MWSHS Student Newsletter

Spring 2024

MWSHS Alumna Profile

Carrie Picardi, Ph.D

"I have been an avid organic vegetable gardener for eight years, starting with two raised beds and learning and growing each season," Carrie Picardi informed us, but then added: "I decided it was a great time to learn and expand into herbalism and how to properly grow and harvest herbs for food and medicinal uses."

Carrie enrolled in the Western-Herbalism Certificate Program in December of 2021. As she dug into the workbooks, we wondered what her impressions were. She shared these with us, as follows: "The materials are very thorough and well organized. There is a lot of valuable content included in this program. I enjoyed how the topics were sequenced and progressed with each lesson. The history of herbalism in different parts of the world and in the U.S. is fascinating—how much our predecessors knew about natural, native sources for food and healing!"

Carrie progressed through the program efficiently and skillfully, elaborating on how she accomplished this: "Most of my studies and working through the lessons happened during the Midwest winter months! I found it helpful to take each lesson out of the binder, clip it, and have that section in a handy place where I could open it up and work on a couple of questions at a time. I also wrote my answers in a notebook and then transferred my notes to a Word doc for submission. This approach helped tremendously with recall."

Graduating from the program in March, 2024, Carrie reflected on her studies: "The Western-Herbalism Certificate Program was such a valuable learning experience. The materials are thorough and comprehensive and I know that I will refer to all of it as references on my growing herbalism bookshelf. With any self-study program, you are responsible for your pacing, and so dedication and time management are essential. I really appreciated the thoughtful handwritten feedback and encouragement on my returned assignments."

What, though, are Carrie's plans from here? She explains: "Having recently relocated from the Northeast to a rural ***(Carrie Picardi profile continued in Column Two.)***

Recent Graduates

We offer congratulations to the following recent graduate of the Master-Herbalist Diploma Program:

Paige Swanson

We offer congratulations to the following recent graduates of the Western-Herbalism Module:

Carmen Dorr

Carrie Picardi

Jessica Armes

Jeanne Rohland

We offer congratulations to the following recent graduate of the Asian-Herbalism and Integrative-Herbalism Modules:

Pamela Pomplun-Morgan

We look forward to hearing more from these graduates as they continue to apply what they have learned!

Register for Herbal Therapeutics Workshop on June 2nd
(See page 2 for Details)

Carrie Picardi Profile *(Continued from Column One.)*

Midwest area, I am looking forward to growing and harvesting my own herbs, practicing with different preparations, and hopefully educating the community through workshops, farmers markets, and perhaps writing articles and blogs. We've recently launched a website, www.stillcreekfarmwi.com, and I am excited to reach people that way; also, as we create content. My next goal, however, is to embark on the Master-Herbalist Program, since the Western-Herbalism Certificate Program was such a fulfilling experience."

We asked Carrie what she would say to those considering studying with MWSHS, and she offered these thoughts: "As a longtime educator in a completely different field, I enjoyed being a student and learning subject matter that was completely new and sometimes out of my comfort zone. Whether you are interested in herbs and herbal health/wellness or in becoming a holistic practitioner, the Midwest School of Herbal Studies offers an array of programs and topics to expand your knowledge."

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WORKSHOP CREDIT OPTIONS

Except where noted, all of the below-listed events qualify as Workshop credits toward the Master-Herbalist program. Each hour of *verified* attendance (e.g., per instructor-completed workshop-credit slips as supplied by MWSHS) counts toward an equivalent hour of Workshop Category #3 credits (up to the student limit of 20 hours), unless another category is specified or unless one attends a particular workshop at one of these events that is *strictly* in one of these other categories.

Workshops, Conferences, Lectures, & Events in Herbal Studies Across North America

Medicines from the Earth Herb Symposium, *May 17-19, 2024*. Blue Ridge Assembly in **Black Mountain, NC.** For more info, see the website at at https://www.botanicalmedicine.org/2024-herbal-conferences/. This symposium typically offers events that would qualify for all 3 of the necessary MWSHS workshop categories.

Herbal First Aid Walk and Workshop. *June 1, 2024*. **Ojai, CA**. In this workshop, participants will learn about herbal first aid, discover local herbs for treating common injuries and ailments, and create five personalized herbal remedies to enhance their home first aid kits. For more info or to register: https://herbwalks.com/event/herbal-first-aid-walk-and-workshop-with-emily-watson/

Our Workshop, "Identifying, Wildcrafting, and Processing Wild Plants Not Commonly Available on the Herb Market" is scheduled for *Sun., June 2nd, 1:30 PM to 5:30 PM* and will take place in a **Northern suburb of the Twin Cities.** Extensive color slides will be shown and we will be making glycerites! This workshop is strongly recommended for newer students or other students who have not as yet attended this annual event. Details and registration on our website, under the tab "Events/Lesson Questions" (accessible from a computer, but not from a phone) with the general student password or you can mail us a check for $45, enclosing a slip with your name and cell-phone number. (MWSHS, P O Box 120096, New Brighton MN 55112) or call in your registration to us on a Mon-Wed early afternoon, at 651-484-0487.

Oshala Farm Herb Camp 2024. *July 5-7, 2024*. **Grants Pass, OR**. This event offers the chance to connect with plant enthusiasts nationwide, learn from diverse teachers, and interact with the 80+ medicinal herb varieties found on the farm. For more info or to register: https://oshalafarm.com/event/oshala-farm-herb-camp-2024/

Watch for announcements of **MWSHS herbwalk**s over the **Summer**. We typically hold 4 walks a year—one in June, one in July, one in August, and one in September. We can only give a 7-to-10-day notice, owing to weather reports not being reliable past that time. Watch for announcement of the first walk in June, which will most likely be in our *Interim Student Newsletter* for that month!

 Correspondence should be addressed to us by snail-mail at Midwest School of Herbal Studies, P O Box 120096, New Brighton MN 55112 or by email at MWSHS@aol.com.

Foragers, Beware: Toxic Wild Plants!

by Matthew Alfs, MH, RH(AHG)

Foraging for wild plants to use as food, medicine, or utility can be a delightful and a rewarding activity. However, there are a number of toxic look-alikes to many such usable plants that need to be carefully distinguished. Otherwise, a pleasant outing can be turned into a very *un*pleasant hospital visit!

People of long ago (and even Americans up till around the beginning of the Industrial Revolution) were well familiar with the plants in their area and were careful to stay away from those known to be toxic. Yet, today, great ignorance abounds. Even persons who should know better—people like park employees, hunters, naturalists, and schoolteachers taking a class out on a nature field trip—frequently make dangerous mistakes when it comes to wild plants. All of this underscores the truth in the old expression: "forewarned is forearmed!" It would behoove us, then, to take an in-depth look at poisonous wild plants....

What is Toxicity?

First of all, what do we mean when we say that a plant is "poisonous" or "toxic"? Interestingly, the word "toxic" actually comes from an ancient word for "arrow." This is because natives of Oceania, Africa, and Central America have long coated their arrowheads with plant or animal substances so as to hasten death for the recipients of their shafts, even as Native Americans of times past did as well. By definition, then, a toxic substance is one that produces injury to the health of a living organism.

Some plants can be intrinsically toxic to human health, while others could be considered "toxic" from a different perspective. For instance, a plant could be considered "toxic" to one person as opposed to others if that individual has an allergy to it or to a domestic relative. A person allergic to buckwheat might well have an allergic reaction to its near relative curly dock [yellow dock] (*Rumex crispus)*; a person allergic to cashews or mangoes might likewise find himself allergic to sumac (*Rhus glabra; Rhus typhina*) fruits.

Then, there is environmentally produced toxicity that can be mediated by wild plants. Plants growing adjacent to a street or a highway may wind up being coated with so many pollutants from auto exhaust that, if ingested, they would make a person sick (either immediately or later in life). This could be true of a plant that was otherwise perfectly utilizable as food or medicine. Mullein (*Verbascum thapsus*), sumac (*Rhus glabra; R. typhina*), and cattail (*Typha angustifolia; T. latifolia*) would be good examples here: Mullein's leaves make a delicious tea, but fine hairs on them are like magnets to pollutants. Cattail's male flower-spike makes a delicious cooked repast and yields pollen for medicine (in TCM, it is known as *pu huang* and used to stimulate blood movement when there is stagnation). Yet, these spikes also absorb any nearby pollutants like a sponge. The red berries of sumac make a scrumptious lemony-flavored beverage and serve as an important astringent for sore throats, diarrhea, and weak bladders. Yet, the hairs on those fruits–which, by the way, impart its delicious flavor, being tipped with organic acids—also pull in any nearby pollutants like a vacuum cleaner! The key here, then, is not to harvest these (or other) herbs from roadsides, near factories, or from any other ostensible sources of pollution.

Another form of plant-mediated environmental toxicity involves common edible plants growing on certain soils showing a preference for accumulating substances toxic to humans (or, substances toxic in excess). For example, useful wild plants such as lamb's quarters (*Chenopodium album*), pigweed (*Amaranthus retroflexus*), Canada thistle (*Cirsium arvense*), sunflower (*Helianthus annuus*), curly dock (*Rumex crispus*), smartweed (*Polygonum* spp.), and wild carrot (*Daucus carota*) can accumulate toxic amounts of nitrates (the form of nitrogen in the soil most often used by plants), depending on the concentration of these substances in the soil. Here, the use of fertilizers (which are largely nitrates) on a given piece of land sharply increases that risk for any such forageable weed growing thereon. Furthermore, nitrates are reduced to the even more toxic nitrites (the latter being ten times more toxic than the former!) in the body, which are proven carcinogens. Nitrites alter the body's hemoglobin, rendering it incapable of carrying oxygen so that a certain amount of asphyxiation at the cellular level can even occur.

Toxic Plant Components and How They Poison

What we are most concerned with in the present article, however, are those plants which are *intrinsically* toxic—i.e., not just to some people, but *to humans in general*. As the noted toxicologist J. M. Kingsbury put it: "In order for a plant to be functionally poisonous,... it must not only contain a toxic secondary compound but also possess effective means of presenting that compound to an animal in sufficient concentration, and the secondary compound must be capable of overcoming whatever physiological or biochemical defenses the animal may possess against it."—Kingsbury, John M. *Poisonous Plants of the United States and Canada*, Holt, Prentice-Hall, 1964

Many of such plants are toxic if eaten raw, cooked, or dried—i.e., in *all* states. Others may be toxic only in the raw state, with the poison being broken down by heating or drying. The corms of jack-in-the-pulpit (*Arisaema triphyllum*), for instance, can be made into "wild potato chips" or pounded into flour if properly dried and then heated. (However, this takes great skill and experience, and I do not recommend it.) If done improperly, the ingested corms can cause severe, lingering pain to the mouth and serious injury to the esophagus if swallowed. Marsh marigold *(Caltha palustris)* (pictured just below) makes a delicious repast if properly cooked, but can exert a blistering effect should one attempt to eat it raw (or even undercooked). Finally, certain wild plants containing dangerous levels of cyanide can be rendered innocuous by heating and drying, but can prove deadly if eaten fresh.

As we all know, the greatest test of safety and efficacy—*time*—has allowed the herbal materia medica to be carefully refined into a list of plants that can be used *with confidence* and *with safety* according to their indications, with all poisonous plants having long been 'weeded out.' Nevertheless, wild-plant poisonings take place every year (although these are largely among the uninitiated).

We will classify a number of toxic plants below, based upon their major toxins.

Alkaloids

Alkaloids are produced from amino acids and related substances in about 15% of vascular plants. They contain nitrogen bound in a special kind of ring system and react with acids to form soluble salts. Viewed as generally toxic substances, they affect the central nervous systems of living creatures. It is hypothesized by some that they even mimic or block neurotransmitters (which they structurally resemble), thereby causing poisoning. Yet, a number of alkaloids have been put to use in small amounts, or in certain forms or fashion, as medicinal agents. In fact, they were among the first substances isolated from plants for medicinal and other purposes. As a result, a few of them are known by the public, including morphine, codeine, quinine, and caffeine.

One family of plants in which alkaloids are widely sprinkled is the *Solanaceae*, which includes our common tomato and potato and which confronts the forager in the field in the form of the edible ground cherry *(Physalis* spp.*),* the various *Solanum* spp. (nightshades)*,* and the infamous jimsonweed *(Datura stramonium*). Some of these plants contain *tropane alkaloids* (e.g., atropine), which can have dangerous effects on the nervous system and other bodily functions, although they have also been used medicinally in carefully controlled amounts (such as by optometrists to dilate pupils for eye exams).

Children have died from eating jimsonweed capsules, while dangerous hallucinogenic effects have been experienced by teens and adults who have sampled various parts. European explorers of the New World encountered this plant in a rather dramatic episode in which several members of an exploratory party returned to their base at Jamestown "stoned out of their minds," as it were, from having ingested the plant—their pupils dilated and their speech nothing but an incoherent babble! A 1705 account of this frightening episode related that "the plant was gathered very young for a boiled salad, by some of the soldiers sent thither,...and some of them ate plentifully of it, the effect of which was...they turned natural fools upon it for several days: One would blow up a feather in the air; another would dart straws at it with much fury; and another—stark naked—was sitting up in a corner, like a monkey, grinning and making mows at them; a fourth would fondly kiss, and paw his companions, and snear in their faces, with a countenance more antic than any in a Dutch Droll. In this frantic condition they were confined, lest they should in their folly destroy themselves;...indeed, they were not very cleanly; for they would have wallowed in their own excrements, if they had not been prevented. A thousand such simple tricks they played, and after eleven days, returned to themselves again, not remembering anything that had passed."—R. Beverley*, The History and Present State of Virginia*, Book 2 (London:1705).

Then, too, most of the plants in this family contain solanine, a type of alkaloid known as a *steroidal alkaloid*, which can cause suppression of the central nervous system and/or gastrointestinal poisoning. In the nightshades (including the widespread woody nightshade, *Solanum dulcamara*), solanine is particularly concentrated in the unripe (green) berries, and ingestion of just a few of these has caused severe poisoning.

Indole alkaloids are another type that is widely distributed in the plant kingdom and can be very toxic. These are found in ergot (*Claviceps purpurea*), a purplish-black fungal pathogen that occurs in the place of a healthy kernel of grain in rye and in some other grasses. Used in minute amounts, ergot alkaloids can serve medicinal purposes; hence, ergotamine may relieve migraine symptoms, and ergometrine is helpful for relaxing the uterine muscles during childbirth. But, ergot

is quite toxic if ingested in grains, producing effects similar to its well-known derivative, LSD.

The symptoms of alkaloid toxicity vary according to the type of alkaloid involved, although all relate to the nervous system in one way or another. Physicians treat alkaloid poisoning by gastric lavage (stomach "pumping") and/or by an activated charcoal slurry to remove as much of the toxin as possible. They also sometimes employ a countermeasure in the form of a substance known as potassium permanganate. And yet, surely, as Benjamin Franklin, in his wisdom, once observed: "An ounce of prevention is worth a pound of cure!"

Glycosides

Glycosides are extremely abundant in the plant kingdom. They are defined as substances in which a sugar molecule is paired with a non-sugar molecule (called an *aglycone* or *genin*). In their compound form like this, they are often (though not always) inert, but when broken down into their basic components (aglycone + sugar), which can occur during ingestion, the aglycone part is sometimes rendered toxic to human beings.

Coumarin glycosides, widely sprinkled among the many plant species, are characterized by an oxidized, phenolic sort of aglycone known as a coumarin. The aglycone component is released upon tissue damage to the plant, and is quite often detectable by smell. (One memorable example is the strong, characteristic odor of newly cut hay.) The downside of these coumarins in the field is their potential toxicity—especially *photo*toxicity, in which the skin becomes sensitized to ultraviolet light, producing severe sunburn on hairless parts of the body exposed to strong sunlight. The parsley (*Apiaceae*) family is especially rife with large amounts of these phototoxic coumarins. One example is masterwort [or, cow parsnip] (*Heracleum* spp.), a powerful herbal ally used for treating stubborn flatulence and even epilepsy (especially as occurring when flatulence is prominent). (Pictured just below. See photos of other plants discussed in this article under "Images" at Google.com) Understandably, herbs like this should only be gathered with protective gloves.

Aflatoxin is another interesting coumarin that is produced from a mold (*Aspergillus flavus*) and sometimes occurs on peanuts, nuts, and grains. It is a potent carcinogen and is especially toxic to the liver. Dicoumarol co-nsists of a double coumarin molecule produced from normal coumarin glycosides with the aid of moisture, formaldehyde, and the presence of fungal activity. It prevents blood from clotting and can thus bring about internal hemorrhaging and subsequent death. It is of particular danger to wildcrafters because of its ability to form from improperly dried leaves of sweet clover *(Melilotus* spp.*)* and a few other plants. However, it has been used in carefully controlled forms and amounts in human medicine as an anticoagulant to help prevent dangerous blood clots.

Cyanogenic glycosides are glycosides producing hydrocyanic acid, which is nature's form of cyanide. They consist of one hydrogen atom jointed to one carbon atom joined to one nitrogen atom, and chemically abbreviated as "HCN." Hydrocyanic acid is released as a by-product of the breakdown of the glycosides, which occurs when their plant source is molested and/or when ingested and hydrolyzed in the stomach. In either case, the cyanogenic glycoside is broken down into hydrocyanic acid, sugar, and an aldehyde or ketone.

These glycosides occur in about 800 different species of plants, spread throughout about 80 different families. Of interest to foragers is their moderate concentration in plants such as white clover (*Trifolium repens*) and their heavier concentration in the seeds ("peas") of vetches *(Vicia* spp.). But the greatest concentration of these glycosides occurs in the rose family, which includes apples, apricots, plums, cherries, and peaches—all of whose seeds, and some of whose leaves, contain dangerous levels of these cyanogenic glycosides if enough of them are consumed to exceed a certain threshold in which the body can tolerate them. As one sad example, there is an account in the wild-foods literature of a man who loved to eat apple seeds and who saved up a very tiny cup of them. After munching on them over a short period of time, he died of cyanide poisoning.

Cardiac glycosides are glycosides having a direct action on the heart. Over 400 different kinds have been identified. Plants containing them that are commonly encountered by foragers include dogbane (*Apocynum spp.,* which can be easily be confused with the useful milkweed, *Asclepias* spp.), crown vetch (*Coronilla* spp.,a rosy-flowered, low-lying plant commonly planted alongside highways for beautification), and garden or house plants such as oleander, foxglove, and lily-of-the valley. Symptoms of poisoning here—which can cause death by cardiac arrest—include blurred vision, disturbed color vision, severe digestive upset, diarrhea, nausea, and vomiting. (The latter appears to be a built-in defense mechanism to rid the body of these toxins, but it doesn't always work to the extent needed to prevent poisoning!)

Concentration of other types of glycosides can cause various kinds of mischief in the human body as well. These include *anthraquinone glycosides*, which occur in the fruits of buckthorn *(Rhamnus* spp.) and those of some other shrubs or trees, and which can produce violent,

painful, purgative effects if ingested in any quantity. Then there are certain irritant oils that come into existence as a by-product of particular glysoside dissolutions, facilitated by damage to the tissues of their parent plants (such as through hand collection by a forager). The buttercup family (*Ranunculaceae*) is especially of concern here: A glycoside widely spread throughout this family, ranunculin, can break down to its aglycone, protoanemonin, causing burning and inflammation of mucous membranes if ingested. Showy plants such as baneberry (*Actaea* spp.) and buttercup (*Ranunculus* spp.) are examples of nasties here. Still another plant yielding this toxin, marsh marigold (*Caltha palustris*), can actually be picked with gloves, cooked in several waters, and eaten, as mentioned earlier; in fact, this is one of my all-time favorite wild edibles! (See more on this plant in my book *Edible & Medicinal Wild Plants of the Midwest*.)

So much for glycosides. We will now will look at plants containing toxic resins, oxalates, and alcohols and consider what steps might be taken in a poisoning emergency.

Oxalates

Oxalic acid is an organic (carbon based) acid. Organic acids are colorless, chemically-stable, water-soluble liquids, recognized by their low pH. Organic acids in our foods are usually harmless and they flavor some of our most delectable fruits and vegetables. Examples are malic acid (apples, grapes, plums, and cherries) and citric acid (citrus fruits, strawberries, and currants).

Oxalic acid occurs in many of our domesticated foods (grapes, sorrel, rhubarb, and spinach) and in many popular, wild-plant foods (lamb's quarters, purslane, and sheep sorrel). But if it should occur in over 10% of the plant's volume, ingestion can be dangerous to human health. Salts of oxalic acid, known as "oxalates," occur in some plants, either separately or in conjunction with oxalic acid. These may take the form of water-soluble oxalates (potassium oxalate; sodium oxalate) or instead as insoluble calcium oxalate. Unfortunately, the soluble oxalates can be absorbed from the digestive tract and then react with calcium in the blood to form calcium oxalate. This situation may tie up calcium to the point where an ionic mineral imbalance could occur in the blood, resulting in internal hemorrhaging due to an anticoagulant effect. Coma can also occur, with death as the possible terminus (the fatal dose of the soluble salts in man being 20 grams, while for oxalic acid it is 5 grams).

Insoluble calcium oxalates may occur in some plants (e.g., jack-in-the-pulpit, skunk cabbage, wild calla, and other members of the Arum family) in the form of raphides, or needle-like crystals, which penetrate painfully into the mouth's mucous membranes if chewed, with the pain sometimes lingering for days. If swallowed (usually rarely, since the quickly-felt pain at the tongue and in the mouth usually induces the victim to spit out the plant parts), the oxalate crystals may cause such severe swelling to the throat that the air passage can be blocked, requiring emergency assistance. Swallowed material may also irritate the stomach lining. Fortunately, though, calcium oxalate crystals pass along the digestive tract and are eventually excreted, not being absorbed into the bloodstream to cause the type of kidney damage effected by soluble oxalates, which are absorbed and transform into calcium oxalate.

Resins

Resins are complex substances of differing chemical structure but possessed of several commonalties, including the following: (1) they are insoluble in water; (2) they are semi-solid when extracted at room temperature; (3) they soften on heating; and (4) they contain no nitrogen. Often they occur in mixture with volatile (or, essential) oils (responsible for plant fragrances), in which case they are termed "oleoresins."

Resins can be of an acrid sort, irritating skin and mucous membranes. Such is the case with phorbol, a resin occurring in the common weeds known as spurges (*Euphorbia* spp.), which are often encountered when one is foraging in field or meadow. The milky white sap of these plants can cause dermatitis if it contacts the skin and pronounced irritation and inflammation if ingested.

Another irritating resin occurs in irises, the rhizomes of which can be mistaken for cattail rhizomes and then accidentally consumed. In these species occur irisin, an oleoresin that affects the gastrointestinal tract, producing inflammation, diarrhea, and sometimes painful pancreatic/hepatic inflammation.

Finally, a toxic oleoresin known as urushiol is the substance making poison ivy such a nuisance to about 70% of the population.

Alcohols

Two toxic alcohols need to be mentioned. One is cicutoxin, occurring in the deadly water hemlock (*Cicuta* spp.), in conjunction with a yellowish resin. It acts directly on the central nervous system and causes fatality more so than any other North-American plant.

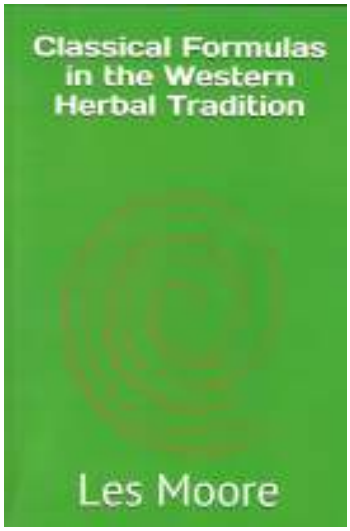
The other is tremetol, an unstable, alcohol-like mixture of chemicals occurring in white snakeroot (*Eupatorium rugosum*) and jimmyweed (*Isocoma pluriflora*). Like cicutoxin, it causes neuromuscular symptoms, known since colonial times as "the trembles," which can be fatal to man or beast. It caused thousands of fatalities in early American times (including Abraham Lincoln's mother), when it was dispersed into the milk of cows that had fed on the plants.

This ends our discussion of toxic wild plants. Forewarned should be forearmed. Otherwise, any indiscretion may need to be reported to a Poison Control Center, ASAP.

Book Review

Moore, Les. *Classical Formulas in the Western Herbal Tradition,* 2020, published by the author, softcover, 220 pages, $30.00

Reviewed by Matthew Alfs, MH, RH(AHG)



Both Ayurveda and TCM have utilized a large number of herbal formulas for many centuries. These are widely known by well-trained herbalists and are generally available on the American herb market. In marked contrast, most of the Western-derived herbal formulas on the market today date only from the late 1980s onward.

Yet, a number of remarkable Western herbal formulas were developed in the 1800s and early 1900s that proved to be highly efficacious, but which remain largely unknown or unappreciated today. European naturopaths such as Thomas Deschauer and Otto Mausert brought some of these to the U.S. when they migrated here in the late 1800s and early 1900s and their books list them in abundance. Sadly, however, their works are long out of print and most of the formulas listed therein have long since disappeared from the U.S. herb market.

Classical Western Formulas in the Western Herbal Tradition attempts to alert readers to the value of these largely-forgotten classic formulas and even provides the ingredients for each of them and in their proper ratio. The format that the book follows is to list the formulas by way of physiological actions (carminatives, laxatives, diaphoretics, etc.). Then, as explained by the author: "Each formula is broken down into ten sections, examining the therapeutic principles, constituents, form, dosage, indications, applications, contraindications, herbs and actions, modifications, and a brief commentary."

Formulas featured include those developed by herbal luminaries of yesteryear such as Samuel Potter, O. G. Carroll, Edward Shook, Herbert Nowell, and some of the Eclectic and Physio-medicalist physicians. There are some familiar names to MWSHS students in the mix as well, such as Samuel Thomson, Dr. John Raymond Christopher, R. F. Weiss, and R. S. Clymer. The book also includes formulas by herbalists of centuries ago, including Hildegard of Bingen and Nicholas Culpeper.

***Edible & Medicinal & Medicinal Wild Plants of the Midwest,* 3rd Ed., by Matthew Alfs (Minnesota Historical Society Press)**

Have you had occasion to add the 2020 revised and updated edition of MWSHS Director Matthew Alfs' *Edible & Medicinal Wild Plants of the Midwest* to your library as yet?

This beautiful, oversized book of 372 pages, originally published in 2001 and then revised in 2013, is now back in print as a third, revised edition—this time by Minnesota Historical Society Press.

A much appreciated feature of this new edition is the integration of the many color photos (over 170 of them!) in the book with the text, whereas before the photos were gathered together in an appendix and merely keyed to the text.

Please note that we have copies available here at MWSHS (see our website on how to order), but so may your local independent bookstore—the latter of which would no doubt very much appreciate your business in this era when visits to bookstores are progressively decreasing and such are struggling to stay in business. (Barnes & Noble bookstores in the Twin Cities area are also stocking the book.)

We hope that you have opportunity to obtain and to enjoy this new edition of a now classic work!