family, community, state and nation, each striving to live a full and safe, that is, a happy life. He sees other groups of individuals forming other nations of which the individuals also wish to lead happy lives. He shares with all the inheritance that accompanies the physical body, as, for example, such emotions as intolerance and belief in force; he finds that all are subject to the passions of the pack, as seen in mob violence and in heresy hunting spasms. Accompanying these impulses, he sees also emotions of a kindlier nature, sympathy, forbearance, protection of the weak, all growing out of the parental instinct. These, however, were evolved later in time than the preceding ones and are at times submerged by the older and hence stronger emotions.

In some nations he sees where certain groups have made use of force and intolerance to become supreme, with at times a single man becoming dominant over the thought and actions of a nation. In other nations he sees a frequent shifting of government, as one group after another succeeds in seizing control by armed force. And finally, he sees the nations in which control of any group is decided by majority vote.

As man views such democracies, he realizes that they are succeeding only because education is required of all, and because there is freedom through press and discussion for the expression of varying views. It is this accessibility to varying views and to consequent possible change that gives the democratic form of government the vitality of an evolving organism. Here may humanity find freedom for expansion in the limitless realm of the human spirit, new thoughts ever leading into new activities and a continually richer life. Expansion of consciousness in man can result only from such never-ending compromise between liberty for each and equality for all.

"HOW SOON WILL THE 'MANUAL' BE DONE?"[1]

A PLEA FOR SOME UNDISTURBED MOMENTS

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IN 1829, in edition 5 of his "Manual of Botany," Amos Eaton wrote: "Many vain botanists are continually in search of new species; and their vanity leads them into gross absurdities. . . . There is not [note the singular verb], probably, 50 undescribed species of Phenogamous plants in the United States—perhaps not one species east of the Mississippi." Amos Eaton believed in a simple system of classification, which still prevails in some centers, arranging his genera (without designation of families and orders) in strictly alphabetical sequence. In 1873, William H. Leggett, then editor of the *Bulletin of the Torrey Botanical Club,* wrote in volume iv (19, 20): "Many causes have led botanists in America to give their attention more particularly to the systematic part of the science; but this field has been so well worked, and is so full of workers, that there is little room for any new comer to add much to our knowledge."

Amos Eaton closed the door on further discovery of plants in the United States 109 years ago; Leggett again shut it 65 years ago. Nevertheless, here we are assembled as the American Society of Plant Taxonomists. In the southern idiom: "Wha' for are we all here?" Can it be that we are here simply because we are hungry?

I find myself retiring president of one of the least organized organizations in the country. When I was told that you had elected me your president, I was specially instructed that I must be wholly passive and "let George do it"; I was merely an ornament to be displayed at dinner after you had all presumably overeaten and were not too wide awake. In other words, the president of this organization without organization becomes the retiring president upon election. Retiring, according to the dictionary, means going out of sight or notice; shrinking from publicity; subdued.

There are advantages to these conditions. For instance, when the botanists planned to meet in Ottawa last summer I tried to make it clear that I could not be there, that my obligations in Cambridge and the special field-work I had undertaken in Virginia would make it out of the question. In the old days if one wished to become invisible it was necessary to go out in the moonlight on St. John's eve, and, while reciting the Pater Noster backward, to gather either the seeds of St. John's wort or "fern seeds." But now the process is more subtle. One needs to become a retiring president. At the time of the Ottawa meeting I was either in Cambridge or in Virginia (I haven't verified the dates). But as a retiring president (or one who shrinks from sight) I seem to have been present, though invisible, at Ottawa. I didn't know it myself; but the official report which I read in SCIENCE definitely stated that I was there and that I presided at one of the sessions.

But to come to the main theme. My text this eve-

[1] Address of the retiring president of the American Society of Plant Taxonomists, Richmond, Va., December 28, 1938.

ning will be found in the closing sentences of 999 out of every 1,000 letters which reach me:

"How soon will the 'Manual' be done?"[2]

Fully appreciating the interest of all of you in this vital topic, I am going to show you as briefly as possible why the conscientious writing of a manual is a slow and exacting task. It would be quite possible to hire an inexperienced clerk without too much knowledge of plants and to have him compile from the manuals of others a book which would look like Gray's "Manual." I realize that that is an up-to-date method of doing research and that some people applaud books thus produced; but I am old-fashioned and that is not my idea of a wholly satisfactory method of work. Conceptions of generic and specific lines vary. My own do not always coincide with those of some others; and the book I am trying to produce must be based upon my own studies and deductions. The period since Robinson and I transposed into the metric system the measurements in the sixth edition, shifted the nomenclature to meet the then current international rules, and revised the treatments of such groups as had already been revised, has been one of tremendous activity. The ghosts of Amos Eaton and of William H. Leggett would shrink into mere shades if they realized what has been going on. In my office there are card-catalogues of current items regarding range-extensions, nomenclature, technical characters, new discoveries and differences of opinion. Computing from the contents of one drawer, I estimate that these trouble-making card-catalogues contain 150,000 entries. Figuring that one half of these record differences of opinion, you can see what I am facing. The reconciling of 75,000 differences of opinion and the drawing from them of something resembling my own ideas is really some task! If one of the entries gets overlooked the whole book will be condemned. Nevertheless, working in those abundant moments of a teacher with a full quota of lectures; with a dozen or more tremendously diligent and earnest research students finding puzzles to be solved; with the monthly editing of a technical journal, most of whose authors want their data and statements verified by the editors; with a mail of 20 or more letters a day, each asking or claiming the individual judgment of the recipient on some question he knows nothing about (and some of the letters as appealing as the following: "Professor Gray Hibernian, Curate of the Garden, Boston. Dear Professor Hibernian: Our class has a project on the flowers of Massachusetts. Please send us on the inclosed sheet all you know about the above subject and oblige"); with daily packages of all the miscellaneous puzzles which have been given up in local herbaria over the United States and Canada; with semi-weekly second or third appeals for a brand new autobiography to be published in the indispensable "Who's Who in Ward 7" or in "The Lesser Men of Science"; with six-page questionnaires on every conceivable subject; with requests from *Chronica Botanica* for a list of every one of the thousands upon thousands of collectors represented in the Gray Herbarium with a biographical sketch of each one; all these in addition to the regular extra-classroom duties of a university professor and the director of an active research establishment—in this plethora of free time the treatment of 756 genera, containing 3,300 species and varieties, has already been completed; and the genera contain such nice little groups as *Panicum* and *Solidago*. This may seem like slow progress to those who believe that I should crib my treatment of *Astragalus* from Rydberg and of *Solidago* from Mackenzie. My treatments of these groups, however, are based on my own studies; I could not honestly accept the other treatments, *in toto*, as my own.

Unhappily, or perhaps happily, as soon as news leaks out (and it always leaks out, especially if it is groundless) that I have finally written up some group for the "Manual," large packages and freight-boxes begin to arrive, with the kindly and very complimentary request that I stop all other work and spend three weeks studying and labeling all material of *Solidago* or of *Xanthium* and then return it to the sender; the accompanying letter of transmittal always ending: "How soon will the Manual be done?" Every one who knows me will tell you that I have a one-track mind, of course with the network of usual side-tracks at all stations of one-track roads. Incidentally my memory for forgotten details is not perfect. As a typical Cape Codder once remarked to me: "I have a good memory; only it is terribly short." If I yield to my sympathetic impulses and hunt up the revisions of groups long forgotten, in order to be accommodating, progress along the main line is stopped. I wrote up *Panicum* with its 110 species and varieties in 1934, *Antennaria* with 42 and *Solidago* with 120 in 1935, the *Ranunculaceae* with 175 in 1936. Those stations were long since passed and all the freight then assembled in them taken aboard. If, when I am struggling in interrupted moments to classify for proper delivery in 1939 the confused freight at Dogwood and Willowgrove stations, I am pressed to back up to the side-track at Goldenrod Crossing, which was safely passed in 1935 and where no new freight has been delivered, I shall not get back on the single main track and reach Hawkweed station, at the end of the line, in time to deliver the freight there. You might suppose that a man who is approaching the age of second childhood would remember everything in the distant past; but, frankly, when my mind is closely absorbed in trying

[2] Eighth edition of Gray, "Manual of Botany."

to untangle the intricately confused species of *Vitis* and endeavoring to discover really stable differential points, so that I can safely pass Grapevine Bower, or when I am trying to keep on the single track through the perpetually retarding thicket or brambles, my mind has become wholly blank regarding the finer details of *Rhynchospora* and of *Erigeron,* whose freights were long-ago checked off as safely on board.

Another of the perpetual obstacles to rapid progress along the line is the confusing and slipshod rubbish which clutters the track. One illustration will show what I mean. In 1890 a lifelong student of pondweeds, aiming to name a specimen from Spallumacheen River, British Columbia, called it *Potamogeton pusillus,* "var. *elongatus,*" giving little if any diagnosis. One year later, in 1891, he definitely described the British Columbian plant as var. *elongatus.* Ten years after it was cited formally by him as the type and only material of var. *elongatus* the Spallumacheen River plant figured, in 1901, as part of a second of the same author's varieties: "*P. pusillus,* var. nov. *capitatus.* This was sent me by Professer Macoun from Sable Island [Nova Scotia], and I have also specimens from the Spallumacheen River, British Columbia, which I had wrongly referred to my var. *elongatus.*" Just why "wrongly" does not appear, since the British Columbian plant was the type and only cited specimen of var. *elongatus.* The Sable Island plant is actually ordinary *P. pusillus,* var. *tenuissimus* Mert. and Koch., such as abounds in Canada and Eurasia.

In describing var. *capitatus* from Sable Island, its author said: "the fruit stems [whatever they may be] approach in character those of my *Potamogeton Aschersonii*" of Chile, thus starting further complications for the Sable Island plant. Var. *capitatus* had been given the highly impressionistic characterization "the heads of flowers at a short distance looking as though they are elevated above the plant without any peduncle." This is almost as definite as the same author's characterization of his *P. Sturrockii:* "Whole plant delicate, pellucid and not conforming to any named *pusillus,* but standing apart"!

Returning to *Potamogeton Aschersonii,* to which the Sable Island plant was said to be similar, *P. Aschersonii* from South America had a most extraordinary christening in 1893, said by the same English author to be a *pusilloid* species (*i.e.,* with narrowly linear leaves 0.1–5 mm broad); but its author said that its "linear" leaves were "1–3 in. long, 1–1½ inches broad. . . . Fruit 2¼ lines long, by 1½ inches broad." Obviously no plant with leaves 1–1½ inches broad belongs in the *Pusilli* (with leaves only 0.1–5 mm broad) and the fruits, described as being as broad as walnuts, are quite impossible in any pondweed. But when he suggested that the Sable Island plant, actually with leaves 1 mm wide and fruits 2 mm broad, belonged to the same group as *P. Aschersonii,* he started something. In 1916 a Swedish student of the group fell into the trap and definitely cited *P. Aschersonii* not only from South America, where it occurs, but from Sable Island as well.

Not only did the Swede so identify the Sable Island plant, the type of *Potamogeton pusillus,* var. *capitatus,* which was said by its own author to include his earlier-published var. *elongatus,* but it was also cited by the author of *P. Sturrockii* as that plant, the species which differs by "standing apart." To add to the dilemma we are seriously told that "Of a hybrid origin are, no doubt, the vars. *capitatus* . . . and *Sturrockii.*" This is almost the last straw (the last straw will blow across our horizon later). Little *Potamogeton pusillus,* var. *tenuissimus,* of Sable Island is not only that variety, but it is said likewise to be *P. Sturrockii, P. Aschersonii* and *P. pusillus,* vars. *capitatus* and *elongatus* and it is also "no doubt" two different hybrids. As the only representative of the group known to occur on Sable Island it has accomplished wonders. At least ten times in as many years I puzzled over the complex situation above described (with further complications introduced by Graebner) and, after intensive study for days at a time, repeatedly abandoned the maze, lest I should reach the mental condition aptly described in 1847 by Asa Gray in a letter to Jane Loring, his prospective wife, who to two generations of students was affectionately known as Lady Jane Gray. Here is Gray's letter:

> I have been addling my brain and straining my eyes over a set of ignoble Pond-weeds (alias Potamogeton) trying to find the
>
> "difference there should be
> 'Twixt tweedle-dum and tweedle-dee"
>
> and wasting about as much brain in the operation as your dear paternal would expend in an intricate law case, for all of which I suppose nobody will thank me and I shall get no fee. . . . But I shall be glad when they are done.
>
> 10: 45 P.M. There, the Pond-weeds are done.

Now for the last straw. The meddlesome young botanists at the British Museum have just brought forward the assertion that the one and only specimen before Linnaeus in originally describing *Potamogeton pusillus* has never before been critically examined by a student of the group, although the famous English student of the genus above quoted had always lived within an hour's ride of it. It is not at all what every one calls *P. pusillus* but another species. Now we must start all over again! Yet some people argue that botany is an exact science; furthermore, they repeatedly ask, "How soon will the 'Manual' be done?"

Potamogeton pusillus is not the only plant of our

flora of which the actual type, with which Linnaeus, Lamarck or Michaux worked, has been neglected. There are hundreds and hundreds of others. In that happy period when weight of authority and established usage were the law the old and historic specimens were of natural interest but not too binding upon the student. Now, with emphasis upon the historic type (beginning with 1753) and strict priority of publication the whole picture has changed. It becomes imperative that the groundwork of all our species be reinspected. This is slow and exacting work and too often there is difficulty in determining beyond dispute just which of several different elements should stand as the actual type. With the addition of these newly imposed burdens, the author of a manual which aims to be authoritative must be allowed some time in which to prosecute his exacting studies. If these unescapable studies are constantly retarded by the thoughtless and needless urging upon the author of too many axes to grind for others the question must inevitably arise: Which do eastern American botanists want done first, the "Manual" or its author?

OBITUARY

WILTON EVERETT BRITTON

1868–1939

A STERLING gentleman and an able scientist passed from life on February 15, 1939, with the death of Wilton Everett Britton, state entomologist of Connecticut and director of the State Geological and Natural History Survey. Few entomologists have had a more fully rounded career, and few have given so full a measure of unselfish service to their fellow workers and to the public.

Dr. Britton was the builder of the department of entomology of the Connecticut Agricultural Experiment Station. He lived to see his department housed in a building designed for biological research, and he gathered about him a staff of earnest and able men to carry on his traditions of quiet and thorough work. He took part in a score of activities relating to his scientific duties, and he exerted a wide and healthful influence.

Dr. Britton was born at Marlboro, Mass., on September 18, 1868. His early background, however, was rural, and his early years were spent on a farm in New Hampshire, near the city of Keene. In 1893 he received the degree of bachelor of science from the New Hampshire College of Agriculture and the Mechanic Arts, now the University of New Hampshire. In 1894 he was a graduate student at Cornell University. That same year he became a member of the staff of the Connecticut Agricultural Experiment Station, as horticulturist, and he continued as a servant of the state of Connecticut until his death. In 1901 he became state entomologist and entomologist of the experiment station. In 1925 he assumed the additional duties of director of the State Geological and Natural History Survey. On April 30, 1895, Dr. Britton was married to Bertha Madeline Perkins, of Surry, N. H. There were no children. In 1938, after a long illness, Mrs. Britton died. Two brothers and a sister of Dr. Britton survive him.

Two years after Dr. Britton became state entomologist of Connecticut he was granted the degree of doctor of philosophy by Yale University. Twenty-seven years later, in 1930, the University of New Hampshire conferred upon him the honorary degree of doctor of science.

The breadth of Dr. Britton's interest and activities relating to his profession is well evidenced by the memberships that he held in various organizations and the responsibilities that he discharged. Early in his work he became a member of the American Association of Economic Entomology, and he was elected president in 1909. He was associate editor of the *Journal of Economic Entomology* from 1910 to 1929. He assisted in preparing the indexes of *American Economic Entomology* covering the years 1905 to 1934. He was a fellow of the Entomological Society of America. For thirty-five years he was a member of the American Association for the Advancement of Science, and for thirty-three of those years he was a fellow. He was one of the organizers of the Eastern Plant Board and was president in 1936.

He was actively identified with the work of the Crop Protection Institute and for a period was a member of its board of governors. From its beginnings he was chairman of the Connecticut Tree Protection Examining Board. He was a member of the National Malaria Committee. His activities with various Connecticut associations included the Pomological Society, the Beekeepers Association, the Forest and Park Association, the Botanical Society, the Nurserymen's Association and the Vegetable Growers' Association.

Dr. Britton was deeply interested in books and their significance. He was a member of the Library Association of Connecticut, was director and president of the Donald G. Mitchell Library and for seven years was director of the New Haven Public Library. For twenty-seven years he was a director of the Young Men's Institute Library.

The breadth of his service is further indicated by the fact that he was twice president of the Edgewood Civic Association, was a member of the Governor's Foot Guard for three years, was a member of the