

TRANSACTIONS
OF THE
Nova Scotian Institute of Natural Science.

ART. I.—NOTES ON NOVA SCOTIA COMPOSITÆ,—ASTERS. BY J. SOMMERS, M.D., *Prof. Physiology, Halifax Medical College.*

(Read before the Institute, November 18, 1876.)

THE genus *Aster* being a natural division of the order *Compositæ*, attracts our attention, because of the beauty and variety of its forms. It is interesting also, because it supplies the botanist with the latest floral treasures which our short season affords for his study and subsequent reflection; with the golden-rods they light up our autumnal landscape, like a lingering ray of our departed summer.

The generic characteristics of this group are exceedingly well marked, none others in the whole botanical classification being so separated from their congeners by natural distinctions.

Their specific diagnosis is, however, exceedingly difficult, as is acknowledged by the diversity of nomenclature and doubtful separations of species, the elevations of varieties into species, and of individuals into varieties, by different authorities, leading to much confusion, so that in many cases, named species are but examples of a single form, these names being truly synonyms, and not patronymics. An example is here furnished by the form designated *Aster lævis*, *Linn lævigatus*, Willd, *cyaneus*, Hoffm and Pursh described as separate species, now recognized as varieties of an amorphous species, connected by many intermediate variations. Any one of the three may be regarded as the parent stock. Taking the intermediate series we find apparent variations, which, on close examination, fail to establish a well-marked specific distinction. We are justified, therefore, in designating this form by a specific

title, which includes the whole group, as is done by Prof. Gray in his Manual, in which priority is given to the Linnæan term *lævis*, the others representing varieties under this head.

Circumstances like the above are more or less characteristic of all the native species which I have so far examined. I have concluded, therefore, that all well-defined species,—or perhaps I should say true species,—must be looked upon as so many groups, varying individually, yet possessing within each group certain characteristic peculiarities, which, being common to members of each, are sufficient to relegate them from the members of other groups.

I am inclined also to the opinion, “the correctness of which I leave for future determination,” that more species are described than have an existence in nature. Observations prove that when passing from the generic diagnosis of the asters, we have, on the whole, few genuine and really natural specific characteristics separating its members.

The difficulty of marking the dividing lines between species in this group of plants arises from their inherent plasticity. Of all feral plants, they have the greater tendency to vary in their natural positions; apparently the slightest change in their physical surroundings tends to produce changes in form, which, though not sufficiently marked to furnish specific distinctions, are yet perplexing enough to severely tax the diagnostic skill of the Botanist who attempts to separate them.

Having on many occasions experienced this difficulty, I have in the following notes attempted to characterise such of our native asters as appear to possess definitive specific peculiarities, and have in the case of each endeavored to relegate them to the group or species described in the Class Book. In this attempt I have relied principally upon the character of the achænia, pappus, and scales of involucre, and upon the inflorescence, leaves and axis when admissible, the former being in general more reliable for distinctive diagnosis, the latter not so reliable, since, in the very many cases their characteristics are so indefinite as to prove perplexing and abortive as distinctive evidence of specific difference.

The labor may, after all, prove to be a work of supererogation;

nevertheless, any Botanist who undertakes the study of this and some other genera of the great natural order Compositæ, will, I am sure, sympathize with the effort and condone its errors.

ASTER RADULA, Ait.

Stem, 1° to 2°. Angular striate; smooth, purple, shining, branching at the top into a loose corymb; simple below; branches purple, pubescent about three flowered, heads pedunculate large, peduncle naked, involucre imbricated, five rowed; scales all squarrose, with scarious margins, green centres and tips; obtuse not as long as the disk; rays deep violet, spreading thrice longer than the disk, from ten to fifteen in number; leaves lanceolate, acuminate, sessile, scarcely clasping; alternate remote subserrate dentate; margin scabrous, upper surface dull, dark green, rugous and scabrous; under surface paler; venation reticulated, the veins well marked; pappus simple clubshaped. A fine showy Aster, flowering in July and August, in moist places; varies in its foliage, but the flowers are constant; involucre bell-shaped; scales regular, close pressed with spreading tips. A distinct specific form, but superficially resembles the next.

A. SPECTABILIS. Ait.

Resembling the above in height, foliage and inflorescence. The scales of the involucre are however different, being spatulate and obtuse, their margins glandular hairy, giving them the appearance of being finely dissected or fringed. The leaves are narrower, lighter colored, and although netveined, are not rugous. Both species may be easily separated from other forms. They vary less than our other species.

A. PUNICEUS L. VAR VIMINIUS. Willd.

Stem glabrous, paniculate furrowed, or striate 2° to 3°; green or reddish on one side; stem leaves narrow; lanceolate taper pointed, remotely serrate dentate; reticulate veined; somewhat auriculate amplexicaul; smooth above and below; edges scabrous; upper

surface dark green glaucous, lower paler, $1\frac{1}{2}'$ to $2'$ smaller and entire on the branches; branches one or two flowered, heads large, rays about twenty-five, spreading purple, twice or thrice larger than the disk; pappus copious, simple; achænia smooth, scales of involucrem two rowed, outer longer and lax, all green lanceolate acute, as long or longer than the disk, the outer sometimes bract like. A rather handsome species, growing in dark, shady woods or by watercourses, varying much in robustness and foliage according to its situation. In some the branches are supplied with very small leaves, in others they are nearly naked; diagnosis doubtful; answers to *punicus* of Linn., but absence of hairs and different character of scales and number of rays, separates it from the typical species; corresponds to *A. vimineus* described in Wood's Class Book.

A. LONGIFOLIUS. Lam.

Smooth stem; terete striate purple; very much branched; branches spreading; many flowered leaves; linear acute entire; the edges scabrous; scales lanceolate, broad, acute, equalling the disk; irregularly two-rowed, loosely squarrose, herbaceous, often bract-like; rays violet, twenty to thirty, showy, very long; pappus simple; achænia smooth; a handsome aster in fields and on roadsides; flowering in September and October; remarkable for its very long, narrow, and acute leaves, which measure from $4'$ to $6'$ in length by $\frac{1}{3}'$ in width; the scales cause it to approach the above, but the entire, very long, narrow, and acute leaves, the longer, narrow, and more abundant ray-florets, and the absence of small leaves on the stems, afford points for differential diagnosis. Synonymous with *A. laxus* Willd. *A. elodes*. Torr. & Gr.

ASTER.—Sp. ?

Stem striate, simple, leafy, branching at the top; the branches glandular, hairy, and forming a compound corymb; heads numerous, medium sized; involucrem closely imbricated; scales in three rows, erect, narrow, acute, much shorter than the disk, rays all white, twice longer than the disk; fifteen to twenty, disk yellowish or purple brown, pappus equal copious; leaves broad, lanceolate,

taper pointed; acuminate gibbous, smooth, with margins scabrous, gradually tapering to a short petiole, entire, imperfectly three-veined, somewhat coriaceous, dark green above, and paler below. A fine, robust plant, very abundant in hilly pastures, forming communities, the only native species observed, with pure, white rays, never varying, except in robustness; the largest of our asters, so far as stem and foliage are concerned; often attaining a height of four or five feet. Although very distinct in form and appearance from the others of this genus, I am unable to affix its specific name, inasmuch as it does not correspond to any species described either in Gray's or Wood's Manuals. It might pass for *A. solidaginoides*, W. in Eaton's Manual, except for its leaves, which are rather broad, lanceolate, not linear as in the description of *solidaginoides*, which has only five ray florets; in height and robustness also, it does not approach to our plant. Aster S., of Eaton's Manual is, I suppose, identical with *seriocarpus solidaginoides*, of Gray's book. I would feel no difficulty in naming it *Diplopappus umbellatus*, Torr & Gr., to the description of which it corresponds in the characters of its height, foliage, form of inflorescence, scales, and rays, but the pappus of our plant is simple, a character which, it seems to me, would preclude our placing it in a genus, the name of which denotes the presence of a double pappus in its species.

ASTERMISER. L. Ait.

Stem hairy, terete channelled, reddish purple, from 1° to 3°, branching from below upwards, the branches green, hairy, heads pedunculate racemose secund, sometimes sessile, racemes leafy, stem leaves lance-linear acuminate, denticulate, feather veined, margins scabrous, 1½' to 2' leaves of branches, mostly entire, very small ovate lanceolate involucre, two rowed; scales erect, lanceolate acute, having scarious margins green centres and tips as long as the disk; rays scarcely longer than disk, varying in colour from white to light violet; heads numerous, occupying the whole length of the branches, a very variable species. "And may include distinct forms." Sometimes simply racemose, or paniculate, or com-

pound. In some the leaves are very small, in others large; the stem simple or much branched; all have denticulate leaves, minute flowers, and a general resemblance, which enables us to separate them from other asters.

A. MISER. Simply racemose or paniculate.

— *Var.* Diffusus compound racemose. Mostly inhabitants of dry hill pastures; flowering in Sept.

ASTER. *acuminatus*.—Michx.

Stem 1° to 1½°, simple flexuous, somewhat irregular, hairy; branching paniculate corymbose above; branches almost naked; one or more flowered; pedicels having a midway bract; heads large, involucre, single rowed, often an irregular outer one; scales linear acute, erect channelled; margins and tips scarious; rays about twelve, twice longer than the disk, white with a purple or roseate tinge; achænia smooth; leaves mostly below or at origin of branches, in some appearing to be rosulate, broad lanceolate, feather veined, remotely and irregularly serrated near the long acuminate point, entire towards the cuneate base. Sessile, 2' to 2½', veins with scattered hairs; upper surface rough, dull green; inhabits wooded hills, dry and shady places, flowers early—July, August; a species easily distinguished by the characters of its stem leaves and flowers, yet it has apparently three rather distinct forms, one with a zigzag stem, leaves regularly alternate, numerous heads on simple branches, another with the stem also flexuous, but the leaves are crowded at the centre, appearing whorled or rosulate, with simple single or twin-flowered branches springing from the leaves, giving an umbellated appearance, a third more robust than the two former, leaves arranged in general like the second var., but more abundant and scattered; the leaves are also somewhat coriaceous, rugose shorter and narrower than in the others, the heads more numerous and corymbose, the rays more numerous, purple or slaty in color, it flourishes in clearings or exposed situations, while the others flourish best in the shade.

ASTER, NEMORALIS. Ait.

Stem simple or corymbose at the top, leafy, the leaves crowded below the branches, or midway on the simple axis, which is often single-flowered; heads few, branches when present usually single-flowered and naked; stem and branches having short hairs; scales lance linear acute squarrose, margins and tips scarious; rays pale purple or roseate, never white, 15 to 25 in number; leaves narrow, lanceolate, entire sessile; upper surface rugous and scabrous, edges scabrous and revolute, "more revolute in the upper than in the lower leaves; 1' to 1½' in some subdentate, lessening from below upwards, an inhabitant of swampy pastures, rather a pretty Aster, generally the first to put forth flowers—July; with a resemblance to the above, it is sufficiently distinct for easy diagnosis from it; they are both included in the div. scariosa or orthomeris, Torr & Gray, differing from Asters proper by their membranous scales.

ART. II.—MORTALITY RATES OF ANCIENT AND MODERN TIMES.

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THE idea of our great recent progress is so generally received, that it may be well to take a retrospective glance and see how much in reality has been accomplished.

To get a fair understanding of our subject, let us revert to the period when natural laws were untrammelled, and we had the best examples of health, which, without doubt, prevailed in a very early period of history. We may conclude that the Pastoral Life furnished every sanitary requirement,—good drainage and ventilation, and temperate and sufficient exercise and diet, without facility for effeminate habits. Under these circumstances, it is safe to conclude that, excepting accidents, death resulted from old age.