

THE EVOLUTION OF A BOTANIST AND OF A
DEPARTMENT OF BOTANY.¹

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An occasion like this is bound to be more or less reminiscent. Considering the admitted and honorable age of the two guests of honor, reminiscences can hardly fail to go back of day-before-yesterday.

The invitation that I have received to introduce one of the guests of honor in such a way as to make you glad that his turn to speak is quickly coming—and the mildly worded admonition that we must hurry from this room to assist in an important session of the Academy of Science—may be taken as my reason for not seizing the tempting opportunity to trespass on the field of another by saying the many complimentary and congratulatory things I myself should like to say of the other guest of honor, Dean Coulter.

In a sense the segregation is fitting, anyway; for he and his introducer are to be counted as in a way more to the manner born than Professor Arthur and I who may have required more root-pruning than they in the transplantation. Whatever the cut of our hats and beards and the mouthing of our r's, he and I may not escape the stigma of having been born in the (more or less) effete East, for we are on record as New Yorkers.

I never have been privileged to visit Professor Arthur's native picturesque section of New York; but there must be something in it stimulating to a love of nature. I can hardly imagine that Arthur could have lived in Lowville as a child without imbibing something of the kind from his environment, nor that he could have escaped something of its reflex in the extra-professional interests and activities of Dr. Franklin Hough—the founder of our national interest in forestry and the father of my lamented classmate at Cornell, Romeyn Hough, whose wood sections and tree book are unique in their excellence. It fortunately is hard to lose the imprint of such early environment and association, however great and enlarged may be the privileges of later life.

Half a century of such privileges may work wonders in any case, but in greater measure with such a background—other things being equal. Naturalists are not factory made: they are products of the soil and of what has been imbibed from it in early life. One sometimes thinks or claims that "Ologists" may be made to order; but if so I fancy that much of the best raw material for their manufacture will be found to have acquired grain and strength and resilience through natural growth and struggle before they were mechanically worked into form.

To introduce Professor Arthur as I wish to, it really is necessary to carry the preliminary words back for all of fifty years; for I cannot

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present him, in the light in which I want to present him, either as an elderly gentleman or as a hard-worked and harder-working middle aged teacher; I want you to see the inseparable evolution of the man and of his science up to as well as through these culminating periods. To be sure, the allotted span of a life marks only a fragment of the mnemonic cycle through which protoplasm has been developing from simplicity into efficiency, and it can experience only a fragment of human achievement; but this efficiency is cumulative and its achievement is accelerating, so that in material progress Tennyson's fifty years of Victorian Europe fades before a decade of the fifty years that have followed it. It is these fifty years in which Arthur's active life has been passed, so that (for this occasion only) you may agree with me in calling it the Neo-Arthurian period.

Fifty years ago some of us were teaching botany, others were studying botany and others were dreaming of teaching or of studying botany—while most of us had not begun to dream at all.

Anyone who has read Leacock's delightful essays, collected under the title "College Days," must agree with him in recognizing the great wisdom of upper classmen when he himself was a freshman, and in being saddened by the inconsequence of those who succeeded him as upper classmen. It seems to take a long lifetime for some people to outgrow such convictions, formed at a time when dwarfs and giants were so near at hand that the comparison was bound to be made at every turn.

You may remember that in those far off days all professors were plethoric storehouses of knowledge and wisdom, patiently overflowing cornucopia-wise through the big end.

I'm afraid that pygmies and giants have been dwarfed and equalized for most of us through the leveling effect of time as the decades have rolled on. Many of us are prepared to contend, though, that there *were* giants in those days: remarkably outstanding giants, in our chosen field of plant lore. They were men who knew plants, whatever they may have known about what plants know.

I owe a lasting and unpayable debt of gratitude to Austin Apgar of the Trenton Normal School for once having shown me and a roomful of other fledglings how easy it is to see and note what it is necessary to see and note in order to find out what a plant is called. I never have had a bit of instruction in this delightful and fundamental pastime of "keying-out" things, beyond this one hour in which an admirable teacher showed me how to begin by using two books. These books went together like hand and glove: so of course they were published by one highly intelligent house.

Apgar, to me, was a teacher. The makers of the books, to me, were the real botanists. To be sure, he had made one of them, but it was designed to lead to the use of the other. From that moment, Asa Gray, the maker of that other book, became a giant on my horizon, and he did not grow overpowering when in later years I came nearer to him, nor has he shrunken in the many years that have passed since I was with him.

I fear, though, that environment may have had much to do with our visualization and consequent recognition of the great botanists, the men who knew plants, the men who made "botanies," in those callow days. If we registered at an intelligence desk of Ivison, Blakeman, Taylor and Company, in the seventies, we learned that Gray's "Botanies" were authoritative. If we registered at an information desk of A. S. Barnes and Company, we learned of the superior merits of Alphonso Wood's "Botanies". One who received successive teaching positions through both intelligence offices must have had an educational experience in using now one, now the other, in the classes he taught; for Gray still is esteemed the outstanding American botanist of his day, but some of the plants that Wood could not get him to recognize have come into their own since their status has ceased to interest either man.

To know botany was really equivalent to knowing what to call plants and something about classifying them; not that a very excellent understanding of their external morphology—on which classification was and is based—had not been worked out, nor that their structure and functions had not been studied, and for a very long time; but that few people found interest in these phases of botany.

A student of botany in the seventies, where this reminiscence begins had the great good fortune to have his plastic interest come under the formative influence of Sachs, the great reformer whose German Lehrbuch appeared and also passed into an English Textbook then. Directly or indirectly his concept of botany reached across the water.

Today many of our middle-aged botanists were "made in Germany," but the botanists of half a century ago were home-made. They have worn pretty well beside the imported article. Beal, Burrill and Bessey were of these pioneers in the "new botany". Burrill once said to me that he regretted that he never had been privileged to study in another man's laboratory. Necessity always has mothered invention in a sort of apogamic way.

After this trio come three men who ought to be foremost in today's gathering. If only Barnes were living, he and not I should introduce Arthur, for the A B C in the new settlement following the frontier exploration of an amplified botany was, literally, Arthur, Barnes and Coulter. What Coulter has done for micro-morphology, Barnes did with rare originality for physiology, and Arthur has done for micro-taxonomy.

I have been asked to introduce one of the guests of honor, Professor Arthur, one of these three; and the other guest of honor, Dean Coulter, has fallen to the other living member of the group. Unlike either of the others, Arthur did go abroad for early guidance, and to the greatest of Sach's disciples—but like the others he blazed his own trail.

One of the earliest men to be known as a phyto-pathologist, when this member of the content of the new botany was beginning to make itself known, he graduated into it in the most promising way—through knowing his home flora, through making it inclusive of the lower forms and through teaching the high points of their morphology and physiology as well as those of the commonly studied flowering plants.

DeBary had made the parasitism of the rusts certain; many men in many lands had made them known in many of their forms; to Arthur belongs the merit of classifying a large group of them on a well rounded-out and consistently applied morphological basis. In his person and his achievements I am able to present to you at once an example of half a century's development in a recondite branch of botany, and of its reciprocal, a developed modern botanist—Professor Arthur.