An Ethnobotanical Study of the Kumaon Region of India

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In recent times great emphasis has been given to ethnobotanical studies by Groh (1), Woodward (2), Schultes (3, 4), Jain (5), De (6), and others. Ethnobotany is the study of the relationship which exists between peoples of primitive societies and plants. Such societies still depend for medical and surgical treatment on native remedies and particularly on folklore plants. Ethnobotanical studies can doubtless help to discover new drug plants provided the studies are organized scientifically. As suggested by Schultes (4), we should keep in mind, during the course of investigation, the widespread exaggeration of ethnobotanical data. If we really want to discover new drug plants, ethnobotanical studies should be conducted hand in hand with phytochemical and pharmacological studies.

Our paper is devoted primarily to presentation of ethnobotanical and other pertinent data from two—the Montane and the Submontane—of the three main regions of the Kumaon, an ethnically distinct area of northeastern India.

Topography and Vegetation

Kumaon lies between latitude 28° 59′ and 30° 40′ north and longitude 79° 02′ and 81° 31′ east. The area may be divided into three main topographical regions: the Tarai and Bhabar Region, the Submontane Region, and the Montane Region.

The Tarai and Bhabar Region. This region, 500 to 3000 feet above sea level, lies in the southeast and southwest of Kumaon. Tarai is characterized by numerous springs and swamps. Bhabar is composed of waterless areas of comparatively recent beds of boulders, gravel, and silt brought by streams and small rivers. The whole region has a somewhat tropical and subtropical type of vegetation. The main dominants are *Shorea robusta*, *Cassia fistula*, *Adina cordifolia*, and *Dalbergia sissoo*, forming the canopy; *Mallotus philippinensis*, *Aegle marmelos*, *Calotropis procera*, *Lantana camara*, *Adhatoda vasica*, and species of *Smilax*, *Clerodendron*, and *Cassia*, forming the understory; and *Boerhaavia diffusa*, *Achyranthes aspera*, *Mimosa pudica*, and *Justicia*, forming the ground flora. This region is the winter camping place of the Kumaonies, who migrate from nearby hills.

The Submontane Region. This region constitutes the main portion of the area and lies at an altitude of 3000 to 7000 feet. It is intersected by numerous watercourses. Large and small warm valleys occur at altitudes of 2500 to 3500 feet. The main towns of Kumaon, such as Nainital, Almora, Ranikhet, Pithoragarh, Mukteshwar, Bageshwar, and Dharchula, are situated here. The region has a temperate to subtemperate type of vegetation with *Quercus incana*, *Pinus roxburghii*, *Myrica esculenta*, *Rhododendron arboreum*, and *Lyonia ovalifolia* as the canopy; *Pyracantha crenulata*, *Rubus ellipticus*, *R. lasiocarpus*, *Pyrus pashia*, *Berberis aristata*, *B. asiatica*, *Indigofera gerardiana*, and *Desmodium* as the understory; and species of *Anaphalis*, *Leucas*, *Senecio*, *Micromeria*, *Dicliptera*, *Artemisia*, *Valeriana*, *Viola*, *Bergenia*, *Flemingia*, and various grasses as the ground flora.

The Montane Region. This region lies near the Himalayan ranges at altitudes of 7000 to 11,000 feet. Most of it is quite away from modern civilization. The most beautiful and the biggest glaciers of Asia —Pindari and Milam, respectively—are situated here. The region has an alpine and subalpine type of vegetation with *Quercus semecarpifolia*, *Abies pindrow*, *Cedrus deodara*, *Cupressus torulosa*, *Taxus baccata*, *Rhododendron arboreum*, and *Acer* as the canopy; *Berberis aristata*, *Pyrus pashia*, *Euonymus tingens*, *Cornus capitata*, and species of *Indigofera*, *Viburnum*, and *Desmodium* as the understory; and *Potentilla fulgens*, *Swertia purpurascens*, *S. paniculata*, *Pedicularis carnosa*, *Rubia cordi-*

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folia, Cotoneaster microphylla, and species of *Valeriana, Viola, Bergenia*, and *Galium* as the ground flora. Above 10,000 feet are alpine pastures known as *bugiyals*. In these the following herbs grow: *Potentilla argyrophylla, P. atrosanguinea, Polygonum affine, Taraxacum officinale, Anemone obtusiloba, Pedicularis, Tanacetum longifolium, Saussurea taraxicifolia, Swertia petiolata, S. chirata, Nepeta, Aster, Primula, Saxifraga, Delphinium cashmerianum, Picrorhiza kurroa, Aconitum heterophyllum*, and *A. atrox*. Other species of *Aconitum* and *Nardostachys jatamansi* are generally found on high rocks. These pastures have no shrubs or trees, but their sloping boundaries have the following plants: *Betula utilis, Rhododendron campanulatum, R. anthopogon*, and *Rosa*. It is the general belief of the Kumaonies that rare and efficaceous medicinal plants are found in these pastures. It is supposed that the approach to these pastures is difficult because of the high and hazardous trails and the poisonous atmosphere allegedly caused by aconites known as *bish*. Kumaonies also believe that nothing will grow around a *bish* plant.

The People and Their History

The people of Kumaon are racially a mixture of various tribes. The *Vishnu-puran*, the *Mahabharata*, and the *Varit Samhita*—the old ethnical literature of Hindus—mention a number of tribes such as the Sakas, the Nagas, the Kiarats, the Hunas, and the Khasas dwelling on the border of Bharat, which, with confidence, may be referred to the portion of the Himalayas now known as Kumaon. The Sakas are pointed out to be among the earlier ruling races of the Kumaon hills. There are traces of a mysterious serpent race known as Nagas, which were once quite widespread. The Kiarats, or Rajya Karats, were a tribe of foresters of which a trace, still found in Askot, represents itself as the descendants of one of the aboriginal princes of Kumaon, who fled with his family to escape destruction threatened by a usurper. The Hunas may be the pastoral tribe occupying parts of the Punjab or they may be Bhotias dwelling along the northern border of Kumaon. The Khasas were, like the Nagas, a very powerful race whose claim to be Aryan immigrants is generally allowed; they came at a very early period from central Asia. The Khasas are numerically the most important people in the Kumaon hills.

In historical records the main dynasties of ruling kings of Kumaon were the Katuris, who ruled for many centuries, and the Chand, who overthrew the Katuris and ruled from 953–1790 A.D. Apart from these two dynasties, Kumaon consisted of a multitude of petty principalities.

The Tarai and Bhabar People. In the Tarai and Bhabar Region the inhabitants are Paharies (Kumaonies) and the Plains People. The majority of the population speaks Western Hindi; the principal dialect is Hindustani. The people are well advanced, and most of them take the modern medical aid provided by the government and private agencies.

The Submontane, or Central Region, People. The inhabitants of this region are predominantly Khasia Rajputs. The chief language is Kumaoni, a form of Central Pahari with many dialects. As the winter season sets in, very many of the inhabitants descend to the Tarai and Bhabar Region; they return to their native places up to the middle of March. Many of them travel by bus; the rest travel on foot with their families and livestock. Sometimes whole villages are emptied, and only old men are left to look after the property of the absentees. This practice of migration is now decreasing as most of the people living in the villages are employed in services or as laborers and so have abandoned the migratory habits.

The Montane Region People. The majority of the people inhabiting this region are Bhotias. A race of Mongoloid extraction previously trading with Tibet, the Bhotias now keep sheep and goats for cartage, meat, and for wool for weaving blankets, carpets, and other goods. They also cultivate potatoes and buckwheat. Generally this region remains under snow for about six months each year; zero temperatures prevail. During this time the inhabitants migrate southward with their families and livestock and live in camps established at convenient points at lower altitudes or in montane valleys. They bring with them articles of trade from the alpine regions such as aconites

(*bish* and *atis*), orchids (*salam-misri* and *salam-panja*), Indian spikenard (*jatamansi*), *Picrorhiza* (*kutki*), *Allium strachei* (*jambu*), *Angelica glauca* (*ganderayan*), *Rheum* (*dolu*), *Delphinium* (*nirbishi*), *Swertia* (*chirayata*), *musk* (*kasturi*), bile of bear (*rikh-titee*), and valuable skins of musk, leopards, bears, and deer. In the middle of May they return to their homes. During summers the local inhabitants (males only) move with their livestock to the nearby alpine pastures for grazing. In their leisure they hunt for the articles of trade to take with them to lower altitudes when they migrate. The language spoken is Bhotia, which has five dialects: Rankas or Shokia Khun, Byansi, Chaudansi, Darmia, and Bhotia or Huniya.

Attitude toward Disease

Kumaonies are simple, superstitious, god-fearing people with their own customs, traditions, and folklore. To them, only skin infections, ear trouble, eye trouble, and short-duration fevers are regarded as physical diseases. Other maladies are supposed to derive from some spell or curse of an evil spirit or from the anger of some household god. If after a month or so a Kumaoni does not recover from an affliction after treatment with folklore medicines, his relatives approach the mystic-priest known as the Poochari. The Poochari tells them whether the patient is under the spell of an evil spirit or under the anger of a household god, or whether he is suffering from some sort of illness. In the latter case, the patient is taken to a village physician for treatment. If the Poochardi decides that the patient is under the spell of an evil spirit, he recommends some other mystic-priest who, with the help of hymns, drives the spirit away. Before leaving the patient, the spirit may ask for some rice and pulse or for the sacrifice of a cock, pig, or goat, or he may desire some colored cloth. The rice and pulse are left on road crossings. It is believed that the spirit will leave the patient after getting the articles demanded. If the Poochari says the patient is under the anger of a household god, he recommends a magico-religious ceremony known as Jagar to placate the god. Jagar is always held at night. A large room in the patient's house is cleaned and fitted with articles of worship such as fruits, cereals, milk, curd, ghee, sweets, etc. It is decorated with various flowers and with branches of *Prunus cerasoides* and *Urtica dioica* or *U. parviflora*. The room is incensed with *Valeriana jatamansi* roots, *Nardostachys jatamansi* roots, *Betula utilis* bark, *Selinum wallichianum* roots, and *Skimmia laureola* leaves mixed with barley and ghee. The Jagari (hymn chanter and conductor of the ceremony), the Dangari (the dancer who acts as a medium for the appearance of the god), and the relatives and friends are seated in the ceremonial room. A crude drum (nagara) and a metallic plate (thali) are played, the Jagari chants hymns, and the Dangari begins to dance. When the dance and the music reach their climax, the patient's household god speaks through the medium of the Dangari. The relatives ask the god-in-medium the cause of his anger. He tells the cause, which may be, among other reasons, that the patient did not worship him properly or that he did not give him a sufficient share from his earnings. As a penalty the god may demand a simple Khichari (a mixture of uncooked rice, pulses, chillies, and salt); a sacrifice of a goat, pig, cock, or coconut; a continuous Jagar for 20 days or so; or simple worship at home or in a particular temple. Every Kumaoni fulfills the demands of the god because failure to do so may result in serious consequences not only to the patient but also to his family.

One may witness such a magico-religious ceremony in any village of Kumaon, even among the learned classes. About 50% of the patients are cured by it.

Plants play an important role in the life of the Kumaonies—chiefly for food and medicine and in worship, where scores of species are regarded as sacred. In the following account we have compiled a listing of folklore medicinal plants of two regions of Kumaon: (1) the Montane Region, between 7000 and 10,000 feet, and (2) the Submontane Region, between 3000 and 6500 feet. Under each region the plants are arranged alphabetically according to their local names; for each plant, the scientific name, the family name, and local medicinal uses are given.

FOLKLORE MEDICINAL PLANTS OF THE MONTANE REGION

ATIS

Aconitum heterophyllum Wall. (Ranunculaceae).

The roots are used for fevers and are administered to infants for stomach troubles.

BANKAKRI

Podophyllum hexandrum Royle (*P. emodi* Wall. ex Hook. f., & Th.) (Berberidaceae).

The seeds are used in fermenting a country liquor.

BERU

Ficus palmata Forsk. (Moraceae).

The latext of the young twigs is applied to draw out prickles or other foreign matter which has entered the body parts. The young inflorescences are boiled and eaten.

BHEKUA, BHIMUA

Grewia optiva Drum. (*G. oppositifolia* Roxb. ex Mast.) (Tiliaceae).

The crushed young branches and the bast, which yields "leather," are used as soap. This "leather" is also used as a lubricant at time of delivery when there is a difficult delivery case.

BHUJPATRA

Betula utilis D. Don (*B. bhojpattra* Wall.) (Betulaceae).

The resin of the tree, when mixed with water and administered with *ghee* (butter) after menstruation, works as an oral contraceptive. The resin is also used on cuts and burns.

BHOTIA KATHA

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The dried wood is used for stomach troubles.

BHUTKESHI

Selinum wallichianum (DC.) Raiz. & Sax. (*S. tenuifolium* Wall. ex DC.) (Umbelliferae).

The powdered root is used as incense in magico-religious rites.

CHIRAR, CHIUR

Neolitsea umbrosa (Nees) Gamble (Lauraceae).

The oil extracted from the fruits is applied on skin diseases and for massage. It is also used as an edible oil and for lighting.

CHIRET

Swertia chirata Buch.-Ham. ex Wall., *Swertia angustifolia* Buch.-Ham. ex D. Don, *Swertia purpurascens* Wall. ex C. B. Clarke and some *Gentiana* spp. (Gentianaceae).

A decoction of the whole plant is used for fevers and for purifying the blood in certain skin diseases believed due to blood impurities.

DOLU

Rheum emodi Wall. (Polygonaceae).

A water-paste of the roots is used for cuts, sprains, and swellings.

DUNA

Allium sp. (Liliaceae).

The dried leaves are used as a condiment and vegetable.

GANDRAYAN

Angelica glauca Edgw. (Umbelliferae).

The powdered root is given with hot water for stomach troubles and to check vomiting. It is further believed that the roots, when used to season curry, give strength and vigor to women after delivery. The roots are generally used for flavoring.

JAMBU

Allium strachei Edgw. (Liliaceae).

The dried leaves are used for flavoring.

KARWI, KUTKI

Picrorhiza kurroa Royle ex Benth. (Scrophulariaceae).

The rhizomes are used for fevers and for children's stomach troubles known as *juka*.

MAMIRA

Thalictrum neurocarpum Royle (Ranunculaceae).

Juice from the roots is used for treating cataracts.

NAIR, NAIRPATI

Skimmia laureola Sieb. & Zucc. ex Walp. (Rutaceae).

The dried crushed leaves are used as incense.

NIRBISHI

Delphinium denudatum Wall. ex Hook. f. & Th. (Ranunculaceae).

A water-paste of the roots is applied on ulcers.

PATI

Artemisia nilagarica (Clarke) Pamp. (*A. vulgaris* sensu Hook. f., *A. parviflora* Buch.-Ham. ex Roxb., *A. vestita* Wall. ex DC.) (Compositae).

The aerial parts of the plant are used as incense.

THUNER

Taxus baccata L. (Taxaceae).

Small pieces of the bark, with common salt and ghee, are used in a tea-like preparation known as *jya* that is supposed to give strength and vigor.

FOLKLORE MEDICINAL PLANTS OF THE SUBMONTANE REGION

AANK

Calotropis gigantea (L.) R. Br. ex Ait., *C. procera* (Ait.) R. Br. (Asclepiadaceae).

The latex is used for leprosy. The powdered root mixed with goat's milk is used for ear trouble and boils.

AARU

Prunus persica Batsch. (Rosaceae).

An oil extracted from the seeds is used to treat eczema.

AGANYO

Premna mucronata Roxb., *P. barbata* Wall. (Verbenaceae).

The juice of the stem is used for *aganyo*, a type of eczema.

AILARU, AILAR

Cucumis sativus L. var. *hardwickii* Royle (Cucurbitaceae).

Pieces of the fruit in a hot fomentation are used on the chest for pneumonia.

AKASHILAGUL, AGASILAGUL

Cuscuta reflexa Roxb. (Convolvulaceae).

Powdered seeds are used for stomach pain. The juice of stem and leaves is used to kill head lice.

AKHOR, AANKHOR

Juglans regia L. (Juglandaceae).

A paste of the husk is used for toe-sores (*katya*). Ashed nuts are used as tooth-powder. Dried leaves are used as an insecticide; they are kept in food stores of houses.

ANGAW, AWNL

Emblica officinalis Gaertn. (*Phyllanthus emblica* L.) (Euphorbiaceae).

Fruits are used as a purgative and also, in hot summers, to quench thirst. The plant is regarded as sacred.

ANGYAR, AYANAR

Lyonia ovalifolia (Wall.) Drude. (*Pieris ovalifolia* D. Don.) (Ericaceae).

A paste of the young twigs is used for pimples and boils. Cuttings of the tree may be kept in paddy fields to protect them from worms and insects.

BAISING

Adhatoda vasica Nees. (Acanthaceae).

Ashed leaves and wood mixed with honey are used for coughs and asthma.

BAJRADANTI

Potentilla fulgens Wall. (Rosaceae).

The powdered root is used as tooth-powder for strengthening teeth.

BANAPSHA, GULBANAPSHA

[*Viola serpens* Wall., *Viola canescens* Wall. (Violaceae).]

Dried flowers are used as a purgative and, when boiled with tea, for coughs and colds.

BANARH

Cassia tora L. (*C. obtusifolia* L.) (Leguminosae).

Powdered seeds and roots are mixed with lemon juice or they are applied externally

for ringworm. The seeds boiled with tea are used for colds.

BANTULESE

Origanum vulgare L. (Labiatae)

The leaves boiled with tea are used for influenza and for fevers or colds.

BERU

Ficus palmata Forsk. (Moraceae).

The boiled fruits mixed with curd and condiments like coriander, cumin, black mustard, common salt, etc.—a preparation known locally as *raita*—are a remedy for dysentery.

BHANGAW, BHANGALU

Cannabis sativa L. (Cannabaceae).

Juice of leaves dropped in the ear relieves ear troubles. Paste of leaves is used for piles. Juice of leaves mixed with sugar is applied to cuts and is an anthelmintic. Resin of leaves mixed with tobacco is smoked as a narcotic and also to treat colds. Strong fibers are obtained from the stem.

BHARAR

Ipomoea nil (L.) Roth. (Convolvulaceae).

The powdered seeds are used as a purgative.

BHILMORA

Rumex hastatus Don (Polygonaceae).

Crushed fresh leaves are used for boils. A sauce is also prepared from them. During the Chanda dynasty the leaves were used to clean copper utensils.

BHAT

Glycine max Merr. (*G. soja* Sieb. & Zucc.) (Leguminosae).

The seeds, crushed, are given to buffalos for stomach disorder (*damri*). Many kinds of lentel dishes are prepared.

BIJESAR

Pterocarpus marsupium Roxb. (Leguminosae).

Water in which the wood has been soaked overnight is used for diabetes. The plant occurs below 3000 feet in the Bhabar region.

BRAHMI

Centella asiatica (L.) Urban (*Hydrocotyle asiatica* L.) (Umbelliferae).

The juice of fresh leaves is dropped in eyes for eye troubles, especially for cataracts, and is given for fevers. The leaves are supposed to be a good tonic for the brain.

BUKIL

Anaphalis adnata DC., *A. contorta* Hook. f., and other species of *Anaphalis* (Compositae).

The flower heads and the hairs of the plant are used to stop bleeding. The dried heads and leaves are made into wicks.

BURANS

Rhododendron arboreum Sm. (Ericaceae).

Flowers are a remedy for dysentery. Whenever fish cartilage sticks in the throat, the flowers are eaten to remove the cartilage.

CHALMORA, TIPATI

Oxalis corniculata L. (Oxalidaceae).

Juice of fresh leaves is applied to cuts, swellings, and insect stings.

CHUTHRAKILMORA

Berberis aristata Roxb. (Berberidaceae).

A decoction of root bark is used for eye trouble and for boils. *Berberis asiatica* is used as a substitute for *B. aristata*. Sauce is prepared from its acidic flower buds.

DARIM

Punica granatum L. (Punicaceae).

Rind of fruit, bark, and seeds are used for coughs. The crushed seeds are applied on pimples.

DAYA

Callicarpa macrophylla Vahl. (Verbenaceae).

The wood is rubbed against a clean stone with water and the paste so obtained is used on mouth and tongue sores (*khap* or *daya*).

DHAUL

Woodfordia fruticosa (L.) Kurz. (*W. floribunda* Salisb. (Lythraceae).

The crushed flowers are applied on cancers (?).

DHATURA

Datura inoxia Mill. (*D. Metel* auct. non L.), *D. stramonium* L. (*D. tatula* L.) (Solanaceae).

The seeds are smoked like tobacco for curing gum troubles like pyorrhea.

GANJAROO

Stephania glabra (Roxb.) Miers (Menispermaceae).

Massage with root sap is given for headache and body ache. The ash of the roots is used for eye trouble.

GARHMEHAU

Pyrus pashia Buch.-Ham. ex D. Don (Rosaceae).

The juice of the leaves is used for eye troubles. The ripe fruits are eaten.

GEWAIN, NAN GEWAIN

Solanum nigrum L. (Solanaceae).

The juice of the leaves is used for eye troubles. The leaves are eaten, without salt, for swelling of the body. Fruits when ripe are edible.

GURJA

Tinospora cordifolia (Willd.) Miers (Menispermaceae).

Pith and wood are used for asthma and fever. A mixture of the pith and wood along with crushed seeds of *Glycine max* is given to buffalos for stomach trouble.

HAJARI, SURJI

Tagetes sp. (Compositae).

The juice of the leaves is used for eye troubles and cuts.

HALD

Curcuma domestica Valeton. (*C. longa* L.) (Zingiberaceae).

A water-paste of the powdered rhizome is applied on swellings, insect stings, and wounds. Green rhizome is given for whooping and other coughs.

HARJOR

Cissus quadrangularis L. (*Vitis quadrangularis* Wall.) (Vitaceae).

The crushed stem is used as a plaster for bone fractures.

INDRAIN

Trichosanthes bracteata (Lam.) Voigt (*T. palmata* Roxb.) (Cucurbitaceae).

The root powder mixed with water is given for fever.

JAMIR

Citrus medica L. var. *limonum* Wight & Arn.? (Rutaceae).

Root juice and fruit juice are given to infants for the stomach trouble known as *juka* and characterized by diarrhea, fever, and cough.

JHATALOO

Prinsepia utilis Royle (Rosaceae).

The branches of this shrub are supposed to be efficacious in doing away with evil spirits. Oil from the seeds is used for lighting. Toy guns are made from the hollow stems, and the unripe fruits are used as bullets.

KAPHAW

Myrica esculenta Buch.-Ham. (Myricaceae).

A decoction of the stem bark is given for fever. Fruits are eaten.

KAIRU

Asparagus adscendens Roxb. (Liliaceae).

Root bark mixed with cow's milk is supposed to give vitality and strength. The stem is allegedly aphrodisiac. The young stems serve as a vegetable.

KALI CHARI

(?) (Polypodiaceae).

The juice of leaves is used for ear trouble. The stem and fronds, soaked in hair oil, are said to be a remedy for falling hair.

KARIAL

Momordica charantia L. (Cucurbitaceae).

Fruit juice mixed with honey is used for eczema.

KWARAU

Bauhinia variegata L. (Leguminosae).

A decoction of root bark is used for lessening fatness of the body and for tumors. The flower buds are also given for tumors.

MAMIRI, MAMIRA

Thalictrum foliolosum DC., *T. javanicum* Blume (Ranunculaceae).

Ash of the roots is used for eye trouble. A paste made from *mamiri* roots and from seeds of *Datura* (*Datura stramonium*) is used for eczema.

PANGAR

Aesculus indica Colebr. (Hippocastanaceae).

Roots are used for leucorrhea. Crushed seeds are given to cattle to increase the quality and quantity of milk.

PAYAN

Prunus cerasoides D. Don (*P. puddum* Roxb. ex Brandis) (Rosaceae).

The ash of the bark mixed with mustard oil is applied to wounds, cuts, and burns. The tree is a sacred one.

PARI

Cissampelos pareira L. (Menispermaceae).

Juice of fresh leaves is used for eye troubles. The crushed leaves are made into a plaster for pimples, boils, burns, and wounds.

KHET PAPRA, PIT PAPRA, KAIRU

Fumaria parviflora Lam. (Fumariaceae).

Plant is used for fever and influenza.

PEOLI

Hypericum cernuum Roxb. (Hypericaceae), *Reinwardtia indica* Dum. (*R. trigyna* Planch.) (Linaceae).

Crushed flowers mixed with mustard oil are used on wounds and boils.

RAI

Brassica rugosa Prain var. *rugosa* (Cruciferae).

The seeds, crushed and mixed with curd, crushed gourd, powder of turmeric, and salt, are given as an anthelmintic. The seeds, mixed with *Capsicum frutescens*, are thrown in a fire, and the smoke is inhaled to do away with the spirits possessing infants and newly wed brides. The smoke is said to induce lactation in domestic animals that fail to give milk.

RATPATIA

Ajuga bracteosa Wall. & Benth. (Labiatae), *Senecio nudicaulis* Buch.-Ham. (Compositae).

The juice of the leaves is used as a blood purifier and also for fevers; the powdered leaves, for burns and boils.

SAMYO

Valeriana jatamansi (DC.) Jones [*V. Wallichii* DC. (Valerianaceae)].

The powdered root mixed with sugar is used for urine trouble. Dried roots are burned for incense.

SHAU, CHEER

Pinus roxburghii Sargent (*P. longifolia* Roxb.) (Pinaceae).

Resin is used for urine trouble and as a plaster for swellings, sprains, boils, and bone fractures. The pollen mixed with red loam is used as a plaster for bone fractures.

SILPHORA

Bergenia ligulata (Wall.) Engl. (Saxifragaceae).

The powdered root mixed with water is applied on burns and cuts. Mixed with *Glycine max* seeds, it is given to cattle for diarrhea.

SHISOON

Urtica dioica L., *U. parviflora* Roxb. (Urticaceae).

The branches with leaves are applied externally on sprains and swellings for their counter-irritant properties. Pith of the plant is used for suppositories. The plant is supposed to do away with evil spirits. Newly wed brides or sick infants, when moved from one place to another, are always moved with a branch of *Urtica*. The leaves, boiled, are supposed to be efficacious for gout and rheumatic pains.

SEWAIN, SHIWAI

Vitex negundo L. (Verbenaceae).

The leaves, heated in earthen pots, are used as a fomentation in rheumatism and body swellings. A decoction, mixed with pepper, is taken for colds.

SYAPA KARYAL, ISHARI

Bryonopsis laciniosa (L.) Naud. (*Bryonia laciniosa* L.) (Cucurbitaceae).

This plant is supposed to be efficacious for snakebite. Barren women are supposed to become fertile by the use of its roots.

SYUN

Euphorbia royleana Boiss. (Euphorbiaceae).

The latex is applied for a disease, *khor*, in which the hairs of the head and eyebrows fall out. People keep the plant on their house roofs to ward off evil spirits and lightning.

TIMUR

Zanthoxylum alatum Roxb. (Rutaceae).

The powdered seeds are used for toothpowder to cure tooth diseases. Small pieces of the branches serve as toothbrushes.

TITPATI

Roylea cinerea (Don) Berill. (*R. elegans* Wall.) (Labiatae).

Crushed leaves are put on the head for their cooling effect. The powdered roots are used to cure pimples.

It can be well established from the above work and from work published in the past that Kumaon has a good treasure of folklore medicinal plants. We do not claim to have mentioned all these plants, but only those which came to our notice. Many other valuable folklore medicinal plants are yet to be found out. The only difficulty in this work is that the Kumaonies do not easily yield the secrets of the plants they use for medicinal purposes; they have a traditional notion that if they do so, the curing properties of the plants will vanish. They yield these secrets only to their kith and kin—and only at the last stages of their lives. The work of exploring for folklore medicinal plants in Kumaon requires much patience and the technique to win the confidence of the people. No doubt if systematic teamwork is done, then many valuable results can be expected, but the work needs an early start.

As Dr. Schultes (4) observes, "Our challenge is to salvage some of the native medicobotanical lore before it becomes forever entombed with the cultures that gave it birth."

We wish to express our gratitude to all the Kumaonies who helped us during the course of our investigation.

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It is our privilege to record here that several recent publications of Dr. R. E. Schultes inspired us to publish the unrecorded ethnobotanical data of the Kumaon Region. Dr. Schultes has also kindly edited the manuscript. Dr. Robert F. Raffauf deserves our sincere thanks for going through the manuscript and improving it.

References

1. Groh, G. W. 1955. Witch doctors and your health. Cosmopolitan **139**: 116–119. Oct.
2. Woodward, E. F. 1956. Literature searches for uses of new botanical drugs. Advances in Chemistry Series **16**: 162–167.
3. Schultes, R. E. 1962. The role of the ethnobotanist in the search for new medicinal plants. Lloydia **25**: 257–266.
4. ———. 1963. The widening panorama in medical botany. Rhodora **65**: 97–120.
5. Jain, S. K. 1965. On the prospects of some new or less well known medicinal plant resources. Indian Medical Journal **59**: 270–272.
6. De, J. N. 1968. Ethnobotany—a newer science in India. Science and Culture **34**: 326–328.