, 1956).

***Chaerophyllum villosum*** Wall. ex DC. (Apiaceae).

**Pl.** 21C

**Vern. (L) :** Nyo, Shakrag.

**Common Names**

H.P. & Kash.-Ginzari, Jangli Gajar, Shankara.

**Systematic Account**

A slender plant to 60 cm with stem covered with long, deflexed, white hairs; leaves 2-3 pinnate; pinnae finely divided; leaf-sheaths inflated; flowers white in small umbels; bracts absent; bracteoles 5-6, linear to lanceolate, hairy; fruit 5-9 mm, somewhat narrowed at the apex.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Meadows, irrigated areas; Tozing (L), 3000 m.

**Distribution:** Afghanistan to Bhutan. 2100-3600 m.

**Material Examined:** EBH-15, 13-7-94.

**Folk Uses**

Carrot-like roots eaten raw to cure abdominal pain; stem and branches also edible.

Known as a vegetable (Koelz, 1979; Rawat & Pangtey, 1987).

Aqueous extract of roots at $LD_{500}$ and ME of whole plant at $LD_{350}$ show no biological activity (Sharma *et al.*,1978).

***Chenopodium album*** Linn. (Chenopodiaceae)*

**Pl.** 21D

**Vern. :** Am (L), Eyar (S).

**Common Names**

Beng. & Hindi-Bathu sag, Bethua sak ; Bomb.-Chakwit; Guj.-Cheel, Tanko; Ladakh-Em; Mar.-Chakavata, Chivil; Pb.-Bathu, Bathua, Jausag, Lunak; Sans.-Agralohita, Chakravarti, Chilli, Chillika, Gandavastuka, Ghanaghana, Hilamochika, Kankella, Ksharadala, Ksharapatra, Mahaddala, Mridupatri, Panshuptra, Shakaraja, Shakarata, Shakashreshtha, Shakavira, Tuni, Vastuka, Vastuki, Vasuka; Tam.-Parupukkirai, Parupukire; Tel.-Pappukura.

Arab.-Kulf, Vatlatulhumakka; China-Hui Ti, Li; Eng.-All good, Bacon weed, Biacon weed, Dirt weed, Dirty Dick, Drought weed, Frost bite, Goose foot, Muck-weed, Myles, Wild spinach; Fr.-Herbe an vendangeron, Senousse; Ital.-Farinaccio; Pers.-Khurfa, Khuruelasafir; Sind-Jhil; S. Afr. -Common Pig weed, Goose foot, Lamb's quarters, White Goose foot.

**Systematic Account**

Foetid herbs; stems much-branched, angular-ribbed, purple-streaked; leaves upto 6 cm, white mealy when young; lower leaves long-petioled, scattered with toothed margin, upper ones entire; flowers tiny green in clusters, in axillary spikes, often tinged purple; fruits entirely covered by the persistent perianth.

**Reproductive Cycle:** June-September.

**Habitat Ecology:** Frequent on wastelands, cultivated fields; Rawaling (L), 3200 m; Kaza (S), 3350 m.

**Distribution:** Throughout Himalaya. 1500-3600 m.

**Material Examined:** EBH-22, 16-7-94 (L); EBH-216, 21-7-95 (S).

**Folk Uses**

Inhabitants of Lahoul use powdered seeds as foodstuff, especially for making bread. In Spiti, powdered seeds prescribed for constipation; young leaves used as a pot-herb.

Known in India as a vegetable and in skin and urinary diseases, and also to revive taste (Jain, 1991).

Effect on respiration, cardiovascular system and nictitating membrane positive (Bhakuni *et al.*, 1969).

***Chenopodium botrys*** Linn (Chenopodiaceae)

**Pl.** 21E

**Vern. (L):** Sokana

**Common Names**

Dutch-Druivenkruid, eik van Jerusalem, Piment; Eng.-Feather geranium, Jerusalem Oak, Oak of Paradise; Fr.-Chenopode a grappes, Piment; Germ.-Ambrosienkraut, Botryskraut, Krotten, Traubenkraut; Spanish-Biengranada.

**Systematic Account**

Glandular-pubescent, strongly aromatic annual herbs with angular, ribbed stems; lower leaves pinnately lobed, upper ones more entire; flowers clustered in a terminal panicle; fruit a nutlet, enclosed by glandular-pubescent perianth.

**Reproductive Cycle:** June-September.

**Habitat Ecology:** Weed of cultivated areas, wastelands; common; Tozing (L). 3000 .

**Distribution:** Temperate Himalaya. W. Tibet. Europe. N. & W. Asia. N. Afr. 1800-3600m.

**Material Examined:** EBH-16, 13-7-94.

**Folk Uses**

Chopped leaves mixed with flour and a pinch of salt to taste are boiled in water to prepare soup, especially prescribed for gastric problems.

Known as an anthelmintic, diuretic, laxative, stomachic, and for headache and liver complaints (Gupta *et al.*, 1981).

Chief active principles are betaine, chrysoeriol, quercetin pyranosides, hispidulin, 7- mecupatulin, sinenstin, salvigenin and 5-salvigenin; essential oil, 26 compounds, including chenopodic acid, and sesquiterpenes from aerial parts. Antiasthmatic, antispasmodic and diuretic activities confirmed (Asolkar *et al.*, 1992; Sharma *et al.*, 1978).

***Chenopodium foliolosum*** (Moench) Asch.syn. *C. blitum* Hook. f. (Chenopodiaceae)*

**Pl.** 21F

**Vern. (S):** Khupald.

**Common Names**

Pb.-Kupald, Sundar; U.P.-Ban-palak.

**Systematic Account**

Annual herbs with erect or ascending glabrous stems upto 100 cm high; leaves triangular-hastate, deeply toothed, bright-green, long-stalked; flowering spikes sessile, axillary, green, leafy, 6-8 mm across; perianth saccate, succulent; fruit bright red.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Common on wastelands, cultivated areas, sandy slopes; Kaza (S), 3350 m.

**Distribution:** Pakistan to C. Nepal. Temperate Eurasia. N. Afr. 1800-3600 m.

**Material Examined:** EBH-237, 21-8-95.

**Folk Uses**

Ripe fruits edible and considered nutritious.

Known in India as a vegetable (Rawat & Pangtey, 1987).

Plant possesses no biological activity (Aswal *et al.*, 1984 a,b).

*Christolea carassifolia* Combess. (Brassicaceae)*

**Pl.** 22A

**Vern. (S):** Chakchak-lammo.

**Systematic Account**

Perennial, much-branched, fragile herbs upto 30 cm high; branches decumbent; leaves 1-4 cm thick, ovate-oblong, toothed; flowers white to mauve, in 10-25 flowered spike-like clusters; pods linear-oblong, flattened.

**Reproductive Cycle:** July-September.

**Habitat Ecology:** Stony slopes, roadsides, in dry area; common; Kibber (S), 3950 m.

**Distribution:** Afghanistan to C. Nepal. C. Asia. 3300- 4200 m.

**Material Examined:** EBH-227, 17-8-95.

**Folk Uses**

Powdered seeds (2 g) with water given thrice a day for 3-4 days to cure boils. Infusion of seeds and leaves may also be applied to cure them.

*Cicer microphyllum* Benth. syn. *C. soongaricum* auct. non Stephan ex Dc. (Fabaceae)*

**Pl.** 22B

**Vern.:** Van Nayarcha (L); Chiri (S).

**Common Names**

Chenab basin-Banyarts, Jawane, Tizhu; Ladakh-Sarri, Serri.

**Systematic Account**

An erect glandular-hairy perennial; leaves pinnate, with 18-30 leaflets, ending in a spiral tendril; stipules foliaceous, palmately-lobed; flowers stalked, mostly purple, solitary or paired, axillary; calyx hairy; pods 2-3 cm, linear-oblong, hairy, conspicuously beaked.

**Reproductive Cycle:** July-September (L); June-September (S).

**Habitat Ecology:** Sandy slopes, irrigated ground; Guskiar (L), 3250 m; Losar (S), 3800 m.

**Distribution:** Western Himalaya and alpine regions. 3300-4800 m.

**Material Examined:** EBH-72 (L), 18-8-94; EBH-223 (S), 2-8-95.

**Folk Uses**

In Lahoul, paste of aerial plant parts applied on affected parts to cure 'Khur' disease in sheep, cows and goats. Seeds eaten raw or cooked as a vegetable by Spitians.

Reported from Lahoul for veterinary ailments (part not specified, Koelz, 1979) and from other parts of India as a pot-herb, foodstuff and fodder (Anonymous, 1986b; Gupta *et al.*, 1980; Kaul *et al.*,1985; Rawat & Pangtey, 1987).

Plant shows no biological activity (Aswal *et al.*, 1984a, b).

***Cnicus argyracanthus*** (DC.) C.B. Clarke. syn. *Cirsium verutum* (D.Don) Spreng., *C. involucratum* DC. (Asteraceae)+

**Pl.** 22C

**Vern. (L):** Khishag.

**Common Names**

Garh.-Bis- Kanda.

Nepal- Karayo.

**Systematic Account**

Erect, spinescent herbs upto 1.5 m tall; stems cotton-hairy, leaves pinnatifid, glabrous above, cottony haired or glabrate beneath, toothed margins with long pale spines; flower-heads globular, stalkless, purple or pink, in dense fasicles; involucral bracts with woolly margins and a simple spine; achenes with pappus of several rows of feathery hair.

**Reproductive Cycle:** July-September.

**Habitat Ecology:** Open slopes, fields, grazing grounds, forest clearings; Sumnam (L), 3100 m.

**Distribution:** Murree to Bhutan. Burma. 740-3100 m.

**Material Examined:** EBH-49, 1-8-94.

**Folk Uses**

Peeled roots eaten raw to cure urinary complaints and kidney diseases.

50% aqueous extract of whole plant at $LD_{1000}$ shows no biological activity (Sharma *et al.*, 1978).

***Codonopsis clematidea*** (Schrenk) C.B. Clarke (Campanulaceae)*

**Pl.** 22D

**Vern. (S):** Golchokpa.

**Common Name**

Pb.-Ludut.

**Systematic Account**

Perennial herbs, upto 60 cm long; strongly aromatic; roots woody; leaves alternate, often heart-shaped, short-stalked, hairy; flowers solitary, campanulate, nodding, sky-blue, long-peduncled; capsule obconical.

**Reproductive Cycle:** July-September.

**Habitat Ecology:** Cultivated areas, moist slopes; common; Kibber (S), 3950 m.

**Distribution:** W. Himalaya, Kash. to Garh. 2400-4200 m.

**Material Examined:** EBH-229, 17-8-95.

**Folk Uses**

Powdered leaves and flowers (2-3 g) given to cure rheumatic pain.

In Lahoul, Koelz (1979) made a similar observation.

***Convolvulus arvensis*** Linn. (Convolvulaceae)

**Pl.** 22E

**Vern. (L):** Grachi.

**Common Names**

Beng.-Gandhbhadali, Gondal; Guj.-Nari, Veladi; Hindi-Beri, Haranpadi, Hiranpaddi, Prasarna, Prasarni; Mar.-Haranpag, Chandvel; Pb.-Harinpadi, Hiranpaddi; Sans.-Bhadrabala, Prosarani, Rajbala, Sarana.

Eng.-Deer's foot Bindweed, Field Bindweed, Small Bindweed; Fr.-Bedille, Liseret, Liseron des champs, Lisette, Lixet, Petit liseron, Villee, Vroncelle; Germ.-Ackerwinde, Winde; Ital.-Vilucchio, Viticchio, Volubile; Sind-Hirnpug; Spanish-Correhuela.

**Systematic Account**

A climbing perennial; stems slender, glabrous; leaves stalked, sagittate; flowers pink or purple, funnel-shaped, usually solitary, axillary; peduncles longer than the leaves; capsule ovoid-globose, hairless; seeds 4.

**Reproductive Cycle:** June-September.

**Habitat Ecology:** Wastelands, weed of cultivated areas, in dry areas; quite common; Garang (L), 2950 m.

**Distribution:** Temperate and subtropical regions, 1000-4100 m.

**Material Examined:** EBH-12, 13-7-94.

**Folk Uses**

Cakes prepared from decomposing aerial plant parts crushed with animal urine in sun between two stones for 7-8 days, used as a substitute for soap to keep skin attractive and healthy. Plant also used as fodder.

Known in India as a cathartic, purgative, fodder (Chopra *et al.*, 1956; Janardhanan, 1963; Sharma *et al.*, 1979). From Lahoul, Koelz (1979) recorded its use as a detergent, but he did not give the methodology for its use.

Plant contains 1.52-40% of a resinous substance convolvulin, possessing cathartic properties. Dried rhizome yields 4.9% resin. 50% aqueous extract of whole plant at $LD_{1000}$ shows no biological activity (Sharma *et al.*, 1978).

***Cotoneaster microphylla*** Wall. ex Lindley (Rosaceae)+

**Pl.** 22F

**Vern. (L):** Rogthali.

**Common Names**

Kash.-Khariz, Luni; Kum. -Garri.

Indo-China-Sa luan duong.

**Systematic Account**

An evergreen shrub; stem much-branched, procumbent; leaves elliptic-ovate, glabrous above, bristle-hairy beneath; flowers white, small, solitary or upto 3 in axillary clusters; calyx densely hairy; fruits red.

**Reproductive Cycle:** June-September.

**Habitat Ecology:** Meadows, open slopes, banks, drier areas; Malang (L), 3150 m.

**Distribution:** Afghanistan to China. 2000-5400 m.

**Material Examined:** EBH-76, 22-8-94.

**Folk Uses**

Fruits edible.

Known in India as an astringent, and for walking sticks and baskets; fruits edible (Anonymous, 1986b; Gaur *et al.*, 1983; Gupta, 1962; Rawat & Pangtey, 1987).

Aerial parts contain sorbitol, hydrocyanic acid and a cyanogenetic glucoside prulaurism (Chopra *et al.*, 1956).

***Cotoneaster vulgaris*** Lindl. syn. *C. falconeri* Klotz; *C. integerrima* Medicus sensu R. Parker (Rosaceae)+

**Pl.** 23A

**Vern. (L):** Rogthali.

**Common Names**

Dutch-Laagstamde kweeboom; Eng.-Bastard mespilus, Common cotoneaster; Fr.-Amelanchier velu, Cotoneastre commun, Cotonniere commune; Ger.-Bergmispel, Steinmespeln, Stockmehlbeere, Zwergmespel, Zwergquitte.

**Systematic Account**

A prostrate deciduous shrub to 1.5 m, with leaves broadly ovate

to elliptic, glabrous above, pubescent beneath; flowers white or pink, solitary-axillary or in clusters of upto 5; pedicels and peduncles covered with bristly-hairs; fruits globose, scarlet.

**Reproductive Cycle:** June-September.

**Habitat Ecology:** Dry slopes, shrubberies; Sumnam (L), 3100 m.

**Distribution:** Afghanistan to Himachal Pradesh. 1500-3300 m.

**Material Examined:** EBH-99, 8-8-95.

**Folk Uses**

Fruits edible, specially eaten by children.

***Cousinia thomsoni*** C.B. Clarke(Asteraceae)*

**Pl.23B**

**Vern:** Bachachhawag (L), Changchher (S).

**Systematic Account**

Cottony herbs; stem robust, branched, upto 50 cm high; leaves deeply pinnately- lobed; segments spinescent, 1-nerved, dense cottony beneath; basal leaves stalked with numerous unequal linear lobes ending in a rigid spine, 12-25 cm; flower-heads globular, terminal, pink to purple, 3-6 cm across with an involucre of spine-tipped bracts, and with disc-florets only; receptacle with spiny scales; achenes glabrous.

**Reproductive Cycle:** July-September.

**Habitat Ecology:** Wastelands, dry slopes, grazing grounds; Mooling (L), 3150 m; Losar (S), 3800 m.

**Distribution:** Afghanistan to W. Nepal, Lahoul to Kumaon in Western Himalaya. Tibet. 3000-4200 m.

**Material Examined:** EBH-23 (L), 17-7-94 ; EBH-225 (S) , 5-8-95.

**Folk Uses**

In Lahoul, greenish cotton obtained by threshing the mature leaves with a stick of *Salix fragilis* or stem of *Saussurea albescens* used for fire-making and smoking. Peeled off young stems edible. Approximately 2 g powdered root given thrice a day for inflammation and rheumatism in Spiti.

Known from Lahoul as a constituent of incense along with *Waldheimia glabra* (Aswal & Mehrotra, 1987).

***Crataegus soongarica*** G.Koch syn. *C. oxycantha* auct. non Linn. (Rosaceae)+

**Pl.** 23C

**Vern. (L):** Ramjag.

**Common Names**

N. & W. Himalaya-Ban-Sanjli, Patakhan, Phindak, Pingyat, Pinyal, Ramnia, Ring, Ringo, Sinjli, Sursinjli.

Afg.-Durana; Dutch-Bezekesboom, Deureshaag, Doorhage, Doorleer, Doreleer, hagedoorn, Steendoorn, Witte doorn; Eng.-Hawthorn; Ger.-Spitzdorn; Trans-Indus-Ghwansa, Ghwardsa.

**Systematic Account**

Deciduous trees, upto 8 m; branches spinescent; young shoots sparsely pubsecent; leaves irregularly 3-7 lobed, toothed; flowers white, odorous, long stalked, in terminal corymbose cymes; calyx-lobes subacute; petals orbicular; fruits globular, scarlet.

**Reproductive Cycle:** June-September.

**Habitat Ecology:** Open slopes, cultivated areas; Rashil (L), 3050 m.

**Distribution:** Afghanistan to U.P.; common in Kash. 1500-3050 m.

**Material Examined:** EBH-83, 30-8-94.

**Folk Uses**

Fruits edible.

Known in India as a cardiac tonic; wood used for making axe-handle, walking sticks and engraving (Anonymous, 1986b; Arora, 1981).

Cardiotonic activity due to l-epicatechin present in leaves and fruits. Oligomeric procyanidins fraction of leaves decreases B.P. in cats and affects CNS. Active principle 'Crataegus lactone' responsible for coronary vasodilation. The compound brings about protracted coronary dilation with increase in contraction amplitude in heart of guineapigs. Hypotensive activity positive (Asolkar *et al.*, 1992; Chopra *et al.*, 1969; Sharma *et al.*, 1978).

***Cynoglossum wallichii*** G. Don. syn. *C. glochidiatum* Wall. ex Benth. (Boraginaceae)+

**Pl.** 23D

**Vern. (L):** Kochi-shuwer.

**Common Names**

Assam-Dhalabrauisabta.

**Systematic Account**

Herbs; stem erect, hirsuate, 30-75 cm, usually branched above; leaves ovate-lanceolate, densely clothed with soft pubescence; flowers deep blue in terminal to axillary, scorpoid cymes; corolla tube short; calyx lobes oblong; nutlets bristly, 2-3 mm long.

**Reproductive Cycle:** June-September.

**Habitat Ecology:** Wasteland, cultivated areas, drier areas; Sumnam (L), 3100 m.

**Distribution:** Temperate Himalaya, Kash. to Kumaon. 1200-4000 m.

**Material Examined:** EBH-3, 10-7-94.

**Folk Uses**

Fresh leaves employed as a substitute for band-aid to cover wounds and cut parts.

Known for checking vomiting in infants (Anonymous, 1986b).

Amabiline and pyrrolizidine alkaloids, predominantly cynaustraline, isolated from aerial parts (Asolkar *et al.*, 1992).

***Dracocephalum heterophyllum*** Benth. (Lamiaceae)*

**Pl.** 23E

**Vern. (S):** Kuramtoksay.

**Common Names**

Pb. & Ladakh-Karamm, Shanku, Zanda.

**Systematic Account**

Decumbent, aromatic herbs upto 25 cm tall; leaves leathery, ovate-oblong, crenate, long-stalked, 2-4 cm; flowers white, in densely flowered leafy spikes with lobed bracts; calyx distinctly bilabiate, deeply cleft, hairless; corolla hoary-pubescent, fruits linear-oblong, dark brown.

**Reproductive Cycle:** June-September.

**Habitat Ecology:** Open slopes, meadows, edges of cultivation; Kibber (S), 3950 m.

**Distribution:** Himalaya. Tibet. 3000-5000 m.

**Material Examined:** EBH-230, 18-8-95.

**Folk Uses**

Powdered dry flowers (3 g per dose) given thrice a day with water for eye ailments, especially weakness; fresh flowers eaten raw for their nectar.

Used in India for eye complaints (whole plant, Gupta *et al.*, 1981), and as a vegetable and cattle fodder (Anonymous, 1986b).

***Ephedra gerardiana*** Wall. ex Stapf. (Ephedraceae)*

**Pl.** 23F

**Vern:** Buchchur (L); Chhe, Somlata (S).

**Common Names**

Bushahar-Rachi, Khandaphag; Pb.- Asmani, Budagur, Budshur, Chewa; Ladakh- Trans, Tsapatt, Tse.

Russ.-Kuzmicheva trava.

**Systematic Account**

Shrublets upto 80 cm high; branches densely clustered, erect, smooth, green, jointed with scales at joints; cones in small axillary clusters; male cones stalked, solitary or 2-3 together, with 4-8 flowers each; anthers 5-8 with fused filaments, in the axils of bracts; female cone solitary, a naked ovule; fruits ovoid, 7-10 mm, red with 1-2 black seeds.

**Reproductive Cycle:** July- September (L); June- September (S).

**Habitat Ecology:** Screes, rocks, open slopes, in drier areas; common; Sumnam(L),3100 m; Hurling (S), 3150 m.

**Distribution:** Temperate and Alpine Himalaya. W. & C. Asia. Europe. 2400-5000 m.

**Material Examined:** EBH- 13 (L) , 13-7-94, EBH-215 (S) , 14-7-95.

**Folk Uses**

In Lahoul valley, fresh branches used as tooth-brush and 2-3 g powdered plant in divided doses given thrice a day for 2-4 days with water for curing liver disorders, especially weakness. In Spiti, powdered plant (2-3 g) is prescribed thrice daily for 3-5 days for cough, fever and cardiac ailments; ash of burnt branches/ branchlets used as snuff.

Known in India as an edible plant and blood purifier and for asthma, headache, hepatic disorders and rheumatic pain (Gaur *et al.*, 1983; Gupta *et al.* 1981; Kaul *et al.*, 1985; Rawat & Pangtey, 1987; Uniyal, 1968). Gupta *et al.* (1981) and Koelz (1979) recorded its use as snuff and tooth-brush in Lahoul.

Chief active principles are the alkaloids ephedrine and pseudoephedrine, the former constituting 55.7% of total alkaloids (1.22%). Diuretic and oxytocic activities confirmed and effect on isolated tissue positive (Asolkar *et al.*, 1992; Aswal *et al.*, 1984a,b; Chopra *et al.*, 1956).

***Epilobium angustifolium*** Linn. syn. *Chamaenerion angustifolium* (Linn.)Scop. (Onagraceae)+

**Pl.** 24A

**Vern. (L):** Dharshak.

**Common Names**

Eng.- Bay willow, Blood vine, Blooming sally, Burnt weed, Cat's

eyes, Fire top, Fire weed, Flowering willow, Fr. Willow, Purple rocket, Rose bay, sally bloom, Wickup, Willow herb; Fr.- Antoinette, Antonin, Faux laurier, Laurier de Saint Antoine, Neriette, nerion antonin, Osier fleuri; Ger.-Antoni-Kraut, Antonius, Antons, Bergschote, Eberkraut, Federbluah, Feuerkraut, Krebsblumen, Schotenweiderich, Thranenkraut, Wullenweidenroslein; Dutch-Basterdwederik, Dondertoren, hardijzers, kattestaart, Koekoeksbloem.

**Systematic Account**

A leafy perennial; stem erect, glabrous, branched, 1.2-2 m tall; leaves lanceolate with a white midrib and whitish beneath, spirally arranged; flowers pink, in long terminal leafless spikes; petals 4, obovate, stalked, spreading; calyx tube clothed with white tomentum; stigma distinctly 4-lobed; capsule upto 8 cm, finely hairy.

**Reproductive Cycle:** May-August.

**Habitat Ecology:** Open grassy slopes, screes, roadsides, edges of cultivated areas; Jahalman (L), 2900 m.

**Distribution:** Temperate W. Himalaya, W. Asia. Europe. N. America. 3000-4300 m.

**Material Examined:** EBH- 67, 12-8-94.

**Folk Uses**

Dried and pulverised roots used as detergent for washing clothes.

Known in India as a beverage, Kaporie tea and for abdominal, hepatic, intestinal and renal diseases (Anonymous, 1986b; Srivastava *et al.*, 1981).

Extract of leaves (1-2%) exhibits antiphlogistic action, contains about 10% pyrogallol tannin. Roots contain tannin, gallic acid, mucilage and pectin (Anonymous, 1986b; Chopra *et al.*, 1956).

***Eremurus himalaicus*** Baber (Liliaceae)

**Pl.** 24B

**Vern.(L):** Pray.

**Common Names:**

Kash.- Walun.

Eng.- Desert Candle.

**Systematic Account**

Erect, scapose herbs with a fibrous rootstock and a long leafless stem upto 110 cm high; leaves all basal, flat, long, narrow; flowers several in dense raceme, stalked, white; bracts awn-shaped, papery; fruits, a capsule.

**Reproductive Cycle:** June- August.

**Habitat Ecology:** Dry slopes; common; Beeling (L), 3250 m.
**Distribution:** Temperate W. Himalaya. C. Asia. 2100-3300 m.
**Material Examined:** EBH-95, 18-7-95.

**Folk Uses**

Young leaves used as a pot-herb and roots pickled and eaten. Known in India as a galactagogue (Asolkar *et al.*, 1992).

Root extract shows positive hypoglycaemic activity; it contains hordenine (Asolkar *et al.*, 1992; Sharma *et al.*, 1978).

***Erigeron alpinus*** Linn. syn. *E. acris* Linn. (Asteraceae)+

**Pl.** 24C

**Vern (L):** Bashakar

**Common Names**

Dutch- Blauw bijtend donderkruid; Eng.- Blue fleabane, Farewell-to-summer, Fleabane, Sharp erigeron; Fr.- Erigeron acre, Vergerette acre; Ger. -Altmannskraut, Baldgaris, Baldkraut, Dauron, Rufkraut, Rustkraut, Scharfes flohkraut, Zauber wurz.

**Systematic Account**

Erect herbs; stem tufted; heads pale-purple, solitary, corymosely arranged, long peduncled, involucral bracts linear; pappus-hairs reddish; achenes hairy.

**Reproductive Cycle:** July-August.
**Habitat Ecology:** Edges of cultivated areas; stony slopes, meadows; Beeling (L), 3150 m.
**Distribution:** Temperate and Alpine Western Himalaya. 1250-3550 m.
**Material Examined:** EBH-82, 25-8-94.

**Folk Uses**

Powdered aerial plant parts (2-3 g) given thrice a day for 5-7 days to cure rheumatism.

***Erigeron monticolus*** DC. (Asteraceae)+

**Pl.** 24D

**Vern. (L):** Minchan- sernag.

**Systematic Account**

Herbs; stem erect, glabrous or sparsely hairy; flower heads usually solitary, sometimes few on scape; ray-florets thread-like; ligules many, twice as long as the pappus; achenes flat, slightly silky.

**Reproductive Cycle:** July-August.

**Habitat Ecology:** Meadows, moist slopes, edges of fields; Keylong (L), 3300 m.

**Distribution:** Temperate and Alpine Himalaya. 2400-4500 m.

**Material Examined:** EBH-78,24-8-94.

**Folk Uses**

Powdered aerial plant parts used as a tonic.

***Fagopyrum tataricum*** (Linn.) Gaertn. (Polygonaceae)

**Pl.** 24E

**Vern.(L):** Brafo.

**Common Names**

Hindi- Kaspat; Pb.-Brapu, Chin, Drawo, Kalatrumba, Karmabres, Kathu, Phaphra, Tsabri, Ugal, Ulgo; Ladakh- Rajao, Trao.

Eng.-Bitter Buckwheat; Chinese-Ku Chiao Mai; Fr.-Ble de tartarie, Granette, Sarrazin de Tartarie.

**Systematic Account**

An erect annual with glabrous, unbranched stem, and with triangular heart-shaped leaves, as wide as long; flowers green in terminal branched clusters; perianth white; fruit, a nutlet, much longer than the persistent perianth, deeply grooved.

**Reproductive Cycle:** June-September.

**Habitat Ecology:** Cultivated, often as an escape on wastelands and along cultivated fields; Mayling (L), 3300 m.

**Distribution:** Pakistan to Bhutan, widely cultivated in the Himalaya. 1400-4400 m.

**Material Examined:** EBH-20, 14-7-94.

**Folk Uses**

Paste prepared by mixing nut flour with water and butter-milk and kept for 9-10 hours used on the affected part for giving relief from irritation caused by burns; also used for making bread. Leaves used as a vegetable.

Known in India as a vegetable and poultry feed, and foodstuff (Anonymous, 1986b; Bhargava, 1959; Gupta, 1962; Kaul *et al.*, 1985; Rawat & Pangtey, 1987).

Effect on respiration, cardiovascular system, nictitating membrane and CNS found positive (Bhakuni *et al.*, 1988).

***Ferula jaeschkeana*** Vatke (Apiaceae)

**Pl.** 24F

**Vern. (L):** Kalyash.

**Common Names**

Kash.-Haput Kanpur.

**Systematic Account**

An erect perennial to 2 m, with large, pinnatifid leaves upto 40 cm long with margins serrate, and yellow flowers in compound umbels; bracts and bracteoles absent; leaf bases oblong; fruits reddish, flattened.

**Reproductive Cycle:** June-September.

**Habitat Ecology:** Dry slopes, meadows, edges of fields; Sumnam (L), 3100 m.

**Distribution:** Pakistan to H.P. C. Asia. 2400-3600 m.

**Material Examined:** EBH-32, 19-7-94.

**Folk Uses**

Paste of fresh roots applied on boils and dried stems used for making toys, such as pistol, wind indicator and also as firewood.

Known in India to cure toothache and wounds (Dar *et al.*, 1984; Srivastava *et al.*,1981). Considered to be useful in rheumatism in Lahoul valley (Koelz, 1979).

Essential oil of fruits and roots contains camphene and d-α–pinene. Latex yields resin 69.98%, gum 9.21% and essential oil 14.81% (Anonymous, 1986b; Chopra *et al.*, 1956). Antifertility, abortifacient, antiimplantation and hypotensive activities (Aswal *et al.*, 1984 a,b; Sharma *et al.*, 1978).

***Fragaria indica*** Andr. syn. *Duchesnea indica* Focke (Rosaceae)+

**Pl.** 25A

**Vern. (L):** Palla.

**Common Names**

Pb.-Bana-phal, Bunun murrim, Ingrach, Kanzars, Paljor, Tawai.

Eng.-Indian or Mock Strawberry; Ger.-Gelbblutige erdbeere.

**Systematic Account**

A stoloniferous, perennial herb with thick rootstock and trifoliate leaves; leaflets sessile, obovate, toothed, glabrescent above, pubescent beneath; flowers white, 1-3, axillary; bracteoles 3-toothed, epicalyx conspicuous; fruit red with fleshy receptacle.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Forests, alpine slopes, shady banks; Mooling (L), 3150 m.

**Distribution:** Himalaya upto 3400 m.

**Material Examined:** EBH-24, 17-7-94.

**Folk Uses**

Ripe fruits eaten and considered nutritious.

***Fraxinus xanthoxyloides*** (Wall. ex G. Don) DC. (Oleaceae)

**Pl.** 25B

**Vern. (L):** Thrung.

**Common Names**

Chenab Basin-Butru, Chum, Sandal, Shangal; Jehlam Basin-Hanuz, Nuch, Shilli,; Kash.-Chijla, Chuj, Siju; Kum.-Thelka; Sutluj Basin-Chum, Thum; Trans Indus -Shang.

Eng.-Achee tree ash, Chinese-ash; Fr.-Frene xanthoxyloide; Ger.-Chinesische esche; N.W.P. -Auga, Gaha.

**Systematic Account**

Deciduous tree; bark greyish-pale with reticulate cracks; branches stiff; leaves pinnate; midrib winged; leaflets 5-11, elliptic-lanceolate, saw-toothed, scattered; flowers in dense heads, in the axils of fallen leaves; petals absent; fruit a winged nut.

**Reproductive Cycle:** July-September.

**Habitat Ecology:** Open slopes, in drier areas; Udaipur (L), 2700 m.

**Distribution:** Temperate Himalaya- Kash. to Kumaon. 1000-2700 m.

**Material Examined:** EBH-85, 2-9-94.

**Folk Uses**

Decoction prepared by boiling pieces of stem in water for 30 minutes prescribed for abdominal disorders in animals.

Wood used for making oars, poles and ploughs (Polunin & Stainton, 1984).

Plant extract has no specific pharmacological action (Abracham *et al.*, 1986).

***Gentianella moorcroftiana*** Airy-Shaw syn. *Gentiana moorcroftiana* Wall. ex G. Don (Gentianaceae)*

**Pl.** 25C

**Vern. (L, S):** Tikta.

**Common Names:**

Ladakh-Chhumbi Tikt.

Eng.- Moorcroft's Gentian.

**Systematic Account**

A glabrous, much-branched annual herb with ascending branches and oblong-elliptic leaves; flowers many, blue, tubular, funnel-shaped, pedicellate in a lax cluster, corolla not fimbricate in the throat; capsule lanceolate.

**Reproductive Cycle:** August-October (L); July-September (S).

**Habitat Ecology:** Open slopes, damp places, irrigated areas; Beeling (L), 3150 m; Hansa (S); 3650 m.

**Distribution:** Western Himalaya. 2700-4800 m.

**Material Examined:** EBH-60 (L), 6-8-94; EBH-219 (S), 25-7-95.

**Folk Uses**

In Lahoul, 2-3 g of powdered aerial plant parts given thrice a day with water for a few days to cure fever, cough and rheumatism. Amchi of Spiti prescribe the powder for gastric trouble.

Known in India as a febrifuge, blood purifier and for cough, cold, nausea and giddiness (Asolkar *et al.*, 1992).

***Gentianella paludosa*** (Hook.) Harry Smith (Gentianaceae)*

**Pl.** 25D

**Vern. (S):** Tikta

**Systematic Account**

An erect annual to 35 cm with solitary blue flowers with long pale corolla tube, and ovate-elliptical to ovate-lanceolate cauline leaves; throat of corolla tube without hairs or scales; stamens included; capsule stipitate with numerous blackish-brown seeds.

**Reproductive Cycle:** July-September.

**Habitat Ecology:** Grassy meadows, irrigated areas; Kibber (S), 3950 m.

**Distribution:** Pakistan to China. 3000-4500 m.

**Material Examined:** EBH-236, 20-8-95.

**Folk Uses**

Powdered aerial plant parts (2 g) given with water thrice a day for 3-7 days for gastric disorders.

***Geranium pratense*** Linn. (Geraniaceae)*+

**Pl.** 25E

**Vern. :** Porlo (L); Likatur (S).

**Common Names**

Hindi & Pb.-Bhanda.

Eng.-Crane's bill, Crow foot, Grace of God, Greatia Dei, Meadow Crane's-bill; Fr.-Grace-Diece des allemands; Ger.- Wiesenstorchschnabel.

**Systematic Account**

Perennial, branched, hairy herb with erect stems to 45 cm and 7-9 palmately lobed leaves; stipules subulate-lanceolate; flowers bluish-purple with darker veins, in pairs on long densely hairy pedicels; sepals erect in fruits; petals entire; capsule glandular-hairy, beaked with reticulate seeds.

**Reproductive Cycle:** June-August (L); June-September (S).

**Habitat Ecology:** Grassy meadows, moist shady slopes, prominent along irrigated channels; Rashil (L), 3050 m; Losar (S), 3800 m.

**Distribution:** Temperate Western Himalaya, W. Tibet, Temperate Eurasia, 3000-4500 m.

**Material Examined:** EBH-87 (L), 3-9-94 ; EBH-207 (S), 8-7-95.

**Folk Uses**

Inhabitants of Lahoul use its flowers as offerings to various deities. In Spiti, powdered whole plant, about 1/2 teaspoon, given twice a day with water, to treat cough, jaundice and gastric disorders.

Koelz (1979) reported its use in Lahoul as a stomachic, dye and for bruises.

Iodotannin, isokempferid and hexahydroflavone present in leaves and roots. Antibacterial and hypotensive activities found positive (Asolkar *et al.*, 1992).

***Habenaria arcuata*** Hook. f. (Orchidaceae)

**Pl.** 25F

**Vern. (L):** Panja.

**Systematic Account**

Glabrous, terrestrial herbs upto 60 cm high; leaves sessile; upper leaves lanceolate, basal sheathing; flowers green in terminal spikes; labellum large; rostellum flat, broad, acute; seeds numerous in a capsule.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Grassy slopes, grazing grounds; Sissu (L), 3150 m.

**Distribution:** W. Himalaya. 3000-4300 m.

**Material Examined:** EBH-41, 30-7-94.

**Folk Uses**

Powdered roots (2-3 g per dose) given thrice a day with water

as a tonic, febrifuge, and in dysentery. Agricultural implements made of iron not employed for digging its roots, as it is considered a sin among the inhabitants of Lahoul. However, *Salix* wood is employed for the same purpose.

***Heracleum candicans*** Wall. ex DC. syn. *H. lanatum* Michx.; *H. nepalense* D. Don (Apiaceae)

**Pl.** 26A

**Vern. (L):** Raswal.

**Common Names**

U.P.-Kakhriya.

Eng.-Cow parsnip, Health root, Masterwort.

**Systematic Account**

Herbs; stem erect, branched, upto 2 m tall; leaves 20-60 cm, pinnately lobed, white felted beneath; flowers white, in umbels; bracts usually absent; bracteoles 5-8, linear; fruits strongly compressed, pubescent.

**Reproductive Cycle:** June-September.

**Habitat Ecology:** Meadows, dry slopes, edges of fields; Bargul (L), 3200 m.

**Distribution:** Pakistan to China. 1800-4300 m.

**Material Examined:** EBH -28, 18-7-94.

**Folk Uses**

Fresh stems eaten raw for curing abdominal pain and gastric disorders.

Considered useful as an aphrodisiac, nerve tonic, spice and in leucoderma (Chopra *et al.*, 1969; Gupta *et al.*, 1981; Hajra & Chakraborty, 1981). Koelz (1979) reported its use in Lahoul valley to cure menstrual complaints and also for edible purposes.

Root contains furocoumarin, heraclenin, heraclenol, imperatorinoxide, 8-geranoxypsoralen, xanthotoxin, xanthotoxol sphondin, isoheraclenin, omc-heraclenol, tert-O-β- glucosylheraclenol, minor furocoumarins and candicanin. Fruit yields bergapten, a furanocoumarin and two other compounds lactonic in nature. 50% ethereal extract of plant shows positive spasmolytic activity (Asolkar *et al.*, 1992; Chopra *et al.*, 1969).

***Hippophae rhamnoides*** Linn. ssp. *turkestanica* Ronsi (Elaeagnaceae)*

**Pl.** 26B

**Vern. (S):** Chharma, Tirkug.

**Common Names**

Ladakh-Sirna, Tasru, Tsarana, Tsarap; Pangi-Suak; Pb.-Amb,

Bautphut, Kalabisa, Kando, Milech, Miles, Rul, Sirma, Suts, Starbu, Tarru, Tsarap, Tsarmang, Tsarmaniechak, Tserkar, Tswak.

Dutch - Duindoorn; Eng.-Sallow-thorn, Sand-thorn, Seabuckthorn; Fr.-Argousier, Argoussier; Germ.-Stechdorn; N.W.P.-Chuk, Chuma, Dhurchuk, Tarwa; Tibet-Starbu.

**Systematic Account**

Very thorny shrubs, upto 2.0 m tall, with rigid branches and silvery twigs and leaves; male and female flowers in clusters; tepals free in male flowers and united in female flowers; ripe fruits succulent, orange yellow; seeds solitary, spiny.

**Reproductive Cycle:** June-October.

**Habitat Ecology:** River sides, irrigated areas; very common; Kungri (S), 3350 m.

**Distribution:** Pakistan to H.P. Europe. C. Asia. 2100-3600 m.

**Material Examined:** EBH-218, 23-7-95.

**Folk Uses**

Berries eaten. Infusion of berries relished by children and regarded as tonic; medicine for tuberculosis prepared from pulverised harries. Branches used for fencing and as fuelwood.

Used in India for lung disorders and as pickle (Gupta, 1962). Inhabitants of Lahoul use its fruits for edible purposes, for cleaning ornaments, and as an aphrodisiac (Koelz, 1979).

Fruits are rich in vitamin C (135-608 mg/ 100 g). Presence of humnin in root nodules; and carotene, ascorbic acid and dehydroascorbic acid in leaves reported. Bark contains a yellow fatty oil (3.06%), two alkaloids and carotenes. Oxytocic activity and effects on isolated tissues and diuresis found positive (Abracham *et al.*, 1986; Aswal *et al.*, 1984a,b; Chopra *et al.*, 1956).

***Hippophae salicifolia*** D. Don. syn. *H. rhamnoides* Linn. ssp. *salicifolia* Sar veltaż (Elaeagnaceae)

**Pl.** 26C

**Vern. (L):** Sarla.

**Common Names**

Almora-Chu; Bassahir - Surch; Bhutan - Lhala; Garh. - Ames, Chuk; Pb. - Chuma, Dhurchuk, Kalabis, Surch, Tarwachuk.

Nepal-Ashuk.

**Systematic Account**

Thorny shrubs or small trees, deciduous; shoots rusty, scaly; leaves cottony-pubescent above and velvety beneath with white stellate

hairs, margins recurved, 5-10 cm long; male flowers yellowish-brown, in dense stalkless clusters; stamens 4; female flowers solitary, short-stalked, stigma exserted; fruits ovoid, yellow, succulent.

**Reproductive Cycle:** July-October.

**Habitat Ecology:** Wasteland, meadows, riversides; common; Chokhang (L), 3050 m.

**Distribution:** H.P. to Tibet. 2000-3500 m.

**Material Examined:** EBH-66, 10-8-94.

**Folk Uses**

Powdered berries given for cough, fever and skin diseases. Juice obtained by crushing the berries in 'Gogdum' considered nutritive, and enjoyed as a drink.

Known in India for use on cuts, wounds, ulcer, and also for edible purposes (Bennet, 1983; Negi *et al.*, 1985; Uniyal, 1968; Uniyal & Chauhan, 1973).

Bark extract is tumour inhibitory. Active principles are β-sitosterol and 2 alkaloids (Anonymous, 1986b). Antiviral activity and effect on isolated tissues found positive (Abracham *et al.*, 1986).

***Hyoscyamus niger*** Linn. (Solanaceae)

**Pl.** 26D

**Vern. (L):** Dhandhura.

**Common Names**

Beng.- Khorasaniajowan; Bomb.- Khorasaniowa; Guj.- Khorasaniajmo; Hindi- Khurasaniajvayan, Khurasanijamani, Khurosaniyamani; Kash.- Bazarbang; Mar.- Khorasanivova; Pb.- Bangidewana, Bazrbang, Damtura, Dandura, Datura, Dentura, Sura; Sans.- Dipya, Parasikaya; Tam.- Kurasaniyomam; Tel.- Kurashanivamam, Kurinjivamam.

Braz.- Meimendro Negro; Chinese- Lang Tche Tchou, Lang Tang, Lao lang Hoa; Dutch- Bilsenkruid; Eng.- Belene, Black Henbane, Brosewort, Chenile, Henbane, Henbell, Henkam, Hogsbean, Loaves- of- bread, Sickly- swelling Henbane, Stinking Roger, Symphonica; Fr.- Careillade, Clavelee, Feve a cochon, Hannebane, Henbane, Hennebane, Hennebone, Herbe aux angelures, Herbe a la teigne, Feve de pourceau, Jusquiame noire, Mort aux poules, Porcelet, Potelee, The poule; Ger.- Dullkraut, Dulldaeg, Huehnertod, Saukraut, Schlafkraut; Grk.- Hyaskyamos; Port.- Meimendro, Velheno, Yosciamo; Sind- Damtura; Spanish- Belenonegroveleno; Swed.- Bolmort, Honsble.

**Systematic Account**

Erect, coarsely hairy, viscid herbs with robust stem to 1 m and yellowish - white flowers with purple reticulations; upper flowers solitary in the axils of leafy bracts, lower ones in the forks of the branches; leaves sessile, dull green; calyx funnel-shaped, spine tipped in fruit; stamens protruding; capsule enclosed by the enlarged calyx.

**Reproductive cycle:** July- September.

**Habitat Ecology:** Wastelands, meadows, dry areas; Shipting (L), 3150 m.

**Distribution:** Kash. to Garh. Temperate Eurasia, N. Afr. N. America, 2100-3300 m.

**Material Examined:** EBH-25, 17-7-94.

**Folk Uses**

Seeds used in toothache and skin diseases. Smoke of burnt seed is blown through wheat straw into tooth cavity of the patient to provide instant relief from toothache.

Known in India as an astringent, sedative, vermifuge and for whooping cough, muscular pain, asthma and hysteria (Chopra *et al.*, 1956; Gaur *et al.*, 1983; Gupta *et al.*,1981; Shah, 1982). Koelz (1979), from Lahoul, described its use as symbolic and also for toothache.

The chief active principles are the alkaloids hyoscyamine, scopolamine with little quantities of atropine and hyoscypikrin. Antispasmodic activity positive (Anonymous, 1986b; Chopra *et al.*, 1956).

***Impatiens gigantea*** Edgew. syn. *I. sulcata* Wall. (Balsaminaceae)+

**Pl.** 26E

**Vern. (L):** Don.

**Common Names**

Eng.- Grooved balsam.

**Systematic Account**

Herbs upto 2.5 m tall; stem glabrous, delicate; leaves opposite, ovate- lanceolate, pedicelled, crenate; flowers pink to purple, spurred, in terminal umbel- like clusters; spur curved; capsule linear, 2.5-4 cm long.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Streamsides, forests, wet rocks; Khangsar (L), 3250 m.

**Distribution:** Temperate Himalaya. 1800-4000 m.

**Material Examined:** EBH-1, 8-7-94.

**Folk Uses**

Paste prepared by crushing the plant along with *Rumex scutatus* and some lichens in alcohol is used as a substitute for nail polish. Tribals apply it during night and subsequently cover the nails with a piece of *Betula* bark.

Known to be used as a veterinary tonic and for burns (Bennet, 1983; Rawat & Pangtey, 1987).

***Inula racemosa*** Hook. f. (Asteraceae)

**Pl.** 26F.

**Vern. (L):** Manurucha.

**Common Names**

Kash.- Poshkar, Urdu- Rasan.

Arab.- Rasan, Zanjabileshami; Pers.- Gharsa, Pilgush, Rasan, Zanjabilishami.

**Systematic Account**

Perennial herbs; stem erect, rough, grooved, 1.75 m high; leaves coriaceous; flower- heads 4-8 cm across, short-stalked, yellow, 1-3 in racemes; innermost involucral bracts longer than the outer ones; achenes slender, glabrous; pappus reddish.

**Reproductive Cycle:** July- September

**Habitat Ecology:** Cultivated; Shashin (L), 3250 m.

**Distribution:** Temperate and Alpine W. Himalaya. 1700-4750 m.

**Material Examined:** EBH-48, 1-8-94.

**Folk Uses**

Pounded roots used as incense.

Known in India as an expectorant and resolvent and for use in curing rheumatism and gastrointestinal disorders and in veterinary medicine as a tonic and stomachic (Anonymous, 1986b; Gupta *et al.*, 1981). Besides the use of roots as incense in Lahoul valley, flowers are used as offerings to various deities in religious ceremonies (Koelz, 1979).

Root extract strongly anthelmintic and diuretic due to active principles inulin (10%) and essential oil containing alantolactone (Anonymous, 1986b).

***Iris kemaonensis*** D. Don ex Royle (Iridaceae)+

**Pl.** 26G

**Vern. (L):** Praynal.

**Common Names**

Pb.- Karkar, Piaz, Tezma.

**Systematic Account**

Small herbs; rootstock stout, creeping with fleshy rootlets; stems tufted; leaves linear, 10-30 cm long; spathes 1-2 flowered, broader than the leaves; flowers solitary, bright lilac, shortly stalked; corolla tube erect, incurved, elliptic longer than the spathes; sepals bearded; capsule 3-4 cm, beaked.

**Reproductive Cycle:** May- August.

**Habitat Ecology:** Open slopes, grazing grounds, in drier areas; very common; Taylangway (L), 3500 m.

**Distribution:** Pakistan to Arunachal Pradesh. 2400-4000 m.

**Material Examined:** EBH-21, 16-7-94.

**Folk Uses**

Small pieces of fresh roots put into tooth cavity to cure toothache; basal parts of the leaves used as a whistle, especially by children. Flowers are not plucked for fear of diseases and deaths in the family.

Considered to be useful as a febrifuge and in urinary complaints (Gaur *et al.*, 1983; Rawat & Pangtey, 1987). Koelz (1979), from Lahoul, recorded its use as a pot-herb and in epilepsy.

Plant yields iridin and iriskumaonin. Spasmolytic and diuretic activities and effects on isolated tissues and CNS found positive (Asolkar *et al.*, 1992; Dhawan *et al.*, 1977,1980).

***Jaeschkea oligosperma*** (Griseb) Knobl. syn. *J. gentianoides* Kurz. (Gentianaceae)+

**Pl.** 27 A

**Vern. (L):** Tikta.

**Common Names**

Ladakh-Tikta.

**Systematic Account**

Glabrous, annual herbs to 40 cm, with narrowly-lanceolate, clasping, sessile leaves and bluish to reddish-purple flowers in a terminal cluster; stamens arising from the mouth of corolla tube; capsule compressed.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Grassy meadows, open slopes; Beeling (L), 3150 m.

**Distribution:** Kash.. W. Himalaya. 2700-4300 m.

**Material Examined:** EBH-74, 20-8-94.

**Folk Uses**

2-3 g of powdered aerial parts given twice a day for 3-5 days to cure cough, fever and rheumatism.

Used in India as a febrifuge and blood purifier (Gupta *et al.*, 1980).

Active principles are gentisin, gentianose and gentianine (Asolkar *et al.*, 1992).

***Juglans regia*** Linn. var. ***kamaonia*** C.DC. (Juglandaceae)+

**Pl.** 27B

**Vern. (L):** Ka, Kaboot.

**Common Names**

Beng. & Hindi-Akhrot; Bomb. & Mar.- Akroda; Sans. - Akschota; Tam. & Tel. - Akrottu.

Eng. - Common Walnut, European Walnut, Persian Walnut.

**Systematic Account**

Large deciduous trees with grey coloured, vertically fissured, aromatic bark and pinnate leaves; leaflets usually 5-9, entire, leathery, the terminal largest; male flowers in pendulous catkins; female flowers in terminal spikes; fruits ovoid with thick fleshy pericarps; nuts 2-valved.

**Reproductive Cycle:** June - October.

**Habitat Ecology:** Often planted near the villages, also met with as an escape in the forests; Thirot (L), 2950 m.

**Distribution:** Temperate Himalaya. W. Tibet. 1500-3000 m.

**Material Examined:** EBH-65, 9-8-94.

**Folk Uses**

Wood used for making agricultural implements, furniture and carvings. Bark and leaves used for scouring teeth, especially by women. Bark chewed as a substitute for lip-stick. Kernels mixed with roasted barley eaten.

Known in India as an anthelmintic, astringent, tooth powder, and for frost-bite, rheumatism, sores of toes, toothache, and for its edible seeds (Dar *et al.*, 1984; Gupta, 1962; Hajra, 1981; Negi *et al.*, 1985; Shah & Joshi, 1971; Sharma *et al.*, 1979).

Immature fruits rich source of ascorbic acid: whole plant, 1470; skin 1090; and pulp 2330 mg/100 g. Aqueous extract of leaves possesses strong bactericidal activity against microorganisms. Leaves and green pericarp of young fruit have phytocidic properties. Kernels contain globulin, juglansin, vitamins A and B (Anonymous, 1986b; Chopra *et al.*, 1969). Antiviral activity, gross effects and effects on respiration, cardiovascular system, nictitating membrane and CNS found positive (Dhar *et al.*, 1973).

***Juniperus macropoda*** Boiss syn. *J. excelsa* Brand.; *J. gossainthaneana* Loddig. (Cupressaceae)

**Pl.** 27C

**Vern. (L):** Shur.

**Common Names**

Garh. - Dhup, Padmak, Padmar; Kum. - Chundun, Dupri, Lewar, Newar, Surgi; Pb. - Chalai, Lewar, Shukpa, Shur, Shurgu.

Baluch. - Apurs, Ghushki, Ubashta; Eng. - The Himalayan Pencil Cedar; N.W.P. - Dhup, Padam, Padmak, Surgi; Nepal - Chandan, Dhupi, Dhupri, Shukpa; Pushtu - Obusht; Tibet - Shukpa, Shurbuto, Shurgu.

**Systematic Account**

Tree; bark reddish-brown, vertically fissured; trunk stout with irregular branches; leaves of two types; mostly scaly leaves on the upper branches, lower leaves adpressed to stem; male cones at the tips of the branchlets; female cones spreading as short lateral branchlets; fruits resinous, blue black, globose with 2-5 seeds.

**Reproductive Cycle:** September - March.

**Habitat Ecology:** Stony slopes, drier areas; Yurnad (L), 3300 m.

**Distribution:** Afg. to C. Nepal. N. Temperate zone. 1800-3600 m.

**Material Examined:** EBH-92, 16-9-95.

**Folk Uses**

Regarded as a sacred tree in Lahoul valley. Leaves used as incense. Smoke arising from burning a pinch of pulverized leaves and some seeds of mustard, and also chanting of some mantras by 'Lamas' is believed to drive away evil spirits from the body. During the engagement ceremony, when the two parties agree for the relationship, local drinks 'Arak', and 'Sara' are served only after dipping leaves of this tree thrice in them.

Known in India as an aromatic (Rawat & Pangtey, 1987). According to Koelz (1979), inhabitants of Lahoul valley consider it as an aromatic and for kidney disorders; the tree is considered as sacred.

Essential oil from the berries contains sugiol, 10-nonacosanol, sitosterol, junipodin, junipin, hypolaetin, and that from the leaves contains biflavons, flavon glucosides, isoflavon, stilbenes and junipegenin B & C (Chopra *et al.*, 1969). Antibacterial and diuretic activities and effect on isolated tissues found positive (Aswal *et al.*, 1984a,b; Bhakuni *et al.*, 1988).

***Lactuca macrorhiza*** (Royle) Hook.f. syn. *Mulgedium macrorhizum* Royle;

*Cicerbita macrorhiza* (Royle) Beauv. (Asteraceae)*

**Pl.** 27D

**Vern. (S):** Unbu.

**Common Names**

U.P. - Churi.

Eng. - Large rooted lettuce.

**Systematic Account**

Erect herbs, stems 6-40 cm, erect, many from the base; leaves pinnate, sometimes entire; upper leaves sessile, lower pedicelled; heads greyish-blue, terminating the branches; achenes flat, black, beaked; pappus hairs silky-white.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Grassy meadows, irrigated areas; Losar (S), 3800 m.

**Distribution:** Temperate Himalaya - Kash. to Sikkim. 2000-4500 m.

**Material Examined:** EBH-208, 8-7-95.

**Folk Uses**

Pounded aerial parts used as laxative in chronic constipation; 1 teaspoon thrice daily for 5 days.

***Lactuca polycephala*** Benth. (Asteraceae)+

**Pl.** 27E

**Vern. (L):** Panu-Shang.

**Common Names**

Eng. - Many - headed lettuce.

**Systematic Account**

Erect, glabrous, annual herbs; stem leaves sessile; flowers yellow; heads in umbel-shaped clusters; involucral bracts 2 - seriate; outer minute, inner 6-10; achenes ribbed, beaked; pappus silky.

**Reproductive Cycle:** June - August.

**Habitat Ecology:** Open slopes, grassy meadows, wet places, roadsides; Yurnad (L), 3100 m.

**Distribution:** Kash. to Sikkim. Burma. Afg. upto 3100 m.

**Material Examined:** EBH -89, 5-9-94.

**Folk Uses**

Flower heads consumed as a tonic.

***Lactuca viminea*** F. W. Schmidt. syn. *L. orientalis* (Boiss) Boiss. (Asteraceae)*

**Pl.** 27F

**Vern. (S):** Nichag

**Systematic Account**

Perennial herb; stem erect, glabrous with white branches and decurrent leaves with green wings; heads yellow, solitary or in clusters of 2-5; receptacle naked; achenes somewhat pointed at both the ends; pappus silvery-white.

**Reproductive Cycle:** June - August.

**Habitat Ecology:** Open slopes, meadows; Kaza (S), 3350 m.

**Distribution:** Himachal Pradesh. W. Tibet. 2100-4000 m.

**Material Examined:** EBH - 224, 3-8-95.

**Folk Uses**

Latex of plant chewed as a substitute for chewing-gum, especially by children.

***Lepidium latifolium*** Linn. (Brassicaceae)*

**PL.** 28 A

**Vern. (S):** Tharag - Thokpa.

**Common Names**

Ladakh - Gonyuch.

Eng.- Dittander; Ital. - Mostardina, Pepealla; Port. - Herba serva, Herva pimenteira, Lepidio ; Spanish - Lepidio, Mastuerzomayor.

**Systematic Account**

Erect, branched, perennial herbs; stem 30-120 cm, woody at the base; lower leaves leathery; flowers minute, white, in corymbose racemes; pods elliptic.

**Reproductive Cycle:** June - August.

**Habitat Ecology:** Open slopes, dry areas; Losar (S), 3800 m.

**Distribution:** Afg. to Kash.. W. Asia. Europe. N. Afr.. 3000-3800 m.

**Material Examined:** EBH - 202, 6-7-95.

**Folk Uses**

Powdered aerial parts (2 g) given thrice a day to cure rheumatic pains.

Described to be a useful antiscorbutic (Chopra *et al.*, 1956).

Infusion of plant increases cardiac amplitude and depresses blood pressure in dogs temporarily (Chopra *et al.*, 1969).

***Lindelofia anchusoides*** (Lindley) Lehm. syn. *Cynoglossum anchusoides* Lindl.; *Paracaryum heliocarpum* Kerner; *Adenocaryum anchusoides* (Lindl.) Brand (Boraginaceae)

**Pl.** 28 B

**Vern. (L):** Moday - shuwar.

**Systematic Account**

Herbs; rootstock stout; stems slender, erect, branched, covered with adpressed hairs; basal leaves long-stalked; cauline - leaves sessile; flowers bluish - purple, funnel - shaped, in terminal, axillary, racemes; stamens included; style protruding; fruits with hooked bristles.

**Reproductive Cycle:** June - August.

**Habitat Ecology:** Grassy meadows, stony slopes, irrigated areas; Sumnam (L), 3100 m.

**Distribution:** Afg. to Himachal Pradesh. 2100-3600 m.

**Material Examined:** EBH - 33, 19-7-94.

**Folk Uses**

Fresh leaves toasted on fire applied as bandage on cuts and wounds, and believed to possess quick healing property.

***Lomatogonium carinthiacum*** (Wulfen) Reichb. syn. *Swertia carinthiacum* Wulfen; *Pleurogyne carinthiaca* (Wulfen) Griseb. (Gentianaceae)+

**Pl.** 28C

**Vern. (L):** Tikta.

**Systematic Account**

Annual herbs to 15 cm; stem erect or decumbent, glabrous, branched; radical leaves obovate, stalkless; flowers blue, long pedicelled, in a cluster; calyx tube short; corolla lobes green-veined with nectaries at their bases; capsule sessile, seeds numerous, ellipsoid.

**Reproductive Cycle:** August to October

**Habitat Ecology:** Open slopes, bogs; Hill of Sumnam (L), 4050 m.

**Distribution:** W. Himalaya. W. Tibet. Europe. 3000-4800 m.

**Material Examined:** EBH-108, 14-8-95.

**Folk Uses**

Powder of dried flowers (2g) given twice a day for 3-4 days to cure cough, fever and rheumatism.

Known in India as an antipyretic, blood purifier, and for cough and cold (Srivastava *et al.*, 1981).

***Lonicera hypoleuca*** Decne (Caprifoliaceae)+

**Pl.** 28 D

**Vern. (L):** Kharmo.

**Common Names**

Pb. - Kharmo, Kodi, Rapesho, Zhiko.

Afg. - Gurazah, Sperai.

**Systematic Account**

Shrubs; stem erect, branched, upto 2 m high; leaves ovate, thick, glandular- hairy on both sides; flowers pale yellow, in pairs, 2-lipped, on small peduncles; bracts foliaceous; bracteoles glandular; berries red.

**Reproductive Cycle:** June - August.

**Habitat Ecology:** Rocky slopes, dry areas; Sumnam (L), 3100 m.

**Distribution:** N. W. Himalaya. Nepal. Tibet. 2700-4200 m.

**Material Examined:** EBH-30, 18-7-94.

**Folk Uses**

Young branches used as writing pen. Paste prepared from young branches applied on wounds in animals caused by rats.

Hypoglycemic activity found positive (Abracham *et al.*, 1986).

***Lychnis himalayensis*** Edgew syn. *Silene gonosperma* (Rupr.) Borquet ssp. *himalayensis* (Rohrb) Borquet syn. *S. wahlbergella* Chowdhuri; *S. himalayensis* (Edgew.) Maj.; *Lychnis apetala* Linn. (Caryophyllaceae)*

**Pl.** 28 E

**Vern. (S):** Sukpa

**Systematic Account**

Glandular-pubescent, erect, perennial herbs, with stem mostly 5-25 cm and narrow-lanceolate, basal leaves; flowers purplish, solitary or few, nodding, balloon - like with a brown-ribbed inflated calyx; capsule with 2 - lobed valves.

**Reproductive Cycle:** June - August.

**Habitat Ecology:** Meadows, edges of cultivation, moist slopes; Losar (S), 3800 m.

**Distribution:** Alpine Himalaya. Afg. to China. C. Asia. 3300-5000 m.

**Material Examined:** EBH-204, 6-7-95.

**Folk Uses**

One teaspoonful powder of sun-dried aerial parts given thrice a day for 10-15 days for rheumatic pain. Powdered seeds and fruits used as soap.

***Malus baccata*** (Linn.) Borkh. syn. *Pyrus baccata* Linn. var. *siberica* Maxim. (Rosaceae)

**Pl.** 32A

**Vern.(L):** Leejo.

**Common Names**

Hindi-Ban Mehal, Gwalam; Kum.-Ban Mahal, gawala-mahal, Rutripuli; Pb.-Lhijo, Litsi, Liu, Liwas, Baror, Choda.

Eng.-Siberian Crab Apple.

**Systematic Account**

Small-sized deciduous trees with short trunk and rounded crown, elliptic-pointed leaves and clusters of white long-stalked flowers in umbelliform corymbs; receptacle fleshy; fruits red, ovoid, 7-15 mm.

**Reproductive Cycle:** June - September.

**Habitat Ecology:** Forests, rocky slopes; Jobrang (L), 3050 m.

**Distribution:** Temperate Himalaya-Kash. to Bhutan. N. Temperate Asia. 1800 - 3600 m.

**Material Examined:** EBH-69, 13-8-94.

**Folk Uses**

Ripe fruits eaten.

Used in India to check dysentery (Negi *et al.*, 1985).

***Malva verticillata*** Linn. syn. *M. parviflora* Linn. (Malvaceae).+

**Pl.** 28 F

**Vern. (L):** Mikanchi.

Ass. - Laffa; Beng. - Lapha, Napha.

China - K'uei, Indo - China - Dong guy ; Eng. - Chinese.

**Systematic Account**

Herbs, 60-120 cm tall with perennial roots, and with erect, branched stems; branches downy; flowers light purple or mauve, sessile, crowded in the axils of the lobed, long-stalked leaves; epicalyx segments 3; stamens numerous, filaments united to form a tube surrounding the ovary and styles; fruit a dry capsule.

**Reproductive Cycle:** June - September.

**Habitat Ecology:** Edges of cultivated areas, roadsides, moist places, rarely in meadows; Beeling (L), 3150 m.

**Distribution:** Temperate Himalaya. N. Asia. N. Afr.. Europe. 2100-3300 m.

**Material Examined:** EBH - 61, 7-8-94.

**Folk Uses**

Powdered seeds (2 g) given thrice a day for 3-4 days to cure

bladder and kidney disorders, especially in strangury.

Known in India as an emetic, emollient, vegetable, animal feed, and for piles, ulcer, pectoral and urinary complaints (Arora, 1981; Karnick *et al.*, 1981; Malhotra & Basu, 1984; Rawat & Pangety, 1987; Singh & Pandey, 1980).

·Activity on respiration, cardiovascular system and nictitating membrane positive (Bhakuni *et al.*, 1988).

***Meconopsis aculeata*** Royle (Papaveraceae)

**Pl.** 29 A

**Vern. (L):** Chharbongcha, Chharmen.

**Common Names**

Kash. - Gul-i-nilum; Kum. - Kanda; Pb-Gudi, Kandeli, Kunda; Shimla dist. - Kanta.

Eng. - Blue poppy.

**Systematic Account**

Prickly perennial herbs with stout stems upto 60 cm tall; leaves irregularly deeply-lobed; bristly-haired; radical leaves long-stalked, cauline leaves sessile; flowers large, purplish-blue, in long racemes; petals 4; stamens indefinite; capsule beaked.

**Reproductive Cycle:** June - September.

**Habitat Ecology:** Stony slopes, damp places; Mountains of Beeling (L), 3600 m.

**Distribution:** Western Himalaya. 3000-4000 m.

**Material Examined:** EBH - 105, 12-8-95.

**Folk Uses**

Powdered aerial parts (2-3 g) given thrice a day as a tonic for general weakness of the body. Koelz (1979) considered the whole plant useful for the same purpose.

Known in India to cure colic, renal pain and backache (Srivastava *et al.*, 1981).

Roots considered narcotic and poisonous (Chopra *et al.*, 1956). Activity on diuresis found positive (Aswal *et al.*, 1984a,b).

***Mentha longifolia*** (Linn.) Hadson var. ***royleana*** Benth. syn. *M. incena* Willd.; *M. sylvestris* Linn. (Lamiaceae)

**Pl.** 29 B

**Vern. (L):** Marini, Madaen.

**Common Names**

Bomb. - Pudina, Vartadan; Hindi - Jungli Pudina, Podina; Kash-Ven;

Pb. - Baburi belanne, Koshu, Pudnakushma.

Eng. - Horsemint.

**Systematic Account**

Strongly aromatic, hairy perennial herbs to 1.0 m tall; leaves 3-8 cm long, lanceolate, densely-hoary, sharply serrate, paler beneath; flowers small, lilac, in shortly pedicelled spikes; bracts lanceolate; stamens exserted; nutlets reticulate.

**Reproductive Cycle:** June - September.

**Habitat Ecology:** Wastelands, nallahs, streamsides, shady localities; Tandi (L), 3000 m.

**Distribution:** Pakistan to C. Nepal. Tibet. N & W. Asia. Europe. 1500-3800 m.

**Material Examined:** EBH - 5, 10-7-94.

**Folk Uses**

Leaves of this plant and radish with a pinch of salt to taste and pepper ground together with addition of butter-milk to prepare chutney.

Known in India as an antiseptic, carminative, digestive and stimulant (Gaur *et al.*, 1983; Uniyal, 1968). According to Koelz (1979), in Lahoul, the plant is applied on animals' wounds to kill maggots.

Constituents of the essential oil from wild mint are phenols, aldehydes, pineol, menthol, diospherol, piperitenone oxide, diosphenolene, piperitone, piperitenone, limonene and cineol (Chopra *et al.*, 1969). The plant exhibits hypoglycemic activity (Aswal *et al.*, 1984a,b).

***Morina coulteriana*** Royle (Dipsacaceae)

**Pl.** 29 C

**Vern. (L):** Dayela.

**Common Names**

U.P. - Kandiyari, Kane, Khundaj.

**Systematic Account**

Perennial herbs; stems unbranched, pubescent upwards, upto 1 m tall; leaves sessile, spinously-toothed, in basal clusters; flowers yellow, in long interrupted spikes; bracts subtending whorls of flowers; corolla with long tube, 2-lipped; calyx lobes bifid; fruit apex oblique.

**Reproductive Cycle:** June - August.

**Habitat Ecology:** Dry slopes, edges of cultivation; common; Khinang (L), 3250 m.

**Distribution:** Temperate and subalpine Himalaya. 2400-3600 m.

**Material Examined:** EBH-59, 5-8-94.

**Folk Uses**

Flowers of this plant and *Rhododendron anthopogon* var. *hypenanthum* ground in equal proportions give an incense.

Known in India for curing abscess and also symbolic to ward off evil eyes (Rawat & Pangtey, 1987; Shah, 1982).

Plant extract has no therapeutical value (Aswal *et al.*, 1984a).

***Myricaria germanica*** (Linn.) Desv. ssp. ***alopecuroides*** (Schrenk) Kitamura syn. *M. bracteata* Royle; *M. hoffmeisteri* Klotz; *Tamarix germanica* Linn. (Tamaricaceae)*+

**Pl.** 29D

**Vern.:** Hombug (L); Hombuk (S).

**Common Names**

Pb. - Bis, Umbu.

**Systematic Account**

An erect bushy shrub, 2 m tall; stems striate; leaves sessile, densely clustered, gland-dotted; flowers reddish-purple in terminal spike-like racemes; bracts acuminate, with scarious margins; stamens connate; fruit 8 mm.

**Reproductive Cycle:** July - September (L); July - August (S).

**Habitat Ecology:** Riversides, sandy riverbeds; Jispa (L), 3350 m; Kaza (S), 3350 m.

**Distribution:** Temperate and Alpine Himalaya - Sikkim to Kum.. W. Asia. Europe. 1500-3350 m.

**Material Examined:** EBH-53 (L), 3-8-94; EBH-211 (S), 11-7-95.

**Folk Uses**

Inhabitants of Lahoul consider the plant as sacred and use small pieces of its stem and dried branches for making fire in religious ceremonies, especially 'Drishag' (a kind of 'Havan'). In Spiti, powdered leaves and flowers (2 g) given thrice a day for about one month to cure rheumatism; dried leaves used as incense.

Known to be used in India as fuel and fodder (Chopra *et al.*, 1956).

Plant extract has no pharmacological action (Sharma *et al.*, 1978).

***Onosma bracteatum*** Wall. (Boraginaceae)+

**Pl.** 29E

**Vern. (L):** Khomig.

**Common Names**

Beng. & Hindi - Gaozaban, Shankhahuli; Kash. - Gul-i-gao-

zaban; Tam. - Gao - zaban; Urdu - Gaozaban.

Arab. - Lasanulshur, Taharatulsanulshur; Pers. - Gaozaban.

**Systematic Account**

Hairy, stout herbs to 40 cm, with erect, leafy stems, and with linear, woolly-haired bracts surrounding the globular silky heads of reddish-purple flowers; upper leaves broader and shorter than the linear basal leaves; corolla-tube cylindrical, with blunt lobes; nutlets rough.

**Reproductive Cycle:** May - August.

**Habitat Ecology:** Stony slopes in dry areas; common; Goshal (L), 2950 m.

**Distribution:** W.Himalaya-Kash. to Kum.. 3300-5000 m.

**Material Examined:** EBH-24, 18-7-94.

**Folk Uses**

Roots mixed with mustard oil used as hair tonic. Dye extracted from roots employed for colouring culinary preparations.

Used in other parts of India as hair tonic (Rawat & Pangtey, 1987).

***Origanum vulgare*** Linn. (Lamiaceae)+

**Pl.** 29F

**Vern. (L):** Lamy Masha.

**Common Names**

Hindi - Mirzanjosh, Sathra; Pb. - Mirzanjosh; Tel. - Mridumaruvamu; Urdu - Mirzanjosha.

Arab. - Buklutulgezal, Mirzanjosha, Sutur; Chinese-Ching chieh, Yin chen; Dan.-Tost, Vild merian; Dutch-Orego; Eng. - Argans, Common Marjoram, English Marjoram, Marjoram, Orgament, Organ, Origany, Pot Marjoram, Wild Marjoram; Ger.-Blauer Orant, Branner Dosten, Dosten, Wilder Majoram; Grk.-Origanos; Ital.-Origano, Regamo; Mal.-Yanchan; Malta-Common Marjoram; Pers.-Mizangosch, Mirzanjosha, Oushneh; Pol.-Lebiotka; Port.-Ouregao, Ouregos; Russ.-Dushitsa; Spanish-Oregano; Swed.-Dosta.

**Systematic Account**

Hairy, aromatic, perennial herbs to 60 cm with pale-purple to white flowers borne on corymbose cymes; leaves ovate, entire, petioled; flowers polygamous, 2-lipped with the upper lip notched, bracteate; calyx bell-shaped, glandular hairy; fruit of 4 nutlets.

**Reproductive Cycle:** July - September.

**Habitat Ecology:** Open slopes, grassy meadows, drier areas; Sumnam (L); 3100 m.

**Distribution:** Temperate Himalaya - Kash. to Sikkim W. & N. Asia. Europe. N. Afr. 1500-3600 m.

**Material Examined:** EBH-4, 10-7-94.

**Folk Uses**

Aerial parts, including flowers, used as spice.

Known to be used in India as a stimulant, tonic, febrifuge and for cold, diarrhoea, fever, hysteria, influenza, menstrual complaints, and in the preparation of local drinks (Gaur *et al.*, 1983; Gupta, 1981; Rawat & Pangtey, 1987; Shah & Joshi, 1971).

Plant extract tested negative for various biological activities (Bhakuni *et al.*, 1969).

***Pedicularis bicornuta*** Klotzsch (Scrophulariaceae)*

**Pl.** 30A

**Vern. (S):** Lugru Serpo.

**Common Names**

Eng. - Two-horned Lousewort.

**Systematic Account**

Tall, hairy, semiparasitic herbs upto 60 cm with roots of fleshy fibres, and with alternate, linear-oblong, pinnatifid leaves with basal large, cauline smaller; flowers yellow, in terminal spike-like clusters; corolla 2-lipped; the upper lip hooded and prolonged into a coiled bifid beak, the lower lip broad, 3-lobed; calyx inflated, hirsuate; fruit a capsule.

**Reproductive Cycle:** July - August.

**Habitat Ecology:** Grassy meadows, moist and shady slopes; Losar (S), 3800 m.

**Distribution:** Afg. to Uttar Pradesh. W. Tibet. 2700-4400 m.

**Material Examined:** EBH-203, 6-7-95.

**Folk Uses**

Powdered aerial parts given (1 tablespoonful a day) to cure chest pain, backache and in case of bleeding through mouth.

***Pedicularis longiflora*** Rudolph. ssp. ***tubiformis*** (Klotzsch) Pennell syn. *P. tubiformis* Klozsch; *P. tubiflora* Hook.f. (Scrophulariaceae)*

**Pl.** 30B

**Vern. (S):** Langna Serpo.

**Common Names**

Eng. - Long-flowered Lousewort.

**Systematic Account**

A stout tufted perennial herb, 5-10 cm tall; flowers bright yellow with dark spots, bracteate, axillary in subcapitate racemes; corolla tube 4 times the length of calyx; fruit a dehiscent capsule.

**Reproductive Cycle:** July - September.

**Habitat Ecology:** Bogs, irrigated channels, streamsides, damp places; Kibber (S), 3950 m.

**Distribution:** Alpine Himalaya. W. Tibet. Siberia. 2700-4800 m.

**Material Examined:** EBH-232, 19-8-95.

**Folk Uses**

Powder of shade-dried flowers (2 g) given thrice a day to cure gastric pain and blood vomiting.

***Peperomia reflexa*** A. Dietr (Piperaceae)+

**Pl.** 30C

**Vern. (L):** Nyanchang.

**Systematic Account**

A creeping herb to 35 cm; stem branched, leafy, delicate, rooting at the nodes; leaves sessile, orbicular, opposite to each other at each node.

**Reproductive Cycle:** June - August.

**Habitat Ecology:** Prominent along water streams; Karga (L), 3050 m.

**Distribution:** Subtropical Himalaya-Garhwal to upper Assam. Sri Lanka. Malay Islands. China. Australia. Afr.. America. 1350-4200 m.

**Material Examined:** EBH-46, 1-8-94.

**Folk Uses**

Paste of aerial parts applied on burns for quick healing; applied on allergic and skin diseases caused by fungus and bacteria.

Known in India as a tonic and for kidney disorders (Anonymous,1986b).

***Physochlaina praealta*** (Decne.) Miers syn. *Belenia praealta* Decne.; *Hyoscyamus praealta* Walp. (Solanaceae)+

**Pl.** 30D

**Vern.** (L) Dhandhura, Langtang.

**Common Names**

Ladakh-Langthang; Pb.-Bazar-bang, Dandarwa, Khardag, Langtang,

Nandru, Sholar.

**Systematic Account**

An erect perennial viscid herb, 60-120 cm, with ovate-oblong, stalked leaves, and with purple-veined pale green flowers in terminal branched clusters; calyx tubular bell-shaped; corolla funnel-shaped; stamens and style exserted; fruit a capsule opening by a lid.

**Reproductive Cycle:** July - September.

**Habitat Ecology:** Stony slopes, common on rocks and boulders; Bargul (L), 3200 m.

**Distribution:** W. Himalaya. W. Tibet. Nepal. 2400-4600 m.

**Material Examined:** EBH-26, 17-7-94.

**Folk Uses**

Smoke of burnt seeds siphoned into tooth-cavity through barley straw to provide instant relief for the aching tooth.

Known in India to cure boils, ulcers and liver disorders (Gupta *et al.*, 1981; Rawat & Pangtey, 1987). Koelz (1979) recorded its use in Lahoul in epilepsy.

Narcotic and mydriatic activities of leaves are due to chief active principles: 1.02% alkaloid, hyoscyamine and hyoscine. Besides leaves, roots have also been found to have 0.64% hyoscyamine (Anonymous, 1986b).

***Plantago major*** Linn. var. ***angusta*** (Pilger) Yamazaki syn. *P. asiatica* Linn. var. *angusta* Pilger (Plantaginaceae)+

**Pl.** 30E

**Vern. (L):** Karecha.

**Common Names**

Bomb.-Barhang, Bartang; Hindi-Luhuriya; Kash.-Gul, Isafghol; Kum.-Luhuriya; Mal.-Cheachean chor; Pb.-Ghuzbe, Gul, Isafghol, Karet; Urdu-Barhang, Bartang.

Afr.-Groot weegbree, Platvoet, Weeblaar, Weegblaar, Weegbree; Annam-Cay phu di, Duong dao, Ma de, Matich, Nguu thiet, Rau ma de, Xa luan the, Xa tien; Arab.-Kasratelazlaa, Lisanelhamal, Sahaatazlaa; Cant.-Che ts in; China-Ch'e Ch'ien; Dan.-Vejbred; Dutch-Groote Weggbree; Eng.-English man's foot, Greater Plantain, Plantain Ribgrass, Plantain Ribwort, Ripple Grass, Waybred, Waybroad, Whiteman's foot; Fr.-Grand plantain, Plantain, Plantain a bouquet, Plantain commun, Plantain des oiseaux; Ger.-Aderkraut, Ballenfaetsch, Ballenkraut, Dreiadern, Dressig, Fuenfederkraut, Heudieb, Hundrippe, Partenblatt, Rippenkraut, Spierkraut, Spitzfeder, Teufelshuetchen, Vergehkraut, Wegblatt, Wegerich; Grk. -

Arnoglosson; Ital. - Paintaggine maggiore; Malta - Bizbula, Greater Plaintain, Piantaggine, Pers. - Barang, Barthang, Kamarsch; Phil. - Llanten; Pol. - Babka ; Port. - Tandhagem mor; Russ. - Popushnik, Poputnik.

**Systematic Account**

Perennial herbs; stem erect, glabrous; leaves all basal, membranous; petioles winged with sheathing base; flowers pale-yellow, crowded in long, slender spikes 10-40 cm long; calyx not stipitate; capsule ovoid, glabrous; seeds 6-34.

**Reproductive Cycle:** June-September.

**Habitat Ecology:** Open slopes, meadows, edges of cultivation; Sumnam (L), 3100 m.

**Distribution:** Temperate and Alpine Himalaya. 2700-5000 m.

**Material Examined:** EBH-6, 10-7-94.

**Folk Uses**

Leaves applied as bandage on cuts, bruises and wounds. Leaves put in curd to extract maximum butter out of it. Pounded seeds prescribed for gastric disorders.

Known in India for cuts, wounds, burns, constipation, diarrhoea, dysentery, fever, inflammation, weakness and as vegetable (Gaur *et al.*, 1983; Kumar *et al.*, 1987; Maheshwari & Singh, 1984; Rao, 1981a,b; Rao & Jamir, 1982a,b; Rawat & Pangtey, 1987; Singh & Singh, 1985; Tiwari *et al.*, 1979).

The plant contains aucubin. Seeds possess 0.183% holoside plantease. Chemical constituents of the leaves are glucosides, saponins and bitter compounds (Chopra *et al.*, 1956). Pharmacological screening shows positive effect on isolated tissues (Abracham *et al.*, 1986).

***Podophyllum hexandrum*** Royle syn. *P. emodi* Wall ex Hook. f.; *P. emodi* var. *hexandrum* (Royle) Chatt. et Muker.; *P. hexandrum* var. *jaeschkei* (Chatt. et Muker) Browicz (Podophyllaceae)

**Pl.** 30F

**Vern. (L):** Omo-Shey

**Common Names**

Beng.-Papra; Guj.-Venivel; Hindi-Bakrachimaka,bhavanbakra, Papra, Papri, Pilijati; Kash.-Banwangan; Mar.-Padwel,Patvel; Pb.-Banbakri, Bankakra, Banbakri, Chimyaka, Gulkakri, Gulkakru, Kakra, Papri, Wanwangan.

Eng. - American mandrake, Duck's-foot, Himalayan May apple, May apple; Fr.- Rhizone de podophyllum; Ger.-Fussblattwurzel.

**Systematic Account**

Glabrate, unbranched, perennial herbs, 15-40 cm tall with scapigerous stems and supra-axillary, cup-shaped, white to pink flowers upto 4 cm across; leaves usually 2-3 lobed, palmate; berry red, large, pulpy, with many seeds.

**Reproductive Cycle:** June - September.

**Habitat Ecology:** Forests, meadows, moist slopes; Khinang (L), 3250 m.

**Distribution:** Afg. to China. 2400-4500 m.

**Material Examined:** EBH-42, 30-7-94.

**Folk Uses**

Powdered roots (3 g) given thrice a day in chronic constipation. Pulverized fruits (2-3 g) prescribed for cough and tuberculosis thrice a day for 10-15 days. Ripe fruits eaten.

Recorded in India for cuts, wounds, diarrhoea, gastric ulcers, hepatic disorders, skin diseases, cancer and tumour, and as a purgative, and for its edible seeds and fruits (Chaudhuri *et al.*, 1977; Dam & Hajra, 1981; Gaur *et al.*, 1983; Gupta *et al.*, 1981; Nautiyal, 1981; Rawat & Pangtey, 1987; Shah & Joshi, 1971; Srivastava *et al.*, 1981; Uniyal, 1968; Uniyal & Chauhan, 1973). Koelz (1979) recorded its use for cough and as purgative among inhabitants of Lahoul valley.

Active constituents of resin in leaves are podophyllotoxin, picropodophyllin and quercetin. Podophyllotoxin β-D-glucoside in the rhizome has been found to inhibit mitosis and cancerous growth (Chopra *et al.*, 1969)

***Polygonum affine*** D. Don syn. *Bistorta affinis* (D. Don) Greene (Polygonaceae)

**Pl.** 31A

**Vern. (L):** Kaped.

**Common Names**

Kash.-Maslun; Pb.-Anjabar, Bajir, Bilauri, Dori, Mamech, Maslun; Urdu-Anjabar.

**Systematic Account**

Tufted, glabrous, mat-forming herbs, 15-30 cm tall, with woody, branched rootstock, and with a few, small, linear-lanceolate basal leaves with crenate margins; stipules reddish-brown, membranous; flowers pale pink on 5-8 cm long racemes; stamens exserted; nut 3-angled.

**Reproductive Cycle:** July - September.

**Habitat Ecology:** Alpine slopes, moist places, screes; Beeling Nallah (L), 3500 m.

**Distribution:** Alpine and Subalpine Himalaya - Kash. to Kum.. W. Tibet. 3000-4800 m.

**Material Examined:** EBH-103, 18-8-95.

**Folk Uses**

Powdered stem (3 g) in divided dose given thrice a day for 3-4 days to check flatulence and dysentery.

Koelz (1979) reported its use for cold and diarrhoea and edible purposes, but did not specify parts of the plant used.

Plant extract tested negative for various biological activities (Dhar *et al.*, 1973).

***Polygonum alpinum*** All. syn. *P. polymorphum* Ledeb. (Polygonaceae)

**Pl.** 31 B

**Vern. (L):** Alipap.

**Common Names**

Kash.-Tsok-Ladar.

**Systematic Account**

Undershrubs with softly pubescent young parts, upto 1.5 m high, and with shortly-petioled, linear lanceolate, acuminate leaves which are pubescent beneath; flowers white or pale pink, in terminal, long panicles; fruit a black nut.

**Reproductive Cycle:** June - August.

**Habitat Ecology:** Rocky slopes, meadows, edges of cultivated crops; Sumnam (L), 3100 m.

**Distribution:** N.-W. Himalaya-Kullu to Kash.. Siberia. N. America. 2750-4000 m.

**Material Examined:** EBH-19, 14-7-94.

**Folk Uses**

Tender roots and stems eaten raw; stems also used for chutney. The plant used as fodder.

Used as an astringent and for edible purposes (Anonymous, 1986b).

Plant extract has no specific pharmacological action (Aswal *et al.*, 1984a,b).

***Polygonum tortuosum*** D. Don syn. *P. tataricum* Wall.; *Aconogonum tortuosum* (D. Don) Hara (Polygonaceae)*

**Pl.** 31C

**Vern. (S):** Nyolo.

**Common Names**

Pb.-Niala, Nialo.

**Systematic Account**

Shrubby herbs to 45 cm with entire, sessile, coriaceous, pale-green leaves which turn crimson during autumn, and with white flowers tinged with pink in short, terminal panicle; branches divaricate; stipules truncate; nut ovate.

**Reproductive Cycle:** July - September.

**Habitat Ecology:** Common on dry slopes; Kibber (S), 3950 m.

**Distribution:** Afg. to Bhutan. Tibet. 3300-5600 m.

**Material Examined:** EBH-233, 19-8-95.

**Folk Uses**

Powdered aerial parts prescribed for dysentery and dehydration; 1 teaspoonful twice daily for 5-7 days.

Used in India as a source of yellow dye (Anonymous, 1986b).

***Polygonum virginianum*** Linn. syn. *Tovara virginiana* (Linn.) Rafin. (Polygonaceae)+

**Pl.** 31 D

**Vern. (L):** Alipap.

**Common Names**

Chinese - Chin szu Ts'ao, Haiken.

**Systematic Account**

Sparsely-hairy perennial herbs to 1.5 m, with hollow branches, and with thin, elliptic-lanceolate, short-petioled leaves; stipules tubular, hairy; racemes long-peduncled; bracts ciliate; flower stalks rigid; perianth 4-partite; fruit ellipsoid, flattened.

**Reproductive Cycle:** June - August.

**Habitat Ecology:** Grassy meadows, common along irrigated channels; Ropsang (L), 3200 m.

**Distribution:** Temperate Himalaya. China. Japan. Eastern United States. 2700-4300 m.

**Material Examined:** EBH-70, 14-8-94.

**Folk Uses**

Young stems eaten raw.

Known in India as a demulcent, pectoral, astringent, tonic, diuretic and antispasmodic (Chopra *et al.*, 1956).

Ethereal extract of plant possesses antibacterial activity (Anonymous, 1986b).

***Polygonum vivipara*** Linn. syn. *Bistorta vivipara* (Linn.) S.F. Gray (Polygonaceae)*

**Pl.** 31E

**Vern. (S):** Naram.

**Common Names**

Beng.-Machutie; Hindi & Pb.-Anjabar, Bajir, Ban-natia, Bilauri, Bijband, Dori, Mamech, Maslun; Kash.-Drop, Maslun; Sans.-Miromati, Nisomale; Urdu-Anjabar.

Arab.-Anjabar; Eng.-Alpine knotweed, Knot grass, Viviparous Bistort, Viviparous Polygonum; Pers.-Anjagar.

**Systematic Account**

Small-sized, slender, glabrous herbs, 5-40 cm; rootstock stout, covered with persistent leaf bases; leaves coriaceous, pubescent beneath; lower leaves stalked, upper leaves sessile; stipules papery; flowers pink, erect, bracteate, in 2-10 cm long spikes; stamens exserted.

**Reproductive Cycle:** July - September.

**Habitat Ecology:** Open slopes, meadows, moist places; Kibber (S), 3950 m.

**Distribution:** Alpine and Subalpine Himalaya-Kash. to Sikkim. W. Tibet, N. Temperate Zone. 3300-5000 m.

**Material Examined:** EBH-231, 18-8-95.

**Folk Uses**

Powder of dried aerial parts (2-3 g) given thrice a day to check dysentery.

Known in India as an astringent and for abscess, diarrhoea, dysentery, intestinal bleeding, ulcer, leucorrhoea, sore throat and lung affections (Gaur *et al.*, 1983; Srivastava *et al.*, 1981; Rawat & Pangtey, 1987).

Active constituents of roots are tannic and gallic acids (Kirtikar & Basu, 1935).

***Prunus cornuta*** (Wall.ex Royle) Steud. syn. *P. paddus* Linn. (Rosaceae)+

**Pl.** 31F

**Vern. (L):** Krun.

**Common Names**

Hindi-Jamana; Kash.-Jaman, Zambchule; Kum.-Bombali, Bombaksing, Jamana, Jamun. Jamuna; N.W. Himalaya- Jamoi, Jamu, Jamun; Pb.-Bast, Chule, Dudla, Gidardak, Jammu, Jamu, Jamun, Karun, Paras, Zam.

Eng.-Bird cherry;Fr.-Cerisier a grappes, Flairanbois, Laurier Putiet, Merisier a grappes, Pultier, Putiet; Ger.- Ahlkirsche, Alzkrische, Elexen, Elfenbaun, Elsebeerbaum, Elsebeere, Elsen, Faulbaum, Faulbeerbaum, Faulkirsche, Hexenbaum, Kirsche, Maibaum, Pabstweide, Traubenkirsche;

Ital.-Pado; Nepal-Arupatti, Likharu; Russ.-Tcheryomukha; Spanish-Cere Zo de racimo, Falso cerezo de Santa Lucia.

**Systematic Account**

Deciduous trees; bark brown-coloured; leaves 8-15 cm, oblong-lanceolate, acuminate, saw-toothed; flowers white, small, drooping in a long raceme; petals orbicular; ripe fruits nearly black globular.

**Reproductive Cycle:** June - September.

**Habitat Ecology:** Open slopes, rocky areas, forests; Rashil (L), 3050 m.

**Distribution:** Temperate Himalaya - Kurrum to Sikkim, Bhutan. Burma. 2100-3500 m.

**Material Examined:** EBH-64, 9-8-94.

**Folk Uses**

Ripe fruits eaten.

Oil from kernels contains HCN-glucosides (Chopra *et al.*, 1956). Plant extract possesses antiviral activity (Dhar *et al.*, 1973).

***Ranunculus wallichianus*** Wight (Ranunculaceae)+

**Pl.** 32B

**Vern. (L):** Peepri-uja.

**Systematic Account**

Small herbs upto 90 cm tall; rootstock perennial; stem glabrous beneath and hairy above; leaves ternati-partite, hairy; long-stalked; flowers yellow, solitary; sepals reflexed; achenes compressed.

**Reproductive Cycle:** June - August.

**Habitat Ecology:** Wet places, irrigation channels, shady localities; Sumnam (L), 3100 m.

**Distribution:** Temperate Himalaya. 1500-4000 m.

**Material Examined:** EBH-56, 3-8-94.

**Folk Uses**

Paste of flowers applied on boils. Paste of aerial parts applied externally on joints to cure pains and stiffness.

***Rheum emodi*** Wall. ex Meissn. syn. *R. australe* D. Don (Polygonaceae)

**Pl.** 32C-E

**Vern. (L):** Archo.

**Common Names**

Beng.-Bangla-revan-chini; Bomb.-Ladakirevandachini; Garh.-Archu; Guj.-Gamnirevanchini; Hindi-Dolu,Hindirevandchini; Ladakh & Spiti-

Lachu; Mar.- Mulkacharevalchinni, Revachini; Pb.-Arts, Artso, Atsu, Chotial, Chuchi, Chukri, Chutial, Kandaul, Lachu, Pambash, Rewandchini, Ribas; Sans.-Gandhini, Pita, Pitimulika, Revatchini; Tam.-Nattirevalchinni, Nattumanjatchinnakkilangu; Tel.–Nattupamuc–hinagagadda, Nattureva-lchinni; Urdu-Rewanch.

Afg.-Chukri, Rawash; Arab.-Ravandchindi; Nepal.-Padamchal, Pers.-Bikhrewas, Rewandehindi.

**Systematic Account**

Erect, leafy herbs upto 2 m high with green and brown streaked stems and a woody rootstock; leaves orbicular, hairy beneath; leaf-stalks stout; flowers reddish-purple in dense clusters; nutlets ovoid-oblong, purple with notched apex and narrow wings.

**Reproductive Cycle:** July - September.

**Habitat Ecology:** Rocky slopes; common; Kardang (L); 3350 m.

**Distribution:** Subalpine and Alpine Himalaya, Himachal Pradesh to E. Nepal. 3000-4200 m.

**Material Examined:** EBH-38, 20-7-94.

**Folk Uses**

Extract of root obtained on boiling its small pieces in hot water for 2-3 hours used as dye for wool and woollen products. Stems and petioles eaten raw for quenching thirst.

Used in India as an appetiser, febrifuge, laxative, and for abdominal pain, asthma, bronchitis, cuts, wounds, dysentery, eye diseases, piles, skin diseases, sprain and ulcer (Gaur *et al.*, 1983; Rawat & Pangtey, 1987; Shah & Joshi, 1971; Uniyal, 1968; Uniyal & Chauhan, 1973). Inhabitants of Lahoul valley use this plant as source of a dye, and for smoking, sprain, swelling, and also for edible purposes (Koelz, 1979).

Effect on isolated tissues and antiprotozoal activity found positive (Abracham *et al.*, 1986). Active principles of roots are rhein and emodin. Leaves possess 1.34% oxalic acid. Essential oil (0.05%) obtained from rhizomes contains eugenol, a terpene alcohol and methyl heptylketone. Chemical constituents of the rhizomes are rhaponticin and chryophanic acid (Chopra *et al.*, 1956).

***Rhododendron anthopogon*** D. Don. ssp. *hypenanthum* (Balf.f.) Cullen. (Ericaceae)

**Pl.** 32F

**Vern. (L):** Ballu.

**Common Names**

Garh.-Dhoop; Kash.-Talisfar, Tazaktsum; Pb.-Kaizaban, Morua,

Nora, Nichni, Rattankat, Talisa, Talishang, Talissi.

Bhutan-Palu; Nepal-Dhupi.

**Systematic Account**

A strong-smelling, dwarf shrub, not exceeding 1.0 m in height with densely scaly branchlets and terminal clusters of 4-6 creamish-white flowers; leaves crowded towards the ends of branches, scaly beneath; corolla tube narrow, throat hairy; stamens included in corolla tube; capsule ovoid, 2-4 mm long.

**Reproductive Cycle:** July - September.

**Habitat Ecology:** Alpine slopes; Drilbu (L), 4250 m.

**Distribution:** Alpine Himalaya-Kash. to Bhutan. 3000-4800 m.

**Material Examined:** EBH-57, 4-8-94.

**Folk Uses**

Powdered leaves (1-2 teaspoonful) given thrice a day with water to reduce birth pains and facilitate delivery. The powder alone or in combination with pulverized flowers of *Morina coulteriana* and *Cassiope fastigiata* used as incense.

Used in India for cough, cold, bronchitis and as incense (Gupta, 1962; Hajra & Chakraborty, 1981; Rawat & Pangtey, 1987: Uniyal & Chauhan, 1973).

Gross effects and effects on CNS found positive (Dhar *et al.*, 1973).

***Ribes alpestre*** Wall. ex Decne (Grossulariaceae)

**Pl.** 32G

**Vern.(L):** Pilickcha.

**Common Names**

Eng.-Asian Gooseberry.

**Systematic Account**

Shrubs, upto 2 m high with 1-3 prickles at each node and orbicular, long-petioled leaves crowded on dwarf shoots; flowers greenish, solitary axillary, bracteate; calyx bell-shaped; stamens protruding; berries yellowish red, ovoid, glandular pubescent.

**Reproductive Cycle:** June - September.

**Habitat Ecology:** Dry slopes, edges of cultivation, Keylong (L), 3300 m.

**Distribution:** Afg. to China. 2400-3600 m.

**Material Examined:** EBH-73, 19-8-94.

**Folk Uses**

Berries eaten for quenching thirst. Twigs inserted in the cake prepared from dung alongwith some pieces of white stones kept outside the main gate of house to keep the evil spirits at bay.

Known in India for edible fruits (Balodi, 1988). Koelz (1979) reported the use of its thorny branches by 'Lamas' and priests in ceremonies in Lahoul.

Effect on diuresis confirmed (Abracham *et al.*,1986).

***Ribes grossularia*** Linn. (Grossulariaceae)

**Pl.** 32H

**Vern. (L):** Bana-Pilickcha.

**Common Names**

Chenab region & Pb.-Amlanch, Kansi, Pilsa, Teila, Sur-Ka-Chup; Kum.-Baikunti, Galdam, Lepcha, Sirkuchi.

**Systematic Account**

Perennial, erect shrub with prickly stems and orbicular leaves with 3-5 lobes; leaves toothed, sparsely-hairy on both the sides; 1-3 prickles beneath each leaf axil; flowers white, unisexual, solitary; berries glandular hairy.

**Reproductive Cycle:** May - September.

**Habitat Ecology:** Stony slopes, rock-crevices; Barbog (L), 3350 m.

**Distribution:** W. Alpine Himalaya-Kum.-Kash. Europe. 3000-4000 m.

**Material Examined:** EBH-36, 20-7-94.

**Folk Uses**

Ripe berries edible. Unripe berries used for chutney.

***Ribes orientale*** Desf. (Grossulariaceae)*

**Pl.** 33A

**Vern.:** Nyangada (L), Nayangay (S).

**Common Names**

Bhotia-Darbag; Ladakh-Askuta, Askutar; Pb.-Nangke, Nyaiphulanch. Afg.-Aksiswerai; N.W. P.-Gwaldakh, Kaghak.

**Systematic Account**

Erect, deciduous shrubs, 1-2 m tall, with glandular-sticky branches, and with orbicular or reniform, 3-5-lobed leaves clothed with glandular-hairs; flowers small, reddish-purple, 1-sexed, in 3-5 cm long, erect racemes; berries red, sticky.

**Reproductive Cycle:** July - October.
**Habitat Ecology:** Open slopes, rocks, moist places; Karga (L), 3050 m; Mountains of Kaza (S), 3800 m.
**Distribution:** Afg. to W. Nepal. Bhutan. China. W & N. Asia. Greece. 2100-4225 m.
**Material Examined:** EBH-43 (L), 30-7-94; EBH-213 (S), 12-7-95.

**Folk Uses**

Fruits edible.

Known in India as a purgative.

Plant extract has no therapeutical value (Aswal *et al.*, 1984a,b).

***Rosa foetida*** Herrm. syn. *R. eglanteria* Linn.; *R. lutea* Mill. (Rosaceae)
**Pl.** 33B
**Vern. (L):** Laybala.

**Common Names**

Eng.- Austrian Briar, The Yellow Persian Rose.

**Systematic Account**

An upright medium-sized prickly shrub with yellow, sweet-scented flowers either solitary or 2-3-together; and with compound leaves with 2-4 pairs of oblong-obovate, deeply serrate leaflets which are glandular pubescent on the lower side; sepals lanceolate; petals obcordate; carpels enclosed in a fleshy receptacle; fruit flask-shaped, red, with persistent sepals.

**Reproductive Cycle:** June - September.
**Habitat Ecology:** Commonly planted in forest and villages in border areas of agricultural fields, Sumnam (L), 3100 m.
**Distribution:** W. Himalaya, 2100-3600 m.
**Material Examined:** EBH-71, 17-8-94.

**Folk Uses**

Floral garlands used as an offering to various deities. Dried and pulverized petals used for treatment of jaundice, 1 teaspoonful thrice a day for 10 days.

Known in Lahoul to cure stomachache (Koelz, 1979).

***Rosa jacquemontii*** Crep. ex Hook. f. (Rosaceae)+
**Pl.** 33C
**Vern. (L):** Chhangsaybala.

**Systematic Account**

An upright medium-sized prickly shrub with white, sweet scented

flowers either solitary or in dense clusters, leaflets coarsely toothed; sepals lanceolate; petals obcordate; fruit flask-shaped, red.

**Reproductive Cycle:** June - September.

**Habitat Ecology:** Commonly grown as an ornamental plant, Funkiar(L), 3200 m.

**Distribution:** Kashmir to Kumaon. 1500-4100 m.

**Material Examined:** EBH-96, 18-7-95.

**Folk Uses**

Powdered sun-dried petals (2-3 g) recommended thrice a day for gastric problems and indigestion. Floral garlands used as an offering to various deities.

***Rosa webbiana*** Wall. ex Royle (Rosaceae)

**Pl.** 33D

**Vern. (L):** Shaybala.

**Common Names**

Ladakh & Spiti-Sia, Sea; Pb.- Kugina, Manyar, Ringyal Shawali, Sikanda.

**Systematic Account**

A prickly shrub with glabrate twigs, and with 5-9, oblong-obovate, coarsely toothed leaflets; flowers pink, large-sized, in dense clusters; prickles straight; petals 5; sepals shorter; fruits red, flask-shaped.

**Reproductive Cycle:** June - September.

**Habitat Ecology:** Rocky and dry areas, villages; Shansha (L), 2925 m.

**Distribution:** Drier Himalaya-Kash. to Kum.. 1500-4100 m.

**Material Examined:** EBH-94, 17-7-95.

**Folk Uses**

Peeled young stems and ripe fruits edible. Floral petals used for garlands as an offering to God. Thorny stems used for fencing. Dried plants used as fuelwood.

Known as an edible fruit and for hepatitis and jaundice (Kaul *et al.*, 1985; Srivastava *et al.*, 1981). Besides the use of stem for edible purposes, Koelz (1979) recorded use of its flowers as stomachic in Lahoul valley.

Pulp of fruit rich in vitamin C (upto 8% in dry pulp) (Anonymous, 1986b). Hypotensive activity found positive (Sharma *et al.*, 1978).

***Rosularia alpestris*** (Karelin & Kir.) Boriss. syn. *Sempervivella acuminata* (Decne.) A. Berger. (Crassulaceae)+

**Pl.** 33E

**Vern. (L):** Pyau Chakti.

**Systematic Account**

A fleshy, glabrous, perennial herb to 15 cm, with one to three erect annual stems, and with dense rosettes of mucronate leaves; flowers rose-purple in terminal corymbs; petals fused into a tube at base; filaments white; fruit a cluster of follicles.

**Reproductive Cycle:** July-September.

**Habitat Ecology:** Open rocky slopes, rock crevices, dry areas; Sumnam (L), 3100 m.

**Distribution:** Afg. to Himachal Pradesh. C. Asia. 2400-4500 m.

**Material Examined:** EBH-88, 4-9-94.

**Folk Uses**

Plant juice considered nutritious.

***Rubus saxatilis*** Linn. (Rosaceae)

**Pl.** 34C

**Vern. (L):** Moday Palla.

**Common Names**

Eng.-Stone bramble; Fr.-Ronce des rochers.

**Systematic Account**

Hairy herbs; rhizome stout, woody; stem erect, short; leaflets 3, membranous, rhombic-ovate; stipules linear-oblong; flowers white, 1-4, small-stalked on the top of a slender axillary peduncle; calyx tube short, unarmed; drupes scarlet with reticulated stone.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Forests, shady banks, occasional in grassy meadows; Rashil (L), 3050 m.

**Distribution:** W. Temperate Himalaya-Kash. to Kum.. 3300-3800 m.

**Material Examined:** EBH-86, 3-9-94.

**Folk Uses**

Ripe fruits eaten fresh.

Koelz (1979) also recorded a similar observation.

***Rumex acetosa*** Linn. (Polygonaceae)+

**Pl.** 33 F

**Vern. (L):** Surjilove.

**Common Names**

Kash.-Tsok tsin

Eng.-Dock sorrel, Sorrel.

**Systematic Account**

Dioecious herbs upto 1 m; leaves hastate, stems erect, grooved, glaucous, rarely branched; flowers reddish-green, 1-sexed, in terminal and axillary clusters; stamens 6, nutlets red, 3-angled, with entire papery wings.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Moist slopes; shady localities, edges of cultivation; Khangsar (L); 3250 m.

**Distribution:** W. Himalaya-Kash. to Kum.. C. Nepal. Temperate Eurasia. N. America 2100-4300 m.

**Material Examined:** EBH-2, 8-7-94.

**Folk Uses**

Fresh stem and leaves consumed for quenching thirst.

Reported to be used as a refrigerant, diuretic, and in scurvy, and for edible purposes (Chopra *et al.*, 1956; Rawat & Pangtey, 1987). Koelz (1979) recorded its use as a laxative and in stomach disorders among inhabitants of Lahoul valley.

Herb antiscorbutic (Vitamin C, 124 mg/100 g) due to the presence of active principles, oxalates and free oxalic acid; acid potassium oxalate and tartaric acid; potassium binoxalate; oxymethyl anthraquinone (Anonymous, 1986b; Chopra *et al.*, 1956). 50% alcoholic extract of roots exhibits anticoagulant property (Sharma *et al.*, 1978).

***Rumex patientia*** Linn. ssp. ***orientalis*** (Bernh. ex Schult.f.) Danser syn. *R. orientalis* Bernh. ex Schult.f.; *R. angulatus* Rech. fr. (Polygonaceae)*+

**Pl.** 34A

**Vern.:** Nyolove (L); Shoma (S).

**Systematic Account**

A robust perennial herb upto 1.75 m high, with oblong-lanceolate, entire, long-stalked leaves with wavy margins, and with greenish, bisexual flowers crowded on leafy racemes; fruiting perianth entire.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Wasteland, shady places; Tholang (L), 3050 m; Hansa (S), 3650 m.

**Distribution:** Afg. to Himachal Pradesh. 2100-4100 m.

**Material Examined:** EBH- 8(L), 11-7-94; EBH-205 (S), 7-7-95.

**Folk Uses**

Dye extracted by boiling pieces of fresh roots in water used for dyeing woollen garments. Paste of leaves recommended for curing irritation caused by *Urtica* species. Leaves used as vegetable in Spiti.

Plant extract has no specific pharmacological action (Aswal *et al.*, 1984a,b).

***Rumex scutatus*** Linn. (Polygonaceae)+

**Pl.34B**

**Vern. (L):** Surlove.

**Common Names**

Eng.-Fr. sorrel; Fr.-Oscille ronde; Spanish-Acedera redonda, Acedera romana.

**Systematic Account**

An erect herb upto 1-2 m tall, with perennial roots, and with long-stalked, broadly triangular leaves; branches slender; flowers greenish-red, small, in terminal branching racemes; fruit a small nutlet enclosed by enlarged winged perianth.

**Reproductive Cycle:** July-September.

**Habitat Ecology:** Grassy meadows, moist and shady places; Rohtang (L), 3978 m.

**Distribution:** W. Himalaya. Europe. N. Afr.. 2100-4300 m.

**Material Examined:** EBH-62, 8-8-94.

**Folk Uses**

Used in the preparation of nail polish. Aerial parts except fruits of this species and those of *Impatiens gigantea* and some lichens are ground into paste with addition of local drink 'Sara'. Paste is applied as poultice on nails, especially at night and subsequently, each nail is covered with a piece of *Betula* bark. In the morning, fingers are washed with water; a bright red or yellow colour is imparted to the nails.

Known to be used as an astringent, refrigerant and in dysentery (Asolkar *et al.*, 1986).

***Salix elegans*** Wall (Salicaceae)*

**Pl.** 34E

**Vern. (S):** Chagma.

**Systematic Account**

A shrub or small tree, leaves 2-5 cm, elliptic obovate or oblong acute or obtuse, very glaucous, reticulate beneath, flowering after leafing; catkins slender on leafy peduncles, bracts small yellow; capsule 1 in,

shortly stipitate; stigmas subsessile 2 partite.

**Reproductive Cycle:** June–September

**Habitat Ecology:** Drier areas, open slopes, near habitations; Kiato (S), 3700 m.

**Distribution:** W. Himalaya. Turkestan. 2500-4100 m.

**Material Examined:** EBH–222, 28-7-95.

**Folk Uses**

Stem and branches used for thatching roofs of houses, for making handles of various agricultural implements and also as fuelwood.

***Salix fragilis*** Linn. (Salicaceae)+

**Pl.** 34D

**Vern. (L):** Shen-Buta.

**Common Names**

Eng.-White Willow.

**Systematic Account**

Trees with glabrous, fragile branches and with lanceolate, glandular-serrate, short-stalked, silky leaves; catkins 1-sexed; fruit a glabrous catkin.

**Reproductive Cycle:** April-June.

**Habitat Ecology:** Extensively cultivated around habitations; Lote(L), 2950 m.

**Distribution:** N. and W. Asia. Europe. Cultivated in Himachal Pradesh and W. Tibet. 2400-4000 m.

**Material Examined:** EBH-93, 16-7-95.

**Folk Uses**

Twigs used for scouring teeth. Wood used for making agricultural implements, building works, all types of handles, spoons and other utility articles; also used as fuel. Fallen leaves, peeled bark of branches and twigs form an excellent reserve of green feed for livestock during winter.

Considered useful for rheumatism, cold, basketry, cricket bats (Anonymous, 1986b).

Bark contains salicin (0.23%) (Anonymous, 1986b).

***Saussurea albescens*** (DC.) Sch. syn. *Aplotaxis albescens* DC. (Asteraceae)

**Pl.** 34F

**Vern. (L):** Bacha-Shang, Drapada.

**Systematic Account**

An erect, slender, cottony herb to 120 cm with pinkish-red flower-

heads with disk-florets in terminal corymbs on a simple leafy stem, and with leaves without spines which are white-cottony beneath, involucral bracts purple-tinged; inner ones lanceolate, outer ones ovate; achenes 4-ribbed; pappus white.

**Reproductive Cycle:** July-September.

**Habitat Ecology:** Grassy meadows, wastelands, dry areas; Summan (L), 3100 m.

**Distribution:** W. and C. Himalaya-Murree to Nepal. 2400-3300 m.

**Material Examined:** EBH-31, 18-7-94.

**Folk Uses**

Leaves used for lighting fire. Cotton obtained by threshing sun-dried leaves from mature plants and kept in the hollow of a piece of metal (Chamak) catches fire when a piece of white stone (Chheprag) is rubbed against the metal.

Diuretic activity and effect on isolated tissues and anticancer screening found positive (Abracham *et al.*, 1986).

***Saussurea lappa*** (Decne) Sch. Bip. syn. *S. costus* (Falc.) Lipsch. (Asteraceae)

**Pl.** 35 A

**Vern. (L):** Koont.

**Common Names**

Beng.& Hindi-Kur, Kut, Pachak; Bhote-Rusta; Guj.-Kur, Upaleta; kan.-Koshta; Kash.-chob-i-qut, Kuth, Post-Khai, Mal.-Sepuddy; Mar.-Kushta; Sans.-Kushta; Tam.-Goshtam, Kostum, Put-chuk; Tel.-Changala, Kustam; Urdu-Kut.

Eng.-Costus; Mal.-Mook heong, Mu hsiang; Pers. & Arab.- Kust; Sing.-Goda mahanel.

**Systematic Account**

Pubescent herbs to 2 m or more with long-stalked basal leaves and large clasping upper leaves, and with few, sessile, axillary, purple flower-heads with purple involucres, in terminal clusters; achenes curved, compressed, with brown pappus.

**Reproductive Cycle:** July-October.

**Habitat Ecology:** Cultivated as a crop; rarely as an escape in moist slopes; Shashin (L), 3200 m.

**Distribution:** Pakistan to Himachal Pradesh, 2000-3300 m.

**Material Examined:** EBH-47, 1-8-94.

**Folk Uses**

Powdered roots used as incense. Extract obtained by boiling

pieces of roots in mustard oil for 30 minutes used as ear drops for relieving pain. Contents of crushed dried roots applied as poultice over painful joints and boils. Tribals keep dry roots in their boxes containing clothes to repel insects.

Used in India to cure asthma, dysentery, rheumatism, skin diseases, stomachache, ulcer, toothache and as an insect-repellent (Dar *et al.*, 1984; Koul, 1941; Shah, 1982; Rawat & Pangtey, 1987; Mittre, 1981). Koelz (1979) reported its use as an incense and masticatory in Lahoul.

Essential oil, alkaloid-saussurine and bitter resin isolated from roots. Chemical constituents of the essential oil are 1% terpenes, 20 % aplotaxene, 60% sesquiterpenes and khustin (Anonymous, 1986b; Chopra *et al.*, 1956). Gross effects and effect on CNS found positive (Aswal *et al.*, 1984a,b).

***Saussurea sorocephala*** (Shrenk) Sch. Bip. syn. *Aplotaxis gnaphalodes* Royle; *S. gnaphaloides* (Royle ex DC) Sch. Bip. (Asteraceae)+

**Pl.** 35B

**Vern. (L):** Pankchi.

**Common Names**

Ravi Basin-Gugi.

**Systematic Account**

A woolly-haired dwarf perennial herb, with reddish-purple flower heads in a domed cluster, and with much-branched rootstock; involucral bracts papery; achenes 5-angled; pappus hairs pale-brown.

**Reproductive Cycle:** July-September.

**Habitat Ecology:** Alpine slopes, bogs, meadows; Rohtang (L), 3978 m.

**Distribution:** Pakistan to China. C. Asia. 4000-5500 m.

**Material Examined:** EBH-107, 14-8-95.

**Folk Uses**

Aerial parts dried and pulverized and 1/2 teaspoonful of powder given thrice a day for 5-15 days to cure backache, pulmonary affections, and also for the purification of blood.

***Scorzonera virgata*** DC. syn. *S. divaricata* Hook. f. (Asteraceae)*

**Pl.** 35 C

**Vern. (S):** Thunbu.

**Common Names**

Afg.-Jhag, Kambul.

**Systematic Account**

Erect herbs upto 40 cm; stem slender, glabrous, grooved, simple or branched from the perennial, woody rootstock; leaves sessile with incurved margins; flower-heads bright yellow, solitary, terminal, on long peduncles; involucral bracts in 3-4 rows, the outer smaller; achenes pale, striate, not beaked.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Dry slopes, occasional in meadows; Rangrik (S), 3500 m.

**Distribution:** W. Himalaya-Kash. to Kunawur. W. Tibet 2700-4200 m.

**Material Examined:** EBH-212, 11-7-95.

**Folk Uses**

Aerial plant parts dried and pulverized for use in constipation; ½ teaspoon twice daily for 3-5 days.

***Selinum tenuifolium*** Wall. ex C.B. Clarke syn. *S. candolli* Edgew.; *S. wallichianum* (DC.)Raizada ex Saxena; *S. elatum* (Edgew.) Hiroe; *Pencedanum wallichianum* DC. (Apiaceae) +

**Pl.** 35 D

**Vern. (L):** Chonra, Bodangar.

**Common Names**

Shimla Dist.-Khes havo.

**Systematic Account**

Perennial herbs 50-150 cm tall; stem hollow, branched, glabrous; leaves pinnate to bipinnate, flowers white in compound umbels; bracteoles white-margined; fruits with winged ribs.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Meadows, shrubberies, dry places; Kardang (L), 3350 m.

**Distribution:** Himalaya-Kash. to Bhutan. 2700-4000 m.

**Material Examined:** EBH-79, 25-8-94.

**Folk Uses**

Small pieces of roots or a pinch of powdered dried roots used as spice, and leaves for making 'chutney'.

Plant extract has no specific pharmacological action (Abracham *et al.*, 1986).

***Senecio chrysanthemoides*** DC. syn. *S. laetus* Edgew. (Asteraceae)+

**Pl.** 35E

**Vern. (L):** Parpat.

**Common Names**

U.P.-Zerjum.

**Systematic Account**

Erect, glabrous, perennial herbs usually branched above, with robust, grooved stem to 2 m, and with yellow, radiate flower-heads in terminal corymbs; leaves usually purple beneath, pinnatifid, stem-clasping; involucral bracts brown-tipped; achenes ribbed, glabrous; pappus white.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Meadows, banks of irrigated channels, streamsides; Keylong (L), 3000 m.

**Distribution:** Pakistan to China. 2400-4000 m.

**Material Examined:** EBH-79, 25-8-94.

**Folk Uses**

Powdered aerial parts used as blood purifier, and for rheumatic, gastric and liver ailments.

Reported to cure inflammation of mouth and sore throat (Dhasmana, 1986). Koelz (1979) reported its use in Lahoul for curing debility.

Hypotensive, diuretic and spasmolytic activities found positive (Sharma *et al.*, 1978). Plant reported to be poisonous to cattle due to presence of the alkaloid seneciophylline (Chopra *et al.*, 1969).

***Senecio hewrensis*** Hook. f. (Asteraceae)*

**Pl.** 35F

**Vern. (S):** Zethi

**Systematic Account**

Dwarf, erect, puberulous annuals, with leafy stems, and with ebracteolate heads on axillary subcorymbose peduncles; leaves oblong-lanceolate, membranous with auricled base; ligules 3; achenes with dirty white pappus.

**Reproductive Cycle:** July-September.

**Habitat Ecology:** Grassy meadows, irrigated areas; Kibber (S), 3950 m.

**Distribution:** Temperate Himalaya. 2700-4300 m.

**Material Examined:** EBH-104, 11-8-95.

**Folk Uses**

Powdered flower-heads (2 g) given twice a day to cure headache.

***Senecio nudicaulis*** Ham. ex D. Don (Asteraceae) +

**Pl.** 36A

**Vern. (L):** Paran.

**Systematic Account**

Glabrous herbs; stems grooved; leaves tomentose beneath; radical leaves rosulate, cauline leaves auricled; heads many-flowered, yellow; bracteolate; bracts 3-nerved; achenes puberulous with white pappus.

**Reproductive Cycle:** July-September.

**Habitat Ecology:** Common in dry slopes; Marvel (L), 3250 m.

**Distribution:** Temperate Himalaya. 1700-3500 m.

**Material Examined:** EBH-90, 6-9-94.

**Folk Uses**

Fresh leaves applied as bandage to cover open wounds.

A new type of unidentified alkaloid, other than *Senecio* alkaloids has been isolated (Anonymous, 1986b).

***Senecio pedunculatus*** Edgew. var. *albus* Ghosh ex Bhattacharyya syn. *S. kraschenninikovii* schisch.; *S. kashianus* Balak. (Asteraceae) +

**Pl.** 36B

**Vern. (L):** Chatiz.

**Systematic Account**

Annual herbs; stem erect, weak, glabrous, much-branched, 20-40 cm tall; leaves compound, pinnatifid; lobes divaricate; heads small, 0.5 cm across, yellow, solitary, in corymbs; involucral bracts purple with scarious margins; fruits glabrous with white pappus.

**Reproductive Cycle:** July-September.

**Habitat Ecology:** Rock crevices and among boulders; Beeling Nallah (L), 3500 m.

**Distribution:** W. Himalaya-Kash. to Uttar Pradesh. W. Tibet. 3000-4300 m.

**Material Examined:** EBH-104, 11-8-95.

**Folk Uses**

Aerial parts dried and pulverized and the powder used for curing jaundice and gastric disorders; 1 teaspoonful t.rice a day for 10 days.

Hypotensive and diuretic activities and effect on CNS found positive (Sharma *et al.*, 1978).

***Silene vulgaris*** (Moench) Garcke syn. *S. inflata* (Salisb.) Smith; *S. cucubalus* Wibel (Caryophyllaceae)

**Pl.** 36C

**Vern. (L):** Ghandoli.

**Common Names:**

Eng.-Bladder Campion.

**Systematic Account**

A glabrous perennial upto 1 m, with ovate leaves, and with few, drooping flowers in loose terminal panicles; calyx inflated; corolla white; stamens 10; styles 3; capsule globose with a conical apex and many seeds.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Meadows, grassy slopes, edges of cultivation; Kirting (L), 2950 m.

**Distribution:** Temperate Asia. Europe. N. Afr. 1800-4000 m.

**Material Examined:** EBH-17, 14-7-94.

**Folk Uses**

Fresh as well as dried leaves and twigs eaten as vegetable. Children play with inflated calyx.

Known in India as an emollient (Anonymous, 1986b).

***Sonchus oleraceus*** Linn. (Asteraceae) +

**Pl.** 36D

**Vern. (L):** Panu Aag.

**Common Names**

Bihar-Titaliya; Bomb.-Mhatora; Hindi-Dodak, Dudhi; Mar.-Mhatara, Pathari; Pb.-Dodak; Tel.-Ratrinta.

Chinese - Ku Tsai; Eng.-Du tistel, Hares Lettuce, Hare's Palace, Hares Thistle, Turn Sole; Fr.-Labyrinthe etrille, Laceron, Laisseron, Lait d'ane, Laiteron, Laiteron commun, Laitron, Laiture de murailles, Lasseron, Liarge, Palais de lievre; Ger.-Gaensedistel; Ital.-Cicerbita, Cicerchia, Crespignia, Crespignoli, Sparaghella; Malta-Cicerbita, Crespino, Sow-thistle; Maxican- Chichicaquihuitl; New Zealand-Poroena, Puwha; Russ.-Zayatchiya kapusta; Spanish-Camaroj, Cerraja, Lechugilla.

**Systematic Account**

Erect herbs, 20-150 cm tall; stem hollow, unbranched soft; leaves thin, delicate, pinnatifid, irregularly dentate, with a sagittate base; heads yellow in irregular, umbellate cymes; peduncles gland hairy; achenes compressed, 3-ribbed, pappus white.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Wastelands, moist places, gardens, agricultural

fields; Sumnam (L), 3150 m.

**Distribution:** Throughout India ascending to 3150 m in the Himalaya. All temperate and many tropical countries, wild or introduced.

**Material Examined:** EBH-55, 3-8-94.

**Folk Uses**

Fresh flowers eaten and considered nutritive.

Known in India as a febrifuge, galactagogue and tonic, and also for jaundice and liver complaints (Dhasmana, 1986; Sharma *et al.*, 1979).

Subcutaneous injection of aqueous or oil suspension of plant extract causes damage to Sarcoma-37 cells (Anonymous, 1986b). Sharma *et al.* (1978) found 50% aqueous extract to have negative biological activities.

***Tagetes erecta*** Linn. (Asteraceae) +

**Pl.** 36E

**Vern. (L):** Bowdu.

**Common Names**

Beng.-Genda; Bomb.-Guljajari, Makhmal; Guj.-Guljharo, Makhanala; Hindi-Genda, Guttera; Mal.-Chendumalli; Mar.-Rajia-cha-phul, Zendu; Oriya-Gendu; Pb.-Genda, Mentok, Tangla; Sans.-Ganduga, Sandu, Sthulapushpa; Tam.-Turakkasamandi; Tel.-Bantichettu, Urdu-Genda.

Braz.-Cravo de defunto; Ceylon-Afr.n Marigold; Eng.-Afr.n Marigold, Aztec, Fr. Marigold; Hova-Anantsinahimbazaha, Tsipolobazaha; Mexico-Cempoalxochitt; Pers.-Kajekharusa, Sadabarg.

**Systematic Account**

Strongly aromatic annual herb to 60 cm with erect, branched, glabrous, hollow stem, and with pinnately-divided, lanceolate-serrate with glands along the margins; flower-heads orange-yellow, radiate; achenes appressed, hairy on the ribs.

**Reproductive Cycle:** July-October.

**Habitat Ecology:** Commonly cultivated as an ornamental plant in gardens. Gozang (L), 3300 m.

**Distribution:** Mexico. Throughout India.

**Material Examined:** EBH-101, 14-8-94.

**Folk Uses**

Capitulum dried by keeping in stored grains used for making beautiful 'Rakhis', generally presented by sisters to their brothers, fathers, uncles and relatives to be worn on jacket, coat or cap. Dried or fresh

capitula used by 'Lamas' during religious ceremonies, and to drive away evil spirits; its garland used as an offering to God. Bottle of 'Arak'/ 'Sara' to be presented during festivals or ceremonies has to be tied with its flower heads.

Reported to be used in India for cuts, wounds, earache and urine complaints (Rai, 1985; Tarafder, 1987).

Essential oil from fresh flowering plants contains d-limonene, ocimene, L-linalyl acetate, L-linalool, tagetone and nonanal (Chopra *et al.*, 1969). Plant extract tested negative for various biological activities (Bhakuni *et al.*, 1969).

***Taraxacum officinale*** Wigg. syn. *Leontodon taraxacum* sensu Aitchison (Asteraceae)*+

**Pl.** 36F

**Vern.:** Quanti (L); Sarkhen Mentok (S).

**Common Names**

Beng.-Pitachumki; Deccan-pathri; Guj.-Pathardi; Hindi-Barau, Dulal, Kanphul; Kan.-Kaddu seventhi; Kash.-Hand; Ladakh-Rasuke,Yamaghi Kha; Mar.-Undarkani; Pb.-Baran, Dudh-bathal, Dudli, Kanphul, Radam, Shamukei.

Eng.-Bitterwart, Blowball, Blower, Canker, Cankerwort, Clock, Crow-passnip, Dandelion, Dashel-flower, Dentelion, Dindle, Doon-head-clock, Fortune teller, Gowan, Irish Daisy, Milky Gowan, Monkshood, One o'clock, Peasant's clock, Priest's Crown, Stink Davie, Swinesnout, Time table; Fr.-Chopine, Cochet, Couronne de moine, Dent de lion, Florion d'or Laitue de chien, Liondent, Pissenlit, Salade de taupe, Tete de moine; Ger.-Ackerzichorie, Apostemkraut, Augenmilch, Baerenzahn, Bettpisser, Bettseiger, Bissanliwurzel, Butter blume, Eierblume, Feldreis, Habichtskraut, Hundslattich, Handszahn, Jungeblume, Kuhblume, Kuhlattich, Laternenblume, Loewenzahn, Luchten, Maistoeckel, Milchadistel, Milchroedel milchstoeckel, Mistfinke, Moenchsblume, Moenchskopf, Lapankraut, Pfaffendistel, Pfaffenoerhlein, Pfaffenschnell, Pfaffenstiel, Pfefferoeslein, Pferdebblume, Saumelke, Saustock, Seherrkraut, Schweineroesl, Schwiblume, Sommerdorn, Sonnenwirbel, Tiefstand, Teufelsrippen, Wiesenlattich; Irish-Cais tsearbhan; Ital.-Dentedi leone, Smirnio, Soffione; Malta-Dandelion, Dente di leone, Pisciacane, Tarassacio; Port.-Dente de leao, Taraxaco; Rom.-Papadie, Parasita gainetor; Russ.-Oduvanchik, Papovo gumentse; Sind-Bathur, Buthur.

**Systematic Account**

Small, erect, pe ennial, caulescent herbs with thick rootstocks, and with entire to lyrate-pinnatifid, sessile leaves arranged in a basal

rosette, flower-heads yellow, solitary on scapes; involucral bracts 2-seriate; outer involucral bracts ovate, inner ones linear, achenes compressed, ribbed with pappus of white hairs.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Wastelands, grassy meadows, moist and shady places; Sumnam (L), 3150 m; Kibber (S), 3950 m.

**Distribution:** Throughout Himalaya. W. Tibet. N. Temperate Zone. Temperate America. 3000-4500 m.

**Material Examined:** EBH-40 (L), 22-7-94; EBH-238 (S), 20-8-95.

**Folk Uses**

In Lahoul valley, fresh leaves used as bandage on cuts and injuries. Young ladies employ the stem latex for temporary tattooing on their hands and foreheads, fresh petioles used as a musical instrument, especially by children. In Spiti, 2 g powdered capitula given thrice a day to cure headache and fever.

Used in India as a tonic, blood purifier and vegetable, and also for blisters, bowel complaints, dislocation of joints, diuresis, dysentery, fomentation, gastric ulcers, headache and kidney disorders (Dar *et al.*, 1984; Dhasmana, 1986; Gaur *et al.*, 1983; Jain, 1984; Kaul *et al.*, 1985; Singh *et al.*, 1980; Srivastava *et al.*, 1981; Uniyal & Chauhan, 1973). Koelz (1979) reported its use as a vegetable.

Taraxacin, taraxacerin, phytosterols, taraxasterol and homotaraxasterol constitute the active principles of the plant (Chopra *et al.*, 1956).

***Thlaspi arvense*** Linn. (Brassicaceae) +

**Pl.** 37A

**Vern.:** (L) Treka

**Common Names**

Eng.-Field Pennycress.

**Systematic Account**

Annual herb; stem erect, glabrous, branched, 15-60 cm; stem-leaves sessile, auricled at base; basal-leaves petiolate; flowers white, in many-flowered racemes; siliculae winged.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** As weed in cultivated areas, roadsides; Tozing (L), 3300 m.

**Distribution:** Temperate and subalpine Himalaya. Europe upto 4500 m.

**Material Examined:** EBH-81, 27-8-94.

**Folk Uses**

Powdered seeds (2-3 g) given thrice a day for 5-6 days to cure urinary and kidney disorders.

Known in India for backache, wounds, pulmonary and renal disorders. Koelz (1979) recorded its use for gonorrhoea and swollen testicles in Lahoul valley.

***Thymus linearis*** Benth. syn. *T. serpyllum* HK. f.; *T. serphyllum* Linn. ssp. *quenquecostatus* (Celak.) Kitamura (Lamiaceae)

**Pl.** 37 B

**Vern. (L):** Kochi Masha.

**Common Names**

Pb.-Kalander zatar, marizha, Masho, Raingsbur, Shakei. N.W.P.-Banajwain.

**Systematic Account**

Prostrate, branched, hairy, aromatic herbs upto 20 cm, with woody rootstock, and with ovate-lanceolate, entire, gland-dotted leaves; flowers purple, polygamous, bracteate, in dense terminal clusters; calyx hairy within; corolla weakly 2-lipped, stamens 4, 2 usually longer than corolla; nutlets smooth.

**Reproductive Cycle:** June-September.

**Habitat Ecology:** Grassy meadows, roadsides, rocky slopes; Sumnam (L), 3100 m.

**Distribution:** Temperate Himalaya-Kash. to Kum.. W. Tibet. Europe. N. Afr. W. and N. Asia. 1500-4300 m.

**Material Examined:** EBH-14, 13-7-94.

**Folk Uses**

Dried leaves and flowers used as a condiment.

Known in India as an anthelmintic, vermicide, and for eye diseases, liver complaints, stomachache, skin diseases and postnatal troubles, and in the preparation of drinks (Gaur *et al.*, 1983; Rawat & Pangtey, 1987; Srivastava *et al.*, 1981; Uniyal, 1968). The plant has been recorded to be used in Lahoul as a condiment and to cure post-natal troubles (Koelz, 1979).

***Tragopogon dubius*** Scop. syn. *T. major* Auct. non Jacq.; *T. pratense* Linn. (Asteraceae)+

**Pl.** 37C

**Vern. (L):** Tholu.

**Common Names**

Eng.- Goatsbeard, Great Goats beared.

**Systematic Account**

Herbs upto 50 cm high with broad leaves 5-10 mm wide and larger sheathing bases and perennial rootstock, and with slender, glabrous, much-branched stem with latex; flower-heads yellow, solitary, terminal; involucral bracts in one row; achenes muricate, beak long.

**Reproductive Cycle:** June-September.

**Habitat Ecology:** Moist slopes, grassy meadows, edges of agricultural fields, Ruding (L), 2950 m.

**Distribution:** W. Himalaya. W. Tibet. 1500-3600 m.

**Material Examined:** EBH-18, 14-7-94.

**Folk Uses**

Tender shoots and inflorescence eaten raw, and latex of stem used for tattooing by children and young ladies.

Known in India for gout and rheumatism (Srivastava *et al.*, 1981). Koelz (1979) reported similar use of aerial plant parts as fresh relish in Lahoul.

***Trigonella emodi*** Benth. syn. *T. cachemiriana* Comb. (Fabaceae)*+

**Pl.** 37 D

**Vern.:** Kuchona (L), Buksup (S).

**Systematic Account**

Glabrous herbs with trifoliate leaves, and with yellow flowers, 6-12, in axillary stalked clusters; leaflets obovate, finely toothed; calyx hairy; corolla at least twice as long as the calyx; pods linear, glabrous, transversely veined.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Moist slopes, riversides, wet places, edges of cultivation; Malang (L), 3150 m; Kaza (S) 3350 m.

**Distribution:** Afg. to Nepal. Bhutan. 2100-4500 m.

**Material Examined:** EBH-10 (L), 13-7-94; EBH-209 (S), 9-7-95.

**Folk Uses**

Inhabitants of Lahoul and Spiti valley use tender shoots and leaves as vegetable. Plant poisonous to domestic animals, if given before flowering.

Used in Lahoul as an aromatic and insect repellent (Koelz, 1979).

***Trigonella polycerata*** Linn. (Fabaceae) +

**Pl.** 37E

**Vern. (L):** Tongzil.

**Common Names**

Kash.-Chini; Pb.-Chini, Khanda rore, Sainji.

**Systematic Account**

A diffuse annual herb with a slender branched stem, and with trifoliate leaves; stipules not laciniated; flowers sessile, 2-4 in axillary umbels; calyx subcylindrical; corolla slightly exserted; pod with 10-20 seeds, falcate, wrinkled transversely.

**Reproductive Cycle:** June-August

**Habitat Ecology:** Grassy meadows; Sumnam (L), 3100 m.

**Distribution:** W. Himalaya. W. Siberia. S. Europe, 1500-4500 m.

**Material Examined:** EBH-77, 24-8-94.

**Folk Uses**

Dried seeds powdered and ½ tablespoon given thrice a day for three days with hot water in fever, and also for cough and cold.

Known to be used in diarrhoea, and as vegetable and green fodder (Anonymous, 1986b).

***Verbascum thapsus*** Linn. syn. *V. thapsiforme* Schrad.; *V. densiflorum* Bertol. (Scrophulariaceae)

**Pl.** 37 F

**Vern. (L):** Jawarna-loudi.

**Common Names**

Hindi-Gidar Tamaku; Pb.-Bantamaku, Bhunkedum Eklbir, Gidartamaku, Gurganna, Kadanda, Karathri, Khargosh, Kharkarnar, kwispre, Phasruk, Phul, Phuntar, Rawandchini, Spinkharnar, Vulr; Urdu-Janglitamak.

Arab.-Adaneddubb, Mahizahraj; Dutch-Wollekruid, Eng.-Aaron's Rod, Adams flannel, Ag,-leaf, Ag-paper, Beggar's blanket, Begar's stalk, Blanket, Blanket leaf, Bulock's Lungwort, Candle-wick, Clown's lungwort, Cuddie's lungs, Duffle, Feldwode, Feltwort, Flannel, Fluff-Weed, Foxglove, Golgen Gram, Golden rod, Great Mullein, Hag-Tapper, Hare's beard, Hedge-taper, Hig taper, Jacob's staff, Jupiter's staff, Ladies foxglove, Mullein dock, Oldman's flannel, Our ladies flannel, Our Lord's flannel, Peter's staff, Sea cabbage, Shepherd's club, Torches, Velvet Dock, Virgin Mary's candle, Woolen; Fr.-Blane.de Mai, Bonhomme, Bouillon male; Ger.-Beinkoell-enblume, Bolzenblume, Federblume, Gelepilblume; Grk.-Phlomes, Phlones; Malta-Great Mullein, Tasso barbasso;

Pers.-Busir, Mahizahreh; Pol.-Dziewanna; Port.-Barbasco, Verbasco; Spanish-Gordolobc.

**Systematic Account**

Leafy herb upto 2 m, densely clothed with stellate tomentum; stem robust, winged with a prolonged leaf base; upper-leaves sessile, basal-leaves petioled; flowers yellow in dense, tomentose, spicate racemes; bracts woolly; stamens with woolly filaments; capsule tomentose with many seeds.

**Reproductive Cycle:** June-August.

**Habitat Ecology:** Stony slopes, grassy meadows, cultivated areas; Sumnam (L), 3100 m.

**Distribution:** Afg. to China. Temperate Eurasia 1800-4000 m.

**Material Examined:** EBH-50, 1-8-94.

**Folk Uses**

Powder obtained on pulverization of roasted aerial parts including flowers and seeds (150 - 200 g) mixed with 500 ml of mustard oil and given to animals to check dysentery and abdominal pain.

Known in India as a symbolic, fish poison, and for asthma, cough, leucoderma and inflammation of body (Joshi, 1982, 1986; Purohit *et al.*, 1985; Rawat & Pangtey, 1987; Sharma *et al.*, 1979; Uniyal & Chauhan, 1971). Reported to be used for diarrhoea and as symbolic in Lahoul (Koelz, 1979).

Leaves contain saponins and α-carotene (Chopra *et al.*, 1956). Plant extract has no therapeutical activity ( Bhakuni *et al.*, 1969).

***Viburnum cotinifolium*** D. Don (Caprifoliaceae) +

**Pl.** 37G

**Vern. (L):** Khimata.

**Common Names**

Kum.-Guya; Pb.-Bathor, Bankunch, Guch, Jawa, Katonda, Khatip, Khimor, Marghwalawa, Papat-Kalam, Rajab, Richhabi Kilmich, Richhuklu, Tumma.

Pushtu-Marghwalwa.

**Systematic Account**

Deciduous shrubs, 2-3 m tall, with twigs, leaves and inflorescence densely covered with stellate-tomentum, and with white flowers tinged pink in terminal cymes; corolla funnel-shaped; style short, ripe fruits black.

**Reproductive Cycle:** June-September.

**Habitat Ecology:** Open slopes, forests; Kirting (L), 2950 m.

**Distribution:** N.W. Himalaya-Kash. to Kum.. Bhutan. 1800-3600 m.

**Material Examined:** EBH-63, 9-8-94.

**Folk Uses**

Ripe fruits edible.

Used as vegetable and in menorrahagia (Arora, 1981; Gupta, 1962; Uniyal, 1968).

# 5

# Epilogue

The present study (Table 9) has revealed that as many as 128 plants under 92 genera and 44 families are used variously by the tribals of Lahoul and Spiti. Of these, 71 species are used predominantly to treat more than 38 ailments; 48 are edible and the rest are of miscellaneous importance. The tribal folk have a wide range of herbal remedies for bodyache, boils, burns, cold and cough, constipation, cuts, dysentery, fever, indigestion, injuries, jaundice, malnutrition, gout and rheumatism, tuberculosis, etc. Some others are used as antiseptic, appetizer, blood purifier, diuretic, tonic and vermifuge, etc. Different parts of the same plant or combinations of different plants have been employed to treat more than one disease. Bodyache, boils, cuts, skin diseases and wounds are treated externally, while cold and cough, constipation, dysentery, fever, jaundice and tuberculosis are treated through oral intake of powder and/or infusion in appropriate doses. Five species of plants find use in veterinary medicine. Details of the formulations, modes of application, dosage of the medicinal plants used in terms of teaspoons or approximate weight for curing various diseases have been recorded. Among the village folk, the elders are more knowledgeable and are familiar with the uses of most of the plants. However, the services of herbal doctors ('Larjay' in Lahoul and 'Amchi' in Spiti) are called for in cases of serious ailments. For treatment, they make use of a number of wild medicinal plants which are generally collected, dried and stored by themselves from July to August, when most of the plants are in flowering or fruiting stage. Like most other Indian tribes (Jain, 1981, 1987b, 1991), the people of Lahoul and Spiti also attribute most of their ailments and ills to evil spirits and often seek the help of 'Lamas' or 'gurs' to perform religious rites or sacrifices to get rid of such ills. In this context, Bye (1979) and Alcorn (1981 a,b) remarked that the subject of ethnobotany has vast and holistic scope for study of man-plant relationships and for understanding the human ecological relations with the environment.

The present data have been compared with those of earlier and

recent workers, viz., Aitchison (1868), Aswal & Mehrotra (1987,1994), Koelz (1979), Sarin (1967) and Uniyal *et al.* (1973). It is worth mentioning that the ethnic uses of 58 plants from Lahoul and 39 plants from Spiti [marked with (+) sign and asterisk against their names, respectively under the observations] have been recorded for the first time. The remaining 45 plants of Lahoul have almost similar folk uses as recorded earlier for this region.

On the basis of the available data, it is seen that the plants of herbaceous habit are the commonest to be used among the tribal folk of Lahoul and Spiti. Regarding ethnic uses, plants belonging to Asteraceae, Rosaceae, Apiaceae, Polygonaceae, Fabaceae, Boraginaceae, Brassicaceae, Gentianaceae, Lamiaceae and Berberidaceae families are widely used in Lahoul, while the 10 predominant families of Spiti are: Asteraceae, Fabaceae, Polygonaceae, Brassicaceae, Chenopodiaceae, Gentianaceae, Liliaceae, Scrophulariaceae, Apiaceae and Boraginaceae. Nevertheless, the vegetation is more akin to the high altitude flora of the Western Himalaya (Rau, 1974).

From the investigation it became obvious that out of 128 species, 63 species (44 from Lahoul and 19 from Spiti) are utilised for a single purpose and the rest 78 species (58 from Lahoul and 20 from Spiti) find multiple uses. As many as 13 plant species, viz., *Carum bulbocastanum, Carum carvi, Chenopodium album, Cicer microphyllum, Cousinia thomsoni, Ephedra gerardiana, Gentianella moorcroftiana, Geranium pratense, Myricaria germanica, Ribes orientale, Rumex patientia* ssp. *orientalis, Taraxacum officinale* and *Trigonella emodi* find use in both Lahoul and Spiti. Of these, the uses of only *Carum bulbocastanum, Ribes orientale, Rumex patientia* ssp. *orientalis* and *Trigonella emodi* are common in the study areas. As a matter of fact, this provides greater credibility to their potential for wider usage or indicates the potential of these plants for the development of drugs. According to Jain & Saklani (1992) and Saklani & Jain (1996), identical uses of certain plants for various purposes by the indigenous people in different places may not be a mere coincidence, but a positive indication of some useful properties possessed by these plants, and further studies should help in discovering functional relationships among different cultural societies.

As is true for the tribal people in developing countries, the people of Lahoul and Spiti also depend largely on plants for their sustenance and livelihood. Much of their pharmacology is indigenous. Although these tribals have learnt to utilize local herbs in different ailments by trial and experience, often at the risk of loss of human life, this expertise is passed on from generation to generation, primarily by word of mouth

## Table 9. Summary of Data on Ethnobotanically Important Plants Collected from Lahoul & Spiti

| Botanical name | Family | Local name | Locality & tribe | Active principles | Part of the plant and ethnobotanical use |
|---|---|---|---|---|---|
| | | | **Medicinal Plants** | | |
| *Aconitum heterophyllum* | Ranunculaceae | Boa | Pyukar (L) | Antisine, atidine, hetidine, heteratisine, histisine, heterophyllidine, hetisinone, benzothteratising, F-dihydroatisine. | Root powder for fever, abdominal pain and diarrhoea |
| *Arnebia euchroma* | Boraginaceae | Dimug, Khamed | Losar (S) | – | For purifying blood and as an antiseptic. |
| *Artemisia glauca* | Asteraceae | Khunyurcha | Beeling (L) | – | Powdered root given to cure asthma. |
| *Artemisia maritima* var. *seski.* | Asteraceae | Seski | Jahalman (L) | – | Decoction of leaves and flowers given orally to remove abdominal parasites. |
| *Aster heterochaeta* | Asteraceae | Lugmig | Kibber (S) | – | Powdered seeds and flowers given to cure weakness and giddiness. |
| *Astragalus himalayanus* | Fabaceae | Kayabachhutup | Losar (S) | – | Powdered seeds and flowers given in strangury. |
| *Berberis jaeschkeana* | Berberidaceae | Kaymali | Tandi (L) | – | Powdered roots used for fever, stomach disorders and skin diseases. |
| *Betula utilis* | Betulaceae | Shag | Ghandal (L) | Betulin, leucocyanidin, lupeol, oleanolic, AC-oleanolic acids. | Bark for curing redness in eyes and as an antiseptic. |

**Table 9. *Contd....***

| | | | | | |
|---|---|---|---|---|---|
| *Brassica erucastrum* | Brassicaceae | Vanonyunger | Sumnam (L) | – | Paste of seed applied to cure back pain. |
| *Capparis spinosa* | Capparidaceae | Rohtokpa-Martokpa | Hurling (S) | Fatty oil, rutin, pentosans, rutic acid, pectic acid and saponin. | Powdered bark for urinary and liver problems. |
| *Carum bulbocastanum* | Apiaceae | Zeera (L), Zira (S) | Sumnam (L), Kaza (S) | Essential oil containing aldehydes | Seeds for back pain, gastric and liver problems and to cure indigestion and dysentery in domestic animals |
| *Carum carvi* | Apiaceae | Gonyorog (L). Gonyod (S) | Wari (L), Hansa (S) | Ketone, carvone, terpene, carvacorol | Powdered seeds given in back pain. Seeds for curing gastric disorder in animals. |
| *Chaerophyllum villosum* | Apiaceae | Nyo, Shakrag | Tozing (L) | – | Roots eaten raw to cure abdominal pain |
| *Chenopodium album* | Chenopodiaceae | Am (L), Eyar (S) | Rawaling (L), Kaza (S) | – | Powdered seeds prescribed for constipation |
| *Chenopodium botrys* | Chenopodiaceae | Sokana | Tozing (L) | Betaine, chrysoeriol, quercetinpyranosides, hispidulin, 7-mecupatulin, sinenstin, salvigenin, 5-salvigenin, essential oil, chenopodic acid, sesquiterpenes. | Soup prepared from leaves prescribed for gastric disorders |

**Table 9. *Contd....***

| | | | | | |
|---|---|---|---|---|---|
| *Christolea crassifolia* | Brassicaceae | Chakchak-lammo | Kibber (S) | – | Powdered seeds given to cure boils Infusion of seed and leaves also applied to cure them |
| *Cicer microphyllum* | Fabaceae | Van Nayarcha (L), Chiri (S) | Guskiar (L), Losar (S) | – | Paste of aerial plant parts applied to cure 'Khur' disease in domestic animals |
| *Cnicus argyracanthus* | Asteraceae | Khishag | Sumnam (L) | – | Peeled roots eaten raw to cure urinary complaints and kidney diseases |
| *Codonopsis clematidea* | Campanulaceae | Golchokpa | Kibber (S) | – | Powdered leaves and flowers given to cure rheumatic pain |
| *Cousinia thomsoni* | Asteraceae | Bachachhawag (L), Changchher (S) | Mooling (L), Losar (S) | – | Powdered roots given for inflammation and rheumatism. |
| *Cynoglossum wallichii* | Boraginaceae | Kochi-shuwer | Sumnam (L) | Amabiline, pyrrolizidine alkaloids, cynaustraline | Fresh leaves used as a band-aid |
| *Dracocephalum heterophyllum* | Lamiaceae | Kuramtoksay | Kibber (S) | – | Powdered flower given for eye ailments |
| *Ephedra gerardiana* | Ephedraceae | Buchchur (L), Chhe, Somlata (S) | Sumnam (L), Hurling (S) | Ephedrine, pseudo-ephedrine | Powdered plant given to cure liver complaints, also prescribed for cough, fever and cardiac ailments. Burnt branches |

**Table 9. *Contd....***

| | | | | | |
|---|---|---|---|---|---|
| | | | | | used as snuff |
| *Erigeron alpinus* | Asteraceae | Bashakar | Beeling (L) | – | Powdered aerial parts given to cure rheumatism |
| *Erigeron monticolus* | Asteraceae | Minchan-semag | Keylong (L) | – | Powdered aerial parts used as a tonic |
| *Fagopyrum tataricum* | Polygonaceae | Brafo | Mayling (L) | – | Paste of nut applied on burns |
| *Ferula jaeschkeana* | Apiaceae | Kalyash | Sumnam (L) | Camphene, d-α-pinene, resin, gum, essential oil | Paste of roots applied on boils |
| *Fraxinus xanthoxyloides* | Oleaceae | Thrung | Udaipur (L) | – | Decoction of stem and branches prescribed for abdominal disorders in animals |
| *Gentianella moorcroftiana* | Gentianaceae | Tikta | Beeling (L), Hansa (S) | – | Powdered aerial plant parts given to cure fever, cough, rheumatism and gastric disorders |
| *Geranium pratense* | Gentianaceae | Tikta | Kibber (S) | – | Powdered aerial plant parts given to cure gastric disorders. |
| *Geranium partense* | Geraiaceae | Porlo (L), Likatur (S) | Rashil (L), Losar (S) | Iodotannin, isokempferid, hexahydroflavone | Powdered plant given to treat cough, jaundice and gastric disorders |
| *Habenaria arcuata* | Orchidaceae | Panja | Sissu (L) | – | Powdered roots used as a tonic, febrifuge and in dysentery |
| *Heracleum candicans* | Apiaceae | Raswal | Bargul (L) | Furocoumarin, heraclenin, heraclenol, imperatorinoxide, 8-geranoxy- | – |

Table 9. *Contd....*

| | | | | | |
|---|---|---|---|---|---|
| | | | | psoralen, xanthotoxin, xanthotoxol, sphondin, isoheraclenin, Omc-heraclenol, tert-o-β-glucosytheraclenol, candicanin, bergapten | |
| *Hippophae rhamnoides* ssp. *turkestanica* | Elaeagnaceae | Chharma, Tirkug | Kungri (S) | Humnin, carotene, ascorbic acid, dehydroascorbic acid, fatty oil | Pulverized berries prescribed for tuberculosis |
| *Hippophae salicifolia* | Elaeagnaceae | Sarla | Chokhang (L) | β-Sitosterol, 2-alkaloides | Powdered berries given for cough, fever and skin diseases |
| *Hyoscyamus niger* | Solanaceae | Dhandhura | Shipting (L) | Alkaloids hyoscyamine, scopolamine, atropine, hyoscypikrin | Seeds used for toothache |
| *Iris kemaonensis* | Iridaceae | Praynal | Taylangway (L) | Iridin, iriskumaonin | Roots used to cure toothache |
| *Jaeschkea oligosperma* | Gentianaceae | Tikta | Beeling (L) | Gentisin, gentianose, gentianine | Powdered aerial parts given to cure cough, fever and rheumatism |
| *Lactuca macrorhiza* | Asteraceae | Unbu | Losar (S) | – | Powdered aerial parts used as a laxative in chronic constipation |
| *Lactuca polycephala* | Asteraceae | Panu-Shang | Yurnad | – | Flower heads consumed as tonic |

**Table 9. *Contd....***

| | | | | | |
|---|---|---|---|---|---|
| *Lepidium latifolium* | Brassicaceae | Tharag-Thokpa | Losar (S) | – | Powdered acrial parts given to cure rheumatic pain |
| *Lindelofia anchusoids* | Boraginaceae | Moday-shuwer | Sumnam (L) | – | Fresh leaves applied as bandage on cuts and wounds |
| *Lomatogonium carinthiacum* | Gentianaceae | Tikta | Hills of Sumnam (L) | – | Powdered flowers prescribed to cure cough, fever and rheumatism |
| *Lonicera hypoleuca* | Caprifoliaceae | Kharmo | Rapay (L) | – | Paste of branches or bark applied on wounds in animals caused by rats |
| *Silene gonosperma* | Caryophyllaceae | Sukpa | Losar (S) | – | Powdered aerial parts given for rheumatic pain |
| *Malva verticillate* | Malvaceae | Mikanchi | Beeling (L) | – | Powdered seeds given to cure bladder and kidney disorders. |
| *Meconopsis aculeata* | Papaveraceae | Chharbongcha, Chharmen | Mountain of Beeling | – | Powdered aerial parts given as a tonic for general weakness |
| *Myricaria germanica* ssp. *alopecuroides* | Tamaricaceae | Hombug (L), Hombuk (S) | Jispa (L), Kaza (S) | – | Powdered leaves and flowers given to cure rheumatism |
| *Onosma bracteatum* | Boraginaceae | Khomig | Goshal (L) | – | Roots used as a hair tonic |
| *Pedicularis bicornuta* | Scrophulariaceae | Lugru Serpo | Losar (S) | – | Powdered aerial parts given to cure chest pain, backache and in cases of bleeding through mouth |
| *Pedicularis longiflora* ssp. *tubiflora* | Scrophulariaceae | Langna Serpo | Kibber (S) | – | Powder of dried flowers given to cure gastric pain and blood vomiting |

**Table 9. *Contd....***

| | | | | | |
|---|---|---|---|---|---|
| *Peperomia reflexa* | Piperaceae | Nyanchang | Karga (L) | – | Paste of aerial parts applied on burns and skin diseases |
| *Plantago major* var. *angusta* | Plantaginaceae | Karecha | Sumnam (L) | Glucosides, saponins, bitter compounds | Pounded seeds prescribed for gastric disorders and leaves as a band-aid |
| *Physochlaing praealtha* | Solanaceae | Dhandhura, Langtang | Bargul | Alkaloid, hyascyamine, hyascine | Seeds used to cure toothache |
| *Podophyllum hexandrum* | Podophyllaceae | Omo-Shey | Khinang (L) | Podophyllotoxin, picropodophyllin, quercetin, podophyllotoxin-β-D-glucoside | Powdered roots given in chronic constipation, pulverised fruits prescribed for cough and tuberculosis |
| *Polygonum affine* | Polygonaceae | Kaped | Beeling Nallah (L) | – | Powdered stem given to check flatulence and dysentery |
| *Polygonum tortuosum* | Polygonaceae | Nyolo | Kibber (S) | – | Powdered aerial parts prescribed for dysentery and dehydration |
| *Polygonum vivipara* | Polygonaceae | Naram | Kibber (S) | Tannic acid, gallic acid | Powdered aerial parts given in dysentery |
| *Ranunculus wallichianus* | Ranunculaceae | Peepri-ujaSumnam (L) | | – | Paste of flowers applied on boils and paste of aerial parts on joints to cure pains and stiffness |
| *Rhododendron anthopogon* ssp. *hypenanthum* | Ericaceae | Ballu | Drilbu (L) | – | Powdered leaves given to reduce birth pains and facilitate delivery |
| *Rosa foetida* | Rosaceae | Laybala | Sumnam (L) | – | Pulverised petals given to cure jaundice |

**Table 9. *Contd....***

| | | | | | |
|---|---|---|---|---|---|
| *Rosa jacquimonti* | Rosaceae | Chhangsay bala | Funkiar (L) | – | Pounded petals given to cure gastric disorders and indigestion |
| *Rumex patientia* ssp. *orientalis* | Polygonaceae Shoma (S) | Nyolove (L), Tholang (L) | Hansa (S) | – | Paste of leaves recommended for curing irritation caused by *Urtica* species |
| *Saussurea lappa* | Asteraceae | Koont | Shashin (L) | Alkoloid saussurine, bitter resin, terpenes, aplotaxene, sesquiterpenes, khustin | Extract of roots used as ear drops for relieving pain, powder also applied as poultice over painful joints and boils |
| *Saussurea sorocephala* | Asteraceae | Pankchi | Rohtang (L) | – | Powdered aerial parts given to cure backache, pulmonary affections and for purification of blood |
| *Scorzonera virgata* | Asteraceae | Thunbu | Rangrik (S) | – | Pulverised aerial parts given to cure constipation |
| *Senecio chrysanthemoides* | Asteraceae | Parpat | Keylong (L) | Seneciophylline | Powdered aerial parts used as blood purifier, rheumatic, gastric and liver ailments. |
| *Senecio hewrensis* | Asteraceae | Zethi | Kibber (S) | – | Powdered flowerheads given to cure headache |
| *Senecio pedunculatus* var. *albus* | Asteraceae | Chatiz | Beeling Nallah (L) | – | Aerial parts dried and pulverised for use to cure jaundice and gastric disorders |
| *Taraxacum officinale* | Asteraceae | Quanti (L), | Sumnam (L), | Taraxacin, taraxacerin, | Powdered flowers given for |

**Table 9. *Contd....***

| | | | | | |
|---|---|---|---|---|---|
| | | Sarkhen Mentok (S) | Kibber (S) | phytosterols, taraxasterol and homotaraxasterol | curing headache and fever |
| *Thlaspi arvense* | Brassicaceae | Treka | Tozing (L) | – | Powdered seeds given to cure urinary and kidney disorders |
| *Trigonella polycerata* | Fabaceae | Tongzil | Sumnam (L) | – | Powdered seeds given to cure fever, cough and cold |
| *Verbascum thapsus* | Scrophulariaceae | Jawarna-loudi | Sumnam (L) | Saponin, α-croretin | Powder obtained on pulverization of roasted aerial parts including flowers and seeds given to animals to check dysentery and abdominal pain |
| | | | **Plants used as incense** | | |
| *Artemisia absinthium* | Asteraceae | Bhurse | Kibber (S) | Artemitin, rutin, (flavonoides) absinth or wormwood oil (essential oil and absinth, guaianolide lactone) | Dried plant used as an incense |
| *Artemisia maritima* var. *neercha* | Asteraceae | Nyurcha | Beeling (L) | Santonin | Plant used as an incense |
| *Artemisia maritima* var. *seski* | Asteraceae | Seski | Jahalman (L) | – | Aerial parts used as an incense |
| *Inula racemosa* | Asteraceae | Manurucha | Shashin (L) | Inulin, essential oil, alantolactone | Roots used as an incense |

**Table 9. *Contd....***

| | | | | | |
|---|---|---|---|---|---|
| *Juniperus macropoda* | Cupressaceae | Shur | Yurnad (L) | Sugiol, 10-non-acosanol, β-sitosterol, junipodin, junipin, hypolaetin, biflavons, flavon glucosides, isoflavon, stilbenes, junipegenin B & C | Leaves used as an incense |
| *Morina coulteriana* | Dipsacaceae | Dayela | Khinang (L) | – | Flowers used as an incense |
| *Myricaria germanica* ssp. *alopecuroides* | Tamaricaceae | Hombug (L), Hombuk (S) | Jispa (L), Kaza (S). | – | Powdered leaves and flowers used as an incense |
| *Rhododendron anthopogon* ssp. *hypenanthum* | Ericaceae | Ballu | Drilbu (L) | | Leaves used as an incense |
| *Saussurea lappa* | Asteraceae | Koont | Shashin (L) | – | Powdered roots used as an incense |
| | | | **Dye yielding plants** | | |
| *Arnebia euchroma* | Boraginaceae | Dimug, Khamed | Losar (S) | – | Roots used for dyeing woollen clothes, foodstuffs |
| *Impatiens gigantea* | Balsaminaceae | Don | Khangsar (L) | – | Paste used for colouring the nails |
| *Juglans regia* var. *kamaonia* | Juglandaceae | Ka, Kaboot | Thirot (L) | Ascorbic acid, globulin, juglansin, vitamins A & B | Bark colour used as a substitute for lipstick |
| *Onosma bracteatum* | Boraginaceae | Khomig | Goshal (L) | – | Roots used for colouring culinary preparations |

**Table 9. *Contd....***

| | | | | | |
|---|---|---|---|---|---|
| *Rheum emodi* | Polygonaceae | Archo | Kardang (L) | Rhein, emodin, oxalic acid, eugenol, terpene alcohol, methyl heptylketone, rhaponticin and chryophanic acid | Roots used for dyeing woollen products |
| *Rumex patientia* ssp. *orientalis* | Polygonaceae | Nyolove (L), Shoma (S) | Tholang (L), Hansa (S) | – | Roots used for dyeing woollen garments |
| | | | **Wild edible plants** | | |
| *Allium carolinianum* | Liliaceae | Lo-adh | Hikkim (S) | – | Flowering tops and leaves used in soups |
| *Allium stracheyi* | Liliaceae | Gyamen, Kochay | Komic (S) | – | Flowering tops and leaves used as a condiment |
| *Amaranthus paniculatus* | Amaranthaceae | Sarada | Kishori (L) | Choline, betaine, oxalic acid | Leaves used as vegetable, seed powder made into gruel-'Sidu' (a bread) |
| *Barbarea intermedia* | Brassicaceae | Marchhalam | Tandi (L) | – | Tender leaves consumed as a vegetable |
| *Berberis jaceschkeana* | Berberidaceae | Kaymali | Tandi (L) | – | Tender leaves and flowers eaten |
| *Berberis vulgaris* var. *aetnensis* | Berberidaceae | Kaymali | Sumnam (L) | Berberine, berbamine, Isotetrandrine, jatrorrhiza, magnoflorine picrate, oxyberberine, oxycanthine | Tender leaves and ripe fruits eaten |
| *Cannabis sativa* | Cannabaceae | Bhang | Gozang (L) | Cannabinol, pseudo- | Seeds edible |

**Table 9. *Contd....***

| | | | | | |
|---|---|---|---|---|---|
| | | | | cannabinol, cannabinin, resin, cannin | |
| *Capparis spinosa* | Capparidaceae | Rohtokpa -Martokpa | Hurling (S) | Fatty oil, rutin, pentosans, rutic acid, pectic acid and saponin | Ripe fruits edible and young leaves as a pot herb |
| *Carum bulbocastanum* | Apiaceae | Zeera (L), Zira (S) | Sumnam (L), Kaza (S) | Essential oil containing aldehydes | Seeds for flavouring curries |
| *Carum carvi* | Apiaceae | Gonyorog (L), Gonyod (S) | Wari (L), Hansa (S) | Ketone, carvone, terpene, carvacorol | Seeds used as a spice |
| *Chaerophyllum villosum* | Apiaceae | Nyo, Shakrag | Tozing (L) | – | Roots and branches eaten raw |
| *Chenopodium album* | Chenopodiaceae | Am (L), Eyar (S) | Rawaling (L), Kaza (S) | – | Powdered seed used as food-stuff. Young leaves used as a pot herb |
| *Chenopodium foliolosum* | Chenopodiaceae | Khupalda | Kaza (S) | – | Ripe fruits edible |
| *Cotoneaster microphylla* | Rosaceae | Rogthali | Malang (L) | Sorbitol, hydrocyanic acid, cyanogenetic glucoside prulaurism | Fruits edible |
| *Cotoneaster vulgaris* | Rosaceae | Rogthali | Sumnam (L) | – | Fruits edible |
| *Cousinia thomsoni* | Asteraceae | Bachachhawag (L), Changchher (S) | Mooling (L), Losar (S) | – | Young stems edible |
| *Crataegus soongarica* | Rosaceae | Ramjag | Rashil (L) | l-Epicatechin, oligomeric procyanidin, crataegus lactone | Fruits edible |

**Table 9. *Contd....***

| | | | | | |
|---|---|---|---|---|---|
| *Dracocephalum heterophyllum* | Lamiaceae | Kuramtoksay | Kibber (S) | – | Fresh flowers eaten raw for their nectar |
| *Eremurus himalaicus* | Liliaceae | Pray | Beeling (L) | Hordenine | Young leaves used as a pot herb, roots pickled and eaten |
| *Fagopyrum tataricum* | Polygonaceae | Brafo | Mayling (L) | – | Nuts used for making bread and leaves as a vegetable |
| *Fragaria indica* | Rosaceae | Palla | Mooling (L) | – | Ripe fruits edible |
| *Hippophae rhamnoides* ssp. *turkestanica* | Elaeagnaceae | Chharma, Tirkug | Guling (S) | Humnin, carotene, ascorbic acid, dehydro-ascorbic acid, fatty oil | Berries eaten |
| *Hippophae salicifolia* | Elaeagnaceae | Sarla | Chokhang (L) | β-Sitosterol, 2-alkaloids | Berries edible |
| *Juglans regia* | Juglandaceae | Ka, kaboot | Thirot (L) | Ascoribic acid, globul-in, juglansin, vitamin A & B | Kernels eaten |
| *Lactuca viminia* | Asteraceae | Nichag | Kaza (S) | – | Latex of plant chewed as a substitute for chewing gum |
| *Mentha longi-folia* var. *royleana* | Lamiaceae | Marini, Madaen | Tandi (L) | Phenols, aldehydes, pineol, menthol, dios-pherol, piperitenone, oxide, dlosphenolene, piperitone, piperitenone, limonene and cineol | Leaves used for preparing chutney |
| *Origanum vulgare* | Lamiaceae | Lamay Masha | Sumnam (L) | – | Aerial parts including flowers used as spice |
| *Podopyllum hexandrum* | Podophyllaceae | Omo-shey | Khinang (L) | Podophyllotoxin, picropodophyllin, | Ripe fruits eaten |

**Table 9. *Contd....***

| | | | | | |
|---|---|---|---|---|---|
| | | | | quercetin, podophyllotoxin -β-D-glucoside | |
| *Polygonum alpinum* | Polygonaceae | Alipap | Sumnam (L) | – | Tender roots and stems eaten raw |
| *Polygonum virginianum* | Polygonaceae | Alipap | Ropsang (L) | – | Young stems eaten raw |
| *Prunus cornuta* | Rosaceae | Krun | Rashil (L) | HCN-glucosides | Ripe fruits eaten |
| *Malus baccata* | Rosaceae | Leejo | Jobrang (L) | – | Ripe fruits eaten |
| *Rheum emodi* | Polygonaceae | Archo | Kardang (L) | Rhein, emodin, oxalic acid, eugenol, terpene alcohol, methyl heptylketone, rhaponticin and chryophanic acid | Stem and petioles eaten raw |
| *Ribes alpestre* | Grossulariaceae | Pilickcha | Keylong (L) | – | Ripe berries edible |
| *Ribes grossularia* | Grossulariaceae | Bana-Pilickcha | Barbog (L) | | Ripe berries edible |
| *Ribes orientale* | Grossulariaceae | Nayangada (L), Nayangay (S) | Karga (L), Mountains of Kaza | – | Ripe fruits edible |
| *Rosa webbiana* | Rosaceae | Shaybala | Shansha (L) | Ascorbic acid | Peeled young stems and fruits edible |
| *Rosularia alpestris* | Crassulaceae | Pyau Chakti | Sumnam (L) | – | Plant juice considered nutritious |
| *Rumex acetosa* | Polygonaceae | Surjilove | Khangsar (L) | Oxalates, oxalic acid, acid potassium oxalate, tartaric acid, potassium binoxalate, oxymethyl-anthraquinone | Fresh stem and leaves eaten raw |

**Table 9. *Contd....***

| | | | | | |
|---|---|---|---|---|---|
| *Rumex patientia* ssp. *orientalis* | Polygonaceae | Nyolove (L), Shoma (S) | Tholang (L), Hansa (S) | – | Leaves used as a vegetable |
| *Rubus saxatilis* | Rosaceae | Moday Palla | Rashil (L) | – | Ripe fruits eaten |
| *Selinum tenuifolium* | Apiaceae | Chonra, Bodangar | Kardang (L) | – | Roots used as a spice, young leaves for making chutney |
| *Silene vulgaris* | Caryophyllaceae | Ghandoli | Kirting (L) | – | Leaves and twigs used as a pot herb |
| *Sonchus oleraceus* | Asteraceae | Panu Aag | Sumnam (L) | – | Fresh flowers eaten |
| *Thymus linearis* | Lamiaceae | Kochi Masha | Sumnam (L) | – | Dried leaves and flowers used as a condiment |
| *Tragopogon dubius* | Asteraceae | Tholu | Ruding (L) | – | Tender shoots and inflorescence eaten raw |
| *Trigonella emodi* | Fabaceae | Kuchona (L), Buksup (S) | Malang (L), Kaza (S) | – | Tender shoots and leaves used as a vegetable |
| *Viburnum cotinifolium* | Caprifoliaceae | Khimata | Rashil (L) | – | Ripe fruits eaten |
| | | | **Fodder Plants** | | |
| *Artemisia maritima* var. *neercha* | Asteraceae | Nyurcha | Beeling (L) | Santonin | Aerial parts used as fodder. |
| *Astragalus grahamianus* | Fabaceae | Rangchawag | Bokta (L) | – | Roots used as fodder for cattle, sheep and goats |
| *Astragalus marschallianus* | Fabaceae | Zomoshing keechu | Kaza (S) | – | Roots used as fodder. |
| *Astragalus rhizanthus* | Fabaceae | Zomoshing | Losar (S) | – | Roots used as fodder. |

**Table 9. *Contd....***

| | | | | | |
|---|---|---|---|---|---|
| *Polygonum alpinum* | Polygonaceae | Alipap | Sumnam (L) | – | Aerial dried parts used as fodder. |
| *Salix fragilis* | Salicaceae | Shen-Buta | Lote (L) | Salicin | Twigs used as a green feed for livestock. |
| | | | **Plants used as fuel** | | |
| *Astragalus marschallianus* | Fabaceae | Zomoshing, Keechu | Kaza (S) | – | Roots used as fuelwood. |
| *Bergenia stracheyi* | Saxifragaceae | – | Lindoor (L) | – | Whole plant used as fuelwood. |
| *Betula utilis* | Betulaceae | Shag | Ghandal (L) | – | Bark for lighting fire. |
| *Ferula jaeschkeana* | Apiaceae | Kalyash | Sumnam (L) | – | Dried stems used as firewood. |
| *Hippophae rhamnoides* ssp *turkestanica* | Elaeagnaceae | Chharma, Tirkug | Guling (S) | – | Branches and stems used as fuelwood. |
| *Rosa webbiana* | Rosaceae | Shaybala | Shansha (L) | – | Dried stems used as fuelwood. |
| *Salix elegans* | Salicaceae | Chagma | Kiato (S) | – | Stem and branches used as fuelwood. |
| *Salix fragilis* | Salicaceae | Shen-Buta | Lote (L) | – | Stem and branches used as fuelwood. |
| *Saussurea albescens* | Asteraceae | Bacha-Shang, Drapada | Sumnam (L) | – | Cotton obtained from leaves used for lighting fire. |

**Table 9. *Contd....***

| | | | | | |
|---|---|---|---|---|---|
| **Plants used in religious ceremonies** | | | | | |
| *Betula utilis* | Betulaceae | Shag | Ghandal (L) | – | Bark used in religious ceremonies. |
| *Geranium pratense* | Geraniaceae | Porlo (L), Likatur (S) | Rashil (L), Losar (S) | – | Flowers as offering to deities. |
| *Juniperus macropoda* | Cupressaceae | Shur | Yurnad (L) | – | Regarded as a sacred tree. Leaves burnt in religious ceremonies. |
| *Myricaria germanica* ssp. *alopecuroids* | Tamaricaceae | Hombug (L); Hombuk (S). | Jispa (L) Kaza (S). | – | Stem and branches used in religious ceremonies |
| *Ribes alpestre* | Grossulariaceae | Pilickcha | Keylong (L) | – | Branches used to keep the evil spirits at bay. |
| *Rosa foetida* | Rosaceae | Laybala | Sumnam (L) | – | Flowers as an offering to various deities. |
| *Tagetes erecta* | Asteraceae | Bowdu | Gozang (L) | – | Flowers used in religious ceremonies to drive away evil spirits and as an offering to deities. |
| **Plants used in decoration** | | | | | |
| *Anaphalis nubigena* | Asteraceae | Shepusha | Beeling (L) | – | Dyed flowering tops used ornamentally. |
| *Tagetes erecta* | Asteraceae | Bowdu | Gozang (L) | – | Petals used for making beautiful flowers. |

**Table 9. *Contd....***

| | | | | | |
|---|---|---|---|---|---|
| *Taraxacum officinale* | Asteraceae | Quanti (L); Sarkhen-mentok (S). | Sumnan (L), Kibber (S) | – | Stem latex used for temporary tattooing of hands and foreheads. |
| *Tragopogon dubius* | Asteraceae | Tholu | Ruding (L) | – | Latex of stem used for tattooing hands. |
| | | **Plants used for making implements, furniture and other household items** | | | |
| *Betula utilis* | Betulaceae | Shag | Ghandal (L) | – | Bark used for wrapping food items and twigs used as a broom. |
| *Cannabis sativa* | Cannabaceae | Bhang | Gozang (L) | – | Fibres used for making ropes, shoes and hand bags. |
| *Juglans regia* var. *kamaonia* | Juglandaceae | Ka, Kaboot | Thirot (L) | – | Wood used for making agricultural implements, furniture and carvings. |
| *Juniperus macropoda* | Cupressaceae | Shur | Yurnad (L) | – | Wood used for making different agricultural implements. |
| *Salix fragilis* | Salicaceae | Shen-Buta | Lote (L) | – | Wood used for making agricultural implements. |
| | | **Plants used as soap/detergent** | | | |
| *Astragalus grahamianus* | Fabaceae | Rangchawag | Bokta (L) | – | Leaves used for making a substitute for soap. |
| *Convolvulus arvensis* | Convolvulaceae | Grachi | Garang (L) | – | Plant used as a substitute for soap. |

**Table 9. *Contd....***

| | | | | | |
|---|---|---|---|---|---|
| *Epilobium angustifolium* | Onagraceae | Dharshak | Jahalman (L) | – | Pulverised roots used as a detergent. |
| *Silene gonosperma* ssp. *himalayensis* | Caryophyllaceae | Sukpa | Losar (S) | – | Powdered seeds and fruits used as soap. |
| | | | **Plants used for scouring teeth** | | |
| *Ephedra gerardiana* | Ephedraceae | Buchchur (L), Chhe, Somlata (S). | Sumnam (L), Hurling (S) | – | Fresh branches used as tooth brush. |
| *Juglans regia* var. *kamaonia* | Juglandaceae | Ka, Kaboot | Thirot (L) | – | Bark and leaves used for scouring teeth. |
| *Salix fragilis* | Salicaceae | Shen-Buta | Lote (L) | – | Twigs used for scouring teeth. |
| | | | **Plants used as insect/rodent repellent** | | |
| *Arctium lappa* | Asteraceae | Pichawag | Pasparag (L) | – | Burs used for repelling rodents. |
| *Artemisia maritima* var. *neercha* | Asteraceae | Nyurcha | Beeling (L) | – | Plant used as an insect repellent. |
| *Saussurea lappa* | Asteraceae | Koont | Shashin (L) | – | Roots used as an insect repellent. |
| | | | **Plants associated with superstition** | | |
| *Habenaria arcuata* | Orchidaceae | Panja | Sissu (L) | – | Agricultural implements made of iron are not employed for digging its roots, as it is considered a sin. |

**Table 9. *Contd....***

| | | | | | |
|---|---|---|---|---|---|
| *Iris kemaonensis* | Iridaceae | Praynal | Taylangway (L) | – | Flowers not plucked for fear of diseases and deaths in the family. |
| | | | **Miscellaneous uses of plants** | | |
| *Astragalus rhizanthus* | Fabaceae | Zomoshing | Losar (S) | – | Roots used for manufacture of paper. |
| *Cousinia thomsoni* | Asteraceae | Bachachhawag (L), Changc-hher (S) | Mooling (L), Losar (S) | – | Cotton obtained from leaves used for smoking. |
| *Ferula jaeschkeana* | Apiaceae | Kalyash | Sumnam (L) | – | Dried stem used for making toys. |
| *Hippophae rhamnoides* ssp. *turkestanica* | Elaeagnaceae | Chharma, Tirkug | Guling (S) | – | Branches used for fencing. |
| *Iris kemaonensis* | Iridaceae | Praynal | Taylangway (L) | – | Basal parts of the leaves used as a whistle. |
| *Lonicera hypoleuca* | Caprifoliaceae | Kharmo | Rapay (L) | – | Young branches used as writing pen. |
| *Rosa webbiana* | Rosaceae | Shaybala | Shansha (L) | – | Stems and branches used for fencing. |
| *Silene vulgaris* | Caryophyllaceae | Ghandoli | Kirting (L) | – | Children play with inflated calyx. |
| *Taraxacum officinale* | Asteraceae | Quanti (L), Sarkhen mentok (S) | Sumnam (L), Kibber (S) | – | Fresh petioles used as a musical instrument. |

with little inclination to share it with outsiders. With the disruption of traditional ways of life due to the so-called scientific development and the introduction of western medicine, their skills and the treasure of traditional knowledge are disappearing fast. This unfortunate situation is aggravated by the continued drift of the populace from rural to urban areas. In this context, Schultes (1963) rightly remarked: "Our challenge is to salvage some of the modern medico-botanical lore before it becomes for ever entombed with the cultures that gave it birth". Thus, there could be no two views on the utility of ethnobotanical forays not only for discovering new plant drugs for wider use, but also providing the needed information to policy-makers, who devise solutions for local and regional problems (Alcorn, 1984). In spite of the modern medical facilities provided free of cost by the State government, people in this remote area of Himalaya continue to take recourse to their traditional plant therapy and are observed to get good results. It is of paramount importance that these folklore medicines, which are efficacious according to their faith and understanding, should find a place in village healthcare programmes after detailed pharmacological and clinical trials. In China, traditional medicine is an integral part of the formal healthcare system and is utilized in about 40% of cases at the primary care level (Li Chaojin, 1987). So far, 7% of the world's vascular flora have been investigated for their medicinal potential and chemical and physical properties (Iversen, 1988). Such an exercise, according to Bruhn & Helmstedt (1980) is also essential, as it may lead to many novel useful drugs.

A perusal of the data on the plants used for various ailments (present study) reveals interesting information regarding the prevalent diseases and disorders among the tribals of Lahoul and Spiti. These people use the maximum number of plants for digestive disorders (13 species), followed by febrifuge (12 species), diseases of joints or rheumatism (12 species), weakness (9 species), antiseptic (8 species), cough (8 species), lung diseases (8 species), bodyache/ headache (6 species), liver complaints (6 species), cuts or injuries (5 species), diarrhoea or dysentery (5 species), urinary complaints (5 species), blood purifier (4 speices), boils (4 speices), burns (4 species), constipation (4 species), diuretic (4 species), swelling (4 species), debility (3 species), haemoptysis (3 species), skin diseases (3 species) and tooth problems (3 species). In comparison, lesser number of plants are used for ailments like asthma, cardiac complaints, child birth, dehydration, ear complaints, errhines, eye diseases, giddiness, kidney diseases, vermifuge, etc. Most of these plants predominantly belong to the families Asteraceae, Apiaceae,

Gentianaceae, Polygonaceae, Brassicaceae, Boraginaceae, Rosaceae, Solanaceae and Scrophulariaceae.

As regards traditional veterinary herbal remedies, the present study records the use of *Carum bulbocastanum, Cicer microphyllum, Fraxinus xanthoxyloides, Lonicera hypoleuca* and *Verbascum thapsus* despite the modern facilities available in the nearby veterinary health centres in this district. Infrequently, the sick animals are also subjected to faith healing, which includes prayers and sacrifice to propitiate family and village deities. As is true for other aspects of ethnobotany, the area of folklore herbal veterinary medicine offers vast scope for research; and there is an urgent need for documenting and scientifically evaluating the available information before it is lost due to rapid intrusion of modern civilization into the remote interior areas (see also Borthakur, 1996).

Regarding the ethnobotanical aspects of life support species, the present study lists 8 wild plants belonging to 38 genera and 20 families used by the tribals of Lahoul and Spiti for supplementing their diet. The value of these plants as pot herbs and vegetables, as substitutes for flour and fruits is not mentioned in the reports of Aitchison (1868), Aswal & Mehrotra (1987), Koelz (1979), Parmar & Kaushal (1982) and Sarin (1967); and even if reported, these differ mostly in respect of the part used. Species belonging to families like Rosaceae (8 genera), Polygonaceae (6 genera), Grossulariaceae (4 genera), Chenopodiaceae (3 genera), Fabaceae (3 genera), Apiaceae (2 genera), Lamiaceae (2 genera), Amaranthaceae (1 species), Brassicaceae (1 species), Cannabaceae (1 species), Capparidaceae (1 species), Caprifoliaceae (1 species), Caryophyllaceae ( 1 species), Juglandaceae (1 species), Liliaceae (1- species) and Podophyllaceae (1 species) predominate among wild food plants. These tribals fancied fruits (19 species) more than the leaves (16 species), shoots (11 species), seeds (5 species), flowers (3 species) and roots (2 species). Usually, flowers and fruits are consumed in raw state, while tubers, leaves and seeds are utilized in cooked form. The health, vitality and longevity enjoyed by the tribals have been attributed by their elders to these wild edibles. It is worthy of mention that the uses of latex of *Lactuca viminea* as chewing gum and of *Ribes alpestre, Rheum emodi* and *Rumex acetosa* for quenching thirst have not been recorded earlier. Besides the use of wild edible plants for overcoming the deficiency of nutritional constituents, these plants could be utilized in times of scarcity and require immediate attention to conserve this wealth of information. There is also scope for improving the growth forms of wild edible plants using modern scientific techniques, and this area offers a challenging task for agronomists.

Basically, agriculture is the main occupation of the people of Lahoul and Spiti. Minor cuts and injuries are unavoidable while handling tools and implements during agricultural operations involving ploughing and harvesting. The leaves of *Cynoglossum wallichii, Lindelofia anchusoides, Plantago major* var. *angusta, Senecio nudicaulis* and *Taraxacum officinale* (present study) are widely used either fresh or after toasting on fire as bandage for quick healing of such minor injuries. Similarly, plants such as *Erigeron alpinus, Gentianella moorcroftiana, Jaeschkea oligosperma, Lomatogonium carinthiacum, Ranunculus wallichianus, Saussurea lappa* and *Senecio chrysanthemoides* (Lahoul), and *Codonopsis clematidea, Cousinia thomsonii, Lepidium latifolium,* and *Silene gonosperma* (Spiti) are utilized for curing stiff joints and rheumatic pains. Some of the plants like *Hyoscyamus niger, Iris kemaonensis* and *Physochlaina praealta* are used in Lahoul region for providing instant relief from toothache. So far, all these plants are also not known to be exploited commercially in this area.

To sustain the livestock during winter, when the pasture lands are under snow for almost six months in a year, the animals are fed on hay, leaves and twigs of willow and thoroughly crushed straw and husk of wheat and barley. Besides, some of the wild plants like *Artemisia maritima* var. *neercha, Astragalus grahamianus, Convolvulus arvensis, Polygonum alpinum* (Lahoul) and *Astragalus marschallianus* and *A. rhizanthus* (Spiti) also find use as supplementary fodders. The aforesaid plants are considered quite nutritious and, therefore, much valued by the local peasants. Further, many of the fodder plants cultivated by the tribals of this area for hay are primitive cultivars and their importance as invaluable genetic stocks cannot be underestimated.

As the density of the trees grown in Lahoul-Spiti district is low, the fuelwood requirements are largely met from *Astragalus grahamianus, A. marschallianus, Bergenia stracheyi, Betula utilis, Ferula jaeschkana, Hippophae rhamnoides* ssp. *turkestanica, Myricaria germanica* ssp. *alopecuroides, Salix elegans, S. fragilis* and *Saussurea albescens*, and these plants are valued by the people. Of these, willow trees are largely cultivated at various places near their dwellings.

The people of Lahoul-Spiti are deeply religious. While worshipping the deities in Gompas, temples, Langs and in their houses, large quantities of incense are burnt. For this purpose, the present study records the use of plants such as *Artemisia absinthium, A. maritima* var. *neercha, A. maritima* var. *seski, Inula racemosa, Juniperus macropoda, Morina coulteriana, Myricaria germanica* ssp. *alopecuroides, Rhododendron anthopogon* ssp. *hypenanthum* and *Saussurea lappa*. This use of most of the plants does not seem to have been reported earlier by Aitchison

(1868), Aswal & Mehrotra (1987, 1994) and Koelz (1979). In addition, the plants considered to be used in religious rituals and offerings are: *Arnebia euchroma, Betula utilis, Geranium pratense, Juniperus macropoda, Myricaria germanica* ssp. *alopecuroides, Ribes alpestre, Rosa foetida, R. jacquimontii, R. webbiana* and *Tagetes erecta*. Similarly, the uses of *Astragalus grahamianus, Convolvulus arvensis, Epilobium angustifolium,* and *Silene gonosperma* (substitute for soap); *Impatiens gigantea* and *Rumex scutatus* (substitute for nail polish); *Juglans regia* (substitute for lip-stick); *Arctium lappa* (rat repellent); *Artemisia maritima* var. *neercha, Saussurea lappa* (insect repellent); and *Astragalus rhizanthus* (for the manufacture of paper); *Allium carolinianum* and *Chenopodium botrys* (for the preparation of soups) are additions to ethnobotanical knowledge.

The tribals of India have also been using about 300 wild plant species as biopesticides (Anonymous, 1994). Additionally, *Artemisia maritima* var. *neercha* and *Saussurea lappa* (present investigation) are used by these tribals as insect repellents for preserving clothes and other belongings kept in boxes. Another unique observation made in the present study is the use of stem latex of *Lactuca viminea* as gum.

Generally, tattooing on any part of the body is not popular with men and women of Lahoul and Spiti. However, on ceremonial occasions, young ladies use the stem latex of *Taraxacum officinale* and *Tragopogon dubius* for temporary tattooing on their hands and foreheads, a practice not prevalent among most of the ethnic tribes studied todate (Alcorn, 1984; Ford, 1980; Gunther, 1945; Hasnain, 1990; Jain, 1981; Saklani & Jain, 1994; Schmidt, 1990).

Like other hill tribes, the people of Lahoul and Spiti, but for a few exceptions, have a great desire for 'Chhang' (a beer made from barley water) and 'Arak' (a kind of distilled spirit, whisky), which form important parts of their culture and tradition. As every house has its own still, the taste and odour of these beverages vary from one house to another. Due to low alcoholic content, these drinks are harmless and are consumed by all sections of the society, but this habit does account for idleness and lethargy when the beverages are taken in large quantities. Moreover, these are served even to their guests without any inhibition. Drinking by these tribals is considered to be an efficacious protection against cold, as it helps in warming up the body. Unfortunately, increasing number of tribals are succumbing to the alcoholic drinks manufactured in the breweries, and this attitude needs to be changed by creating awareness among the tribals in order to preserve their folk values.

The tribals of Lahoul and Spiti are conservation conscious, as is

evidenced by their constructive approach towards nature's conservation in the form of 'sacred' groves through taboos and other mythological associations. Locally, these are called 'Sadbuta' and are regarded to be the abode of deity; it is believed that any interference with the biota of the grove will invoke the wrath of the reigning deity. The tribals thus maintain the sacred groves in a comparatively undisturbed condition for reasons of traditional beliefs and customs. Regular rituals are performed to seek the blessings of the reigning deities. Actually, these groves represent sites of the past climax vegetation and contain enormous species diversity that lies preserved on religious grounds. Through such cultural practices, many of the medicinally important endangered plants like *Aconitum heterophyllum, Habenaria arcuata, Podophyllum emodi* and *Selinum tenuifolium,* which are nearing extinction owing to the indiscriminate extraction from this region, have been conserved to a certain extent in these groves. One of the unique taboos which has been associated with the *in situ* conservation of *Iris kemaonensis* in Lahoul prohibits the plucking of its flowers for fear of diseases and deaths in the family. Such a conservational approach has not been reported so far in the earlier studies (Jain 1981, 1987a). Similarly, the protection of some of the willow and juniper trees is achieved through certain religious sanctions. According to Manandhar (1996), the mechanism for conservation of natural resources involves fusion of folk knowledge with that of resource personnel.

Although the role of ethnic communities in conserving genetic diversity is recognized universally, the economic benefits of utilization of the materials for various scientific purposes seldom reach them, and these people remain poor. Thus, there is an urgent need to organize them, so that they can reap the maximum benefit by judiciously exporting these materials to the concerned organizations. In this regard, Swaminathan (1995) rightly stated that those who have conserved biodiversity tend to remain poor, while those who have converted such genetic diversity into commercial products through biological technology are rich.

# References


Abrachaṁ, Z., Bhakuni, D.S., Garg, H.S., Goel, A.K., Mehrotra, B.N. & Patnaik, G.K. 1986. Screenig of Indian Plants for biological activity, Part XII. *Indian J. Expt. Biol.* **24**: 48-68.

Aitchison, J.E.T. 1868. Lahul, its flora and vegetable products etc. *J. Linn. Soc. Bot.* **10**: 69-101.

Alcorn, J.B. 1981a. Huastec noncrop resource management. *Human Ecol.* **9**: 395-417.

Alcorn, J.B. 1981b. Some factors influencing botanical resource perception among the Huastec: Suggestions for ethnobotanical enquiry. *J. Ethnobiol.* **1**: 221-230.

Alcorn, J.B. 1984. *Haustec Mayan Ethnobotany*. Univ. Texas Press, Austin.

Anonymous, 1948-1976. *The Wealth of India - Raw Materials*, Vols. 1-11. CSIR, New Delhi.

Anonymous, 1983. *Ethnobotany in India*. B.S.I., Howrah.

Anonymous, 1984. *All India Coordinated Research Project on Ethnobiology (Annual Report)*. Dept. of Environment, New Delhi.

Anonymous, 1986a. *All India Coordinated Research Project on Ethnobiology, Eastern Circle, Shillong (Annual Report)*. Ministry of Environment and Forests, India.

Anonymous, 1986b. *The Useful Plants of India*. CSIR, New Delhi.

Anonymous, 1994. *Ethnobiology in India- A Status Report*. Ministry of Environment and Forests, Govt. of India.

Arora, R.K. 1981. Native food plants of the tribals of Bastar (Madhya Pradesh) India: 91-106. In Jain, S.K. (*ed.*): *Glimpses of Indian Ethnobotany*, Oxford Univ. Press & IBH, New Delhi.

Arora, R.K. 1987. Ethnobotany and its role in the domestication and conservation of plant genetic resources: 94-102. In Jain, S.K. (ed.): *A Manual of Ethnobotany*. Sci. Pub., Jodhpur.

Arora, R.K. 1995. Ethnobotanical studies on plant genetic resources - national efforts and concern. *Ethnobotany* **1**: 125-136.

Arora, R.K. 1996. Role of ethnobotany in the conservation and use of plant genetic resources in India: 287-296. In Jain, S.K. (ed.): *Ethnobiology in Human Welfare*. Deep Publ., New Delhi.

Arora, R.K., Maheshwari, M.L., Chandel, K.P.S. & Gupta, R. 1980. Mano (*Inula racemosa*): Little known aromatic plant of Lahul Valley, India. *Economic Bot.* **34** (2): 175-180.

Asolkar, L.V., Kakkar, K.K. & Chakre, O.J. 1992. *Second Supplement to Glossary of Indian Medicinal Plants with Active Principles*, Part-I (A-K) (1965-1981). Publications & Information Directorate (CSIR), New Delhi.

Aswal, B.S. 1985. *Meconopsis bikrami* Aswal (Papaveraceae): A new species from Lahul valley, Himachal Pradesh, India. *Indian J.For.* **8** (1): 84-85.

Aswal, B.S., Bhakuni, D.S., Goel, A.K., Kar, K. & Mehrotra, B.N. 1984a. Screening of India Plants for Biological Activity. X. *Indian J. Expt. Biol.* **22**: 313-332.

Aswal, B.S., Bhakuni, D.S., Goel, A.K., Kar, K. & Mehrotra, B.N. 1984b. Screening of Indian Medicinal Plants for Biological Activity Part XI. *Indian J. Expt. Biol.* **22**: 487-504.

Aswal, B.S. & Mehrotra, B.N. 1987. Ethnobotanical studies on the flora of Lahul valley (North - West Himalayas): 116-130. In Sharma, M.R. & Gupta, B.K. (ed.): *Recent Advances in Plant Sciences*. Bishen Singh & Mahendra Pal Singh, Dehradun.

Aswal, B.S. & Mehrotra, B.N. 1994. *Flora of Lahoul-Spiti (A Cold Desert in North West Himalaya)*. Bishen Singh & Mahendra Pal Singh, Dehradun.

Bajpai, S.C. 1987. *Lahoul-Spiti- A Forbidden Land in the Himalayas*. Indus Publ. Company, New Delhi.

Balodi, B. 1988. Introductory note on the ethnobotany of Gori valley. *J. Econ. Tax. Bot.* **12**: 453-455.

Baruah, P.& Sarma, G.C. 1987. Studies on the medicinal uses of plants by the North east tribes. Pt. 3. *J. Econ. Tax. Bot.* **11**: 71-76.

Bennet, S.S. R. 1983. Ethnobotanical studies in Sikkim. *Ind. For.* **109**: 477.

Bhakuni, D.S., Dhar, M.L., Dhar, M.M., Dhawan, B.N. & Mehrotra, B.N. 1969. Screening of Indian Plants for Biological Activity, Part II *Indian J. Expt. Biol.* **1**: 250-262.

Bhakuni, D.S., Goel, A.K., Jain, Sudha, Mehrotra, B.N., Patnaik, G.K. & Prakash, V. 1988. Screening of Indian Plants for Biological Activity, Part XIII. *Indian J. Expt. Biol.* **26**: 883-904.

Bhargava, K.S. 1959. Unusual and supplementary food plants of Kumaon. *J. Bombay. Nat. Hist. Soc.* **56**: 26-31.

Bhattacharya, V.C. & Uniyal, B.P. 1982. A botanical tour to Pangi and

Triloknath in the upper Chenab. *J. Bombay nat. Hist. Soc.* **79**: 57-78.

Boef, de S.W. (ed.) 1992. Local knowledge and agricultural research. Report on *WAU/ENDA - Zimbabwe/ CGN/ GRAIN Seminar* (28 Sept. - 2 Oct. 1992) Nyanga, Zimbabwe. Dept of Sociology & Rural Development, Wageningen Agricultural Univ. & CPRO - DLO Centre for Genetic Resources, Wageningen, The Netherlands.

Borthakur, S.K. 1996. Wild edible plants in markets of Assam, India-an ethnobotanical investigation: 31-34. In Jain, S.K. (ed.): *Ethnobiology in Human Welfare*. Deep Publ., New Delhi.

Bruhn, J.G. & Helmstedt, B.O. 1980. Ethnopharmacology, objective, principles and prespectives: 405-430. In Beal, J.I. & Reinhard, E. (eds.): *Hipporkartes*, Verlag, Stuttgart.

Bye, R.A. Jr. 1979. Hallucinogenic plant of the Tarahumara. *J. Ethnopharm.* **1**: 23-48.

Chandra, S. 1990. Foundations of Ethnobotany (Pre-1900 *Ethnobotany) - A Review and Bibliography*. Deep Publ., New Delhi.

Charak, S.S. 1979. *History and Culture of Himalayan States. Vol.-II. Himachal Pradesh,* Part 2. Life and Light Publishers, New Delhi.

Chaudhuri, Rai H.N., Banerjee, D.K. & Guha, A. 1977. *Ethnobotanical uses of herbaria.*

Chopra, R.N., Chopra, I.C. & Verma, B.S. 1969. *Supplement to Glossary of Indian Medicinal Plants*. CSIR, New Delhi.

Chopra, R.N., Nayar, S.L. & Chopra, I.C. 1956. *Glossary of Indian Medicinal Plants*. CSIR, New Delhi.

Chowdhery, H.J. & Wadhwa, B.M. 1984. *Flora of Himachal Predesh.* Vols. 1-3. Bot. Surv. India, Calcutta.

Cohen, J.I., Alcorn, J.B. & Potter, C.S. 1991. Utilization and conservation of genetic resources. International Projects for Sustainable Agriculture. *Econ. Bot.* **45**:190–198.

Dam, D.P. & Hajra, P.K. 1981. Observation on ethnobotany of Kameng district, Arunachal Pradesh: 107-114. In Jain, S.K. (*ed.*): *Glimpses of Indian Ethnobotany*. Oxford & IBH, New Delhi.

Dar, G.H., Vir Jee, Kachroo, P. & Buth, G.M. 1984. Ethnobotany of Kashmir-I. Sind valley. *J. Econ. Tax. Bot.* **5**: 668-675.

Datta, C.L. 1973. *Ladakh and Western Himalayas*. Munshiram Manoharlal Publications, New Delhi.

Dhar, M.L., Dhar, M.M., Dhawan, B.N., Mehrotra, B.N., Srimal, R.C. & Tandon, J.S. 1973. Screening of Indian plants for biological activity, Part IV. *Indian J. Expt. Biol.* **11**: 43-54.

Dhasmana, H. 1986. Medicinal plants of Pauri Town (Garhwal) and adjacent forest regions, Part-I, Family Compositae. *J. Sci. Pl. Med.* 7: 45-49.

Dhawan, B.N., Dubey, M.P., Mehrotra, B.N., Rastogi, R.P. & Tandon, J.S. 1980. Screening of Indian Plants for biological activity, Part IX. *Indian J. Expt.Biol.* **18**: 594-606.

Dhawan, B.N., Patnaik, G.K., Rastogi, R.P., Singh, K.K. Tandon, J.S. 1977. Screening of Indian plants for biological activity, Part VI. *Indian J. Expt. Biol.* **15**: 208-219.

Ford, R.I. (ed.) 1978. *The Nature and Status of Ethnobotany.* Anthropological Paper No. 67. Museum of Anthrop. Univ. of Michigan, Ann. Arbor.

Ford, R. 1980. Ethnobotany: historical diversity and synthesis: 33-49. In Ford, R. (ed.): *The Nature and Status of Ethnobotany.* Univ. Michigan, USA.

Gaur, R.D., Semwal, J.K. & Tiwari, J.K. 1983. A survey of high altitude medicinal plants of Garhwal Himalaya. *Bull. Med. Ethnobot. Res.* 4 (*3-4*): 102-116.

Gaur, R.D., Sharma, M.P. & Semwal, J.K. 1980. Ethnotoxic plants of Garhwal hills in India. *East Anthrop.* **33**: 159-163.

Ghildiyal, N. & Aswal, B.S.1985. Rediscovery of *Carex pamirensis* Clarke ex Fedt. (Cyperaceae) from Lahaul valley (H.P). *Indian J. For.* **8** (*3*): 241.

Gill, M.S. 1972. *Himalayan Wonderland.* Vikas Publ. House Pvt. Ltd., New Delhi.

Gunther, Erna 1945, *Ethnobotany of Western Washington.* Univ. of Washington Press, London.

Gupta, O.P., Srivastava, T.N., Gupta, S.C. & Badola, D.P. 1980. An ethnobotanical and phytochemical screening of high altitude plants of Ladakh-I *Bull. Medico-ethnobot. Res.*1: 301-317.

Gupta, O.P., Srivastava, T.N., Gupta, S.C. & Badola, D.P. 1981. Ethnobotanical screening of high altitude plants of Ladakh-II. Bull. *Medico-ethnobot. Res.* **2**: 67-88.

Gupta, Rajkumar 1962. Some unusual and interesting food plants of the Garhwal Himalaya. J.D. *Agric. Trop Bot. Appl.* **9** (11-12) : 532-535.

Gupta, S.P. 1981. Native medicinal uses of plants by the Assurs of Netarhat plateau (Bihar): 218-231. In Jain, S.K. (ed.): *Glimpses of Indian Ethnobotany.* Oxford & IBH, New Delhi.

Gupta, S.P. 1987. Study of plants during ethnological research among

the tribals: 12-22. In Jain, S.K. (*ed.*): *A Manual of Ethnobotany*. Sci. Publ., Jodhpur.

Hajra, P.K. 1981. Nature conservation in Khasi folk beliefs and taboos: 149-153. In Jain, S.K. (ed.): *Glimpses of Indian Ethnobotany* .Oxford & IBH, New Delhi.

Hajra, P.K. & Chakraborty, P.C. 1981. A survey of wild plants sold in the Lal market of Gangtok. *Indian J. Forestry* **4**: 217-220.

Harcourt, A.F.P. 1972. *The Himalayan Districts of Koolo, Lahoul and Spiti*. Vivek Publ. House, Delhi.

Hasnain, N. 1990. *Tribal India Today*, Harnam Publ., New Delhi.

Hutchinson, J.I. & Vogel, J. Ph. 1933. *The History of Punjab Hill States*. Punjab Govt., Lahore.

Iversen, S.T. 1988. Conservation of the Usambara mountains, botanical values at the species and phytogeographical level: 218-243. In Hedberg, I. (ed.): *Systematic Botany - A Key Science for Tropical Research and Documentation*. Almqvist & Wiksell Int., Stockholm.

Jain, S.K. (ed.) 1981. *Glimpses of Indian Ethnobotany*. Oxford and IBH, New Delhi.

Jain, S.K. 1986. *Ethnobotany. Interdiscipl. Sci. Rev.* II. 285-292.

Jain, S.K. 1987a. *Ethnobotany - Its concepts and relevance*. Presid. Address. X Bot. Conf., Patna.

Jain, S.K. 1987b, Ethnobotany - Its scope and various subdisciplines: 1-11. In Jain, S.K. (ed.): *A Manual of Ethnobotany*. Sci. Publ., Jodhpur.

Jain, S.K. 1991. *Dictionary of Indian Folk-medicine and Ethnobotany*. Deep Publ., New Delhi.

Jain, S.K. & Goel, A.K. 1995. Workshop Exercise–1 Proforma for field work: 142–147. In Jain, S.K. (ed.) *A Mannal of Ethnobotany*. Scientific Publ., Jodhpur.

Jain, S.K. & Saklani, A. 1992. Cross-Cultural Ethnobotanical studies in Northeast India. *Ethnobotany* **4**: 25-38.

Janardhanan, K.P. 1963. An enumeration of the medicinal plants of Khed Taluka, Maharashtra State. *Bull. Bot. Surv. India* **5**: 363-374.

Joshi, A.C. 1952. Aquatic vegetation of Lahoul. *The Palaeobotanist* **1**: 277-280.

Joshi, P. 1982. An ethnobotanical study of Bhils - A preliminary survey. *J. Econ. Tax. Bot.* **3**: 257-266.

Joshi, P. 1986. Fish stupefying plants employed by tribals of southern Rajasthan, a probe. *Curr. Sci.* **55**: 647-650.

Kapahi, B.K. & Sarin, Y.K. 1979. Contribution to the botany of Lahaul. *Bull. Bot. Surv. India* **74**: 627-639.

Karnick, C.R., Tiwari, R., Majumdar, R. & Bhattacharjee, S. 1981. Newer ethnobotanical and folklore studies of some medicinal plants of Gauhati and surrounding areas. *Nagarjun.* **24**: 240-245.

Kaul, M.K., Bhatia, A.K. & Atal, C.K. 1985. Ethnobotanic studies in northwest and trans- Himalaya - Contribution to the wild food plants of Ladakh. *J. Econ. Tax. Bot.* **6**: 629-635.

Kirtikar, K.R. & Basu, B.D. 1935. *Indian Medicinal Plants*. Vol. III. Lalit Mohan Basu, Allahabad.

Koelz, W.N. 1979. Notes on the ethnobotany of Lahul, a province of the Punjab. *Quar. J. Crude Drug Res.* **17**: 1-56.

Koul, S.C. 1941. Some wild flowers of Kashmir and their indigenous use. *J. Bombay Nat. Hist. Soc.* **42**: 452-454.

Kumar, Y., Fancy, S. & Rao, R.R. 1987. Further contribution to ethnobotany of Meghalaya: Plants used by 'War Jaintia' of Jaintia Hill District. *J. Econ. Tax. Bot.* **11**: 65-70.

Li Chaojin 1987. Management of Chinese traditional drugs: 39-41. In Akerele, O., Stott, G. & Welbo, Lu (eds): The Role of Traditional Medicine in Primary Healthcare in China. *American Chin. Med.*, (Suppl.).

Maheshwari, J.K. 1987a.Interdisciplinary approaches in ethnobotany: 19-34. In Jain, S.K. (ed.): *A Manual of Ethnobotany*, Jodhpur, India.

Maheshwari, J.K. 1987b. Tribal ecosystem-an overview. *Tribal Res. Bull.* **9**:1-14.

Maheshwari, J.K. & Singh, J.P. 1984. Contribution to the Ethnobotany of Bhoxa tribe of Bijnor and Pauri Garhwal districts, U.P. *J. Econ. Tax. Bot.* **5**: 251-259.

Maheswari, P. & Singh, U. 1965. *Dictionary of Economic Plants of India*. ICAR, New Delhi.

Malhotra, C.L. & Basu, D. 1984. A preliminary survey of plant resources of medicinal and aromatic value from Almora. *J. Econ. Tax. Bot.* **5**: 859-864.

Mamgain, M.D. 1975. *Himachal Pradesh District Gazetteers - Lahul and Spiti Gazetteer of India*, Chandigarh.

Manandhar, N.P. 1996. Ethnobotanical studies in Nepal-Conservation of economically important plants by rural people: 303-306. In Jain, S.K. (ed.): *Ethnobiology in Human Welfare*. Deep Publ. New Delhi.

Martin, G.J. 1994. *Ethnobotany: Methods Manual.* Chapman & Hall, London.

Mittre, V. 1981. Wild plants in Indian folk life - A historical perspective: 37-58. In Jain, S.K. (ed.): *Glimpses of Indian Ethnobotany*, Oxford & IBH, New Delhi.

Nair, N.C. 1964. On a botanical tour to Lahul and Spiti (Punjab Himalaya). *Bull. Bot. Surv. India* **6**: 219-235.

Naithani, H.P. & Aswal, B.S. 1984. *Ranunculus adoxifolius* in the North Western Himalaya. *Indian J. For.* **7** (*1*) : 75.

Nautiyal, S. 1981. Some medicinal plants of Garhwal Hills - A traditional use. *J. Sci. Res. Pl. Med.* **2**: 12-17.

Negi, K.S., Tiwari, J.K. & Gaur, R.D. 1985. Economic importance of some common uses in Garhwal Himalaya: An ethnobotanical study. *Indian J. For.* **8**: 276-289.

Parmar, C. & Kaushal, M.K. 1982. *Wild Fruits of the Sub-Himalayan Region.* Kalyani Publ., New Delhi.

Polunin, O. & Stainton, A. 1984. *Flowers of the Himalaya.* Oxford Press, New Delhi.

Purohit, V.P., Silas, R.A. & Gaur, R.D. 1985. Ethnobotanical studies of some medicinal plants used in skin diseases from Raath (Pauri) Garhwal Himalaya. *J.Sci. Res. Pl. Med.* **6**: 39-47.

Rai, M.K. 1985. Plants used as medicine by the tribals of Chhindwara District (M.P.). *J.Econ. Tax. Bot.* **7**: 385-387.

Rao, R.R. 1981a. Ethnobotany of Meghalaya-Medicinal plants used by Khasi and Garo tribes. *Econ. Bot.* **35**: 4-9.

Rao, R.R. 1981b. Ethnobotanical studies on the flora of Meghalaya-Some interesting reports of herbal medicines: 137-148: In Jain, S.K. (ed.) *Glimpses of Indian Ethnobotany.* Oxford & IBH, New Delhi.

Rao, R.R. 1996. Indigenous people and forests: perspectives of an ethnobotanical study from Nagaland, North-east India: 367-371. In Jain, S.K. (ed.) *Ethnobiology in Human Welfare*, Deep Publ. New Delhi.

Rao, R.R. & Jamir, N.S. 1982a. Ethnobotanical studies in Nagaland-1: Medicinal plants. *Econ. Bot.* **36**: 176-181.

Rao, R.R. & Jamir N.S.1982b. Ethnobotanical studies in Nagaland-II: 54 medicinal plants used by Nagas. *J.Econ.Tax. Bot.* **3**: 11-17.

Rau, M.A. 1960. On a collection of plants from Lahul. *Bull. Bot. Surv. India* **2**: 45-56.

Rau, M.A. 1961. A recent survey of medicinal plant resources of Lahoul valley (Punjab, India). *Pakistan J. Sci. & Res.* (International Symposium) **4**: 202–205.

Rau, M.A. 1974. Vegetation and phytogeography of the Himalaya: 247-280. In Mani, M.S. (ed.): *Ecology and Biogeography in India*. The Hague.

Rawat, G.S. & Pangtey, Y.P.S. 1987. A contribution to the ethnobotany of Alpine regions of Kumaon. *J. Econ. Tax. Bot.* **11**: 139-148.

Sahni, R.N. 1994. *Lahoul- The mystery land in the Himalayas*. Indus Publ. Co., New Delhi.

Saklani, S. & Jain, S.K. 1994. *Cross-cultural ethnobotany of northeast India*. Deep Publ., New Delhi.

Saklani, A. & Jain, S.K. 1996. Credibility of folk-claims in northwestern Himalaya and northeastern India: 136-139. In Jain, S.K. (ed.): *Ethnobiology in Human Welfare*. Deep Publ. New Delhi.

Sarin, Y.K. 1967. A survey of vegetable raw material resources of Lahaul. *Ind. For.* **93** (*7*): 489-495.

Sarin, Y.K., Kapoor, L.D. & Chopra, I.C. 1963. *Physochlaina praealta* (Don) Miers: A hyoscyamine yielding plant important in Lahul's economy. *Indian For.* **89**: 610-611.

Schmidt, J.G. 1990. Ethnobotany of contemporary Northeastern woodland Indians-Its sharing with the public through photography. *Econ. Bot.* **8**: 224-227.

Schultes, R.E. 1960. Tapping our heritage of ethnobotanical lore. *Econ. Bot.* **14**: 257-262.

Schultes, R.E. 1962. The role of ethnobotanist in the search for new medicinal plants. *Lloydia* **35**: 257-266.

Schultes, R.E. 1963. Hallucinogenic plants of the new world. *Harvard Rev.* **1**: 18-32.

Shah, N.C. 1982. Herbal folk medicines in northern India. *J. Ethnopharmacol.* **6**: 293-301.

Shah, N.C. & Joshi, M.C. 1971. An ethnobotanical study of the Kumaon region of India. *Econ. Bot.* **25**: 412-422.

Sharma, M.L., Chandokhe, N., Ray Ghatak, B.J., Jamwal, K.S., Gupta, O.P., Singh, G.B., Mohd. Ali. M., Thakur, R.S., Handa, K.L. & Rao, P.R. 1978. Pharmacological Screening of Indian Medicinal Plants. *Indian J. Expt. Biol.* **16**: 228-240.

Sharma, P.K., Dhyani, S.K. & Shankar, V. 1979. Some useful and medicinal plants of the district Dehradun and Siwalik. *J. Sci. Res. Pl. Med.* **1**: 17-43.

Singh, D.P. 1950. Kuth cultivation in Lahul and its future. *Indian For.* **76**: 526-527.

Singh, K.K., Palvi, S.K. & Singh, H.B. 1980. Survey of some medicinal plants of Dharchula block in Pithoragarh distt. of Uttar Pradesh, *Bull. Med Ethnobot. Res.* **1**: 1-7.

Singh, S.R. & Singh, N.I. 1985. A preliminary ethnobotanical study on wild edible plants in the markets of Manipur-I. *J. Econ. Tax. Bot.* **6**: 699-703.

Singh, V. & Pandey, R.P. 1980. Medicinal plantlore of the tribals of eastern Rajasthan. *J. Econ. Tax. Bot.* **1**: 137-147.

Singh, V. & Singh, P. 1981. Edible wild plants of eastern Rajasthan. *J. Econ. Tax. Bot.* **2**: 197-207.

Singh, U., Wadhwani, A.M. & Johri, B.M. 1983. *Dictionary of Economic Plants in India.* ICAR, New Delhi.

Srivastava, T.N., Badola, D.P. & Gupta, O.P. 1981. Medicinal herbs used by the Amchis of Ladakh. *Bull. Med. Ethnob. Res.* **2**: 193-202.

Stainton, A. 1988. *Flowers of the Himalaya- A Supplement*: Oxford Univ. Press, New Delhi.

Swaminathan, M.S. 1995. Inaugural Address at IV International Congress of Ethnobiology, Lucknow. Nov. 17-21, 1994.

Tarafder, C.R. 1987. Some traditional knowledge about tribal health. *Folklore* **28**: 37-42.

Tiwari, K.C., Majumdar, R.& Bhattacharjee, S. 1979. Folklore medicine from Assam and Arunachal Pradesh (District Tirap). *Quart. J. Crude Drug Res.* **17**: 61-67.

Tobdon 1984. *History and Religions of Lahul.* Oriental Publ., New Delhi.

Uniyal, M.R. 1968. Medicinal plants of Bhagirathi valley lying in Uttarkashi forest division. *Indian For.* **94**: 407-420.

Uniyal, M.R., Bhat, A.V. & Chaturvedi, 1973. Preliminary observations on medicinal plants of Lahoul Spiti forest division in Himachal Pradesh. *Bull. Med.Ethnobot. Res.* **3**: 1-26.

Uniyal, M.R. & Chauhan, N.S. 1971. Medicinal plants of Uhal valley in Kangra forest division, H.P. *J. Res. Indian Med.* **6**: 287-299.

Uniyal, M.R. & Chauhan, N.S. 1973. Traditionally important medicinal plants of Kangra valley in Dharamshala forest circle, H.P. *J. Res. Indian Med. Res.* **8**: 7-85.

Vartak,V.D. 1981. Observations on wild-edible plants from hilly regions of Maharashtra and Goa: Resume and future prospects: 261-

271. In Jain, S.K. (ed.): *Glimpses of Indian Ethnobotany*. Oxford & IBH, New Delhi.

Watt, G. 1881. Notes on the vegetation of Chamba State and British Lahoul. *J. Linn. Soc. Bot.* **18**: 368-382.

Watt, G. 1889-1896. *A Dictionary of the Economic Products of India*. Vols 1-6. Suptd. Govt. Printing, Calcutta.

Wickens, G.E. 1990. What is economic botany ? *Econ. Bot.* **44**: 12-28.

# Captions for Plates

**Pl. 1A–C.** Close-up views of Lahoul valley, Kardang village and Keylong– (A) A close-up view of the lofted mountain peaks of Lahoul valley; (B) Kardang village- Permanent settlement. Village Beeling is also seen in the background; (C) Keylong, the headquarters of Lahoul and Spiti, as it looks in winter.

**Pl. 2A–C.** Losar, Rangrik and Kaza– (A) A close-up view of a part of Losar village; (B) A view of village Rangrik, river Spiti and barren mountains in Spiti valley and (C) Panoramic view of Kaza.

**Pl. 3A–F.** Kungri Gompa– (A) Kungri village- Permanent dwellings; (B) An image of a deity inside Kungri Gompa; (C) A monk performing religious chores; (D) A finely carved wooden box in Kungri Gompa; (E) Holy scriptures stacked on wooden shelves and (F) Prayer wheels.

**Pl. 4A–D.** Deity, monks and 'mummy' (Lahoul and Spiti)– (A) Image of 'Verozana' in Tabo monastery; (B) A Spitian monk; (C) A Lahoula monk and (D) Century old 'mummy' of a Lama in worship posture. It was dug up near an I.T.B.P. camp in 'Giu', a village 8 km. off the state highway between Tabo and Hurling.

**Pl. 5A–C.** 'Mani', 'Chholo' and totems, Lahoul– (A) Inscribed stones- 'Mani'; (B) 'Chholo' - A recreational game and (C) Totems.

**Pl. 6A–J.** Gompas, Pin valley and 'Latho', Spiti– (A) Po Gompa (see arrow); (B) Abandoned natural caves at Tabo; (C) Same, a closer view; (D) A distant view of Pin valley; (E) Monastery being given a fresh coat of lime; (F) Horns of live-stocks (Latho) stacked outside the village to ward off evil spirits; (G) 'Latho' of mud and stones; (H) A close view of a newly constructed Kungri Gompa; (I) A field of 'sarson' (Brassica campestris) in blossom and (J) A lady from Spiti busy in irrigating barley fields.

**Pl. 7A–C.** Houses in Lahoul-Spiti district– (A) A typical house and its surrounding in Lahoul during winter; (B) Interior view of a house showing thatching pattern and support column of the roof in Lahoul and (C) Outside view of a typical house in Spiti.

**Pl. 8A–F.** Kitchen implements, Lahoul– (A) A smoke-less 'Chullah'–cum–room heater; (B) 'Dongmo'– A piston for preparing salted tea; (C–E) Spice box, bath tub and 'Soltag'- A small table, respectively.

All made from the wood of Juniperus macropoda and (F) 'Gogdum'.

**Pl. 9A–H.** Kitchen aids and appliances, Lahoul– (A & B) Brooms, 'Talfeg' (A) and 'Preg' (B); (C) 'Kutni'- A bat (Salix sp.) used for washing clothes; (D) 'Paltiri'- An appliance used for cutting meat; (E & F) A wooden spoon- 'Doe' and a cup- 'Thopo' (Salix sp.); (G) A T-shaped stick of Hippophae salicifolia used for roasting barley grains; and (H) A large–sized wooden churner (Betula utilis).

**Pl. 10A–E.** Kitchen aids and straw-shoes, Lahoul– (A) A household distillation device used for preparing local drink, 'Sara' or 'Arak'; (B) 'Tal-Khuti'– A wooden threshing appliance; (C) A woman from Lahoul using 'Tal-Khuti' for threshing wheat straw; (D) A pair of straw-shoes (wheat); and (E) 'Shin'- A separator.

**Pl. 11A–D.** Fodder and fuelwood-- (A) A young Lahoula man with his back-load of harvested potato shoots to be used as fodder; (B) Piles of dried grass- "Taylang", a means to keep the grass dry during period of rain and snow; (C) Sun-dried cowdung cakes; and (D) Fuelwood- Salix and Hippophae spp.

**Pl. 12A–C.** Costumes, ornaments and dances of Lahoul– (A) A Lahouli woman with local costume and ornaments; (B) A Lama performing devil dance on festive occasion; and (C) Lahouli girls presenting a folk–dance during Independence Day celebration at Keylong.

**Pl. 13A–D.** Spiti belles– (A–C) Spiti belles with local costume and ornaments. Note the bright colour of their skin and range in variation of the ornaments worn by them; and (D) A lady from Spiti carrying her child tied to her back with a shawl.

**Pl. 14A–F.** Agricultural implements, Lahoul– (A) 'Surmo'- Used for the removal of weeds; (B) 'Ogten'- A digger; (C) 'Chhini'- Used for breaking stones; (D) 'Makkudi'- A small–sized axe used for cutting branches of trees; (E) 'Jatum'- A sickle used for harvesting; and (F) (i) 'Fal'- Used in ploughing operation; (ii) 'Dach'- A sickle used for cutting the branches; (iii) 'Chucha'- Used for making pieces.

**Pl. 15A–E.** Agricultural implements, Lahoul– (A) 'Tiwal'- Used in irrigation operations; (B) Procedure for making 'Trawak-tra' from the wood of Juniperus macropoda. It is used to tie the rope to the nose of bull; (C) 'Jumh'- An implement used to keep the bull in position during ploughing; (D) A plough made from Betula utilis; and (E) 'Datha'– A wooden box of Juniperus macropoda which is used for storing the grains.

**Pl. 16A–G.** Agricultural implements and Holy stamps, Spiti– (A) 'Laktar'- An axe; (B) 'Khieum'- Used for the extraction of weeds; (C) 'Tokchay'-

stamps; and (F) 'Chewo'- A basket used for carrying the cow dung.

**Pl. 17A–F.** Ethnobotanically important plants, Lahoul and Spiti– (A) *Aconitum heterophyllum Pyukar*, Lahoul; (B) *Allium carolinianum Komic*, Spiti; (C) *Amaranthus paniculatus Kishori*, Lahoul; (D) *Anaphalis nubigena Beeling*, Lahoul; (E) *Arctium lappa Pasparag*, Lahoul; and (F) *Arnebia euchroma Losar*, Spiti.

**Pl. 18A–F.** Ethnobotanically important plants, Lahoul and Spiti– (A) *Artemisia absinthium Kibber*, Spiti; (B) *Artemisia glauca Beeling*, Lahoul; (C) *Artemisia maritima* var. *neercha Beeling*, Lahoul; (D) *Artemisia maritima* var. *seski Jahalman*, Lahoul; (E) *Aster heterochaeta Kibber*, Spiti; and (F) *Astragalus grahamianus Bokta*, Lahoul.

**Pl. 19A–F.** Ethnobotanically important plants, Lahoul and Spiti– (A) *Astragalus himalayanus Losar*, Spiti; (B) *Astragalus marschallianus Kaza*, Spiti; (C) *Astragalus rhizanthus Losar*, Spiti; (D) *Barbarea intermedia Tandi*, Lahoul; (E) *Berberis jaeschkeana Tandi*, Lahoul; and (F) *Berberis vulgaris* var. *aetnensis Sumnam*, Lahoul.

**Pl. 20A–F.** Ethnobotanically important plants, Lahoul and Spiti– (A) *Bergenia stracheyi Lindoor*, Lahoul; (B) *Betula utilis Ghandal*, Lahoul; (C) *Brassica erucastrum Sumnam*, Lahoul; (D) *Cannabis sativa Gozang*, Lahoul; (E) *Capparis spinosa Hurling*, Spiti; and (F) *Flowering shoot of Capparis spinosa.*

**Pl. 21A–F.** Ethnobotanically important plants, Lahoul and Spiti– (A) *Carum bulbocastanum Sumnam* (Lahoul), Kaza (Spiti); (B) *Carum carvi Wari* (Lahoul), Hansa (Spiti); (C) *Chaerophyllum villosum Tozing*, Lahoul; (D) *Chenopodium album Rawaling* (Lahoul), Kaza (Spiti); (E) *Chenopodium botrys Tozing*, Lahoul; and (F) *Chenopodium foliolosum Kaza*, Spiti.

**Pl. 22A–F.** Ethnobotanically important plants, Lahoul and Spiti– (A) *Christolea crassifolia Kibber*, Spiti; (B) *Cicer microphyllum Guskiar* (Lahoul), Losar (Spiti) (C) *Cnicus argyracanthus Sumnam*, Lahoul; (D) *Codonopsis clematidea Kibber*, Spiti; (E) *Convolvulus arvensis Garang*, Lahoul; and (F) *Cotoneaster microphylla Malang*, Lahoul.

**Pl. 23A–F.** Ethnobotanically important plants, Lahoul and Spiti– (A) *Cotoneaster vulgaris Sumnam*, Lahoul; (B) *Cousinia thomsoni Mooling* (Lahoul), Losar (Spiti); (C) *Crataegus soongarica Rashil*, Lahoul; (D) *Cynoglossum wallichii Sumnam*, Lahoul; (E) *Dracocephalum heterophyllum Kibber*, Spiti; and (F) *Ephedra gerardiana Sumnam* (Lahoul) Hurling (Spiti).

**Pl. 24A–F.** Ethnobotanically important plants, Lahoul and Spiti– (A) *Epilobium angustifolium Jahalman*, Lahoul; (B) *Eremurus himalaicus Beeling*, Lahoul; (C) *Erigeron alpinus Beeling*, Lahoul; (D) *Erigeron monticolous Keylong*, Lahoul; (E) *Fagopyrum tataricum Mayling*, Lahoul; and (F) *Ferula jaeschkeana Sumnam*, Lahoul.

**Pl. 25A–F.** Ethnobotanically important plants, Lahoul and Spiti– (A) *Fragaria indica Mooling*, Lahoul; (B) *Fraxinus xanthoxyloides Udaipur*, Lahoul; (C) *Gentianella moorcroftiana Sumnam* (Lahoul), Hansa (Spiti); (D) *Gentianella paludosa Kibber*, Spiti; (E) *Geranium pratense Rashil* (Lahoul), Losar (Spiti); and (F) *Habenaria arcuata Sissu*, Lahoul.

**Pl. 26A–G.** Ethnobotanically important plants, Lahoul and Spiti– (A) *Heracleum candicans Bargul*, Lahoul; (B) *Hippophae rhamnoides* ssp. *turkestanica Guling*, Spiti; (C) *Hippophae salicifolia Chokhang*, Lahoul; (D) *Hyoscyamus niger Shipting*, Lahoul; (E) *Impatiens gegantia Khangsar*, Lahoul; (F) *Inula racemosa Shashin*, Lahoul; and (G) *Iris kumaonensis Taylangway*, Lahoul.

**Pl. 27A–F.** Ethnobotanically important plants, Lahoul and Spiti– (A) *Jaeschkea oligosperma Beeling*, Lahoul; (B) *Juglans regia* var. *kamaonia Thirot*, Lahoul; (C) *Juniperus macropoda Udaipur*, Lahoul; (D) *Lactuca macrorhiza Losar*, Spiti; (E) *Lactuca polycephala Yurnad*, Lahoul; and (F) *Lactuca viminea Kaza*, Spiti.

**Pl. 28A–F.** Ethnobotanically important plants, Lahoul and Spiti– (A) *Lepidium latifolium Losar*, Spiti; (B) *Lindelofia anchusoides Sumnam*, Lahoul; (C) *Lomatogonium carinthiacum Sumnam*, Lahoul; (D) *Lonicera hypoleuca Sumnam*, Lahoul; (E) *Lychnis himalayensis Losar*, Spiti; and (F) *Malva verticillata Beeling*, Lahoul.

**Pl. 29A–F.** Ethnobotanically important plants, Lahoul and Spiti– (A) *Meconopsis aculeata Beeling Nallah*, Lahoul; (B) *Mentha longifolia* var. *royleana Tandi*, Lahoul; (C) *Morina coulteriana Khinang*, Lahoul; (D) *Myricaria germanica* ssp. *alopecuroides Jispa* (Lahoul), *Kaza* (Spiti); (E) *Onosma bracteatum Goshal*, Lahoul; and (F) *Origanum vulgare Sumnam*, Lahoul.

**Pl. 30A–F.** Ethnobotanically important plants, Lahoul and Spiti– (A) *Pedicularis bicornuta Losar*, Spiti; (B) *Pedicularis longiflora* ssp. *tubiformis Kibber*, Spiti; (C) *Peperomia reflexa Karga*, Lahoul; (D) *Physochlaina praealta Bargul*, Lahoul; (E) *Plantago major* var. *angusta Sumnam*, Lahoul; and (F) *Podophyllum hexandrum Khinang*, Lahoul.

**Pl. 31A–F.** Ethnobotanically important plants, Lahoul and Spiti– (A) *Polygonum affine Beeling Nallah*, Lahoul; (B) *Polygonum alpinum Sumnam*, Lahoul; (C) *Polygonum tortuosum Kibber*, Spiti;

(D) *Polygonum virginianum Ropsang*, Lahoul; (E) *Polygonum vivipara Kibber*, Spiti; and (F) *Prunus cornuta Rashil*, Lahoul.

**Pl. 32A–H.** Ethnobotanically important plants, Lahoul and Spiti– (A) *Pyrus baccata Jobrang*, Lahoul; (B) *Ranunculus wallichianus Sumnam*, Lahoul; (C–E) *Rheum emodi Kardang*, Lahoul; (F) *Rhododendron anthopogon* ssp. *hypenanthum Drilbu*, Lahoul; (G) *Ribes alpestre Keylong*, Lahoul; and (H) *Ribes grossularia Barbog*, Lahoul.

**Pl. 33A–F.** Ethnobotanically important plants, Lahoul and Spiti– (A) *Ribes orientale Karga* (Lahoul), *Komic* (Spiti); (B) *Rosa foetida Sumnam*, Lahoul; (C) *Rosa jacquemontii Funkiar*, Lahoul; (D) *Rosa webbiana Shansha*, Lahoul; (E) *Rosularia alpestris Sumnam*, Lahoul; and (F) *Rumex acetosa Khangsar*, Lahoul.

**Pl. 34A–F.** Ethnobotanically important plants, Lahoul and Spiti– (A) *Rumex patientia* ssp. *orientalis Tholang* (Lahoul), *Hansa* (Spiti); (B) *Rumex scutatus Rohtang*, Lahoul; (C) *Rubus saxatilis Rashil*, Lahoul; (D) *Salix fragilis Lot*, Lahoul; (E) *Salix elegans Kiato*, Spiti; and (F) *Saussurea albescens Sumnam*, Lahoul.

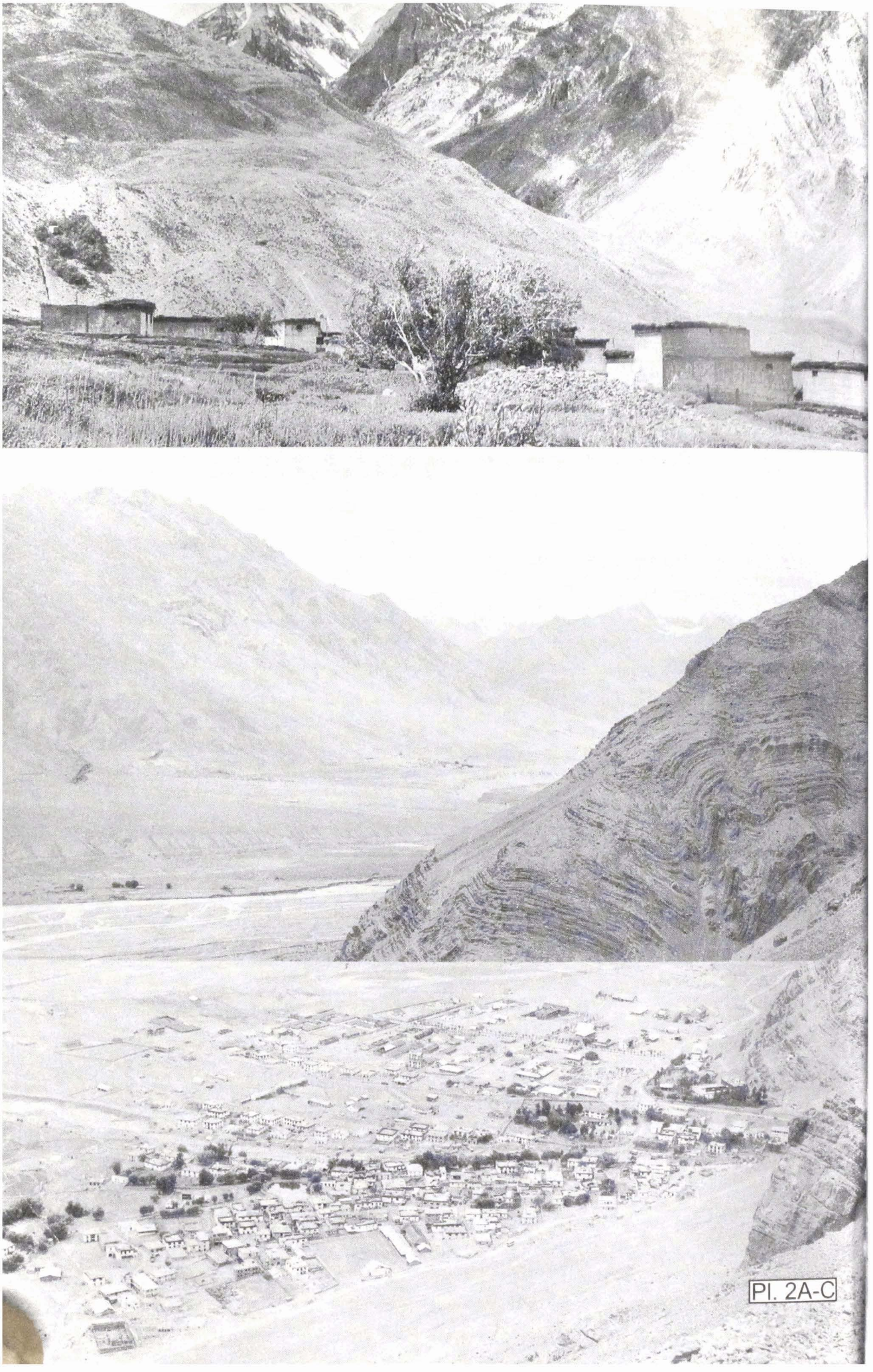
**Pl. 35A–F.** Ethnobotanically important plants, Lahoul and Spiti– (A) *Saussusea lappa Shashin*, Lahoul; (B) *Saussurea sorocephala Rohtang*, Lahoul; (C) *Scorzonera virgata Losar*, Spiti; (D) *Selinum tenuifolium Kardang*, Lahoul; (E) *Senecio chrysanthemoides Rohtang Pass*, Lahoul; and (F) *Senecio hewrensis Kibber*, Spiti.

**Pl. 36A–F.** Ethnobotanically important plants, Lahoul and Spiti– (A) *Senecio nudicaulis Marvel*, Lahoul; (B) *Senecio pedunculatus* var. *albus Beeling Nallah*, Lahoul; (C) *Silene vulgaris Kirting*, Lahoul; (D) *Sonchus oleraceus Sumnam*, Lahoul; (E) *Tagetes erecta Gozang*, Lahoul; and (F) *Taraxacum officinale Sumnam* (Lahoul), *Kibber* (Spiti).

**Pl. 37A–G.** Ethnobotanically important plants, Lahoul and Spiti– (A) *Thlaspi arvense Tozing*, Lahoul; (B) *Thymus linearis Sumnam*, Lahoul; (C) *Tragopogon dubius Ruding*, Lahoul; (D) *Trigonella emodi Malang* (Lahoul), *Kaza* (Spiti); (E) *Trigonella polycerata Sumnam*, Lahoul; (F) *Verbascum thapsus Sumnam*, Lahoul; and (G) *Viburnum cotinifolium Rashil*, Lahoul.

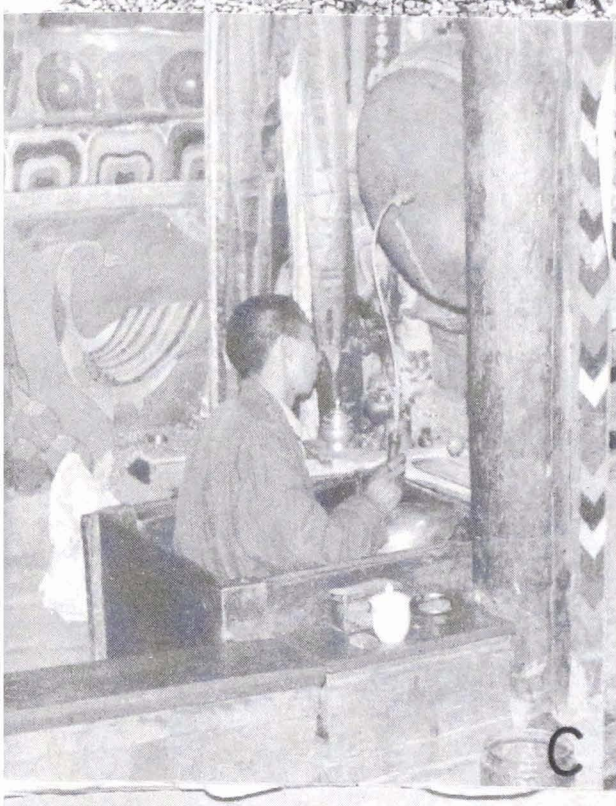
**Pl. 38A–H.** Edible wild seeds and fruits, Lahoul and Spiti– (A) *Seeds of Amaranthus paniculatus*; (B) *Allium stracheyi*; (C) Dried cakes prepared from Allium stracheyi used as a spice or flavouring agent; (D) *Fruits of Hippophae salicifolia*; (E) *Fruits of Cotoneaster microphylla*; (F) *Berries of Ribes orientale*; (G) *Fruits of Rosa webbiana*; and (H) *Fruits of Crataegus soongarica*.

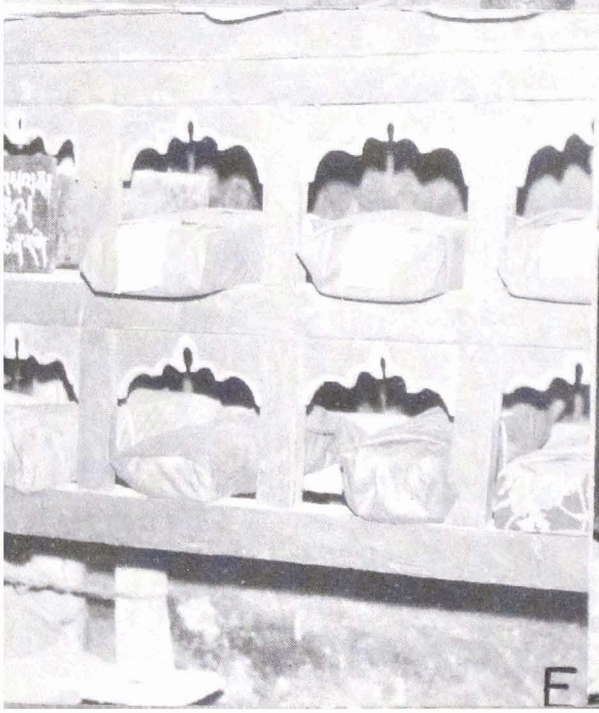

Pl. 1A-C

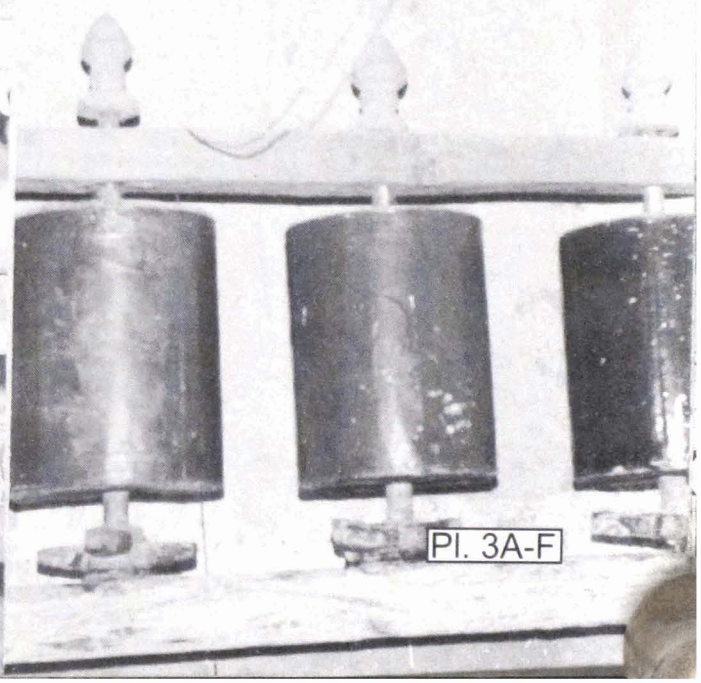


PI. 2A-C

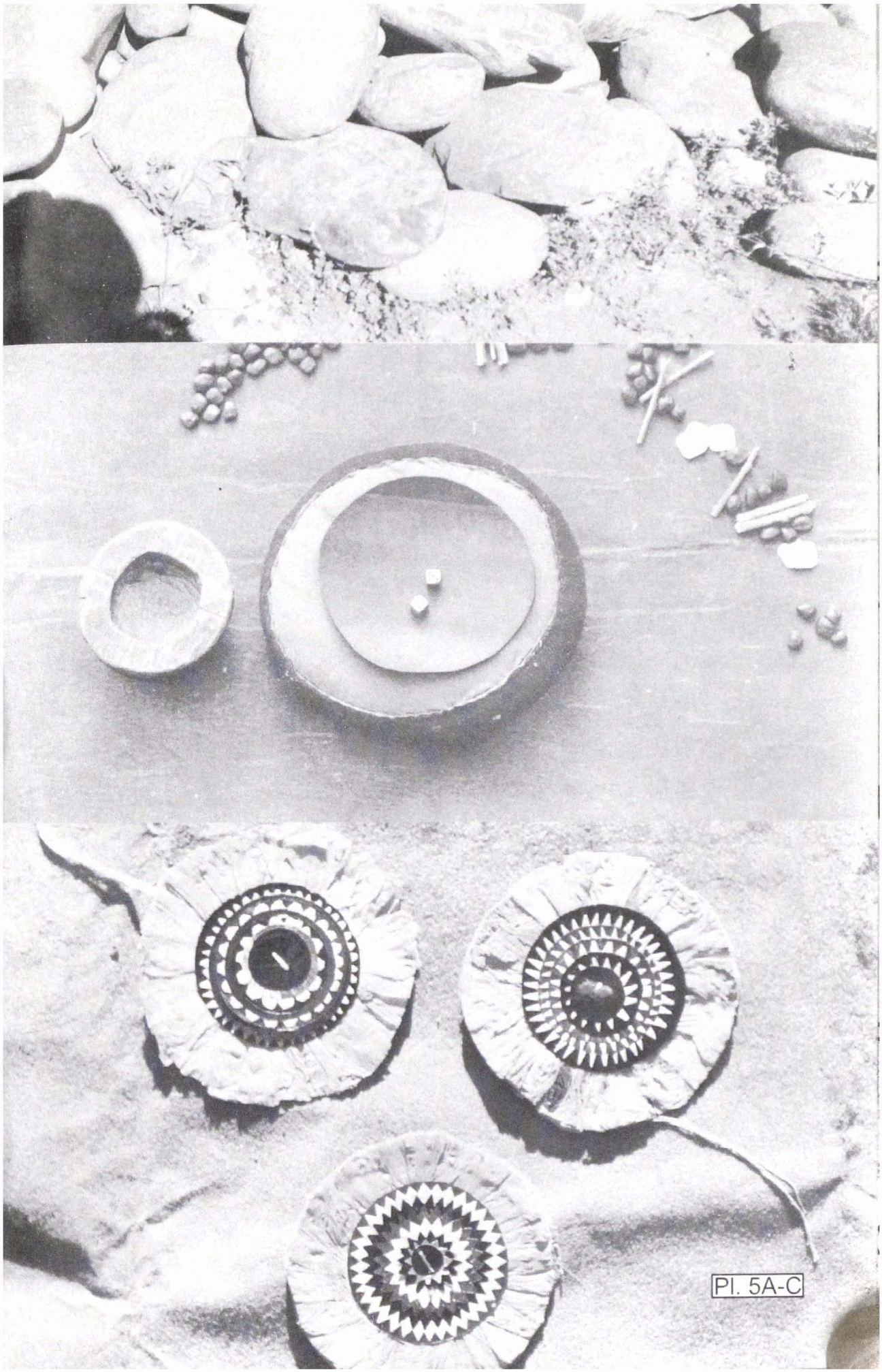

A


C


F


Pl. 3A-F

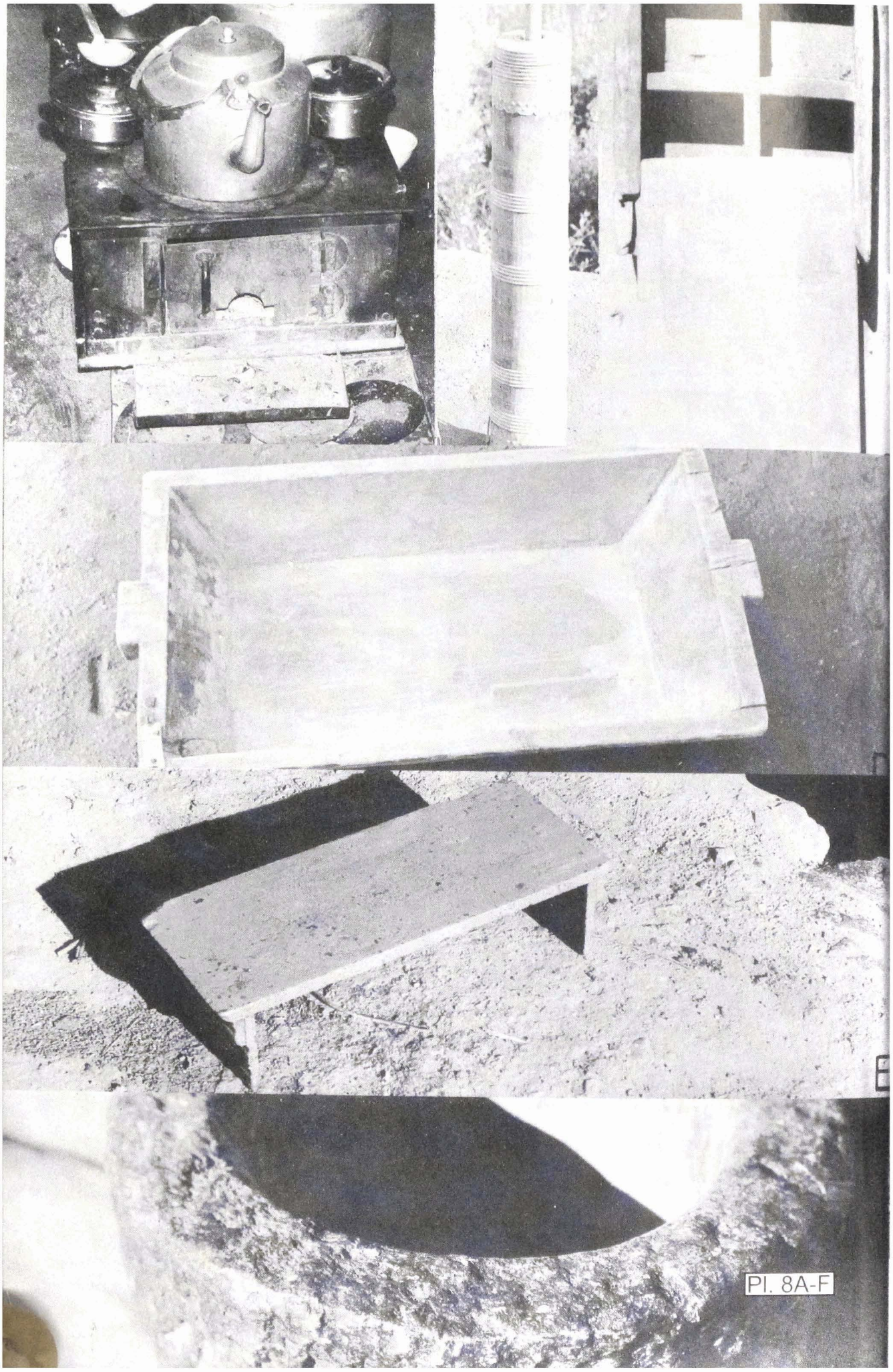
Pl. 4A-D



Pl. 5A-C

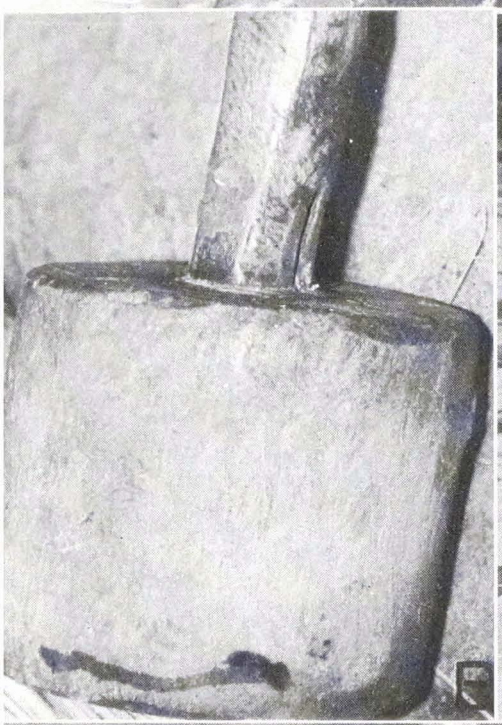
Pl. 6A-J

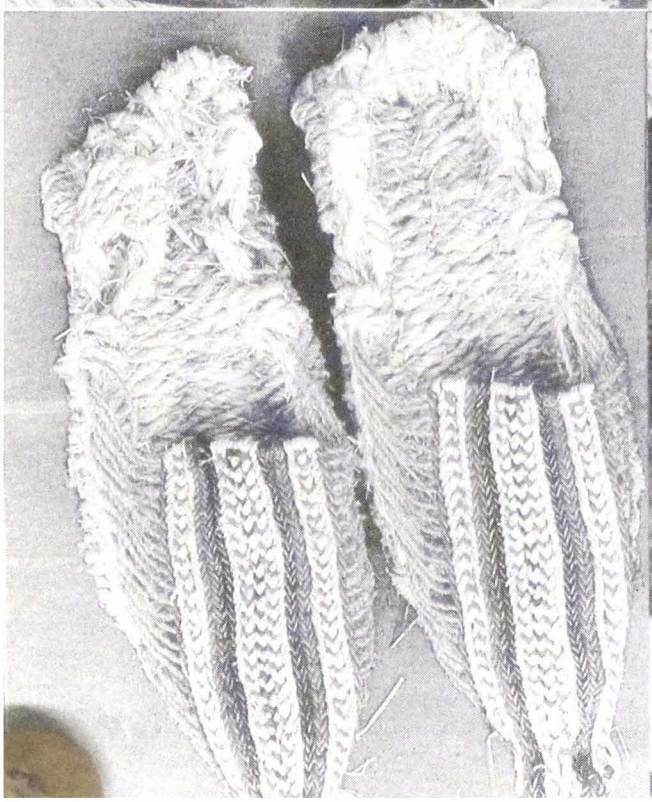
Pl. 7A-C

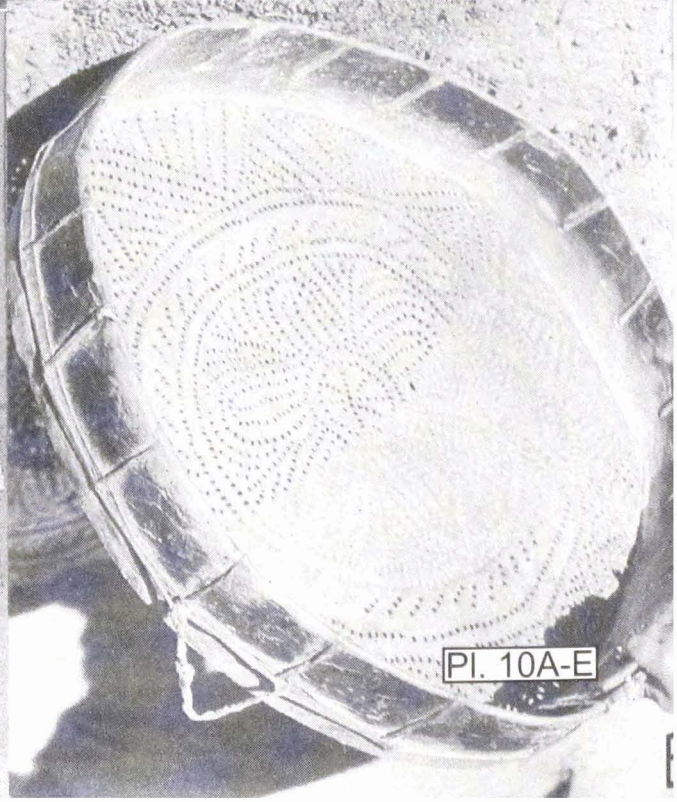


Pl. 8A-F

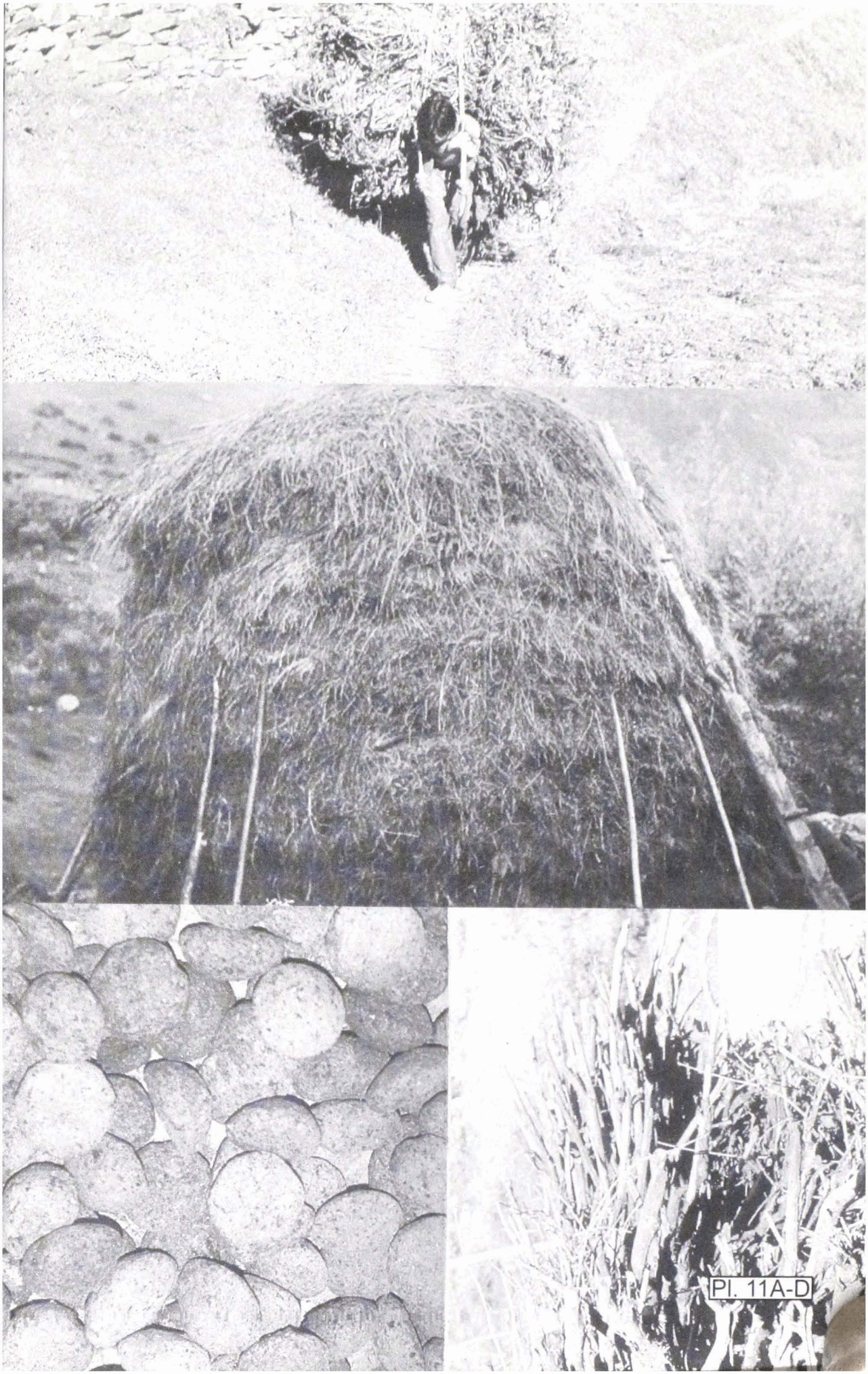
Pl. 9A-H





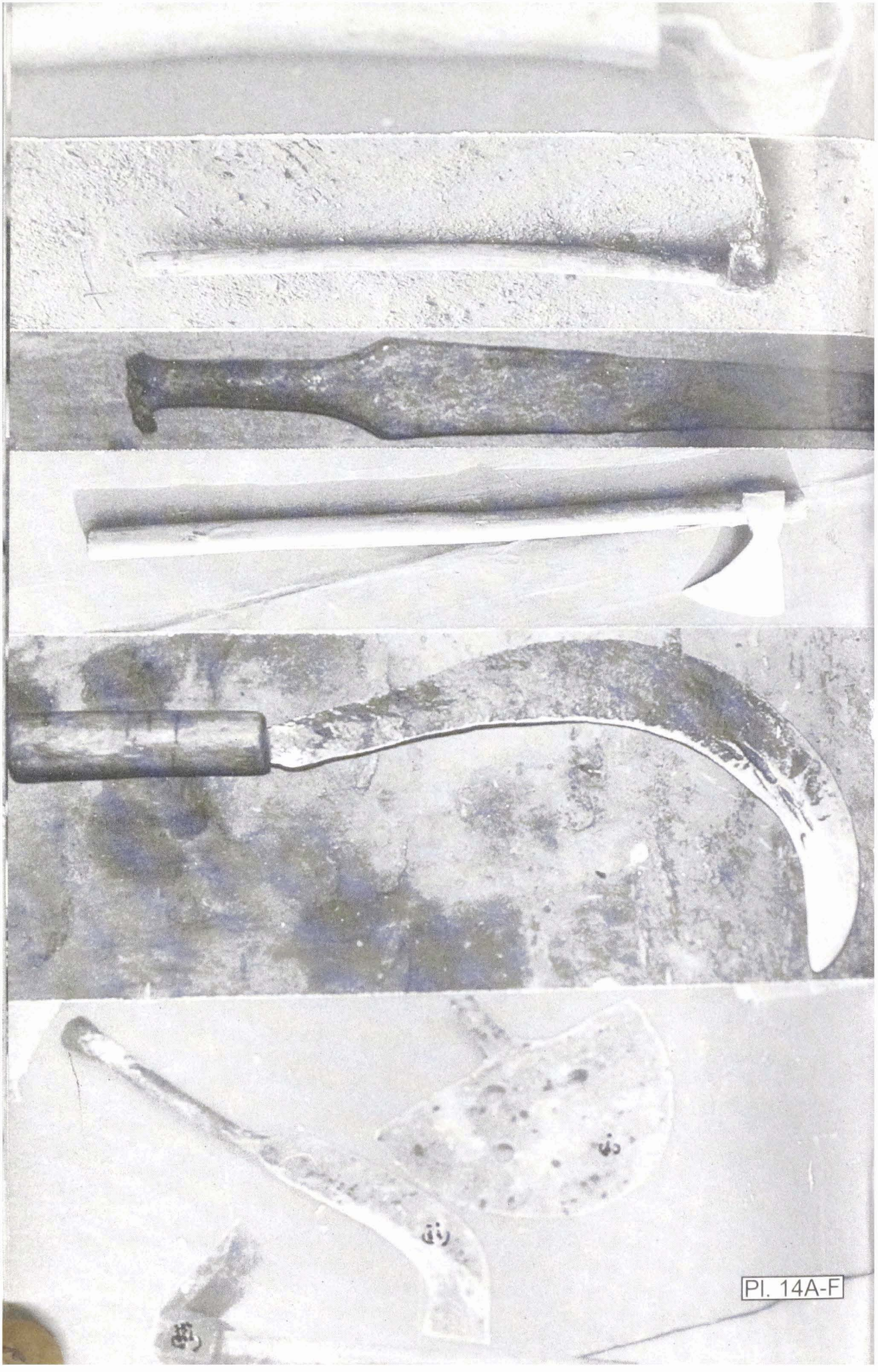


Pl. 10A-E

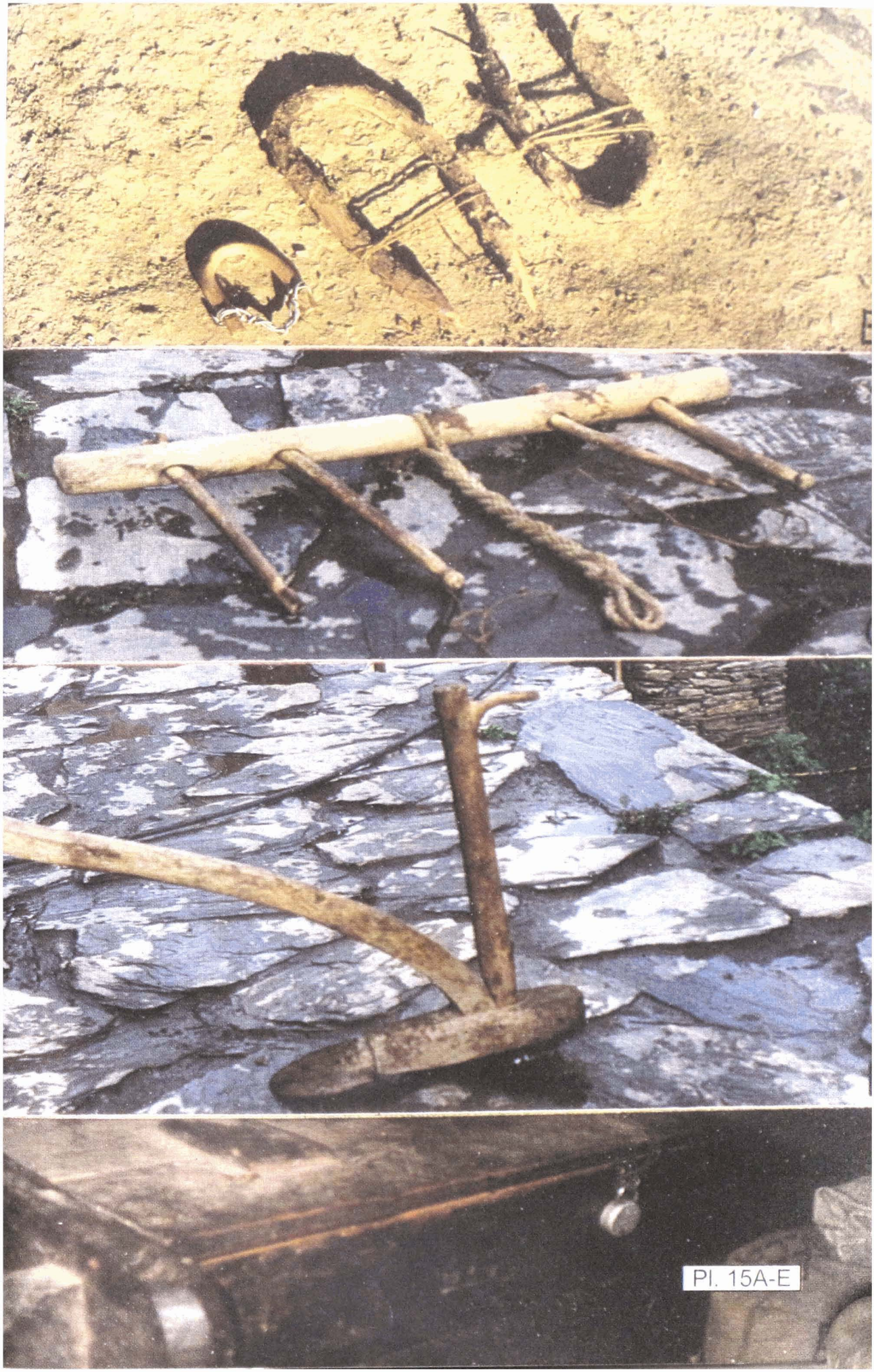

Pl. 11A-D

Pl. 12A-C


Pl. 13A-D



Pl. 14A-F

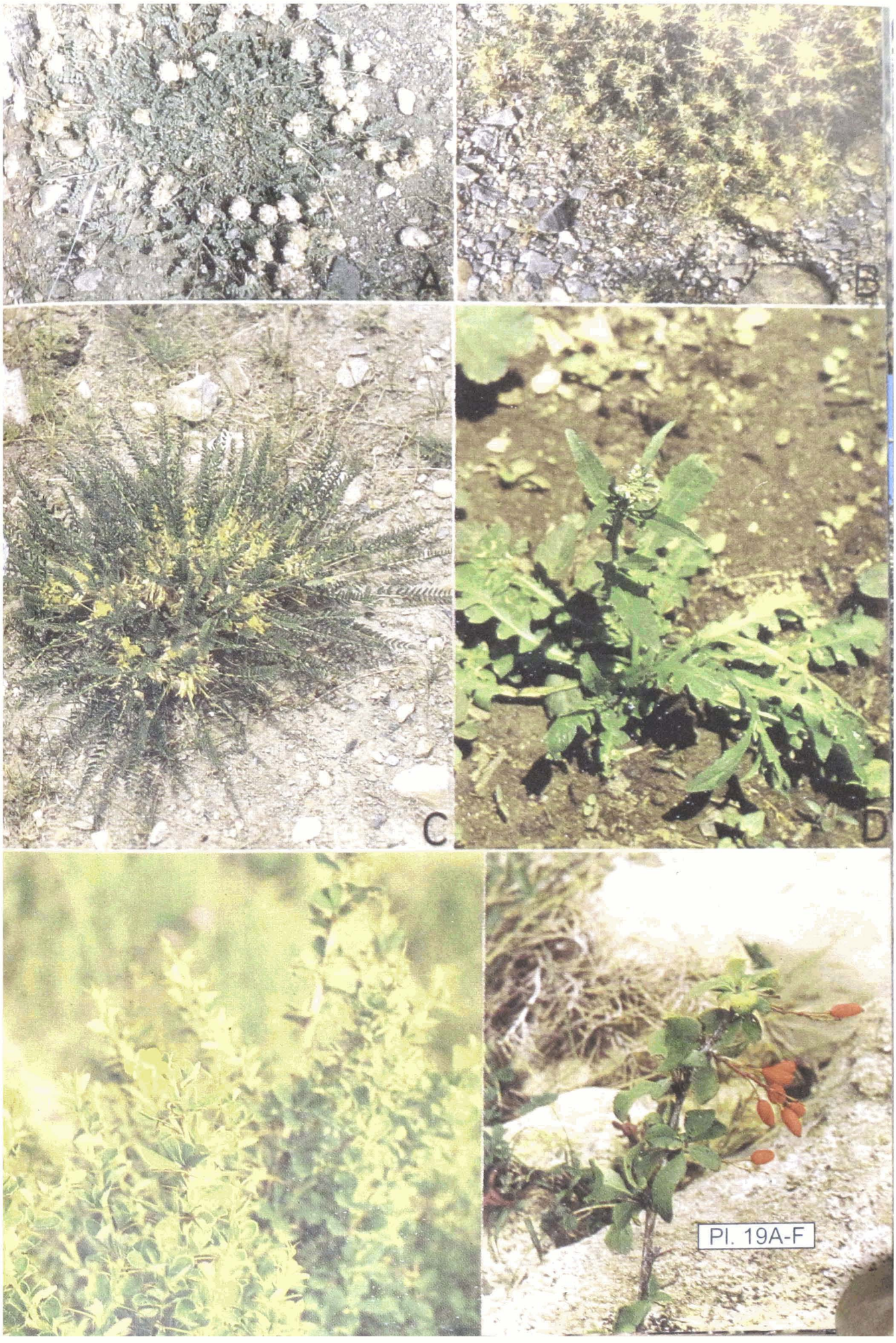


Pl. 15A-E


A
B
C
D
E
Pl. 16A-G

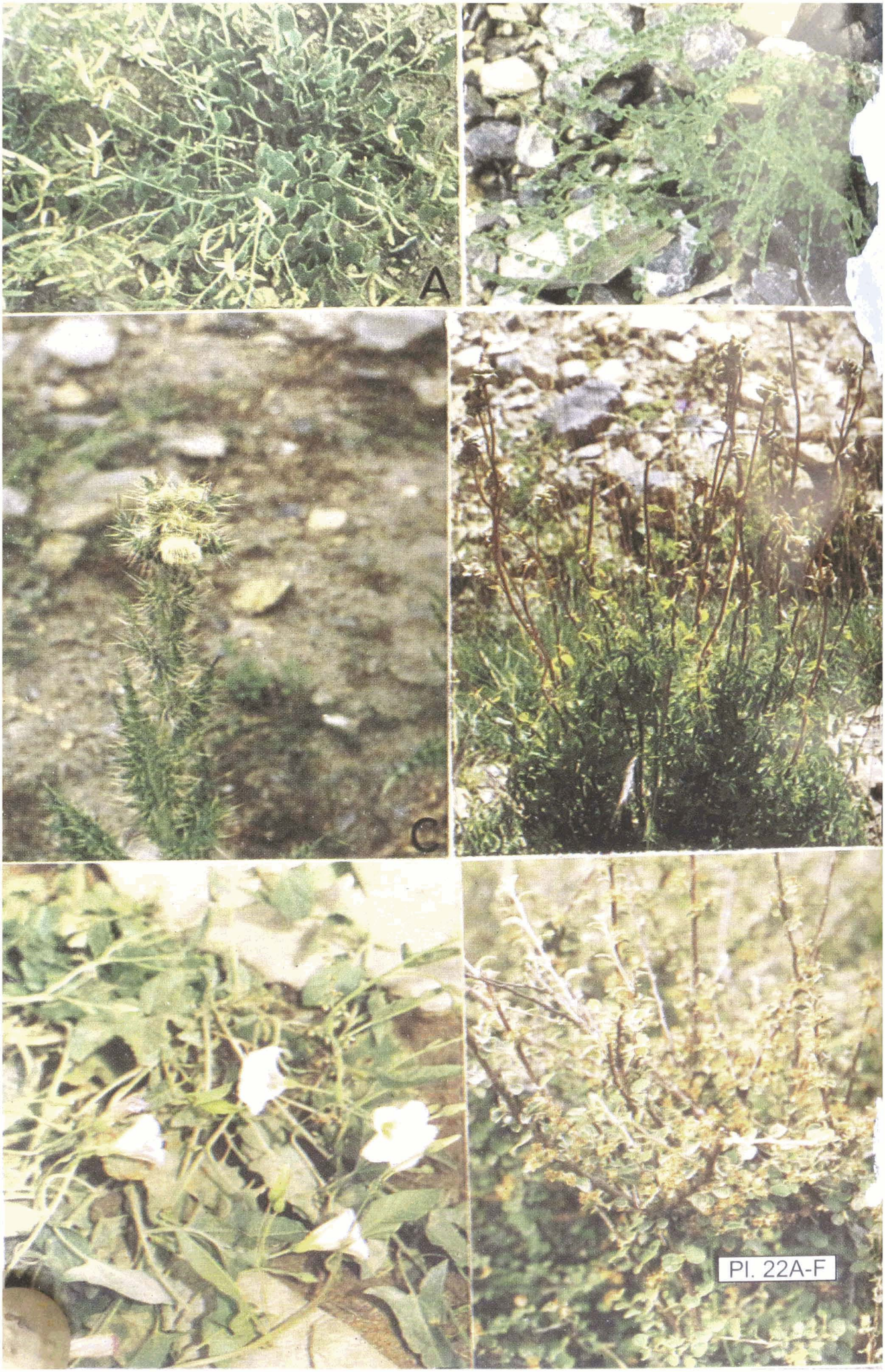

A
C
Pl. 17A-F


A
B
C
Pl. 18A-F


A
B
C
D
Pl. 19A-F


A
C
E
Pl. 20A-F


A
Pl. 21A-F

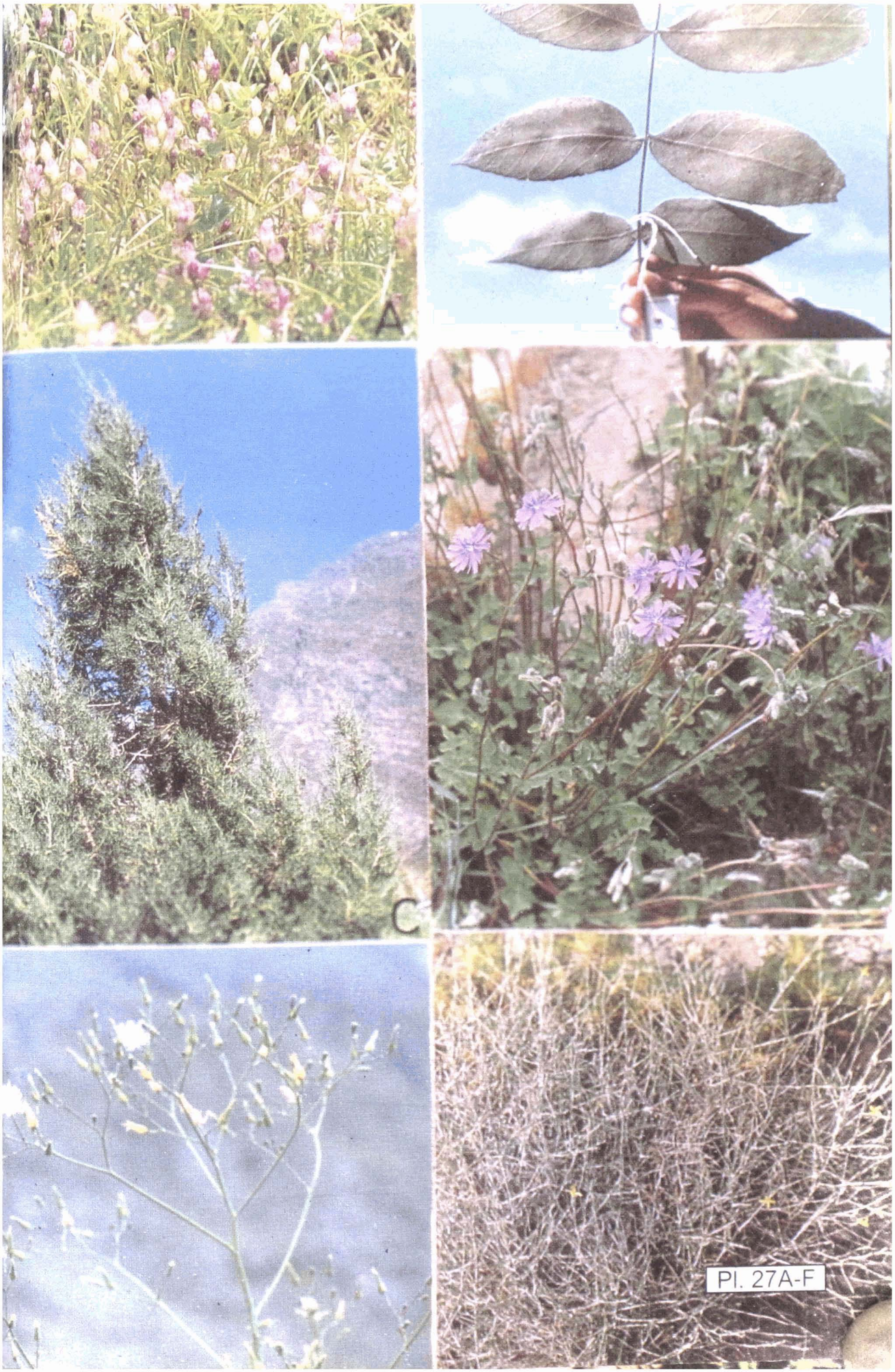

A
C
Pl. 22A-F


A
PI. 23A-F


C
Pl. 24A-F


A
B
C
D
Pl. 25A-F


A
B
PI. 26A-G

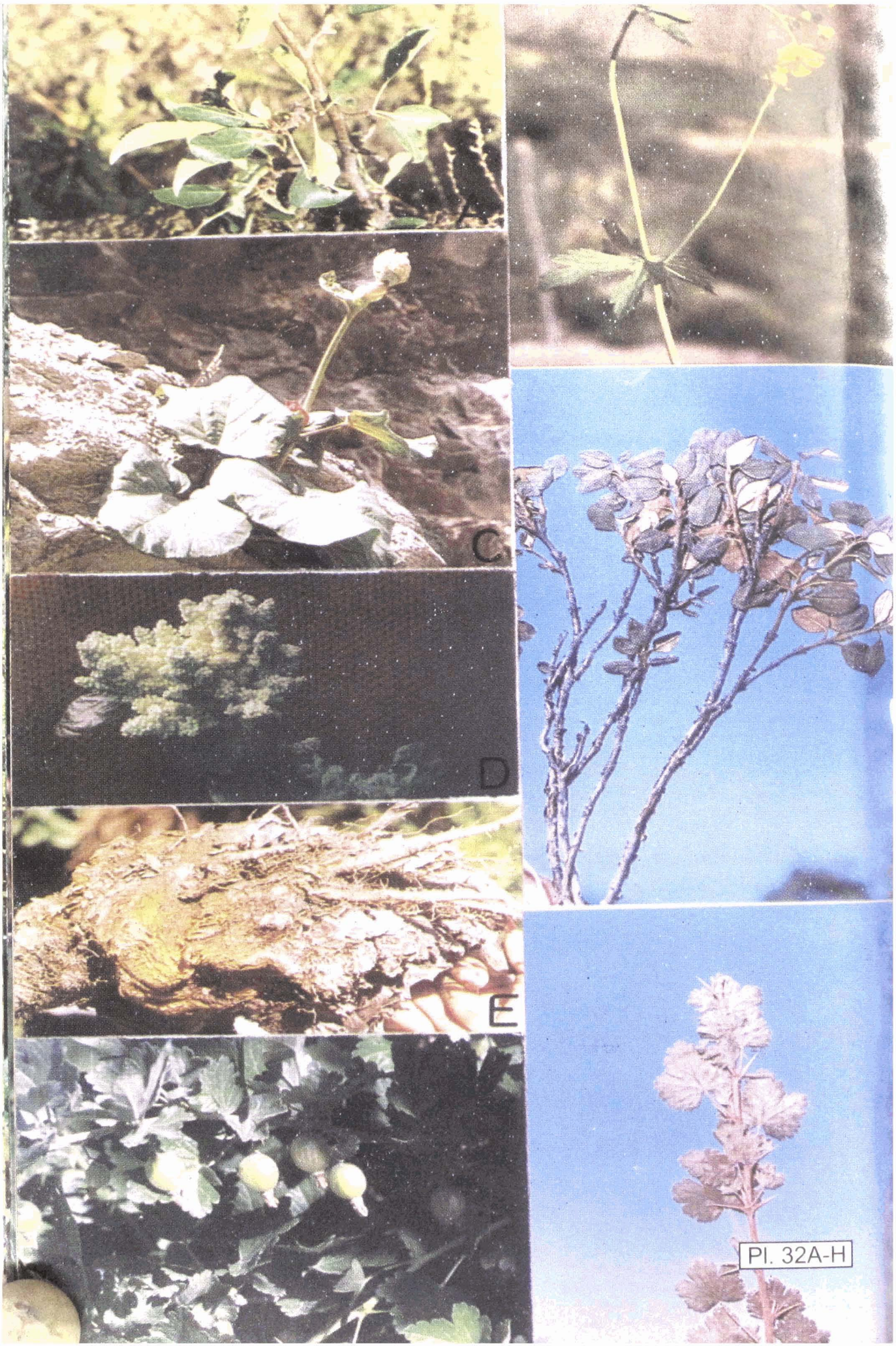

A
C
Pl. 27A-F


Pl. 28A-F


A
C
Pl. 29A-F


A
C
Pl. 30A-F

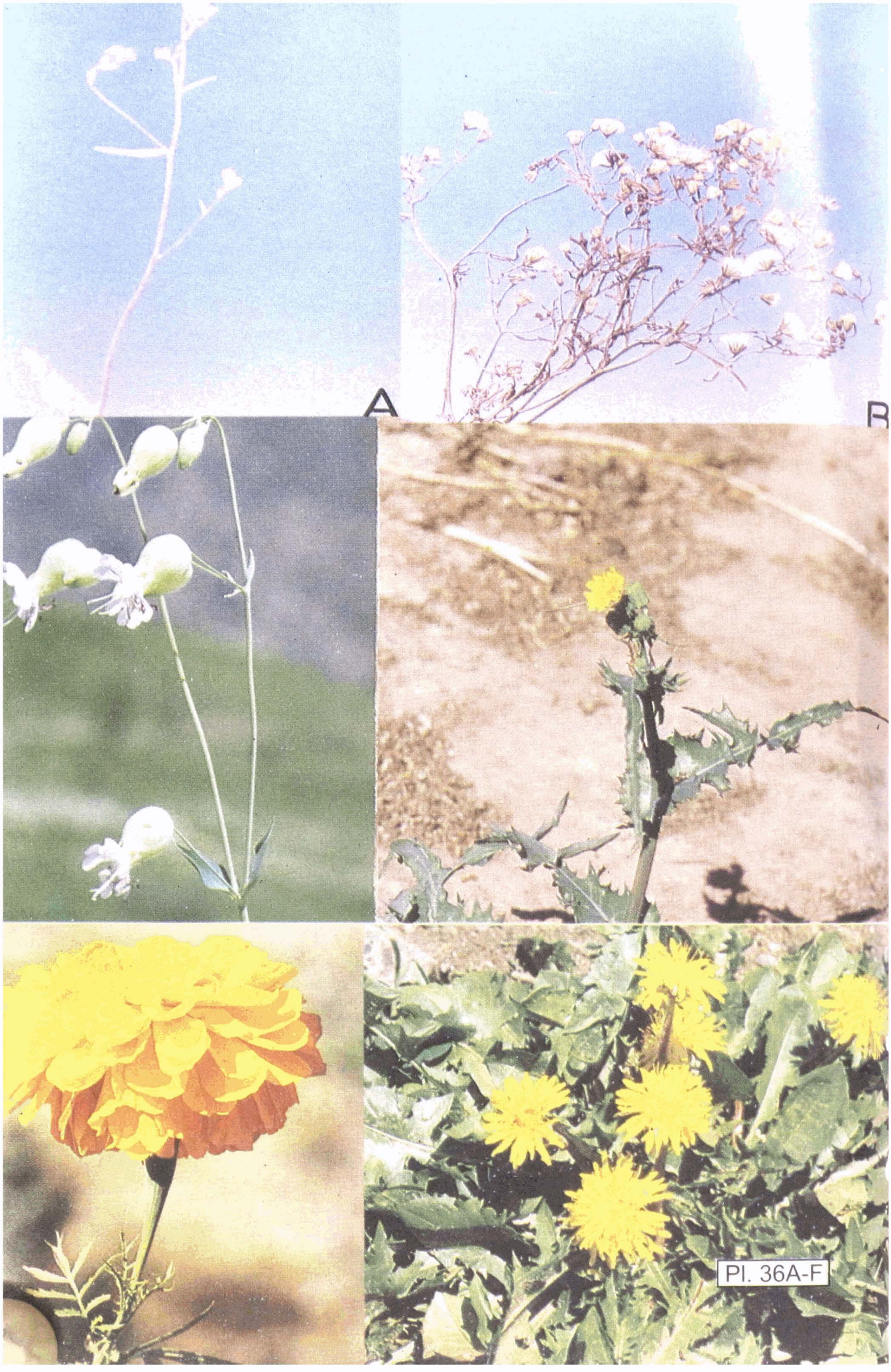

A
C
D
Pl. 31A-F


C
D
E
Pl. 32A-H

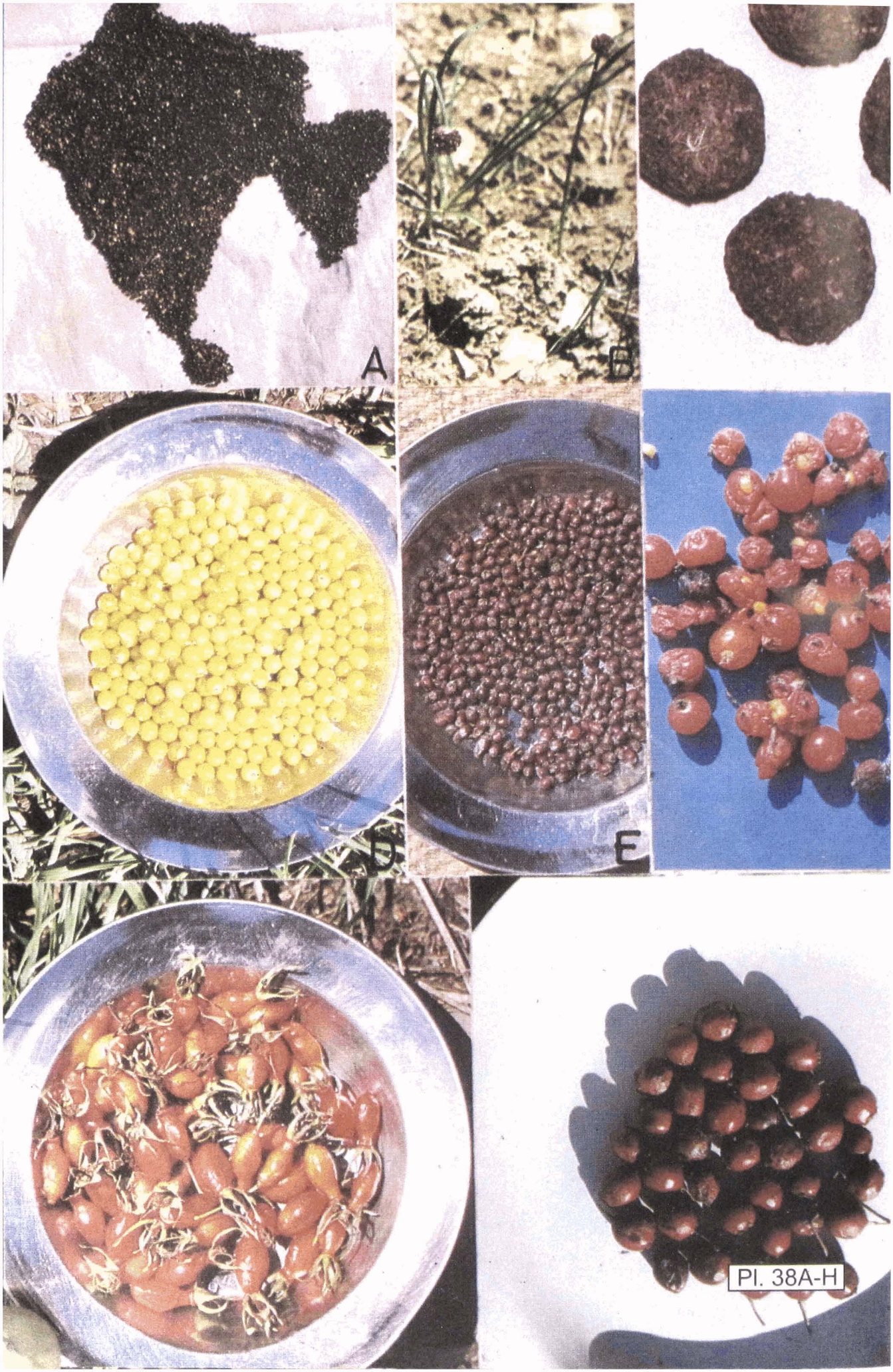

A
B
Pl. 33A-F


PI. 34A-F


A
Pl. 35A-F


A
B
Pl. 36A-F


E
Pl. 37A-G


A
B
D
E
Pl. 38A-H

# Appendix I

## INDEX TO USES

**ANTIEMETIC:**

*Pedicularis bicornuta, Pedicularis longiflora* ssp. *tubiformis.*

**ANTISEPTIC:**

*Arnebia euchroma, Betula utilis, Cynoglossum wallichii, Fagopyrum tataricum, Lindelofia anchusoides, Peperomia reflexa, Plantago major* var. *angusta, Taraxacum officinale.*

**AROMATIC:**

*Allium carolinianum, Allium stracheyi, Carum bulbocastanum, Carum carvi, Chenopodium botrys, Mentha longifolia* var. *royleana, Origanum vulgare, Selinum tenuifolium, Thymus linearis.*

**ARTHRITIS:** See **JOINT DISEASES.**

**ASTHMA:**

*Artemisia glauca.*

**BANDAGE :**

*Cynoglossum wallichii, Lindelofia anchusoides, Plantago major* var. *angusta, Senecio nudicaulis, Taraxacum officinale.*

**ЬECHIC : See COUGH.**

**BLOOD PURIFIER :**

*Arnebia euchroma, Onosma bracteatum, Saussurea sorocephala, Senecio chrysanthemoides.*

**BODYACHE : See PAIN.**

**BOILS : (ABSCESS, CARBUNCLE, ULCER) :**

*Christolea crassifolia, Ferula jaeschkeana, Ranunculus wallichianus, Saussurea lappa.*

**BURNS:**

*Arnebia euchroma, Betula utilis, Fagopyrum tataricum, Peperomia reflexa.*

**CARBUNCLE : See BOILS.**

**CARDIAC COMPLAINTS : (ANGINA PECTORIS):**

*Ephedra gerardiana. Pedicularis bicornuta.*

**CHILD BIRTH : (OXYTOCIC, PARTURIENT) :**

*Rhododendron anthopogon ssp. hypenanthum*

**COLD:**

*Aconitum heterophyllum, Gentianella moorcroftiana, Habenaria arcuata, Jaeschkea oligosperma, Lomatogonium carinthiacum, Trigonella polycerata.*

**CONDIMENT:**

*Origanum vulgare, Thymus linearis.*

**CONSTIPATION:**

*Chenopodium album, Lactuca macrorhiza, Podophyllum hexandrum, Scorzonera virgata.*

**COUGH (BECHIC):**

*Ephedra gerardiana, Gentianella moorcroftiana, Geranium pratense, Hippophae salicifolia, Jaeschkea oligosperma, Lomatogonium carinthiacum, Podophyllum hexandrum, Trigonella polycerata.*

**CUT: See INJURIES.**

**DEBILITY :**

*Aster heterochaeta, Carum bulbocastanum, Carum carvi.*

**DECORATION:**

*Anaphalis nubigena, Rosa foetida, Rosa jacquemontii, Rosa webbiana, Tagetes erecta.*

**DEHYDRATION :**

*Polygonum tortuosum.*

**DENTAL PROBLEMS:** See **TOOTH PROBLEMS.**

**DENTRIFICES :** See **TOOTH BRUSH.**

**DERMATITIS :** See **SKIN DISEASES.**

**DETERGENT:**

*Astragalus grahamianus, Convolvulus arvensis, Epilobium angustifolium, Lychnis himalayensis.*

**DIARRHOEA :** See **INTESTINAL DISEASES.**

**DIGESTIVE DISORDERS: (ABDOMINAL PAIN, ACIDITY, DYSPEPSIA, FLATULENCE, GASTRIC COMPLAINTS, STOMACHACHE):**

*Berberis jaeschkeana, Carum carvi, Chenopodium botrys, Gentianella moorcroftiana, Gentianella paludosa, Geranium pratense, Heracleum candicans, Pedicularis longiflora* ssp. *tubiformis, Plantago major* var. *angusta, Polygonum affine, Rosa jacquimonti, Senecio chrysanthemoides, Senecio pedunculatus* var. *albus.*

**DIURETIC:**

*Astragalus himalayanus, Capparis spinosa, Cnicus argyracanthus, Thlaspi arvense.*

**DYE:**

*Arnebia euchroma, Impatiens gegantia, Juglans regia var. kamaonia, Onosma bracteatum, Rheum emodi, Rumex patientia* ssp. *orientalis, Rumex scutatus.*

**DYSENTERY : See INTESTINAL DISEASES.**

**DYSPEPSIA : See DIGESTIVE DISORDERS.**

**EAR COMPLAINTS :**

*Saussurea lappa.*

**EDIBLE:**

*Allium carolinianum, Allium stracheyi, Amaranthus paniculatus, Barbarea intermedia, Berberis jaeschkeana, Berberis vulgaris* var. *aetnensis, Cannabis sativa, Capparis spinosa, Carum bulbocastanum, Carum carvi, Chaerophyllum villosum, Chenopodium album, Chenopodium foliolosum, Cotoneaster microphylla, Cotoneaster vulgaris, Cousinia thomsoni, Crataegus soongarica, Dracocephalum heterophyllum, Eremurus himalaicus, Fagopyrum tataricum, Fragaria indica, Hippophae rhamnoides ssp. turkestanica, Hippophae salicifolia, Juglans regia* var. *kamaonia, Lactuca viminia, Mentha longifolia* var. *royleana, Origanum vulgare, Podophyllum hexandrum, Polygonum alpinum, Polygonum virginianum, Prunus cornuta, Pyrus baccata, Rheum emodi, Ribes alpestre, Ribes grossularia, Ribes orientale, Rosa webbiana; Rosularia alpestris, Rubus saxatilis, Rumex acetosa, Rumex patientia* ssp. *orientalis, Selinum tenuifolium, Silene vulgaris, Sonchus oleraceus, Thymus linearis, Tragopogon dubius, Trigonella emodi, Viburnum cotinifolium.*

**ERRHINES : (STERNUTATORY)**

*Ephedra gerardiana.*

**EYE DISEASES:**

*Betula utilis, Dracocephalum heterophyllum.*

**FEBRIFUGE : See FEVER.**

**FEVER : (ANTIPYRETIC, FEBRIFUGE):**

*Aconitum heterophyllum, Berberis jaeschkeana, Ephedra gerardiana, Gentianella moorcroftiana, Habenaria arcuata, Hippophae rhamnoides ssp. turkastanica, Hippophae salicifolia, Jaeschkea oligosperma, Lomatogonium carinthiacum, Podophyllum hexandrum, Taraxacum officinale, Trigonella polycerata.*

**FIRE- MAKING :**

*Betula utilis, Cousinia thomsoni, Saussurea albescens.*

**FLATULENCE :** See **DIGESTIVE DISORDERS.**

**FLAVOUR:**

*Allium carolinianum, Allium stracheyi, Carum bulbocastanum, Carum carvi, Chenopodium botrys, Mentha longifolia* var. *royleana, Origanum vulgare, Selinum tenuifolium, Thymus linearis.*

**FODDER :**

*Artemisia maritima var. neercha, Astragalus grahamianus, Astragalus marschallianus, Astragalus rhizanthus, Polygonum alpinum, Salix fragilis.*

**FUEL:**

*Astragalus marschalianus, Bergenia stracheyi, Betula utilis, Ferula jaeschkeana, Hippophae rhamnoides* ssp. *turkestanica, Rosa webbiana, Salix elegans, Salix fragilis.*

**GASTRIC COMPLAINTS :** See **DIGESTIVE DISORDERS.**

**GIDDINESS : (VERTIGO):**

*Aster heterochaeta.*

**GUM:**

*Lactuca viminea.*

**HAEMOPTYSIS:**

*Carum carvi, Pedicularis bicornuta, Pedicularis longiflora* ssp. *tubiformis.*

**HEADACHE :** See **PAIN.**

**HEPATIC COMPLAINTS :** See **LIVER COMPLAINTS.**

**INCENSE:**

*Artemisia absinthium, Artemisia maritima* var. *neercha, Artemisia maritima* var. *seski, Inula racemosa, Juniperus macropoda, Morina coulteriana, Myricaria germanica* ssp. *alopecuroides, Rhododendron anthopogon* ssp. *hypenanthum, Saussurea lappa.*

**INFLAMMATION :** See **SWELLING.**

**INJURIES : (CUT, WOUND) :**

*Arnebia euchroma, Betula utilis, Cynoglossum wallichii, Plantago major* var. *angusta, Taraxacum officinale.*

**INSECTICIDE :**

*Artemisia maritima* var. *neercha, Saussurea lappa.*

**INTESTINAL DISEASES : (DIARRHOEA, DYSENTERY, LOOSE MOTION, STOMACHACHE):**

*Aconitum heterophyllum, Berberis jaeschkeana, Habenaria arcuata, Polygonum tortuosum, Polygonum vivipara.*

**ITCH** : See **SKIN DISEASES.**

**JAUNDICE** : See **LIVER COMPLAINTS.**

**JOINT DISEASES : (ARTHRITIS, RHEUMATISM):**

*Codonopsis clematidea, Cousinia thomsoni, Erigeron alpinus, Gentianella moorcroftiana, Jaeschkea oligosperma, Lepidium latifolium, Lomatogonium carinthiacum, Lychnis himalayensis, Myricaria germanica* ssp. *alopecuroides, Ranunculus wallichianus, Saussurea lappa, Senecio chrysanthemoides.*

**KIDNEY DISEASES : (RENAL DISEASES) :**

*Cnicus argyracanthus, Thlaspi arvense.*

**LIVER COMPLAINTS : (HEPATIC COMPLAINTS, JAUNDICE):**

*Capparis spinosa, Carum bulbocastanum, Geranium pratense, Rosa foetida, Senecio chrysanthemoides Senecio pedunculatus* var. *albus.*

**LOOSE MOTION: See INTESTINAL DISEASES.**

**LUNG DISEASES : (PHTHISIS, TUBERCULOSIS, PULMONARY COMPLAINTS):**

*Gentianella moorcroftiana, Geranium pratense, Hippophae rhamnoides var. turkestanica, Hippophae salicifolia, Jaeschkea oligosperma, Podophyllum hexandrum, Saussurea sorocephala, Trigonella polycerata.*

**MISCELLANEOUS:**

*Arctium lappa, Astragalus rhizanthus, Betula utilis, Cicer microphyllum, Dracocephalum heterophyllum, Fraxinus xanthoxyloides Trigonella emodi, Verbascum thapsus.*

**NARCOTIC:**

*Cousinia thomsoni.*

**ODONTRALGICS** : See **TOOTHACHE.**

**OXYTOCIC** : See **CHILD BIRTH.**

**PAIN : (BODYACHE, HEADACHE)** :

*Brassica erucastrum, Carum carvi, Pedicularis bicornuta, Saussurea sorocephala, Senecio hewrensis, Taraxacum officinale.*

**PARTURIENT** : See **CHILD BIRTH.**

**PHTHISIS** : See **TUBERCULOSIS, LUNG DISEASES, PULMONARY COMPLAINTS.**

**PRESERVATIVE :**

*Artemisia maritima* var. *neercha, Saussurea lappa.*

**PULMONARY COMPLAINTS :** See **TUBERCULOSIS, LUNG DISEASES.**

**REFRIGERANT : (COOLING) :**

*Berberis jaeschkeana, Chaerophyllum villosum, Heracleum candicans, Hippophae rhamnoides* var. *turkestanica, Hippophae salicifolia, Polygonum alpinum, Polygonum virginianum, Rheum emodi, Ribes alpestre, Ribes grossularia, Rosularia alpestris, Rumex acetosa.*

**RELIGIOUS CEREMONIES :**

*Geranium pratense, Juniperus macropoda, Myricaria germanica* ssp. *alopecuroides, Tagetes erecta.*

**RENAL DISEASES :** See **KIDNEY DISEASES.**

**RESOLVENT :** See **SWELLING.**

**RHEUMATISM :** See **ARTHRITIS, JOINT DISEASES.**

**SKIN DISEASES : (DERMATITIS, ITCH):**

*Hippophae salicifolia, Peperomia reflexa, Rumex patientia* ssp. *orientalis.*

**SPICE:**

*Allium carolinianum, Allium stracheyi, Carum bulbocastanum, Carum carvi, Origanum vulgare, Selinum tenuifolium, Thymus linearis.*

**STERNUTATORY :** See **ERRHINE.**

**STOMACHACHE AND OTHER COMPLAINTS :** See **DIGESTIVE DISORDERS, INTESTINAL DISEASES.**

**SWELLING : (INFLAMMATION, RESOLVENT) :**

*Astragalus himalayanus, Cousinia thomsoni, Malva verticillata, Thlaspi arvense.*

**SYMBOLIC:**

*Betula utilis, Geranium pratense, Juniperus macropoda, Myricaria germanica* ssp. *alopecuroides, Ribes alpestre, Tagetes erecta.*

**TONIC : (WEAKNESS):**

*Aster heterochaeta, Carum bulbocastanum, Carum carvi, Dracocephalum heterophyllum, Erigeron monticolus, Habenaria arcuata, Lactuca polycephala, Meconopsis aculeata, Sonchus oleraceus.*

**TOOTH BRUSH : (DENTRIFICES):**

*Ephedra gerardiana, Juglans regia* var. *kamaonia, Salix fragilis.*

**TOOTH PROBLEMS: (DENTAL PROBLEMS, ODONTRALGICS):**

*Hyoscyamus niger, Iris kemaonensis, Physochlaina praealta.*

**TUBERCULOSIS : (PHTHISIS) :**

*Hippophae rhamnoides* ssp. *turkestanica, Pedicularis bicornuta,*

*Pedicularis longiflora* ssp. *tubiformis, Podophyllum hexandrum.*

**ULCER** : See **BOILS.**

**URINARY COMPLAINTS:**

*Astragalus himalayanus, Capparis spinosa, Cnicus argyracanthus, Malva verticillata, Thlaspi arvense.*

**VERMICIDE** : See **VERMIFUGE.**

**VERMIFUGE** : **(ANTHELMINTIC, VERMICIDE):**

*Artemisia maritima* var. *seski.*

**VERTIGO** : See **GIDDINESS.**

**VULNERARY** :

*Cynoglossum wallichii, Lindelofia anchusoides, Onosma bracteatum, Plantago major* var. *angusta.*

**WEAKNESS** : See **TONIC.**

**WOUND** : See **INJURIES.**

# Appendix II

## INDEX TO FAMILIES

The index to families and genera is listed in alphabetical order. Figure within parantheses after the name of each family corresponds to the total number of genera and species under that family. Similarly, the total number of species in a genus is given within parentheses after each generic epithet.

### LAHOUL

| | | |
|---|---|---|
| AMARANTHACEAE | (1/1) | *Amaranthus* (1) |
| APIACEAE | (5/6) | *Carum* (2), *Chaerophyllum* (1), *Ferula* (1), *Heracleum* (1), *Selinum* (1) |
| ASTERACEAE | (14/21) | *Anaphalis* (1), *Arctium* (1), *Artemisia* (3), *Cnicus* (1), *Cousinia* (1), *Erigeron* (2), *Inula* (1), *Lactuca* (1), *Saussurea* (3), *Senecio* (3), *Sonchus* (1), *Tagetes* (1), *Taraxacum* (1), *Tragopogon* (1) |
| BALSAMINACEAE | (1/1) | *Impatiens* (1) |
| BERBERIDACEAE | (2/3) | *Berberis* (2), *Podophyllum* (1) |
| BETULACEAE | (1/1) | *Betula* (1) |
| BORAGINACEAE | (3/3) | *Cynoglossum* (1), *Lindelofia* (1), *Onosma* (1) |
| BRASSICACEAE | (3/3) | *Barbarea* (1), *Brassica* (1), *Thlaspi* (1) |
| CANNABINACEAE | (1/1) | *Cannabis* (1) |
| CAPRIFOLIACEAE | (2/2) | *Lonicera* (1), *Viburnum* (1) |
| CARYOPHYLLACEAE | (1/1) | *Silene* (1) |
| CHENOPODIACEAE | (1/2) | *Chenopodium* (2) |
| CONVOLVULACEAE | (1/1) | *Convolvulus* (1) |
| CRASSULACEAE | (1/1) | *Rosularia* (1) |
| CUPRESSACEAE | (1/1) | Juniperus (1) |
| DIPSACACEAE | (1/1) | *Morina* (1) |
| ELAEAGNACEAE | (1/1) | *Hippophae* (1) |
| EPHEDRACEAE | (1/1) | *Ephedra* (1) |
| ERICACEAE | (1/1) | *Rhododendron* (1) |

| | | |
|---|---|---|
| FABACEAE | (3/4) | *Astragalus* (1), *Cicer* (1), *Trigonella* (2) |
| GENTIANACEAE | (3/3) | *Gentianella* (1), *Jaeschkea* (1), *Lomatogonium* (1) |
| GERANIACEAE | (1/1) | *Geranium* (1) |
| GROSSULARIACEAE | (1/3) | *Ribes* (3) |
| IRIDACEAE | (1/1) | *Iris* (1) |
| JUGLANDACEAE | (1/1) | *Juglans* (1) |
| LAMIACEAE | (3/3) | *Mentha* (1), *Origanum* (1), *Thymus* (1) |
| LILIACEAE | ( 1/1) | *Eremurus* (1) |
| MALVACEAE | (1/1) | *Malva* (1) |
| OLEACEAE | (1/1) | *Fraxinus* (1) |
| ONAGRACEAE | (1/1) | *Epilobium* (1) |
| ORCHIDACEAE | (1/1) | *Habenaria* (1) |
| PAPAVERACEAE | (1/1) | *Meconopsis* (1) |
| PIPERACEAE | (1/1) | *Peperomia* (1) |
| PLANTAGINACEAE | (1/1) | *Plantago* (1) |
| POLYGONACEAE | (4/8) | *Fagopyrum* (1), *Polygonum* (3), *Rheum* (1), *Rumex* (3) |
| RANUNCULACEAE | (2/2) | *Aconitum* (1), *Ranunculus* (1) |
| ROSACEAE | (7/10) | *Cotoneaster* (2), *Crataegus* (1), *Fragaria* (1), *Prunus* (1), *Pyrus* (1), *Rosa* (3), *Rubus* (1) |
| SALICACEAE | (1/1) | *Salix* (1) |
| SAXIFRAGACEAE | (1/1) | *Bergenia* (1) |
| SCROPHULARIACEAE | (1/1) | *Verbascum* (1) |
| SOLANACEAE | (2/2) | *Hyoscyamus* (1), *Physochlaina* (1) |
| TAMARICACEAE | (1/1) | *Myricaria* (1) |

**SPITI**

| | | |
|---|---|---|
| APIACEAE | (1/2) | *Carum* (2) |
| ASTERACEAE | (7/8) | *Artemisia* (1), *Aster* (1), *Cousinia* (1), *Lactuca* (2), *Scorzonera* (1), *Senecio* (1), *Taraxacum* (1) |
| BORAGINACEAE | (1/1) | *Arnebia* (1) |
| BRASSICACEAE | (2/2) | *Christolea* (1), *Lepidium* (1) |
| CAMPANULACEAE | (1/1) | *Codonopsis* (1) |
| CAPPARIDACEAE | (1/1) | *Capparis* (1) |
| CARYOPHYLLACEAE | (1/1) | *Lychnis* (1) |

| | | |
|---|---|---|
| CHENOPODIACEAE | (1/2) | *Chenopodium* (2) |
| ELAEAGNACEAE | (1/1) | *Hippophae* (1) |
| EPHEDRACEAE | (1/1) | *Ephedra* (1) |
| FABACEAE | (3/5) | *Astragalus* (3), *Cicer* (1), *Trigonella* (1) |
| GENTIANACEAE | (1/2) | *Gentianella* (2) |
| GERANIACEAE | (1/1) | *Geranium* (1) |
| GROSSULARIACEAE | (1/1) | *Ribes* (1) |
| LAMIACEAE | (1/1) | *Dracocephalum* (1) |
| LILIACEAE | (1/2) | *Allium* (2) |
| POLYGONACEAE | (2/3) | *Polygonum* (2), *Rumex* (1) |
| SALICACEAE | (1/1) | *Salix* (1) |
| SCROPHULARIACEAE | (1/2) | *Pedicularis* (2) |
| TAMARICACEAE | (1/1) | *Myricaria* (1) |

# Appendix III

## INDEX TO LOCAL NAMES

| Local names | Botanical names |
|---|---|
| Alipap | *Polygonum alpinum* |
| Am | *Chenopodium album* |
| Archo | *Rheum emodi* |
| Ayar* | *Chenopodium album* |
| Bacha chawag | *Cousinia thomsoni* |
| Bacha shang | *Saussurea albescens* |
| Ballu | *Rhododendron anthopogon* ssp. *hypenanthum* |
| Bana pilickcha | *Ribes grossularia* |
| Bashakar | *Erigeron alpinus* |
| Bhang | *Cannabis sativa* |
| Boa | *Aconitum heterophyllum* |
| Bodanger | *Selinum tenuifolium* |
| Bowdu | *Tagetes erecta* |
| Brafo | *Fagopyrum tataricum* |
| Buchchhur | *Ephedra gerardiana* |
| Buksup* | *Trigonella emodi* |
| Chagma* | *Salix elegans* |
| Chakchak lamo* | *Christolea crassifolia* |
| Changchher* | *Cousinia thomsoni* |
| Chharma* | *Hippophae rhamnoides* ssp. *turkestanica* |
| Chatiz | *Senecio pedunculatus* var. *albus* |
| Chhangsay bala | *Rosa jacquemontii* |
| Chharbongcha | *Meconopsis aculeata* |
| Chharmen | *Meconopsis aculeata* |
| Chhe* | *Ephedra gerardiana* |
| Chiri* | *Cicer microphyllum* |
| Chonra | *Selinum tenuifolium* |
| Dayela | *Morina coulteriana* |
| Dhandhura | *Hyoscyamus niger* |
| Dharshak | *Epilobium angustifolium* |

| | |
|---|---|
| Dimug* | *Arnebia euchroma* |
| Don | *Impatiens gegantia* |
| Drapada | *Saussurea albescens* |
| Ear* | *Chenopodium album* |
| Em | *Chenopodium album* |
| Ghandoli | *Silene vulgaris* |
| Golchokpa* | *Codonopsis clematidea* |
| Gonyod* | *Carum carvi* |
| Gonyorog | *Carum carvi* |
| Grachi | *Convolvulus arvensis* |
| Gyamen* | *Allium stracheyi* |
| Hombug | *Myricaria germanica* ssp. *alopecuroides* |
| Hombuk* | *Myricaria germanica* ssp.*alopecuroides* |
| Jawarna loudi | *Verbascum thapsus* |
| Ka | *Juglans regia* var. *kamaonia* |
| Kaboot | *Juglans regia* var. *kamaonia* |
| Kalyash | *Ferula jaeschkeana* |
| Kaped | *Polygonum affine* |
| Karecha | *Plantago major* var. *angusta* |
| Kayaba chhutup* | *Astragalus himalayanus* |
| Kaymali | *Berberis jaeschkeana* |
| Kaymali | *Berberis vulgaris* var. *aetnensis* |
| Keechu* | *Astragalus marschallianus* |
| Khamed* | *Arnebia euchroma* |
| Khampa* | *Artemisia absinthium* |
| Kharmo | *Lonicera hypoleuca* |
| Khimata | *Viburnum cotinifolium* |
| Khishag | *Cnicus argyracanthus* |
| Khomig | *Onosma bracteatum* |
| Khunyurcha | *Artemisia glauca* |
| Khupalda* | *Chenopodium foliolosum* |
| Kochay* | *Allium stracheyi* |
| Kochi masha | *Thymus linearis* |
| Kochi shuwer | *Cynoglossum wallichii* |
| Koont | *Saussurea lappa* |
| Krun | *Prunus cornuta* |
| Kuchhona | *Trigonella emodi* |
| Kuramtoksay* | *Dracocephalum heterophyllum* |

| | |
|---|---|
| Kut | *Saussurea lappa* |
| Lamay masha | *Origanum vulgare* |
| Langna serpo* | *Pedicularis longiflora* ssp. *tubiformis* |
| Langtang | *Physochlaina praealta* |
| Laybala | *Rosa foetida* |
| Leejo | *Pyrus baccata* |
| Likatur* | *Geranium pratense* |
| Lo-adh* | *Allium carolinianum* |
| Lugmen | *Erigeron monticolus.* |
| Lugmig* | *Aster heterochaeta* |
| Lugru-serpo* | *Pedicularis bicornuta* |
| Manurucha | *Inula racemosa* |
| Marchhalam | *Barbarea intermedia* |
| Marini | *Mentha longifolia var. royleana* |
| Martokpa* | *Capparis spinosa* |
| Minchan sernag | *Erigeron monticolus* |
| Moday palla | *Rubus saxatilis* |
| Moday shuwer | *Lindelofia anchusoides* |
| Naram* | *Polygonum vivipara* |
| Nayangay* | *Ribes orientale* |
| Nichag* | *Lactuca viminea* |
| Nyanchang | *Peperomia reflexa* |
| Nyangada | *Ribes orientale* |
| Nyolo* | *Polygonum tortuosum* |
| Nyolove | *Rumex patientia* ssp. *orientalis* |
| Nyurcha | *Artemisia maritima* var. *neercha* |
| Omo-shay | *Podophyllum hexandrum* |
| Palla | *Fragaria indica* |
| Panja | *Habenaria arcuata* |
| Pankchi | *Saussurea sorocephala* |
| Panu-aag | *Sonchus oleraceus* |
| Panu shang | *Lactuca polycephala* |
| Paran | *Senecio nudicaulis* |
| Parpat | *Senecio chrysanthemoides* |
| Peepri uja | *Ranunculus wallichianus* |
| Pichawag | *Arctium lappa* |
| Pilickcha | *Ribes alpestre* |
| Porlo | *Geranium pratense* |

| | |
|---|---|
| Pray | *Eremurus himalaicus* |
| Praynal | *Iris kemaonensis* |
| Pyau chakti | *Rosularia alpestris* |
| Quanti | *Taraxacum officinale* |
| Ramjag | *Crataegus soongarica* |
| Rangchawag | *Astragalus grahamianus* |
| Rogthali | *Cotoneaster microphylla* |
| Rogthali | *Cotoneaster vulgaris* |
| Rohtokpa* | *Capparis spinosa* |
| Sarada | *Amaranthus paniculatus* |
| Sarkhen mentok* | *Taraxacum officinale* |
| Sarla | *Hippophae salicifolia* |
| Seski | *Artemisia maritima* var. *seski* |
| Shag | *Betula utilis* |
| Shakrag | *Chaerophyllum villosum* |
| Shenbuta | *Salix fragilis* |
| She-pusha | *Anaphalis nubigena* |
| Shilpada | *Bergenia stracheyi* |
| Shoma* | *Rumex patientia* ssp. *orientalis* |
| Shur | *Juniperus macropoda* |
| Sokana | *Chenopodium botrys* |
| Sukpa* | *Lychnis himalayensis* |
| Surjilove | *Rumex acetosa* |
| Surlove | *Rumex scutatus* |
| Tharag-thokpa* | *Lepidium latifolium* |
| Tholu | *Tragopogon dubius* |
| Thrung | *Fraxinus xanthoxyloides* |
| Thunbu* | *Scorzonera virgata* |
| Tikta | *Gentianella moorcroftiana* |
| Tikta* | *Gentianella moorcroftiana* |
| Tikta* | *Gentianella paludosa* |
| Tikta | *Lomatogonium carinthiacum* |
| Tirkug* | *Hippophae rhamnoides* ssp. *turkestanica* |
| Tongzil | *Trigonella polycerata* |
| Treka | *Thlaspi arvense* |
| Unbu* | Lactuca macrorhiza |
| Vana-nyarcha | *Cicer microphyllum* |
| Vano-nyunger | *Brassica erucastrum* |

| | |
|---|---|
| Zeera | *Carum bulbocastanum* |
| Zethi* | *Senecio hewrensis* |
| Zira* | *Carum bulbocastanum* |
| Zomoshing * | *Astragalus rhizanthus* |
| Zomoshing* | Astragalus marschallianus |

* Plants from Spiti

# Appendix IV

## GLOSSARY OF WORDS COMMONLY USED BY TRIBAL PEOPLE OF LAHOUL AND SPITI

**Tribal Communities of Lahoul and Spiti**

| English | Pattani/ Melogpa/ Manchadpa | Gahari/ Punanpa | Tod/ Khampa | Tinan | Chan/ Shipi | Lohari/ Dombiali | Spitian |
|---|---|---|---|---|---|---|---|
| **Ailment and state of the body** | | | | | | | |
| Blind | Kanay | Golba | Jara | Jarnag | Kane | Kane | Shara |
| Boil | Ganna | Ganna | Ganna | Ganna | Ganna | Ganna | Shinder |
| Cough | Gyul | Lunjis | Ludpa | Gog | Kas | Khang | Lutpa |
| Diarrhoea | Shall | Shall | Shall | Shall | Shall | Shall | Nyangba |
| Disease | Rog | Nadh | Jug | Tsecki | Dukh | Dukh | Sujer |
| Fever | Trodh | Chhadh | Chhed | Bukhar | Bukhar | Zartab | Niepshid |
| Pain | Teshi | Zug | Zug | Zug | Dukhaen | Dukhaen | Sujer |
| Rheumatism | Chhuser | Chhuser | Chhuser | Chhuser | Chhuser | Chhuser | Dantag |
| Sleep | Em | Eps | Ni | Eps | Nindru | Nindra | Nidh |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sneezing | Nis | Priphs | Phris | Hichig | Hichig | Hikig | Didpa |
| Sweat | Trug | Trugs | Mulchhu | Tsug | Prased | Prased | Chhadpa |
| Swelling | Gani | Gangi | Tsangchay | Gangi | Ukhtora | Ukshora | Boedetug |
| Tears | Mikti | Mikti | Chhima | Chim | Paen | Paen | Chimag |
| **Parts of body** | | | | | | | |
| Blood | Shui | Shu | Tha | Shui | Rath | Rath | Thag |
| Bone | Ruspa | Ruspa | Rupha | Ruspa | Harta | Harta | Rulwa |
| Brain | Tangya | Datpa | Dadpa | Lakpa | Menu | Menu | Latpa |
| Breast | Kah | Kyugtong | Tangha | Qug | Yaka | Yaka | Dang |
| Chest | Kah | Kyugtong | Tangha | Qug | Yaka | Yaka | Dang |
| Ear | Recha | Rechi | Namchog | Retra | Kanu | Kanu | Amchog |
| Eye | Tira | Mig | Mig | Mig | Tira | Tira | Mig |
| Face | Modh | Modh | Dongpha | Modh | Muh | Muh | Dongh |
| Finger | Brenja | Bochi | Zoo | Brencha | Aunguli | Aunguli | Zoo |
| Foot | Konza | Bang | Kangpa | Pang | Khur | Khur | Kangpa |
| Gum | Nhil | Nilh | Nilh | Nilh | Nhil | Nhil | Nilh |
| Hair | Kra | Kra | Tsa | Bal | Shig | Shig | Sha |
| Heart | Shuja | Shusha | Ning | Tsocha | Henjoo | Hero | Sempa |
| Heel | Thuri | Konchi | Tingpa | Thuri | Thuri | Thuri | Tingba |
| Intestine | Chiri | Gyuma | Nangcha | Chiri | Chiri | Chiri | Gyuma |
| Joint | Jod | Tsisgpa | Tsigpa | Jodh | Jodh | Jodh | Jodh |
| Kidney | Buka | Khalma | Khalma | Khalma | Buka | Buka | Khalma |
| Knee | Push | Pus | Pima | Pudrah | Zanoo | Zano | Peelmo |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Liver | Tingya | Chhinpa | Chherpa | Chhimpa | Kalja | Kalja | Chhinba |
| Lung | Lungya | Grova | Lwa | Lwa | Bhash | Bhash | Lwa |
| Mouth | Ah | Ah | Khaso | Ah | Shunt | Shunt | Kha |
| Nail | Tinh | Shun | Sedmo | Tin | Nish | Nish | Sermo |
| Neck | Muthu | Khangul | Jingpa | Khongjah | Muthu | Muthu | Ole |
| Nose | Neya | Gyunphu | Na | Nya | Nak | Nak | Na |
| Shoulder | Kamar | Punpa | Takche | Pungpa | Kamar | Kamar | Pongba |
| Skin | Khal/Cham | Bachi | Pakpo | Botra | Tarapi | Tarapi | Pao |
| Throat | Tatu | Koma | Udukpa | Khonaje | Tatu | Tatu | Oldang |
| Tongue | Lay | Lay | Che | Lay | Lay | Lay | Chay |
| Tooth | Tswa | Suwa | Suwo | Chha | Danoo | Danoo | So |
| Vein | Jang | Sa | Sa | Zang | Seer | Seer | Sa |
| Waist | Umh | Kedhpa | Pimig | Kedhpa | Kamar | Kamar | Kedpa |
| **Relations** | | | | | | | |
| Aunt | Baya | Pheche-Ama | Amchoon | Pheche-Ama | Mathiya | Mathi-Ama | Michung |
| Brother | Kaka | Achho | Achho | Achho | Kaka | Kakah | Acho |
| Child | Katu | Bethy | Tru | Yodcha | Shoru | Matha | To |
| Daughter | Myo | Chemed | Bomo | Gemecha | Shori | Mathi | Pomo |
| Daughter-in-law | Bhoudi | Nam | Nama | Nyem | Bhoudi | Bhoe | Chhamo |
| Father | Bah | Awa | Awa | Awa | Ba | Ba | Apa |
| Grand-father | Meme | Tetay | Meme | Tetay | Dagoo | Dau | Meme |
| Husband | Gaksa | Dakpo | Au | Dagpo | Bhatar | Bhatar | Uh |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mother | Ya/Amh | Ama | Ama | Amh | Ya | Amah | Ama |
| Sister | Rinh | Achhay | Tsingmo | Nukh | Bhaen | Bhaen | Achi |
| Son | Yo | Bucha | Bucha | Yocha | Shoru | Matha | No |
| Uncle | Baba | Phechay | Akug | Phecha-Awa | Math-Awa | Babah | Uh |
| Wife | Mecha | Bayanmo | Anne | Med | Zoeli | Zoeli | Chhamo |
| **Clothes, wearing apparel** | | | | | | | |
| Breeches | Sutana | Byarbu | Namgya | Kango | Sutoon | Sutun | Sutan |
| Button | Fuli | Gorbud | Tupchi | Drogboo | Drogboo | Drogboo | Thupchi |
| Cap | Topudu | Topi | Tibi | Khoro | Topu | Topu | Tibi |
| Clothes | Khamjay | Fos | Ray | Khamje | Dabay | Daboon | Kholag |
| Coat | Kot | Kot | Kot | Kot | Kot | Kot | Kot |
| Gloves | Lagshub | Lagshubs | Lagshub | Lagshub | Hatungjah | Hatungjah | Lagshub |
| Pocket | Chanza | Chanda | Chanda | Chanjah | Chanda | Chanjah | Changda |
| Shirt | Kurti | Shokshum | Kurti | Kurti | Kurti | Kurti | Tochay |
| Socks | Zaraba | Papu | Papu | Papu | Zaraba | Papu | Kinshu |
| Thread | Chhud | Bichhi | Kudpa | Chhud | Dhage | Dhaga | Kudpa |
| Wool | Cham | Chham | Bal | Cham | Oon | Oon | Phal |
| **Fruits, Vegetables, Cereals, Eatables** | | | | | | | |
| Apple | Tsay | Seu | Kushu | Shay | Seu | Seu | Kushu |
| Butter | Kyamar | Kyamar | Kyamar | Kyamar | Kyamar | Kyamar | Mar |
| Curd | Noo | Nuchi | Jo | Noocha | Dehu | Dehoo | Sho |
| Food | Bagat | Zamen | Zache | Zamen | Bagat | Bagat | Topcha |
| Grass | Shang | Chi | Sa | Shang | Gha | Gah | Sah |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Liquor | Sara | Arak | Araq | Arak | Sara | Sara | Arak |
| Milk | Panu | Pelchi | Oma | Palmo | Dudh | Dudh | Homa |
| Mushroom | Moksha | Moksha | Moksha | Moksha | Moksha | Moksha | Shamo |
| Potato | Adu | Aru | Adu | Adu | Adu | Adu | Halu |
| Rice | Toor | Bras | Day | Gel | Chau | Chau | Day |
| Sugar | Khand | Khand | Khara | Khand | Khand | Khand | Khara |
| Tea | Cha | Jha | Jha | Cha | Cha | Cha | Cha |
| Walnut | Ka | Kachi | Targa | Ka | Tane | Tana | Tarka |
| Wheat | Chhuwah | Tsawachi | Dou | Zad | Gehun | Gehun | Nay |
| **Tree and its parts** | | | | | | | |
| Branch | Dari | Langyag | Langyag | Brancha | Da | Da | Thalag |
| Flower | Ujah | Mentok | Mentok | Bala | Phul | Phul | Mentok |
| Leaf | Lab | Lab | Lodma | Lab | Pata | Pata | Loma |
| Root | Jang | Batag | Batag | Jang | Seer | Seer | Batag |
| Thorn | Chhawag | Chhawag | Chharma | Chhawag | Kanna | Chhawag | Chharma |
| Tree | Boot | Boota | Boota | Boota | Boot | Boot | Chagma |
| Wood | Sinh | Shing | Shing | Sinh | Katho | Katho | Shing |
| **Place of worship, Dwellings** | | | | | | | |
| Courtyard | Luwad | Habar | Chhugsa | Chhemcha | Lapcha | Lapcha | Go |
| Door | Pitang | Pitang | Gorcha | Pitangh | Dawar | Dawar | Go |
| Floor | Purih | Sa | Thanka | Purih | Pur | Pur | Nang |
| House | Gharbar | Kyum | Khangpa | Kyum | Ghar | Ghar | Khangpa |
| Monastery | Gompa | Gonpa | Gompa | Gonpa | Gomba | Gomba | Gompa |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Roof | Lang | Kyumar | Khantog | Lang | Sherna | Sherna | Khatog |
| School | Mudarsa | Mudarsa | Mudarsa | Mudarsa | Mudarsa | Mudarsa | School |
| Stair | Pan/Tapi | Gesta/ Chapan | Tseka/ Thempa | Pan | Shidh | Shi | Themka |
| Stone | Rag | Grang | Dwa | Rag | Rumn | Runa | Dwa |
| Window | Kal | Kachi | Kalchi | Kaltoo | Chopu | Umuh | Tirshung |
| **Animals and related terms** | | | | | | | |
| Ant | Kurikcha | Kurkuti | Kurkuti | Purikcha | Kurikcha | Kurikcha | Temang-bo |
| Ass | Kara | Kara | Boombu | Kara | Kara | Kara | Fushi |
| Bull | Bang | Zopo | Zo | Zopo | Badhel | Badhel | Zo |
| Butterfly | Farpitak | Phramali | Bemalapchi | Familing | Pharpitig | Pharpitig | Phamalapch |
| Cat | Bhilh | Bila | Pishi | Bilh | Birae | Birae | Pishi |
| Crow | Kag | Kwag | Garog | Krag | Kau | Kau | Karog |
| Dog | Khui | Khyu | Khi | Khui | Kutar | Kutar | Khi |
| Egg | Tiglig | Khortum | Guwan | Khortum | Tiglig | Tiglig | Goan |
| Fish | Machh | Nya | Nya | Nya | Machh | Machh | Nya |
| Fly | Yangza | Bhuyang | Roun | Bujang | Machhi | Machhi | Dhringboo |
| Hen | Kukudi | Kukudi | Kukudi | Kukudi | Kukudi | Kukudi | Chhamo |
| Locust | Tit | Sagsa | Chhechha | Tit | Tit | Tit | Chak –Chakboo |
| Louse | Rig | Shig | Shig | Rig | Zoon | Zoon | Shig |
| Mule | Rang | Shangs | Tah | Rang | Ghowa | Ghowa | Tah |
| Nest | Pyau–Bang | Chhang | Chhankor | Bang | Bang | Bang | Chhesang |
| Owl | Bhulu | Bhu-Bhu | Bhu-Bhu | Bhulu | Bhulu | Bhulu | Hupa |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Pigeon | Krimlo | Tsawanchi | Muran | Ranchha | Ghugu | Ghugooti | Mukoo |
| Sheep | Traen | Lama | Lug | Ter | Pashuru | Paheru | Lug |
| Spider | Ranzatu | Rinchenbu | Tharbu | Ranchi-Rinchi | Machhi | Machhi | Bhuechhan |
| Tail | Mekutu | Nama | Nama | Mekutu | Punjoo | Pinjhooti | Nema |
| Vulture | Yuwad | Hai | Lag | Thankar | Grizh | Grizh | Lag |
| **Domestic articles** | | | | | | | |
| Almirah | Almari | Almari | Almari | Almari | Almari | Almari | Torgum |
| Balance | Trakidi-Bati | Trakidi-Bati | Takar-Bati | Tarakkidi | Tarakkidi | Tarakkidi | Tarache |
| Blow-pipe | Bhudpa | Bhutpa | Bhutpa | Bhutpa | Dhon | Dhon | Bhutpa |
| Bowl | Lodki | Lodki | Lodki | Lodki | Lodki | Lodki | Lurki |
| Broom | Preg | Pregchi | Sidueg | Preg | Boar | Bhokar | Hukil |
| Comb | Shugcha | Shukchi | Somang | Shukcha | Kangi | Kanni | Soma |
| Drum | Nishan | Dolam | Daman | Daman | Nishan | Damama | Daman |
| Hubble-bubble | Nared | Saja | Saja | Sajh | Nar | Nar | Suna |
| Key | Kaenti | Kyulig | Kulig | Kulig | Kaet | Kaet | Kulig |
| Ladle | Thongbu | Thombu | Thombu | Thongbu | Tombu | Thombu | Thombu |
| Lid | Ateg | Tiks | Khatig | Ateg | Atig | Atig | Khau |
| Lock | Kulig | Pekyulig | Dongbo | Kulig | Kulig | Kulig | Golsha |
| Mirror | Arshi | Arshi | Arshi | Arshi | Arshi | Arshi | Melong |
| Needle | Cheb | Gyakhab | Khab | Keb | Sinah | Sinah | Khab |
| Plate | Petada | Petal | Thayli | Plate | Plate | Plate | Thili |
| Spoon | Chhopcha | Khyuchi | Thurmang | Chhopcha | Chhopcha | Chhopcha | Thulba |

| Table | Soltag | Soltag | Solchog | Soltag | Soltag | Soltag | Chhokcha |
|---|---|---|---|---|---|---|---|
| **Tools** | | | | | | | |
| Axe | Karji | Takar | Tari | Karge | Kurai | Kurai | Tiri |
| Basket | Fenja | Pera | Pera | Tokri | Tokri | Balli | Pakche |
| Digger | Ogten | Nalchi | Tokche | Othi | Kudali | Kudali | Tokche |
| Hammer | Tholu | Tholu | Thawa | Tholu | Hathoda | Hathoi | Tholu |
| Plough | Hadh | Nal | Shol | Thong | Hadh | Hadh | Thong |
| Rope | Rashi | Rashi | Rassi | Rashi | Rashi | Rashi | Thakpa |
| Sickle | Zatum | Chatram | Zora | Zatum | Drati | Drati | Sora |
| Stick | Loudi | Berka | Berka | Dong | Loudi | Loui | Bikpa |
| **Numerals** | | | | | | | |
| One | Echa | Tiki | Chig | Echa | Ak | Ak | Chik |
| Two | Jut | Nishking | Ni | Nijih | Dui | Dui | Ni |
| Three | Shumu | Sumi | Sum | Sumu | Tri | Tri | Sum |
| Four | Pee | Pee | Zi | Pee | Chour | Chour | Zih |
| Five | Na | Nae | Na | Na | Panjh | Pan | Na |
| Six | Trui | Trui | Dug | Trui | Chha | Chha | Thug |
| Seven | Nhiji | Nhiji | Dun | Nichi | Sath | Sath | Dhun |
| Eight | Ray | Gae | Gyad | Gaedi | Ath | Ath | Gaedh |
| Nine | Koo | Goo | Goo | Koo | Nou | Nou | Goo |
| Ten | Sa | Chui | Chu | Sa | Dash | Dash | Chu |
| Eleven | Seidi | Chutig | Chugshi | Seidi | Gyarah | Gyarah | Chugshig |
| Twelve | Sanih | Chunis | Chungni | Sanih | Barah | Barah | Chuni |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Thirteen | Tsasum | Chusum | Chugsum | Tsasum | Terah | Terah | Chugsum |
| Fourteen | Sapi | Chupi | Chubji | Sapi | Choudah | Choudah | Chubji |
| Fifteen | Sana | Chuwang | Chona | Sana | Pahanra | Pahanra | Chuna |
| Sixteen | Satrui | Chuzdrug | Churug | Shashum | Shouwa | Shouwa | Churug |
| Seventeen | Sahni | Churnis | Chubdun | Sasnizih | Satarah | Satarah | Chubdun |
| Eighteen | Sare | Chubgyad | Chubgyad | Sargedi | Atharah | Tharah | Chhubged |
| Nineteen | Sasku | Churgu | Churgu | Saskoo | Uni | Uni | Churgu |
| Twenty | Niza | Niza | Nishoo | Nizah | Bi | Bi | Nishoo |
| Thirty | Nizo-Sa | Sumchu | Sumchu | Nizo-Sa | Bio-Dush | Bio-Dush | Sumjoo |
| Forty | Nee-Niza | Zipchu | Zipchu | Ni-Nizah | Dui-Bi | Dui-Bi | Zipchu |
| Fifty | Ninzo-Sa | Napchu | Namchu | Ninizo-Sa | Dui-Bi-o-Dush | Dui-Bi-o-Dush | Nipchu |
| Sixty | Sumniza | Dukchu | Dugchu | Sumnizah | Tri-Bi | Tri-Bi | Dugzu |
| Seventy | Sumnizo-Sa | Dunchu | Dunchu | Sumnizo-Sa | Tri-Bi-o-Dush | Tri-Bi-o-Dush | Dhunzu |
| Eighty | Pee-Niza | Gyachu | Gyachoo | Pi-Nizah | Chaur-Bi | Chaur-Bi | Geezu |
| Ninety | Pee-Nizo-Sa | Gupchu | Gupchoo | Pinizo-Sa | Chaur-Bi-o-Dug | Chaur-Bi-o-Dush | Gupchoo |
| Hundred | Rah | Gya | Gya | Rah | Sau | Sau | Gya |
| Thousand | Hazar | Tong | Tonkchi | Hazar | Hazar | Hazar | Tongchik |