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## GENERAL NOTES.

Sections of Wood Arranged for Instruction in Schools, by H. Brooks, of Boston, are offered to the students of botany and others interested in the knowledge of our timber trees. The collection contains seventeen species of woods, each in three specimens, a radial, tangential and a transverse section, each  $5\frac{1}{2}$  by nearly 2 inches wide and, according to the character of the wood,  $\frac{1}{80}$  to  $\frac{1}{150}$  inch thick. The three different sections of each species are mounted on a neat card-board and are on both sides protected by a thin and completely transparent mica plate, so that dust and use can not injure them and they can be readily examined with transmitted as well as reflected light; with a good magnifying glass they show the wood structure very nicely.

There are seventeen species of wood in each set, which is furnished in a neat box, at \$5.00; application to be made to Henry Brooks, 97 Beacon street, Boston, Mass.

The specimens are similar to those furnished by Mr. Burkart of Brunn,

Austria, but they are not protected by mica and are therefore more liable to injury.

In a hasty examination of the specimens, *Catalpa* wood is found with a few accessory lines which readily might be mistaken for annual rings, but for the want of the pores always accompanying the vernal wood in this genus. Such accessory rings (false annual rings) are rare in the woods of our temperate climate, but in a specimen of *Pinus Elliottii*, of South Florida, I find such rings quite numerous, and difficult to explain and to distinguish from true annual rings. In wood of the same species from farther north no such appearance is observed, the annual rings being clear and well marked.

If sufficient encouragement be given it is proposed to continue the work, so that sections of all our more important forest trees may be furnished.—GEORGE ENGELMANN.

**Morphology of Spines.**—In an illustrated paper lately laid before the German Botanical Society, Dr. J. Urban, of Berlin, proves that the spines of *Aurantiaceae* are not, as has been generally assumed, abortive branchlets, such as we find in *Cratogeomys*, *Gleditschia* and many other ligneous plants. He shows that they are the abnormally developed basal leaves or bud scales of the axillary bud. A pair of these scales is found on both sides of the bud; sometimes both of them are developed into spines, and then the small bud itself is found between and a little above them. In other cases the scales are unequally developed into a small and a larger spine, but more frequently only one of them grows out into a spine. In this latter case the spine assumes an almost axillary position, and the rest of the bud, with the other lateral (originally opposite) minute scale, is pushed sideways and upwards, so that it assumes the position generally ascribed to it by those who have treated on this subject, seemingly above the spine, thus simulating a secondary bud above the primary one, which would be the spine. But the bud will always be found a little sideways of a line drawn from the center of the axil upwards, and the other lateral bud scale can always be discovered on the other side of the bud. Where there are a pair of unequally developed spines the case becomes quite plain.

In connection with this and other strange developments of different organs into spines, it occurred to me that my observations on the morphology of the spines of *Fouquieria*, made nearly thirty years ago, seem to have escaped botanists; though I have often spoken of them, I have never published anything about them.

A small specimen of *Fouquieria splendens*, sent to me from New Mexico, vegetated well enough for many months, continuing to make its fasciculated spatulate subsessile leaves from the undeveloped branchlets in the axils of the spines, without showing any further growth, till after a heavy thunderstorm and rain with sultry weather, a vigorous shoot sprang suddenly from one of the uppermost of these axils and developed scattered leaves of the same form, but larger, and borne on long (say  $\frac{1}{2}$  inch long) horizontal petioles, while the leaf-blade was nearly erect. In the fall these leaves began to wither and to fall, but not, as

one might have expected, at the insertion of the petiole on the axil, nor at the junction of the blade with the petiole; the withered upper half of the petiole separated from the persistent indurated under part in a diagonal plane, so that this indurated part was stoutest at its insertion on the axis, and ran out into a sharp point, while the deciduous part of the petiole was thickest at its connection with the blade and fell off with it, leaving a spine which persists as long as the stem does and which from its axil produces the short spurs with their fasciculated leaves mentioned above. The formation of these different axes and their leaves resembles that of *Larix*, but the morphology of the spines is, as far as I know, quite unique.—G. ENGELMANN.

**Helianthus Maximiliani.**—The occurrence of *Helianthus Maximiliani*, Schrad., far north of the range assigned it in the books, is worthy of note. Two years ago it was reported from Northwestern Iowa (cf. Contr. to Fl. of Iowa, V, in Davenport Acad. Sci., June, 1882, and Cratty, in Bot. Gaz. VII. 85), previous to which time it had not been noted north of Lawrence, Kansas. Last August it was recognized by the writer in Minneapolis and, according to Mr. Warren Upham, the Assistant State Geologist of Minnesota, extends northward into the Red River Valley, where it is particularly luxuriant. Its eastern limit in Iowa is some distance west of the middle of the State, not reaching Des Moines, Ames or Mason City. This extended range of a large and showy sunflower originally thought to be exclusively southern, naturally excites some suspicion of the identification; but it is vouched for by no less an authority than Dr. Gray, who has seen Minnesota specimens.—J. C. A.

**Nectar Glands on Leaves.**—Noticing Prof. W. W. Bailey's inquiry as to the function of the nectar secreting glands at the bases of the leaves of *Cassia Chamæcrista*, to which the ants pay so much attention, I transcribe the following from "Flowers and Their Unbidden Guests:" A. Kerner, English translation, pages 138-9. " \* \* \* what they would have sought, and moreover would have found, in the flower, is already offered them here in rich abundance. The creeping insects are not fastidious. Nectar in one place is the same to them as nectar in another. They are content with that which is first offered, and so do not trouble themselves to climb farther up to the flowers. In *Impatiens tricornis* the stipules are so frequented by *Myrmica levinodis*, Nyl., that I have often seen three of these ants upon a single stipule; and yet, though I have examined hundreds of plants of this species, and though its nectariferous flowers have no other protection whatsoever to keep out these little creatures, I have never seen a single ant inside a blossom. They would, indeed, be very unwelcome guests, inasmuch as they could reach the nectariferous spur without coming in contact with the pollen; or, at a later stage of flowering, with the stigma. They would thus consume the nectar without profit; and not only so, but by diminishing the attraction would limit and hinder the visits of those insects, which, being larger and coming on the wing, would, in entering the flower, necessarily come into due and successive contact with the pollen and the stigma. As with *Impatiens tricornis*, so is it with other plants where nectar is secreted on the leaves. Though these leaf formations may present no mechanical hin-

drance nor offer any insurmountable barrier to small, creeping ants, they yet serve to divert such visitors from the flowers, and detain them from further advance. I do not therefore hesitate to interpret all nectar-glands that are found on leaves, as a means of protection against the unwelcome, because unprofitable, visits of creeping insects."—J. J. DAVIS, *Racine, Wis.*

**One-leaved Strawberries.**—The one-leaved strawberry, *Fragaria monophylla*, L., is recognized as a variety only of *P. vesca*, L. If my memory serves me truly, Duchesne refers to a one-leaved strawberry also. At the New York Agricultural Experiment Station we have seedlings from the Bidwell and Manchester varieties, which show plants distinctly one-leaved, other plants with petioles bearing one, two and three leaflets, and yet other plants of the normal character.

While speaking of strawberries let me call attention to what Miss Bird, that interesting and accurate traveler, says in her "Unbeaten Tracks in Japan," page 45: "Lieut. Hawes gave us some strawberries, which have lately been introduced, and they had a good flavor; but people think they will soon lose it as other exotic fruits have done before them. A day or two ago we had some fully ripe strawberries of a pale pea-green color, with a strong odor and flavor, not of strawberries, but of the Catawba grape."—E. LEWIS STURTEVANT.

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### EDITORIAL NOTES.

DR. C. C. PARRY is now residing at Davenport, Iowa.

DR. OSWALD HEER, of Zürich, Switzerland, the celebrated paleontologist, and eminent authority on fossil botany, is dead.

THE CANADIAN NATURALIST has been discontinued by the Nat. Hist. Society of Montreal, which will at once begin the publication of its transactions in a similar form.

DR. GRAY points out in the *Am. Jour. Sci.* for October that the spelling *Speiranthes* for the orchid-genus *Spiranthes* in Watson's "Contributions XI," is purely accidental, although occurring six times besides in the index.

IT SEEMS from the investigations of Julius Wortmann, given in the *Botanische Zeitung*, that radiant heat acts upon growing organs in a similar manner to the action of light, producing positive and negative thermotropism.

PROF. LESTER F. WARD, of Washington, has recently collected a fine set of fossil plants in the valley of the Yellowstone, near Glendive, Montana. In the number, perfection and rarity of the specimens, it is the best ever obtained in the country.

THE BIOLOGICAL LABORATORY of Wabash College, at Crawfordsville, Ind., now nearly completed, will greatly facilitate the study of botany at that institution, and is expected to give another center for the pursuit of original investigation. The botanical portion consists of a laboratory for general and one for special work and the herbarium room.