

FERNS OF A DEEP RAVINE IN THETFORD, VERMONT.

A. LEROY ANDREWS.

A LOCALITY in the township of Thetford, Vermont, furnishes within a limited space such a variety of ferns, including several which are found very rarely, if at all, in the vicinity, that I am persuaded to attempt a brief description of it.

A deep, narrow ravine or gully cut in the side of a high hill, becomes in spring the bed of a small drainage brook, which later, however, becomes dry. Steep, rocky walls, clothed in a growth of forest, close out effectually the rays of the sun, producing that indescribable effect of forest twilight which we associate with the growth of certain species of ferns. In every available place is collected a thick deposit of vegetable mould. Here the ferns revel in a luxuriance that, in spite of a remarkably dry season, is hardly short of tropical. They fringe the overhanging rocks, adorn every fissure, grow in immense feathery clumps of graceful fronds at the bases of the cliffs and along the brook-bed—a garden of ferns such as one seldom sees.

But the interest is not wholly on the side of the æsthetic,—the botanist also comes away well rewarded. A canister of specimens furnishes the means for an interesting comparison and study.

The species with their distribution are as follows: From the rocky pastures above straggle down large beds of *Dicksonia pilosiuscula*, in varying shades of light and dark green. The other species, uniformly distributed on the steep slopes, are *Aspidium marginale*, *A. acrostichoides*, *Pteris aquilina*, *Phegopteris Dryopteris*, *P. polypodioides*, with occasional sterile fronds of *Onoclea sensibilis*. Upon the flat tops of rocks grow little colonies of *Polypodium vulgare*, while delicate bunches of *Cystopteris fragilis* (apparently the season's second growth) cluster beneath them, rarely showing fertile fronds. In the accumulation of damp mould along the brook-bed grow the species deserving especial mention. Mixed in charming contrast of form and tint are large clumps of *Aspidium marginale*, *A. spinulosum*, var. *intermedium*, *A. Goldianum*, *A. aculeatum*, var. *Braunii*, *Adiantum pedatum*, *Asplenium thelypteroides*, *A. angustifolium*, with specimens of *Botrychium Virginianum*, while the outlet of the ravine is marked by a thicket of tall fronds of *Onoclea Struthiopteris*.

The three species, *Aspidium Goldianum*, *A. aculeatum*, var.

Braunii and *Asplenium angustifolium* were hardly to be expected here, and careful search has failed to reveal them elsewhere in the vicinity. All are species of the deep woods of mountainous regions, the station for *Asplenium angustifolium* being close upon the eastern limit of its range in New England, and that of *Aspidium aculeatum*, var. *Braunii* one of comparatively few in New England, the others being mostly confined to the White and Green mountains, or to more northern mountainous localities. Thetford, situated on the Connecticut River, is not at all mountainous, possessing only a few hills with isolated patches of woods. The ferns of the ravine, which I have described, represent then, apparently, the few survivors of a primitive, uniformly wooded condition, and will themselves undoubtedly soon succumb to the already threatened deforestation of their home.

Since writing the above, further observation reveals a single plant of *Aspidium acrostichoides*, var. *incisum*. The plant is noticeably distinct, with thicker, very dark green fronds, large, deeply-incised pinnae, and the fruiting dots occurring in small numbers on each pinna, separate, and in no case confluent or covering the pinna. President Brainerd of Middlebury kindly confirmed my identification.

THETFORD, VERMONT.

TWO NORTHEASTERN THALICTRUMS.

M. L. FERNALD.

(Plate 21.)

LATE in June, 1899, the Josselyn Botanical Society of Maine spent a forenoon exploring the south bank of the Aroostook river at Fort Fairfield, Maine. Among the more striking discoveries was a delicate meadow-rue first detected by Miss E. L. Shaw in the alluvial thicket below the village, and afterwards found in abundance, by other members of the party, in the thicket which, along the Aroostook (as well as the St. John), forms the boundary between the steep wooded bank and the gravelly beach of the river. The *Thalictrum*, then in bloom, was a dioecious or slightly polygamo-dioecious species, suggesting in its flowers, and its thin glaucous foliage, the early meadow-rue (*T. dioicum*) of southern New England. The stems of the Aroostook valley plant, however, were much taller, often 1 m. high, bearing from three



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