LITERATURE CITED (continued)

plantes (Lao, Meo, Kha) en usage au Laos. Bulletin de l'Ecole Francais d'Extreme Orient 49(2):560-562.

YANG, D. 1982. Why did the Hmong leave Laos? *In* Downing B.T., and D.P. Olney (eds): The Hmong in the West: Observations and Reports. Center for Urban and Regional Affairs:3-20, Minneapolis.

NOTES

[1]Current address: Department of Ecology and Evolutionary Biology, University of Arizona, Tucson, AZ 85721.

[2]This plant used by herbalists for identical indication (denoted 2) or closely related indications.

[3]Indication treated by two herbalists using this plant.

[4]Information not available.

[5]There are two kinds of gonorrhea called ***Mob Kas Cees.***
(a) penis painful with pussy discharge, sometimes accompanied by blister on penis.
(b) no puss, no blister; low stomach and back pain, painful urination; dark yellow urine; pain increases with beef or alcohol consumption.

[6]Heimbach, 1979:28.

CRC Handbook of Proximate Analysis Tables of Higher Plants. James A. Duke & Alan A. Atchley. Boca Raton, FL: CRC Press, 1986. Pp. 400. $100.00 (cloth).

This new reference book from CRC contains tabulated information on the nutritional composition of hundreds of species of vascular plants, compiled from some 22 previously published sources. Information on calcium, phosphorous, iron, sodium, potassium, carotene, thiamin, riboflavin, niacin, and ascorbic acid is included, where these values are reported in the original literature, in addition to water, protein, carbohydrate, fiber, and ash. The authors state in the introduction that the information is also available on computer tape and that they are planning yearly updates of the book.

Two main tables comprise most of the book, both reproduced directly from computer printouts. The first contains data "directly transcribed from original sources," while the second contains the same information "converted to a zero-moisture basis." The authors make a good case for converting the data to a dry weight format; unfortunately, much of the information in the first table is also reported in the same way, as evidenced by the potentially misleading zeroes listed for percent water. Many references which report figures on a dry weight basis do have values for percent water since this can be a valuable piece of information in practical applications. Changing this to a zero detracts from the value of the table. Perhaps one table for fresh weight and one for dry weight would have been a more useful organizing scheme.

The printout is easy to read for the most part (although a few of the pages are miscollated), except that the table is broken into two parts on some pages but not on others. Units and coding information are presented only in the introduction, rather than alongside the numerical data. Only a few of the samples give any indication of preparation techniques, which can be important since cooking, drying, or other processes can significantly change food composition (Kuhnlein 1986).

Many of the more important plants utilized by native peoples around the globe are included, plus many species of lesser importance, but significant gaps do exist. Some of these reflect lacunae in the literature on the subject of nutritional composition, but others are oversights due to the short lists of references cited. Most of the information comes from extensive compilations previously published by the USDA and the FAO and in the pages of *Economic Botany*. Little effort seems to have been made to track down less obvious sources of information. They have especially relied on the USDA seed screening project from several years ago (Earle & Jones 1962; Jones (Earle 1966; Barclay & Earle 1974). The results of this project have been criticized since the protein values reported are consistently higher than those found by other workers studying the same species (Nabhan *et al.* 1979). One of the other references (Hilty *et al.* 1972) is an abridged, popularized version of an article more readily available elsewhere (Benson *et al.* 1973).

There is a potential error in the authors' methodology concerning the values presented for carotene, although I am unsure whether they have fallen into the trap they have set for themselves. They state that the figures for carotene were obtained by doubling the published values for vitamin A. This is fine if the information was reported in SI units (milligrams, micrograms, etc.), or in the old International Units (IUs), but if the original reference presented or calculated the vitamin A values in terms of the newer standard unit, Retinol Equivalents (REs), Duke & Atchley's carotene figures will be too low by a factor of three (National Research Council 1980). I have seen articles employing REs but calling them "micrograms" or "microgram equivalents". Most of the references in this edition are too old to have used this new reporting technique, but if the authors add more information in the future following this line of reasoning they leave themselves open to error.

The book represents a good starting point for understanding the dietary contributions of traditional plant foods since it does contain a wealth of information. I hope the deficiencies will be corrected and the database expanded in the second edition.

References Cited:

Barclay, A.S., & F.R. Earle. 1974. Chemical analyses of seeds III: oil and protein content of 1253 species. Econ. Bot. 28:178-236.

Benson, Eva M., Jean M. Peters, Margaret A. Edwards, & Louise A. Hogan. 1973. Wild edible plants of the Pacific Northwest. J. Am. Diet. Assoc. 62:143-147.

Earle, F.R., & Quentin Jones. 1962. Analyses of seed samples from 113 plant families. Econ. Bot. 16:221-250.

Hilty, I. E., J. H. Peters, E. M. Benson, M. A. Edwards, & L. T. Miller. 1972. Nutritive values of native foods of Warm Springs Indians. Oregon State University Extension Circular 809.

Jones, Quentin, & F. R. Earle. 1966. Chemical analyses of seeds II: oil and protein content of 759 species. Econ. Bot. 20:127-155.

Kuhnlein, Harriet V. 1986. Food sample collection for nutrient analyses in ethnobiological studies. J. Ethnobiol. 6:19-25.

Nabhan, Gary P., Charles W. Weber, & James W. Berry. 1979. Legumes in the Papago-Pima Indian diet and ecological niche. Kiva 44:173-190.

National Research Council. 1980. Recommended dietary allowances. 9th ed. Washington: National Academy of Sciences.

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Economic Botany: Plants in Our World. B. B. Simpson & M. Conner-Ogorzaly. New York: McGraw-Hill, 1986. Pp. x, 640, illustr. n.p. (cloth).

There have been numerous textbooks in economic botany published in the last two decades, an indication of the proliferation of courses offered in this interdisciplinary field. Some have been aimed at courses for beginning students in non-science concentrations or majors, while others have been oriented towards students most of whom are enrolled in the sciences. This textbook, while striving to address both of these audiences, tends to be more technical than most of those recently published. It is to be recommended highly, especially for courses in the science fields; to take full advantage of what it offers the student should have a good grounding in biology and to have more than a beginner's familiarity with organic chemistry.

The book is divided into 19 chapters, each devoted for the most part to plant uses. Several of the chapters are especially interesting, perhaps because the contents are not found in most textbooks of economic botany: The Nature of Variation in Plants; Ornamental Plants; The Uses of Plants in the Future. Throughout the book ethnobotanical observations are freely and fully discussed. The index is highly detailed and consequently provides an excellent tool for the rest of the book. The choice of photographs is commendable, particularly because almost all are new. The many clear line drawings of plants—drawn by the second author—add much to the text.

One criticism might be offered: some of the chapters treat only a small fraction of major economic plants. For example, the discussion of waxes is reduced to two pages and treats only four plants, and only three sources of true rubber are mentioned, although the presentation of ***Hevea brasiliensis*** is noteworthy.

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Food, Diet and Population at Prehistoric Arroyo Hondo Pueblo, New Mexico. Wilma Wetterstrom. Arroyo Hondo Archaeological Series, No. 6. Santa Fe: School of American Research Press, 1986. Pp. xxi, 302. $15.00 (paper).

This ethnobotanical report—with contributions by Vorsila L. Bohrer on "Ethnobotanical Pollen" and R. W. Lang on "Artifacts of Woody Materials"—represents a large step forward in the fast-developing field of Southwestern archaeoethnobotany.

The book is divided into two parts: 1) the foods of Arroyo Hondo Pueblo, and 2) additional reports. The first part consists of sections on food plants, making a living in a marginal environment, lean times in a marginal environment, and diet, death, and demography.

Despite its geographical restriction, this volume has wide significance since it is one of the few that have recently appeared that view ethnobotanical or ethnoarchaeological information from an ecological aspect or from the point of view of the peoples who were alive and active at the time of the now extinct cultures considered. We hope for more contributions of this kind.

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seeds, the terms "seed" and "fruit" are used interchangeably. Winnowing was accomplished in a two step process. Collected infructescence material was first rubbed between the palms of the hands to dislodge fruits from attached perianths, and the material was then distributed along the top edge of an inclined cotton sheet. The lighter and more angular perianth, leaf and stem fragments would adhere to the sheet while fruits would roll down the angled sheet to be collected at its base.

Chemotaxonomie der Pflanzen, Bd. 7: Nachträge zu Band 1 und Band 2. [Plant Chemotaxonomy, Vol. 7: Addenda to Vols. 1 and 2] R. Hegnauer. Basel: Birkhäuser Verlag, 1986. Pp. 804. $278.91 (cloth).

This is the seventh volume in an immensely valuable series of reference books unequalled in any language. It and two planned future works attempt to update and expand upon the original six volumes, published between 1962 and 1973. Volume 7 supplements volumes 1 (algae, fungi, bryophytes, pteridophytes, and gymnosperms) and 2 (monocots). Volume 8 will augment the material on dicots contained in volumes 3-6 and provide indices for the entire set. Volume 9 will deal exclusively with legumes.

The set as a whole is a systematic, voluminous compilation of the available information on the chemistry of plant constituents. Despite the title, the primary emphasis of the series is on the chemical makeup of various plant taxa rather than on the direct application of chemical evidence in taxonomy. Various diagrams and discussions are presented highlighting diverse theories on the phylogenetic relationships among taxa, but this is done in a superficial way and does not represent the main thrust of the books.

The original volumes surveyed the plant (and fungal) kingdoms family by family, presenting a description of each taxon followed by a discussion of organic constituents which have been isolated from various species in each family. Organic acids, alkaloids, carbohydrates, lipids, and many more compounds are discussed in some detail. The pages are studded with numerous diagrams of chemical structures and tables listing the results of quantitative analyses. There are also frequent charts showing the interrelatedness of various compounds and outlining the biochemical pathways by which some compounds are synthesized.

Perhaps the strongest point of the series is the extensive encyclopedic referencing which will permit the reader to follow up on any line of information contained therein. Volume 7, for example, includes a 195-page annotated bibliography of works in English, French, German, Spanish, and several other languages, this in addition to the reference listing at the end of each chapter. Ethnobiologists seeking information on the makeup of plants used by native peoples can do little better than to start the literature search here.

Those of us fortunate enough to read German will gain even more from this useful reference work as a starting point from which to draw information on chemical botany. I am looking forward to the remaining volumes.

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LITERATURE CITED (continued)

Rattus exulans (Peale). Proc. New Zealand Ecol. Soc. 20:121-130.

_____. 1978. The effects of rodents on reptiles and amphibians. Pp. 75-86 *in* The Ecology and Control of Rodents in New Zealand Nature Reserves. Dingwall, R. R., Atkinson, J. A. E., and Hacy, C. (eds.), Dept. Lands and Survey, Information Ser. No. 4, Wellington.

WRIGHT, O. 1950. New Zealand 1826-1827, from the French of Dumont D'Urville. Wingfield Press, Wellington.

The Evolution of Indo-European Nomenclature for Salmonid Fish: The Case of 'Huchen' (*Hucho* spp.). A. Richard Diebold, Jr. Journal of Indo-European Studies, Monograph 5. Washington, D.C.: The Institute for the Study of Man, 1985. Pp. iv, 66. $25.00 (paper).

The salmonid family encompasses salmon, trout, char, huchen, and grayling. In the proposed homeland of speakers of Proto-Indo-European (PIE)—the Eastern Pontic to Western Kirghiz Steppes in the USSR, north of the Black and Caspian Seas—only one salmonid species occurs, ***Salmo trutta,*** with its two morpha, the large anadromous "salmontrout" and the smaller non-anadromous "brook trout." According to Diebold, PIE most likely encoded lexically only two salmonid fish, these being the two types found to the exclusion of all other salmonids in the proposed PIE homeland. This, then, is the evidence supporting the hypothesis placing PIE speakers in the above-mentioned geographical region.

As speakers of Indo-European (IE) languages spread from their homeland through Europe, Western Asia, and the Indian subcontinent, they encountered numerous unfamiliar species of salmonid. Diebold's short book is chiefly concerned with how previously unknown salmonid species were named, and in particular with nomenclature innovated or borrowed for species of the genus ***Hucho*** (huchen).

There are no surprises here. Indo-Europeans have used strategies for naming huchen which are commonly employed by peoples everywhere in labeling newly encountered entities: direct borrowing, description, metaphor, calque, etc. The importance of Diebold's nomenclatural inquiry is that it reveals that *all* terms for huchen in recorded IE languages have been either borrowed or innovated, suggesting that it is unlikely that PIE had a label for any huchen species. According to the author, the same is also true of all IE terms for salmon, char, and grayling, although he does not present detailed documentation for these claims as he does for huchen names. In brief, Diebold makes an excellent but, as he himself cautions, nondefinitive case for a PIE fish lexicon which referentially identified morpha of only one salmonid species, ***Salmo trutta.***

Students of folk biological classification can profit from Diebold's discussion of relatively recent changes in some IE folk taxonomies treating salmonid fish. For example, both huchen ***(Hucho hucho)*** and several species of char (genus ***Salvelinus)*** are lumped together in the Czech folk genus *siven*. Each member of this grouping is binomially labeled: *siven dunajský* ***(Hucho hucho),*** *siven americký* ***(Salvelinus fontinalis),*** *siven alpský* ***(Salvelinus alpinus),*** and so on. Diebold notes that there is an older Czech term for ***Hucho hucho,*** the monomial *hlavatice*, which was used to differentiate lexically huchen from all other salmonids. The inclusion of huchen in *siven* and its binomial designation, then, are relatively recent developments.

Diebold argues that this development in Czech may be related to a "transient Linnaean misclassification" made by 19th century biosystematists. Members of the genera ***Hucho*** and ***Salvelinus*** are perceptually very similar and this no doubt motivated an earlier

mistaken inclusion of these taxa in a single scientific genus. Diebold suggests that this influenced Czech folk classification, wherein both huchen and char developed as members of the folk genus *siven*. He does not speculate on the details of such an influence.

Examples similar to the Czech development have been reported in the literature. For example, the black bear, brown bear, and grizzly bear are included in the folk genus *wu'da*, "bear," in Gosiute, an Amerindian language of Utah (Chamberlin 1908:79). In addition, all three taxa are binomially labeled, e.g., *a-shi wu da*, "grizzly bear." As it happens, there is an alternative monomial label for "grizzly bear" in the language, *oi'ya rro*. I (Brown 1986) have proposed that the latter term for grizzly bear is older and that the development of an additional binomial term for the same is a response to the decreasing salience of grizzlies in the environment of Gosiute speakers. This proposal is in line with my general observation that binomial labels for taxa will replace monomial labels under the condition that the taxa in question decrease in salience or importance for some reason. In the Gosiute case, grizzly bears are no longer salient for speakers of the language since they no longer occur naturally in Utah.

As an alternative to Diebold's suggestion, I propose that huchen have acquired a binomial label in Czech in response to their decreasing salience, e.g., as a result of a decline in the population of huchen in the aquatic environments of Czech speakers. Whatever the case, Diebold has presented us with some important data which are useful in helping to discern regularities in the growth and development of folk biological taxonomies, in addition to informing on such important issues as the identification of the homeland of PIE speakers.

References Cited:

Brown, Cecil H. 1986. The growth of ethnobiological nomenclature. Curr. Anth. 27:1-11.

Chamberlin, Ralph V. 1908. Animal names and anatomical terms of the Goshute Indians. Proc. Acad. Nat. Scis. Phila. 60:74-103.

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