branches, dense, short-penduncled; heads few (3–10), on short pedicels; flowers blue. South Florida. Stem 1–2 feet high. Leaves 1-1½ in. long. Flowers smaller than those of *C. cælestinum*, blooming, in cultivation, from May until frost.

*Ooclinium rigidum*, DC. Frutescent at base, closely pubescent; stems numerous, erect branching; leaves opposite, ovate, crenate-serrate, acute, longer than the petioles; pedicels single, or 2–3 together in the forks of the branches, unequal, longer than the cylindrical many-flowered heads; scales of the involucre smooth, closely imbricate, striate, obtuse, decidous; flowers (about 20) pale blue; achenium smooth, 3–4-angular; receptacle globular or truncate, naked.—Jew-fish Key, South Florida. November. Plant 2 feet high, exhaling a strong unpleasant odor.

*Acanthospermum xanthioides*, DC. Stem prostrate, diffusely branching, pubescent; leaves opposite, oval or obovate, toothed or entire; heads single, terminal and in the forks of the branches, many-flowered; rays yellow; chaff of the receptacle obtuse, unarmed at the tip.—Aiken, South Carolina (*Ravenel*), Atlanta and Savannah, Georgia, Jacksonville and Gainesville, Florida.

*Actinomeris heterophylla*, n. sp. Stem erect, mostly simple, sparingly hirsute, terete and nearly naked above, the lower part winged by the decurrent leaves; leaves muricate, the lower ones oblong,opposite, approximate, half clasping, serrate, decurrent, the upper linear, opposite or alternate, small (½-1 in. long), remote, entire; heads solitary or corymbose, on slender peduncles; scales of the involucre lanceolate, mostly shorter than the disk, shorter than the 5–10 linear yellow rays; chaff of the receptacle rigid, acute, longer than the obovate narrowly winged 1–2 awned achenium.—Sandy pine barrens, East Florida. Stem 2–3 feet high. Leaves 2–3 inches long.

*Flaveria angustifolia*, Pers. Stems shrubby at the base, numerous, erect, smooth, branching; leaves thick, lanceolate, acute, remotely serrulate, connate and sheathing at base; corymbs numerous, compact; heads 10–15 flowered, angular, discoid, or with a single oblong or entire ray.—Sand Key, at Clear Water Harbor, Oct. Stems 2–4 feet high.

*Palafoxia Feayi*, Gray. Shrubby; stem slender, widely branching, roughish with short rigid hairs; leaves ovate and lanceolate, opposite and alternate, longer than the short petioles; corymbs loose, spreading; heads discoid; achenia slender, sparingly hispid, as long as the linear obtuse scales of the involucre, and many times longer than the obtuse denticulate scales of the pappus.—Tampa Bay (*Dr. Feay*), and southward to Caximbas Bay. South Florida. October. Stem 3–5 feet long. Leaves 1–2 in. long.

[*To be continued.*]

NOTES ON HEPATICOLOGY, BY C. F. AUSTIN.—TRICHOCOLEA BIDDLECOMIÆ, *n. sp.*—Caule tenella arcte repens (semper?) subunciali simpliciter breviter pinnato, foliis fere transversalibus (subsuccubis) illis et amphigastriis fere ad basim capillaceo dissectis, fructu—?

On a rotten log in the cedar swamps, near Urbana, Ohio, 1876, *Miss H. J. Biddlecome.*

Much smaller than the smallest form of *T. Tomentella* (ERHR.) NEES, ever observed by me and readily distinguished from it by its simple and rather distantly pinnate stems. Its habitat, on rotten wood (to which it closely adheres), is also peculiar.

*T. Tomentosa* (SWARTZ) NEES, has a similar ramification, but is also a much larger plant, with the leaves strongly succubous (very oblique), and often not divided more than half way to the base.

TRICHOCOLEA GRACILLIMA, *n. sp.*—Caule gracillimo biunciali irregulariter dissitiuscule bipinnatim ramoso, rameis apice subrecurvis foliis subsuccubis fere ad basim dissectis, segmentis terretis (articulatis) pro genere crassis, fructu—?

On shaded ground, Island of West Maui, (altitude 4,000 feet), *D. D. Baldwin* (*Eaton.*)

Readily distinguished by its very slender habit, irregular bipinnate ramification and by the thicker capillary divisions of the leaves.

*T. mollissima*, TAYL.=*T. Tomentella! T. lanata*, (HOOK.) NEES=*T. tomentosa* (fide specimens from New Zealand, in Herb. SULLIV. ex-Herb. LEHM.) *T. Tomentella, Hepaticæ Cubensis Wrightiana=T. tomentosa!*

A FEW NOTES ON THE CHANGES OBSERVED IN VEGETATION.—I cannot say how extensive these changes have been, but the observations made extend over several square miles of surface. Of course one has to depend on the testimony of others for some of his facts in such a matter as this. In the town of Windsor, Conn., there are acres of land covered with White Birch, in place of a heavy growth of Pitch Pine that occupied the land when the place was first settled. Some fields are covered with White and Red Oak, with some Chestnut and Black Oak, in place of the Pine first found there. Others still are now covered with White Birch and scrub pines, that once were covered with a heavy growth of White and Black Oaks, with some Red Oak and Chestnut. The hazelnut bushes have made their appearance in many places—taken possession would perhaps be better, and White Pines are not unfrequent. The *new* growth referred to came in after the soil had been cultivated for quite a length of time. In fact it requires but a few years for a field to put on a good covering of timber, if left to itself. One field I have in my mind now, that has quite a heavy "second growth,"—pines, oaks, chestnut, &c.—that less than forty years ago was planted in corn. The owner told me he had raised good crops of corn and rye on that same field.

There must have been some source whence such changed vegetation was derived. Can any one tell from what source the seeds of an entirely dissimilar vegetation are derived? Soil brought up from almost any depth and kept from contact with the air, has been known to produce plants unlike any ever before seen in the locality. At least, what seems to be well authenticated instances of the kind are reported. In some parts of England where "Parks" have been cleared, an entirely new kind of timber springs up. Whence the seeds? One theory is that the seeds of former vegetation have preserved in the soil, their vitality being such that when shut away from the influence of the air they retain it a long time. The wheat found wrapped up with Egyptian mummies is given as an example. Another theory is the germs are floating in the atmosphere, and when they find a favorable spot they take root; but the seeds of the forest trees do not float very much. I will repeat my question, Can any one tell whence these seeds?—N. COLEMAN, *Berlin, Conn.*

RECENT PUBLICATIONS.—*American Journal of Science and Arts*, November.—"Is the Existence of Growth-rings in the Early Exogenous Plants proof of Alternating Seasons?" This is an extract from a paper read before the N. Y. Academy of Sciences, by Chas. B. Warring, Ph. D. Various observations are mentioned and the facts established by them are formulated in the following propositions:

1. Some exogens form rings at intervals much less than a year.
2. Others require intervals of several years.
3. Some form no rings.
4. The presence or absence of rings in exogens occurs in all climates.
5. Large and well defined rings are found under conditions in which there is absolutely no appreciable variation of temperature or moisture throughout the year.
6. An exogen naturally forms rings, will continue to form them although the climate become uniform through the year.

The existence, therefore, of these markings in the ancient flora gives no information as to the existence at that time of seasons, and so far as they are concerned we are left free to adopt any conclusion as to the inclination of the earth's axis which may appear to us most reasonable.