CHAPTER 11: 1917-1919, Burke and Miller Change Roles as the Division of Forest Insect Investigations Evolves

Why had Miller been so self-satisfied, as evidenced by his diary entry for January 31, 1916? His diaries do not record his inner feelings as a rule, and they never contained criticisms of his colleagues or boasts of his accomplishments. Unfortunately, they also do not record many administrative or management changes. Much official correspondence from this period is rare or nonexistent now, so trying to interpret the documents available will have to suffice. Continuing with Burke's memoirs may shed some light on events (Burke 1946).

> Ever since I had been in forest insect investigations, I had felt that my main interest was the working out of the biology's of the various species. The Northeastern Oregon Control project had gotten me off of the track somewhat but several years away from a control project area had convinced me that I was not interested in control work and that it would be best to return to biological investigations if possible.
>
> Early in 1916 Dr. Hopkins sent out a new plan of organization for comments. This seemed an opportunity for me to make the change so I accepted it. During 1915 the control work had been carried on by the rangers under the direction of Dr. Hopkins in Washington. This had caused more or less friction with the stations. In my comments on the plan, I recommended that all of the work be placed directly under the stations with Miller in charge of the Pacific Slope station at Ashland and that I be placed in charge of a laboratory to investigate the biology's of tree-killing insects. This plan was approved and it was decided to locate my work at Los Gatos, California, with a laboratory giving most of its attention to biological studies with special attention to shade tree problems.
>
> Probably the most important scientific work done at Placerville was the determination that *Oryssus* is parasitic. At least this is the work mentioned in such general works on entomology as Comstock's "Introduction to Entomology" and Essig's "Insects of Western North America." The article "Oryssus is Parasitic" was published in the Proc. Ent. Soc. Washington in 1917. The work done on the flatheaded borers was also published in 1917 as Department Bulletin No. 437 "Flatheaded borers affecting forest trees in the United States."

The Laboratory at Los Gatos, California

> The move from Placerville to Los Gatos was made in November 1916. Because of its growing importance on the Pacific Coast, the work at Los Gatos soon became almost entirely the study of shade tree insects. Scientific Assistant F.B. Herbert was attached to the laboratory from November 1, 1916, to June 30, 1920; Entomological Preparator E.T. Armstrong from November 1, 1916, to October 1, 1917; Assistant Entomological Inspector R.D. Hartman from March 15, 1918, to December 1, 1923; and Entomological Ranger W.E. Glendinning from August 1, 1919, to May 15, 1922.
>
> Among the principal insects studied were the Pacific flathead borer, California oak twig girdler, elder borers of the genus *Desmocerus*, cypress bark beetles, Monterey pine bark beetles, the carpenter worm, California oak worm, penstemon caterpillar, cypress barkscale, European elm scale, *Matsucoccus* scales, madrone psyllid and the unusual lead cable borer.
>
> The time spent at Los Gatos was a time of publication as well as a time of investigation. Twenty-two papers were published on flatheaded borers and various shade tree insects. Among these were Farmers' Bulletin 1076 "The California Oak Worm," with Herbert; and Department Bulletins 838 "Cypress Bark Scale" and 1223 "The European Elm Scale in the West" by Herbert.

There is little other information on Burke's activities during this period except memories of his daughters and family lore that they finally had a home and more settled life in Los Gatos with Stanford University nearby for intellectual stimulus. Mrs. Burke certainly deserved this change after bouncing around for over 10 years following her husband through rural communities and giving birth to daughters Mabel Claire in 1911 in Baker City, Oregon, and Dorothy Eugene in 1914 in Placerville, California.

While in Los Gatos, a son, Harry Eugene Burke, Jr., was born in 1918 and daughter, Janet Margaret, in 1920. Burke said, "This completed the family." To indicate how settled he became, he was elected member of the Los Gatos School Board in 1919. During this period Burke also established a professional relationship with Professor Doane,

J.M. Miller family collection

Mrs. Miller by John's new Saxon auto, 1916.

Automobiles

* John Miller loved them, could repair them, knew their mechanics, and managed to purchase new models on a meager salary and use them in his official travels. Bessie Miller had a near accident on a steep hill in Ashland and would rarely drive after that.
* Harry Burke was not fond of autos or of driving them and was not too knowledgeable about how they functioned. Marion Burke loved the automobile. She was an expert driver, driving from Palo Alto to Yellowstone National Park in 1926 with four young children and a dog in a model T Ford over practically nonexistent roads. She felt the automobile liberated her. She could even change flat tires!

Miller's old teacher, at Stanford University. This relationship ultimately benefited both Burke and Miller and the Pacific Slope Station.

Meanwhile, back in Ashland, there was also activity, at the Pacific Slope Station and for the Miller family. The Station moved to new quarters at the Ashland Normal School in 1916 to accommodate the increased responsibilities and personnel. Both John Patterson and F. Paul Keen passed their civil service examinations and became professional entomologists, there were several entomological rangers on the staff, and the Rogue River bark beetle project had become a sizable research endeavor. The reorganization that Hopkins dictated actually had little added impact on the entomologists at the station because the California District (later Region) and Oregon-Washington District had each assigned a forester to oversee insect control projects on the national forests. Ralph Hopping had been acting in this capacity since Miller left the Service in 1912, and Alex Jaenicke had a similar assignment for District 6 (Region 6) since 1916. However, many private timberland owners had little trust for the Forest Service, so they preferred having Bureau of Entomology men in technical charge of their bark beetle control projects. This resulted in Bureau entomologists acting as a sort of buffer between private and Forest Service interests, and it actually worked quite well on the next large project near Klamath Falls in 1921.

The personal fortunes of the Miller family also improved. Miller must have qualified for and received a raise in pay because of his new position. His son's memories of 1916 indicate the family moved to a larger rental residence and purchased a "new Saxon roadster (Miller, n.d.a)."

Miller's diary for 1917 indicated some major changes in his work related to his new assignment of Station Leader by Hopkins the previous year. To begin with, he rarely went to Hopkins' phenology field sites above town, and there is no mention of the Rogue River Project. Other records indicate that these duties were delegated to Keen and Patterson.

In mid-January he left for Washington, D.C., and Dr. Hopkins' office where he spent the next 6 weeks. He was no doubt being indoctrinated into the intricacies of the federal bureaucracy in general and Dr. Hopkins' operational mode in particular. While there, his diary entries were mostly "worked on correspondence," except for several meetings with Hopkins and Bureau of Entomology Chief, Dr. L.O. Howard, at the Cosmos Club. Visiting the club, whose

J.E. Patterson, PSW

Figure 51—Conference of Bureau of Entomology and Forest Service men at Ashland, Oregon, June 1917. (Top row, left to right) Albert Wagner, John M. Miller, and A.J. Jaenicke. (Bottom row, left to right) F.P. Keen, Thomas Snyder, and Ralph Hopping. Hopping represented Region 5 and Jaenicke Region 6 of the Forest Service. Snyder was on a special trip from the Washington office of the Bureau of Entomology. Albert Wagner, entomological ranger, had just been transferred from the Missoula station of the Bureau, which had been closed down when Josef Brunner left for West Virginia.

membership included the political Who's Who of Washington, D.C., must have been an eye opener for the farm boy from California and now the entomological leader of a research station in Ashland, Oregon.

When he returned to the west coast he was soon on his way to the District 5 Forest Service office in San Francisco, then to Yosemite, cruising a control project in late April, then sick with tonsillitis and an operation in Ashland.

He returned to Yosemite and the Sierra National Forest in June. Then in July and August, Miller and Hopping spent over 2 weeks on a horseback survey of insect conditions in the Little Kern and Kaweah drainages and Sequoia National Park. In September he was again in Yosemite National Park at Patterson's Tenaya Lake Camp.

It appears that personnel from the Ashland station and Miller in particular were encouraged to spend more time and effort in District 5 National Forests and Yosemite National Park (fig. 51). In the summer of 1917, for instance, Patterson was assigned to Yosemite to study the lodgepole needle miner, probably by an envious Miller.

J.M. Miller, PSW

Figure 52—From 1919 to 1924, the station was housed in the residence building (shown at right) in the town of Ashland. This picture was taken in February 1920 following a heavy snow and cold snap in the Rogue River Valley. John Patterson is on the porch.

Patterson devoted most of the summers of 1917-19 to studying the needle miner. This resulted in the first published account of the life history of the insect in the Journal of Agricultural Research, mapping the extent of the outbreak, some excellent photographs of the insect and infested stands, and solid evidence that the heavy mortality of lodgepole pine in the high country was related to defoliation by the needle miner from the 1890s outbreak (Patterson 1921). Consequently, Patterson expanded his studies to include the biology of mountain pine beetle and made important contributions to the knowledge of this bark beetle in high-elevation lodegepole pine stands. The needle miner outbreak finally subsided in 1921.

On October 31, 1917, the station, office, and laboratory in Ashland moved from the old Normal School building to 3rd and C Streets in a large two-story rented house (fig. 52) (Wickman 1987).

But how quickly circumstances can change, there is no mention in Miller's diary of the United States entering World War I in 1917. His entry for July 29 while working in Sequoia National Park says it all "official mail was rather discouraging—I learned that Keen had enlisted."[1]

[1] Keen served in Headquarters Company of the 49th artillery, American expeditionary Force, France until early 1919.

J.M. Miller, PSW

Figure 53—Glendinning watching spruce cants and logging train on Oregon coast. Spruce was an important war material, and production was supervised by the Army, 1919.

J.M. Miller, PSW

Figure 54—Glendinning checking spruce infested with spruce beetle, Oregon coast, 1919.

Miller was not immune from the war fever. On March 29, 1917, he inquired about enlisting in the aviation corps while visiting Stanford University. Because of the loss of Keen, who had taken over the phenology research and the Rogue River project, the Ashland station was short-handed; Miller again helped with some of the phenology observations, although Entomological Ranger Sergent carried the brunt of the work, and Patterson took over the Rogue River Project. Miller, who seemed to enjoy the additional field work, was the entomology representative on a large bark beetle control project on Sequoia National Forest and in Sequoia National Park. He spent much of April, the end of August, and the first half of September on the project with Hopping.

In 1918, new forest insect problems arose in the Sitka spruce forests on Oregon's north coast. Old-growth Sitka spruce is a very light, strong, and fine-grained wood. At that time it was the material of choice for manufacturing airframes and propellers for the fabric-covered biplanes used as fighter aircraft during World War I. It was a strategic material, and the resource was administered by the war department with production supervised by the U.S. Army engineers (fig. 53).

Much of the Sitka spruce in that area in Oregon at the time consisted of immense old trees, many 6 or 7 feet in diameter at breast height. Old-growth Sitka spruce can also be attacked and killed by spruce beetles, degraded by woodborers like ambrosia beetles attacking down logs, and the needles eaten by hemlock loopers. Various reports of insect-caused damage to the spruce and intermingled hemlock were coming to Hopkins from the Forest Service and private timber owners.

In June, August, and October 1918 and May 1919, Miller and Glendinning spent weeks trying to pinpoint the cause of tree damage. What they found was a hodgepodge of insect problems (fig. 54). On surveys from Astoria south to North Bend on the Oregon coast they found defoliation from several previous years and a moth flight at one location (possibly hemlock looper), some spruce beetle, killing trees (but not in serious amounts); ambrosia beetles attacking logs from trees cut in June; and resulting degrade in the wood sufficient to cause the army to reject infested spruce cants. Miller also found an unidentified Cerambycid beetle, *Xyleborus* sp. with larval mining deep in the sapwood of spruce. But most interesting, they found that the browning of the needles on tips of branches that was reported so widespread was being caused by an unidentified green aphid sucking the juices from needles until they turned brown and dropped from the branches. This caused the visual effect of defoliation from caterpillar feeding and had everyone fooled. Miller collected specimens of all of these insects for identification at various times of the year. The aphid was the spruce aphid, and it was indeed a serious tree killer.

Miller mentioned the war only several times in his diary, but the entry for November 11, 1918, summed up the home front's feelings, "worked at station in morning, left for awhile in afternoon to celebrate news of the peace victory."[2] So Keen would be returning, one hoped, by next year.

In December, both Jaenicke and Hopping came to Ashland to spend a week with Miller while they jointly worked on reports. This was indicative of the excellent working relation Miller had with the Forest Service and their two entomological representatives. The year ended cold and snowy as usual, but Miller and Hopping had changes coming in 1919.

Miller spent most of the year traveling to California when not catching up on manuscripts, survey reports, and correspondence at Ashland. On April 17, Keen having been discharged from the Army, arrived in Ashland on the evening train. Unfortunately, he was bearing bad news for Miller. Keen was resigning to work the family farm at Julian near San Diego. This was a blow to the short-handed Ashland station. Keen was a University of California graduate trained in forestry and entomology (Wickman 1987). He was doing excellent research, particularly on the WPB, essentially running the Rogue River project until he left for the war in 1917. As usual Miller made no personal comment about the situation, but it did leave him with only Patterson as his professional assistant. Requests for assistance from the station were increasing in several areas in southern Oregon and in California, particularly Yosemite National Park and the Sierra National Forest. In southern Oregon just north of Klamath Falls, mostly on the Klamath Indian Reservation, a very large pandora moth outbreak was defoliating thousands of acres of ponderosa pine forests. Patterson was assigned to study this heretofore little-known insect as well as complete his studies of the lodgepole pine needle miner and mountain pine beetle in Yosemite National Park. Miller, as was his management style, visited the outbreak areas with Patterson, gave him some advice, then turned him loose. This approach seemed to be successful most of the time.

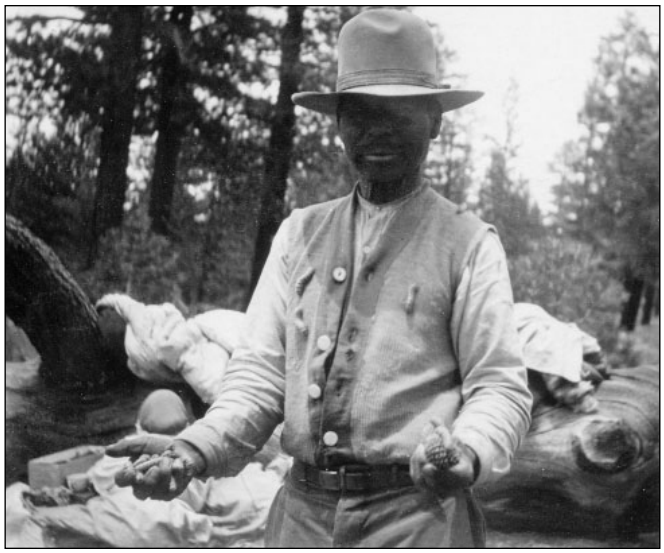
In May and June, Miller was back on the Sequoia National Park project with Hopping. In addition he, Hopping and entomological ranger Wagner were examining stands at Frazier Mountain, near Tejon Pass, Figueroa Mountain, and the coast range near San Luis Obispo. The far northern Pacific coastal areas were also of concern, especially in Alaska. The Forest Service reported huge areas around Ketchikan, Admiralty Island, and Juneau being severely defoliated by caterpillars (possibly hemlock loopers or blackheaded budworm). They requested help from Hopkins. Miller investigated the cost of boat fare to Juneau. Unfortunately it was $80 round trip—too much for their strained budget, so Miller never went.

In August, on his way to Yosemite via the east side of the Sierra, he did score a first for forest entomologists. He recorded: "August 4, 1919—Camped at Mono Lake R.S., August 5 Leevining, Mono Lake, Ranger Greene states that the "Peages" [sic] gathered by the Indians in the Fall are species of caterpillar, very large—from a large beautiful moth [pandora moth] Indians build a fire under the tree [Jeffrey pine] to smoke down the larvae—gather every other year—1 year moths fly—the next year find larvae—1919 year of flight." Patterson was starting to study the same insect on the Klamath Indian Reservation, only the developmental phases were not synchronized—1918 was the year of moth flight in Oregon (figs. 55 and 56). Pandora moth larvae

J.E. Patterson, PNW

Figure 55—Ponderosa pine defoliated by pandora moth on the Klamath Indian Reservation, 1924.

[2] There was a celebration in downtown Ashland as there were in towns across America. Office and other work came to a halt as communities let off steam and gave thanks for the end to the killing of their young men.



Guy Wray, USDA Forest Service

Figure 56—Jake Garrison, Mono Chief, with a handful of live "peaggies," pandora moth larvae.

and pupae were indeed an important source of protein for several Native American tribes.

On August 8 he reported " . . . the entire stand of lodgepole pine around Tuolumne Meadows looks as bad as Tenaya did in 1912—7 years ago—all one can see is a forest of dead tops." The needle miner had progressed eastward, but this was the last outbreak expansion, as populations waned in 1921.

The rest of August and September, Miller was almost continually in the field with Hopping checking the control work around Sequoia National Park and other areas in southern California.

Miller stopped in San Francisco several times on his return trips to Ashland and met with Assistant District Forester Woodbury. During these trips he almost always went down to Los Gatos to visit and confer with Burke. The frequency of the visits seemed to indicate he valued his colleague's counsel, and his diary usually says "took dinner with the Burkes."

On November 19-24, 1919, there was a meeting of entomologists at Ashland; Miller and Patterson and foresters Hopping and Jaenicke from California and Oregon, and Evenden, a new Bureau entomologist from Idaho. They met to discuss the coordination of bark beetle surveys and research in the three states. It was called the "Ashland Conference" and it led to changes for Miller in 1920.

The team was going to lose a valuable member, however. Ralph Hopping, his long-time Forest Service compatriot and close friend, had accepted a job with the Canadian Forest Service as a Forest Entomologist.[3] On December 10, 1919, Miller met the northbound train at Ashland and rode as far as Grants Pass with his colleague, friend, and horse-packing buddy as he passed through on his way to Canada. The lonely return trip to Ashland must have been a reflective one for Miller. Some of his earlier diary entries record the following memories with Hopping:

> January 18th, 1917 (en route to Washington, D.C.)
>
> At 10:30 pm ferried the Mississippi on a flatboat and arrived at New Orleans at 11:30. Found transfer to consist of old fashioned cab. After some delay went to several hotels, found them all filled up. Finally found cots in a Turkish bath with a party of 6 others one of whom snored outrageously.
>
> July 29, 1917 (on horse pack trip surveying insect conditions Sequoia N.F and N.P)
>
> Spent day at Giant Forest working on insects. Hopping left at noon for Three Rivers to get supplies for the remainder of our trip. Official mail was rather discouraging for the reason that I learned that Keen had enlisted and matters pertaining to the survey were in bad shape.

[3] Hopping eventually retired in Canada, and his son George also became a forest entomologist and noted taxonomist of Scolytids for the Canadian Government. Both men had the distinction of being officers in charge of the Vernon, British Columbia, Forest Insect Laboratory. I knew George quite well, but we never discussed his famous father.

CHAPTER 12: Burke and Miller Move Again—1920-1922

> In December of 1919 we had heavy snows in the Ashland area which produced the first white Christmas I had ever enjoyed. A new sled was perfect for sliding down the Bush Street hill. At Christmas time that year, Mother and Father told me of the impending move to California, but the significance was lost on me. I was not impressed with the place on our visits there and it seemed very hot (we always traveled in the summer) and none of it was as exciting as Ashland. Came the days of packing our things, and then, on a sunny winter morning in January, 1920, we were on the train headed south. The Ashland days, alas, were over, albeit they were very happy and secure days for me."(Miller, n.d.a)

The 6-year-old son of John and Bessie Miller thus remembered the move from Ashland to his new home in California. He knew nothing about North Fork, California, but his father did. It was the location of the supervisor's office for the Sierra National Forest; the forest where he started his professional career as a Forest Ranger in the U.S. Forest Service in 1909-10. They were moving there so Miller could start a new field station for the Forest Insect Division. Miller describes the move as follows (Miller and Keen, n.d.):

8. North Fork, California, February 1920–November 1924

The results of research on biology and habits of the western pine beetle at the Ashland station, in addition to unsatisfactory results on a number of control projects led to the development of new ideas which offered some promise of application in control practices. The Forest Service became interested and an agreement was reached with the Division to test several of the proposed theories on experimental projects. This program was outlined in what became known as the Ashland Conference Plan [1919] that called for a series of experiments in the San Joaquin River drainage of the Sierra National Forest.

A field station was provided for at the Forest Supervisor's headquarters at North Fork in order to carry out the Division's part of this project. J.M. Miller was in charge with from 1 to 3 assistants during the period of the project. The tests which were run applied to the percentage principle of control as advocated by Dr. Hopkins, the effectiveness of continued maintenance control to prevent epidemics, and the costs and efficiency of control work during the summer period with the use of the newly discovered solar heat method of destroying the beetles [fig. 57].

In addition to the experimental control program the North Fork station carried on research dealing with other phases of the western pine beetle problem and maintained technical service for a number

A.J. Jaenicke, USDA Forest Service

Figure 57—Mr. Kimball's party at Spencer Creek when a test was made of solar heat control during the SONC Project near Klamath Falls, Oregon, 1921.

of control projects that developed in other parts of the ponderosa pine region.

Miller remained in charge of the Pacific Slope Station, but his headquarters was now at North Fork, California.

The Ashland station was maintained with Patterson in charge assisted by Sergent. In this manner, both the Rogue River research project and new studies at North Fork on the Sierra National Forest could be carried out simultaneously. Although without Keen, both Patterson and Miller had heavy workloads.

Forest Service living quarters were practically nonexistent in North Fork for the Miller family in early 1920, so Bessie and their son remained at Reedley until something habitable was found. After living in a tumbledown shack for a while at the old Site Rock Ranger Station, about 2 miles from North Fork, the family moved to slightly better quarters just above South Fork. This was the old Douglas Ranger Station, and after Miller put a new shingle roof on it, the family moved in. It was home for the next 3 years. Eventually, a one-room shingle shack (ex-tool house) was moved from the Douglas Station to the North Fork supervisors' headquarters (fig. 58). This became the office and laboratory of the forest entomology station until Miller left in 1925. Miller's son, Harold, wrote a delightful description of his new home and North Fork through a child's eyes (Miller 1997).

J.M. Miller family

Figure 58—Former tool shed that served as the first forest entomology station office and laboratory for Miller at the supervisor's headquarters, North Fork, California, 1920s.

Miller's entomology work during this period was varied and far flung. From April through July 1920, he was cruising timber for bark-beetle-killed timber and checking control work from camps on the Sierra National Forest. This was called the San Joaquin project and extended from near North Fork south to the Sequoia National Park area (figs. 59 and 60). It involved much horse riding and camping, which Miller always enjoyed. However, according to

J.M. Miller, PSW

Figure 59—Insect control crew at Chiquita Basin, Sierra National Forest, 1920s.

J.M. Miller, PSW

Figure 60—Cook at the Shuteye insect control field camp, Sierra National Forest, 1920s.

his diary, on June 1, he gave important testimony to a meeting of the California Forestry Committee in San Francisco (see next page).

Miller supervised or assisted with many other projects as well. In late August, he was in northern California helping Patterson with the Antelope Project near Weed. Next he went to Klamath Falls to check a test of fuel oil sprayed on the bark of infested trees, and then ignited. The method was visually spectacular, but failed to kill the beetle brood in the bark. In September he was the first forest entomologist to visit the Warner Mountains in northeastern California. He examined the Sugar Hill burn of 1917 where extensive tree killing was taking place around the burn. (This area was again studied by C.B. Eaton in 1940 and by myself in 1957 for outbreaks of mountain pine beetle in second-growth ponderosa pine). Then he proceeded to the Lassen National Forest near Bogard Ranger Station and was the first forest entomologist to visit Butte Lake (probably to fish) in Lassen National Park. By late September he was in the Chiquita Basin and the San Joaquin project. In October and November he was mostly in North Fork with his family; his diary for November 17-18 notes he "shingled and repaired roof of the Douglas Station." During these months he also had two meetings with Burke in Los Gatos. They were not working together on any projects at that time, but it was evident he valued Burke's counsel.

The year 1921 again resulted in some changes for Burke and the Forest Insect Station's future status and location. Burke's recollections continue.

The Laboratory at Stanford University, California

A reduction in the appropriations for the fiscal year 1921 caused the resignation of Herbert and I decided to look for a new location where laboratory expenses would be small. Stanford University offered laboratory space rent free so I moved to Stanford in March 1921. Officially the move was made November 1, 1921.

For the first few years the work at Stanford continued as at Los Gatos. The investigations of the Pacific flathead borer and the lead cable borer were completed. Bulletin 1107 "The Lead-cable borer or Short Circuit Beetle in California" was published December 4, 1922, and reprinted July 1923 with R.D. Hartman and T.E. Snyder as co-authors. The work on the Pacific flathead borer was submitted as a thesis to Stanford University and I received the degree of Doctor of Philosophy June 15, 1923.

What Burke's memoirs do not mention is that Professor Doane at Stanford University was also an important colleague of Miller's from his earlier student days and likely of Burke as they were probably the only two entomologists in the immediate area. It would be interesting to learn more about the details of Burke's move to the Stanford campus, because it foreshadowed a move of Miller and of all the entomologists to Stanford University within a few years. Perhaps Burke was doing the political groundwork convincing Stanford University administrators that such a move would benefit both parties.

Before this happened, however, there was one more field station established by Keen at Klamath Falls in 1921. Keen had returned to the Bureau of Entomology the previous year finding entomological science more to his liking than farming. This was fortuitous, because Kimball, Hopkins' nemesis from a few years earlier, was again raising the alarm. Only this time the western pine beetle was indeed killing trees in the Klamath Basin in alarming numbers, on private as well as Forest Service and Indian Reservation lands. Miller describes the situation as follows (Miller and Keen n.d.):

9. Klamath Falls, Oregon, January 1922–November 1925

Since the closing down of the first station at Klamath Falls [Parker Station, actually] in 1912, increasing western pine beetle infestations in the Klamath Basin of Southern Oregon from 1918 to 1920 had impressed the private timber owning agencies with the need for action. As a result pressure was brought upon the U.S. Department of Agriculture for an aggressive program of surveys and control. A meeting was held at Klamath Falls, Oregon in April 1921 sponsored by the Klamath Forest Protective Association which included all of the large holders of ponderosa pine timber in that section, and was endorsed by representatives of the leading pine owners throughout the western states.

Stewart Edward White Takes on the U.S. Forest Service Fire Policy

Miller became involved in a fire and bark beetle controversy when a noted author, Stewart Edward White, wrote an article for the April 1920 issue of *Sunset* magazine (White 1920b).

The article touted the benefits of "light" burning in California forests. White was acting as an articulate mouthpiece for the proponents of light burning (what we would call underburning today). Most of the profire advocates were private timber owners who thought that burning the underbrush and smaller trees promoted tree growth, facilitated logging operations, and killed bark beetles, which many believed spent part of their life cycle in the duff under trees. White contended that the Forest Service was not doing enough to control tree-killing bark beetles and argued that underburning the forests would kill beetles by smoke and heat in the litter and even in infested standing trees.

Sunset magazine published a rebuttal in May by Chief Forester Graves, who very diplomatically depicted the use of fire in such a manner as both dangerous and counterproductive to sound forest management (Graves 1920). (This was just one decade after the terrible forest fires of 1910.) He further pointed out that White's biological facts concerning the control of bark beetles by burning them in the forest litter and infested trees did not match the knowledge of the Bureau of Entomology professionals. He did not say it bluntly, but the inference was that White's wild claims on the use of "light fire" to control bark beetles was utter nonsense.

Sunset published a short reply by White in the May issue (White 1920a). White was courteous and claimed he didn't want to start a controversy, but he did not back down on his claims over the benefit of fire either. He asked that the Forest Service participate in some burning experiments on the Southern Pacific Railroad Company's forest lands.

At this point, District 5 Assistant Forester Woodbury and State Forester Hodge formed the General California Forestry Committee chaired by Donald Bruce with several others, including Dr. E.C. Van Dyke, a professor of entomology at the University of California. The committee seemed to be formed for one purpose: that was requesting J.M. Miller to come to San Francisco on June 1, 1920, and give them a briefing on the relations of fire and bark beetles. Miller was called on very short notice and came directly from fieldwork on the Sierra National Forest. He gave a summary of his research on bark beetle relations to wildfire, the biology of bark beetles, and current methods used to control them. He essentially demolished the claims made by White in his *Sunset* magazine articles, and he was further backed by Professor Van Dyke over the particulars of bark beetle life histories. The minutes of the meeting (Anonymous 1920) claim that White was invited to attend the meeting but did not show up.

After almost 3 hours of presentation by Miller and questions and general discussion, the meeting adjourned. Miller never alluded to the subject again in his diary or publications.

The premise that prescribed fire could be beneficial for the health of some pine forests was correct, but the reasons given for practicing it as a forest management tool were wrong. It took another three decades before Professor Harold Biswell of the University of California Forestry School started experimenting and promoting the use of "light fire," and his was a lonely voice for three more decades. Now prescribed fire is not only an accepted forest management tool, but is recognized as an integral part of many fire-dependent pine forests in the West.

The *Sunset* magazine articles, however, had a positive side in that they publicized the growing problem with bark-beetle-caused pine mortality in California. Miller also must have taken note, because he used self-described "propaganda" a decade later when the bark beetle problem was reaching epidemic proportions, and he was seeking increased appropriations from Congress for research.

As a result of this meeting, action was initiated to secure Federal appropriations to enable the Forest Service and Indian Service to conduct control work on their own lands and to cooperate with the private owners in a comprehensive control operation embracing 1,267,000 acres of ponderosa pine forests.

In September 1921 A.J. Jaenicke was assigned to Klamath Falls to work on this situation. The first step was to run surveys to determine the extent to which the infestation involved the multiple ownerships of the Klamath Basin. In the survey program, Jaenicke was assisted by F.P. Keen from the North Fork station, J.E. Patterson of the Ashland station and J.C. Evenden of the Coeur d'Alene station.[1] As a result of the information that was secured and the recommendations that were made, a special appropriation of $150,000 was secured for control work on Federal lands and for the necessary technical service by the Bureau of Entomology. The Klamath Forest Protective Association assumed the obligation for financing the work on private lands. This program which extended over a period of 3 years became known as the Southern Oregon-Northern California Pine Beetle Control Project.

Control work was started in the winter and spring of 1922. A field station to carry out the functions of the Bureau of Entomology was established with project funds early in 1922 with F.P. Keen in charge. General administration, coordination of work and fiscal control of the project was handled under a Board of Control consisting of a representative of the Forest Service, Indian Service, private owners and Bureau of Entomology. Keen as Bureau of Entomology representative was elected chairman of the Board. Keen recruited a staff of men and trained them as spotters in the details of survey and control methods. The Klamath Falls station was continued until November 1924. By that time the original appropriation was exhausted and the private owners decided to continue the work on a more independent basis.

Miller was involved in the planning of this project and establishing a temporary station from the beginning. Even though he was deeply involved in his own research on the Sierra National Forest, he made every effort to visit and become a leader of his men in this new venture. By mid-August 1921 he was on his way to Klamath Falls where he met with Patterson, Keen, Jaenicke, Kimball, Pollard, and King. These men were the principal leaders in this new project and it was the first time they had all met together. For the next several weeks Miller was in the area visiting pandora moth infestations with Patterson at the Sprague and Williamson Rivers on the Klamath Indian Reservation. He was also trying to catch up with a motion picture crew led by a Mr. Perkins who were filming insect outbreaks and control actions in the area. This was a first in the efforts to publicize the timber losses caused by insects at the time. Miller frankly mentions in his diary the intent of this "propaganda." Miller eventually caught up with the movie film crew on the Sierra National Forest where they spent a week filming the insect control project and affected stands of trees. The strategy must have worked because as Miller has already mentioned, a large special appropriation was secured from congress to undertake an insect control project in southern Oregon and northern California.

Miller's management style was commendable given the poor communications and transportation of the era. He rarely failed to visit his entomologists and entomological rangers in the field as new projects developed. He delegated authority to these men to get the job done, but he also provided technical advice on the ground and was not shy about camping and doing physical labor as needed. An interesting notation in his diary refers to "The Burch bed sheet, tent and sleeping bag. E.G. Burch Mfg. Co., Pueblo, Colo." He probably spent more time during this period sleeping in a tent or on the ground than at home. The amount of travel he undertook was prodigious. For instance, starting March 1922, a time when he could normally remain in North Fork writing his reports and doing research, he spent 2 weeks giving technical advice to the Forest Service on a bark beetle control project at Arrowhead Lake near Los Angeles, but at least he could take his family with him to spend time with his mother who lived in Pasadena.

Miller's work in the remainder of 1922 followed a familiar pattern. In May he went to Klamath Falls for meetings with Patterson, Keen, and Kimball; in June, more examinations of the Figueroa Mountain and Arrowhead Lake projects; and, in October, a 2-week trip to check a very large bark beetle infestation on the Mendocino National

[1] The hiring of Evenden and formation of the Coeur d'Alene station has been described in Furniss and Renkin 2003.

Forest extending in patches of dead trees from Alder Springs in the North to Upper Lake and the Eel River in the South. This outbreak was the result of large amounts of windthrown timber from a storm in January 1921 (Miller and Keen 1960).

But on November 1 there is a mysterious diary entry as follows:

> Went to the forestry school at Berkeley, California, met Professor Metcalf and made appointment with Professor Mulford [Dean of School of Forestry, University of California] 12:15 discussed the matter of occupancy of room in basement of Hilgard Hall. Mulford advised putting material or furniture in room so that there would be no cause for complaint from the University because of demands by others for space.

What was going on? Burke was located at Stanford University, in supposedly free quarters, Patterson was renting a house in Ashland as a substation, Keen was located in a substation at Klamath Falls, and Miller was in an old tool shed at the Sierra National Forest Supervisors office. A pretty far-flung and expensive quarters proposition for a poorly funded federal agency. In further comment on the Berkeley development, Miller wrote on November 15 and 16: "Drove to Berkeley stored breeding material from North Fork in room in Hilgard Hall–looked for house in Berkeley.

He spent the entire next day looking for housing. Did Miller feel that some kind of headquarters change was going to be forthcoming from the Washington, D.C., office? Was he a little jealous of Burke's ties to Stanford University and felt that quarters at the University of California Forestry School were more appropriate than the tool shed? Was he just testing the waters with Hopkins? Was change, which seemed to be the order of the day for the forest insect station, once again on the horizon?

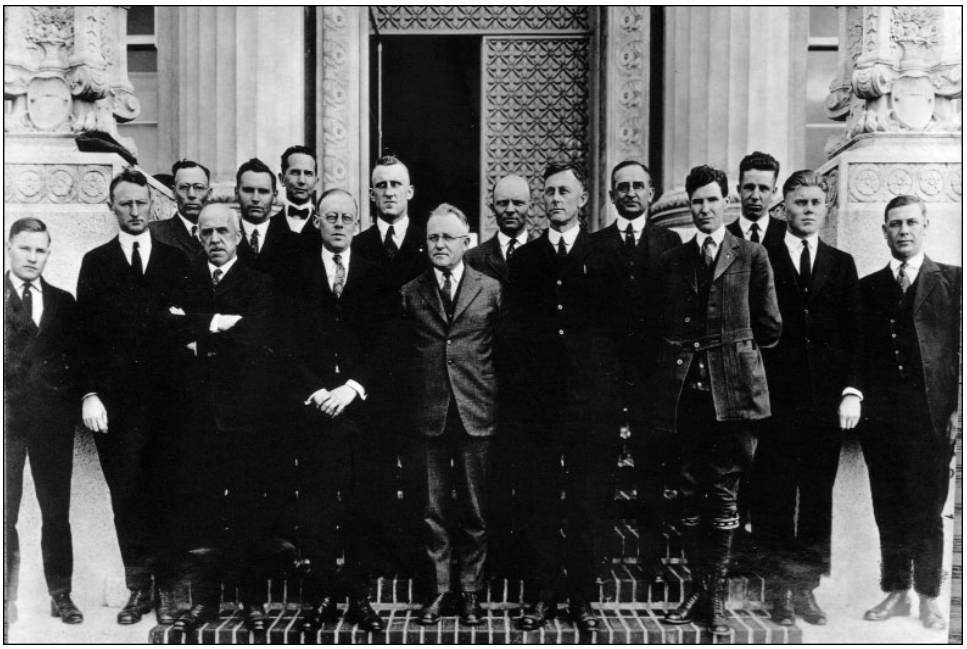


Figure 61—Attendees of the 1923 Forest Insect Conference, University of California Forestry School, Berkeley, California.

CHAPTER 13: A New Chief in Washington, D.C.–More Reorganization, 1923-1924

Government workers often live by a mantra that budgets rarely increase though workloads usually do, and whenever a new "Chief" takes charge, reorganization closely follows. In 1923, this was not necessarily true on the first count because half of the Forest Insect Station staff was benefiting from the new $150,000 appropriation for the Southern Oregon–Northern California (SONC) project. But, on the second count, a new organization was in the works. Burke tersely describes the coming change in his memoirs. "In the fall of 1923, Dr. Hopkins retired as chief of Forest Insect Investigations and Dr. F.C. Craighead replaced him. This caused some reorganization of the work and the discontinuance of shade tree insect investigations in the west for a time."

Probably because of the impending change in leadership, the first large-scale conference of forest entomologists and foresters concerned with insect depredations was organized by Miller and others. It took place at Berkeley, California, February 5-10, 1923. It was simply called "The Forest Insect Conference," and it was held at the University of California Forestry School (Anonymous 1923). Interestingly, no Washington office staff attended (fig. 61).

Miller was elected the program chairman and presided over a series of papers summarizing all of the control projects and knowledge and research to date on the most important Western forest insects. Because many of the reports involved studies in progress and older studies never completed, it was not intended for publication. The meeting was informational for people working on forest insect problems in the West with question-and-answer sessions after each paper. The intent was to get all involved workers updated and familiar with the status of the forest insect problems, the state of current knowledge and research programs, and where the next logical steps might be taken. The attendees also made detailed recommendations on the future organization of Western Forest Insect Division stations and presented them as a resolution to Hopkins. Such a gathering was valuable for a new leader coming on board, and Hopkins and Craighead's subsequent approval of the reorganization of Western Stations in December 1923, indicate they paid

attention to the report.[1] Included in the resolutions was one recommending Miller be chosen as leader of Western Forest Insect Investigations.

The conference was timely because the number of forest insect infestations in the West was rising, and, in the case of bark beetle control efforts, thousands of dollars were being spent. Were the benefits justifying the costs? This was the underlying question and it motivated much future research on the effectiveness of control projects to reduce subsequent timber mortality.

Some of the study reports presented during the conference would be crude science by today's standards, but there were few statistical methods available at that time, and sometimes a study could not be completed because of other pressing duties or lack of funds. What is evident in the reports is the tremendous amount of raw data accumulated on bark beetle counts, infested trees per acre, cruises of infestations, and followup examinations after control projects (fig. 62). All of this work was done with primitive transportation and living conditions. What the study reports lacked in statistical and ecological sophistication they made up for in sheer volume of raw data related to a new specialty in entomology.

The question-and-answer sessions also indicated that these men were professionals of good will; trying to advance their science not themselves.

The Berkeley conference may also partially explain why Miller needed a room in Hilgard Hall on the university campus. Perhaps he needed it to store materials related to the conference. But it doesn't explain why he brought insect breeding material to the room or spent a day looking for

F.P. Keen, PNW

Figure 62—Parade float of the SONC Pine Beetle Control Project, October 1923.

housing in Berkeley. Perhaps he felt that one result of the conference would be a recommendation to locate the Forest Insect Station at the University of California School of Forestry and the newly formed Forest Service Experiment Station there. If so, he was to be temporarily disappointed.

There were several policy recommendations posed during the conference. The first was a reorganization of the Western stations; the second, was the establishment of a Western forest insect newsletter.

To present the first proposal, Keen was posted to Washington, D.C., in March to work with Dr. Hopkins and confer with Bureau of Entomology and U.S. Forest Service and Park Service officials. While there he also updated people on the status of forest insect problems in the West by giving a series of illustrated presentations. At that time Craighead had not been officially declared chief of forest insect investigations, so there was a movement by Western Timber Company people to promote Miller for the job. Probably, unbeknownst to the Westerners, Craighead had been the choice for some time by the Washington, D.C., establishment. Hopkins and L.O. Howard, the Chief of the Bureau of Entomology, approved the reorganization in principle, but there were no final decisions made about the reorganization while Keen was there. Keen did prepare a confidential memo to the Western entomologists upon his return, which clarifies some of this.

Keen's memorandum follows verbatim.

[1] Frank C. Craighead was born in Pennsylvania in 1890. He obtained a B.S. degree from Penn State College in 1912 and Ph.D. degree in entomology from George Washington University in 1919. Hopkins first hired him to work in the Forest Insect Investigations Division in 1911 while he was a student. Craighead spent several summers working in various regions of the United States including assisting in a postcontrol survey of the N.E. Oregon Project (fig. 13). Hopkins appeared to be grooming him for a permanent position in the Division, but in 1921 Craighead took a position with the Canadian Department of Agriculture. In 1923 he returned to the Division as chief, replacing Hopkins. He retained that position until he retired in 1950. His retirement was in name only for he continued to publish numerous articles and five books on various environmental subjects. He was a consultant and collaborator for the Everglades National Park. In 1969, the U.S. Department of the Interior gave him the Conservation Service Award. He died on May 14, 1982, at his home in Naples, Florida (May 1982 obituary, in my possession, from an unknown Florida newspaper).

Memorandum for Western Field Men Confidential

My trip to Washington, which was decided upon at the Berkeley Conference, came at a most critical time in the affairs of Branch, namely, at a time when a change of administration was under way. It was filled with thrills and many lurid moments, many of which cannot be incorporated in a report of this kind. However, I shall try to give an idea of what transpired, but will of necessity have to leave out some of the most interesting details.

On arriving in Washington I soon found that this was to be my biggest task. Very few had heard of what the Branch was doing or that we even existed.

My first interview was with Dr. Quaintance, Acting Chief of the Bureau. He was very much surprised at the size of the Southern Oregon Project and at the support which was being accorded to it by the Forest Service and the private timber owners.

I next had an interview with Dr. Ball, Assistant to the Secretary, accompanied by Dr. Quaintance and Dr. Howard. This was a most unsatisfactory interview. Following this there were interviews with Col. Greeley, of the Forest Service, J.B. Kinney of the Indian Service, and Dr. Marlatt of the Federal Horticultural Board. They all showed a most active interest in what we are doing and were very much surprised in the comparative losses from fire and beetles which was illustrated on pictorial poster which I had prepared for the Berkeley Conference.

Dr. Ball did not know last year that beetles were of any importance whatever as tree killers. Dr. Marlatt was not acquainted with the methods used to combat them. This goes to show how great is the need for adequate publicity and educational work, for if members of our own Department are not conversant with what we are doing how can we expect the general public to be informed?

I gave a short talk at the meeting of the Washington Entomological Society using the fire-beetle poster and colored maps of the project to illustrate the work.

On March 22, I gave a scheduled talk before the Washington Section of the Society of American Foresters using slides and diagrams as illustrations. The talk seemed to arouse a great deal of interest as it was followed with about fifteen minutes of rapid fire questions from the foresters on all phases of the work.

For some time Dr. Hopkins has wanted to be relieved of the administrative work of the Branch in order that he may devote his entire time to research in bioclimatics. On arriving in Washington I found that Dr. Swaine of Canada had been offered the position, although Dr. Hopkins had not been consulted. I felt that, should Dr. Swaine not accept, some consideration should be given to the effect of a change of policy upon the Western work, so did what I could to bring to the attention of those concerned the fact that we had accomplished a great deal here in the west, were doing a great deal now, and had assumed a lot of responsibilities that should not be overlooked when such a change was made.

The private timber owners, with whom we have been cooperating, upon learning of the contemplated change took an extremely active interest in the affair and deluged the Secretary's office with telegrams advocating Mr. Miller's appointment to this post. This, of course, reacted unfavorably towards Miller and under protest from Dr. Howard and myself the propaganda was stopped in-so-far as it applied to Miller, but they are continuing to endorse the work that we are doing as they feel that any change of policy might affect their pocket-books. So far no decision has been reached as to who will be named as Dr. Hopkins' successor. We have hopes, however, that it will be someone who is not antagonistic to the present policies.

I could write a book on this subject, but am not going to. Other matters taken up during the detail are given in the Western News Letter.

I must not neglect to mention one very important result of the trip which was the development of a closer friendship and more cordial relationship with the men in the Eastern Division. Contact with Dr. Hopkins was a real inspiration, and I could not help but regret that I had not known him better in the past.

Mr. Snyder is a square shooter and thoroughly in sympathy with our Western work. I hope that he is selected to succeed Dr. Hopkins. We could not wish for a better friend.

Middleton is a fine clean cut fellow with a lot of splendid ideas and a very likable personality. I was glad to be able to know him better."

Mrs. Carter proved herself a real friend in straightening out my fiscal troubles (and they were bad ones at that). She is a very capable and efficient clerk as you probably all know, and one to tie to if you expect to try any funny business with the fiscal regulations.

The others in the office included Mr. Murray, who is helping Dr. Hopkins with his bioclimatic studies, and Miss Ritchie and Miss Gass, the stenographers. They were all very cordial and pleasant to know.

I met a great many other pleasant people both in the Bureau and on the outside. But for Washington in general, the less said the better.

The proposal for a Western newsletter was approved by Hopkins and L.O. Howard. The first issue was prepared by Miller at North Fork; a facsimile follows:

North Fork, California April 16, 1923

NEWS LETTER–WESTERN DIVISION
Forest Insect Investigations–Bureau of Entomology
U.S. Department of Agriculture

As the plan of organization for a Western Division of the Branch of Forest Insects as accepted at the Berkeley Conference, February 5-10, 1923, has been approved by Dr. Hopkins and the Chief of the Bureau, it is desirable to get the organization underway as soon as possible.

The plans for some sort of a news letter as a medium for keeping the widely separated western stations in touch with each other and in line with policies was favorably considered at the Berkeley Conference. There is little doubt but that this letter will serve a most useful purpose and its success will depend upon the cooperation of the Western field men. We will try to get this out at least monthly to include such items as the following:

1. Movements of personnel at Western stations.
2. Accounts of special field trips or investigations.
3. Progress of projects.
4. Discussion of topics and policy matters in which all stations are interested.

Contributions of this nature can be sent to North Fork in pencil draft and we will try to take care of the typing here. Suggestions as to the name, form, or contents of these news letters will be welcome. This issue represents our first attempt. As no announcement has been made news matter from the other stations did not come in.

Let's make the next letter a real one.

Although the exact details of reorganization remained to be worked out, the newsletter Summarized Keen's understanding of the Washington office plans to date as follows:

THE WASHINGTON DETAIL

Mr. Keen gives the following account of his Washington detail which followed the Berkeley Conference:

1. Western Organization.

At first it seemed rather useless to go ahead with our plan of western organization since the administration of the Branch seemed so uncertain. However, upon advice from Mr. Miller steps were taken to secure the approval of this plan and with some modifications suggested by Dr. Hopkins it was approved by him and Dr. Howard, and can now be considered as in effect.

Under this plan it will be best to take up all matters affecting policy, administration, advice, criticism of reports, cooperation, etc., thru Mr. Miller; matters which before have gone direct to Washington should be handled thru Mr. Miller, since he is better informed as to local conditions than is the Washington office, and Dr. Hopkins cannot afford to spare the time from his bioclimatic research work to go into all these details.

It will be best to take up matters of allotments, increases of authorization, station needs, etc., thru Mr. Miller as he can then keep track of the funds available, and use our meager appropriations to the best advantage.

Under the advice of Dr. Ball authority has always been granted the field men to publish articles of local interest in local papers or periodicals after approval by the District Office which in our case is Mr. Miller. Periodicals such as the Timberman is especially included in this category. (Par. 171 Administrative Regulations).

So Miller's suggestions, with support from other Western forest entomologists and state and federal cooperators, played a major role in how the Western stations would be reorganized.

There is no inkling in his diary that he was now leading the pack, but from Keen's comments in the newsletter, it was obvious that Miller was going to be playing an expanded role in the management of Western forest entomology. His title had even changed from "assistant entomologist" to "entomologist." Nary a word in his diary about his promotion. He was not one to toot his own horn; he had been too busy quietly leading by example. By October 1923, Craighead had officially replaced Hopkins, and he wrote a short article for the Western newsletter describing his goals.

A newsletter facsimile follows. Notice that the newsletter is addressed to "men." No women were in the profession in 1923!

NEWS LETTER–WESTERN DIVISION
Forest Insect Investigations, Bureau of Entomology
U.S. Department of Agriculture
North Fork, Cal.–Oct. 1, 1923.

TO THE MEN OF THE WESTERN DIVISION.

I suppose you have all been wondering what is going to happen next, now that a new head of the Division has arrived in Washington. Just to relieve any anxiety right at the start, I am going to say it will be nothing radical; whatever changes do take place will be after we have all gotten together and seriously discussed the work.

In accordance with Mr. Miller's suggestion I decided the use of the official organ (Western News Letter) of your well-organized Western Division would be the best manner of putting before you some ideas I have for the future. It will be less formal than a letter to each of you and you can all come back (as I see you do at one another), which is just what is wanted.

In the first place I feel that our Division is primarily a research organization with the object of rendering service. We have a part to play in the development of an efficient forest policy for this country and as time goes on it will become a more and more important part, as has that of field crop and horticultural entomologists in agriculture.

The Forest Service and the private foresters, particularly those of the Northeast, are coming to realize more and more the importance of the entomological problems in their efforts to manage the timberlands. This argues well for us and will continually open larger fields for our endeavors. Another angle of all this is that we should not lose sight of a bigger and broader objective when digging down into the details of our pest problems.

To accomplish such results it is necessary, with our limited resources, to do thoroughly everything we undertake. We should not take anything for granted until we have a sufficient array of data and facts to substantiate it and present it in such a manner that it is open to fair criticism. It may be well to limit our projects to a relatively few in number and hammer away at these from all angles. As an example, I might suggest a serious defoliation, since I have been particularly interested in such a problem the past three years and feel that in the future after our mature forests are gone such insects will be our most serious pests. It is first necessary to know in great detail the seasonal history and feeding habits of the insect–not only on individual hosts or under laboratory conditions but in its broader ecological aspects, in relation to all forest environments. It is necessary to know the physiological effects of defoliation on the tree, the relation of secondary insects to the current annual growth of the tree, and the relationship between the vigor of defoliated trees and recovery. Such ramifying ends will immediately suggest the question, how can we do it? The answer is cooperation. We must seek help from the forester for his conception of the forest types and quality sites, as well as on the relationships between tree growth and defoliation; from the plant physiologist and plant mycologist we can get assistance on his phase of the problem.

We are endeavoring to establish a forest insect station in the Northeast to cooperate with the New England Forest Experiment Station. Mr. Dana will represent the Forest Service and Mr. Pierson the Division (for the present in a temporary capacity). From the start the effects of budworm defoliation on the current annual growth will have to be considered in the yield studies undertaken by the Experiment Station. I cite this as an example of how we can be of service right at the opening of the station.

In selecting our problems in the future I feel that we should consult the Forest Service and endeavor to undertake lines of investigation that will be of most immediate and direct importance in carrying out their policy for that particular region.

I hope we can develop a spirit of endeavor for the Division as a whole, such as that developed in the West. We should endeavor to let the other fellow know what each of us is doing and come back at one another with constructive criticism and suggestions. I feel myself that the result of any problem I undertake is not so much a personal creation but that it is merely my interpretation of natural events. Any suggestions that will help to get nearer the truth of the situation will be welcomed.

Although the preceding discussion relates more directly to purely forest insect problems, the same general principles will equally apply to our other lines of work–forest products, shade tree insects and nursery problems.

Continued