

In eastern Maine by far the most abundant and conspicuous of these is *Solidago nemoralis*, covering the dry rolling uplands with a yellow carpet of great beauty for mile after mile. Along roadsides partly shaded *S. serotina*, var. *gigantea* is the most common.

In moister ground *S. puberula* prevails, and in the extensive swamps *S. uliginosa* is very abundant, vigorous and beautiful.

This region, especially where it is a little swampy, is the paradise of *Asters*, *A. punicens* being the most abundant and showy. The earliest of all is *A. radula*, which is gradually replaced in southern Massachusetts by *A. spectabilis*, and again in New Jersey by *A. surculosus*. In a few localities *A. Novae Angliae* is very showy and abundant.

In Massachusetts, as autumn approaches, the fields and roadsides are whitened with low, bushy species, which are mainly *A. multiflorus* and *A. vinivineus*, which, as we move southward, we find largely replaced by *A. ericoides*.

In the vicinity of Washington, D.C., *Aster tradescanti*, *diffusus*, *patens*, *simplex*, *undulatus*, *paniculatus* and *tenuifolius* are often seen in sufficient quantity to give character to the landscape, which *A. linariifolius* is very abundant, and among the pines *A. concolor* is occasionally found in mass, as is its congener, *A. Curtisii*, among the North Carolina mountains.

Among the golden rods which color extended areas are *Solidago bicolor*, with its var. *concolor*, *erecta*, *arguta*, *rugosa*, *nemoralis*, *Canadensis* and *lanceolata*, while *S. sempervirens* is found in mass, bordering salt marshes from Maine to Virginia.

But perhaps this article is already sufficiently extended to call attention to the point desired to be emphasized, and to suggest to botanists the habit of observing and putting down in their note-books those species which by their abundance give color and character to the landscape, and then occasionally sending to scientific journals the results of such observations, so that future editors of manuals and local floras may be able to give some accurate and reliable notes respecting this long neglected department of botanical research.

BOTANY IN THE SCHOOLS.

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THERE has been a great deal published in *Science* upon the subject of biology in the colleges, but little or nothing has been said relative to the teaching of the subject in the common schools. This point was impressed upon me more forcibly upon receipt of some school reports. In the reports, which are prepared by the superintendent of instruction mainly for the benefit of the tax-payers, a statement is made in regard to the various subjects taught, and for those subjects not in the ordinary curricula reasons are given showing their desirability for the pupils.

From the fact that reasons are considered necessary, it would seem to imply that the subjects in question are considered not entirely essential, this being especially true of the subjects that come under the heading "nature study," these usually being botany and a very little zoölogy. There is given usually a tabulated statement of

the benefits the pupils derive from their study, the tabulated statement consisting in many cases of the pedagogical principles that a normal school student is crammed with before an examination, or that one hears rattled off so glibly at a teachers' institute.

And yet behind the reasoning and the tabulated statement there is usually a dense ignorance of the subjects. For if the subjects were understood, no person of ordinary intelligence would feel called upon to give apologetic reasons, or would expect that teachers without any previous training in those subjects would be competent to teach them. Trained teachers are provided for music, drawing, physical culture, sewing, cooking, and manual training, who, besides teaching the pupils, meet the teachers at stated times to coach them in the work, so that they also may be fitted to help the pupils. But in "nature study" it is not considered necessary to have a special teacher, any ordinary teacher being supposed capable of mastering the subjects embraced under that head.

Here is an extract from one report:—"Truly it is said that this work must be done in such a way that it shall lead to the love of nature. Here the task-master has no place. Only they who can lead in the spirit of the student have the power that will inspire in the children the needed zeal." This reads beautifully from the rhetorical point of view, but in the connection in which it was used it was the veriest rot, for the writer knew that the teachers, being for the most part graduates of his own high school, in which neither botany nor zoölogy was taught, knew nothing of the subjects. The writer closed his statements by saying that elementary botany had been taught the previous year, and that, when directed by a teacher in sympathy with it, always interested the young.

Botany is the favorite "nature study," because the teacher can make selections of such pretty flowers, with beautifully long names. Then the flower can be separated into its constituent parts, and the name of each part learned by the pupils; this same process can be gone over with other flowers, and all on pedagogical principles of the latest date, for is not the pupil using natural objects, and finding out things for himself by an analytic process?

Now, if instead of frittering away the children's time by "object lessons" of the James Whitcomb Riley "peanut" variety, a competent specialist were to be put in charge of the work, one who would have a scheme of work that was consecutive, and who could instruct the teachers, just as the specialist does in music, drawing, etc., a minimum amount of time devoted to the work in school would give good results, besides taking a burden off the shoulders of the teachers. For the public school teachers are much imposed upon in having to teach subjects of this kind for which they are not prepared, and in many cases do not know how to set about making up for the deficiency. A subject of this kind is sprung on them, so to speak, by the superintendent, who sometimes does not realize what its teaching involves.

It is said that the public schools are overburdened with work, and that they cost too much already; well, if that be so, then drop the subject altogether from the curriculum. If this statement as to overburdenment and cost be not true, then the subject should be taught in a proper manner. And to teach it in a proper manner means to pay for a specialist who knows the work and who can direct it properly. Not an "object lesson" specialist, but a botanist. And it cannot be expected in this work that a cheap teacher will do, for nearly invariably a forty-dollar man does forty-dollar work. False economy in teaching always involves more or less waste of time and money.