tion with such spray programs. The stem-foliage method of herbicide application also involves the use of large amounts of spray solution and high pressures to force the spray through the leaf canopy.

This naturally tends to increase the intensity and extent of the first two problems mentioned. The stem-foliage spray program is limited only to certain portions of the growing season. Therefore, there are a relatively smaller number of working days available to the applicator. Because of the depth of foliage, oftentimes inadequate chemical coverage is obtained and this leads to incomplete kill, and increased resprouting. Chemical "pruning" is less costly than mechanical cutting, but is still not a satisfactory end. It is the applicator's desire and need continually to reduce the total number of woody stems per acre.

The above problems associated with stem-foliage spraying have been known and discussed for years. The fact that basal treatments could be used at any time led some investigators to propose the use of an extensive overall spray to be applied to woody stems during the dormant season (between leaf drop in the fall, and bud growth initiation in the spring). The question to be answered was whether a hormonal herbicide such as 2,4,5-T could be absorbed adequately, remain unbroken, in toxic concentrations in the stem tissue during the dormant period of the plant's life cycle, and still effect its physiological action the following growing season.

Research investigations and commercial applications over

(Continued on page 26)

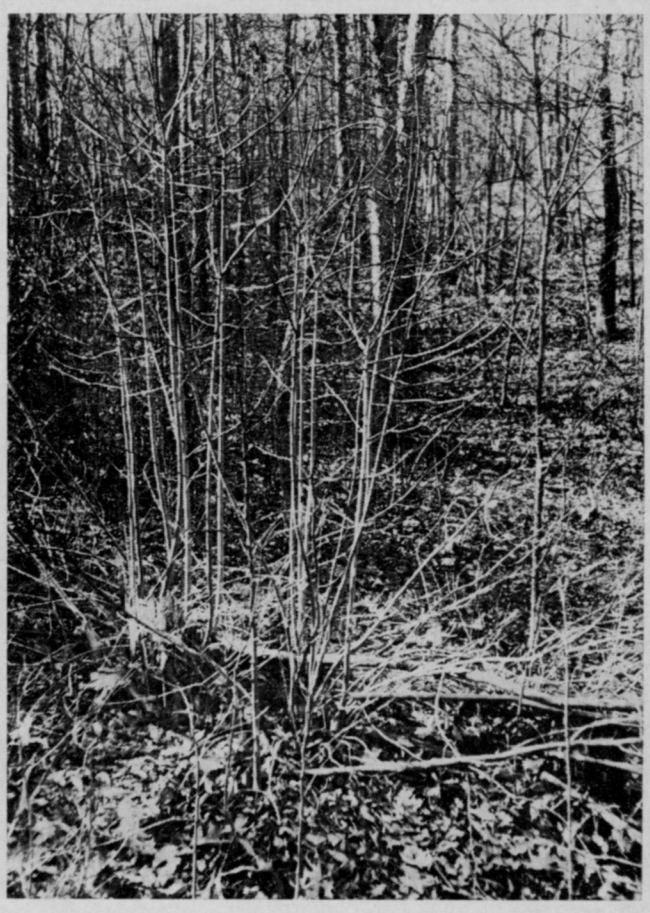
Dormant Season Brush Control

By DR. B. A. SPRAYBERRY

Technical Service, Agricultural Chemicals, Diamond Alkali Company, Cleveland, Ohio

Spraying brush after leaves have dropped can be an off-season moneymaker for many CAs.

Dormant season spraying has been tested, and is used, by railways (left). While it need not be the dead of winter to use "dormant cane broadcast," it is possible to apply chemicals when snow is on the ground (below). Actually, the brush at right is "dormant enough" to permit use of the process described in this article.



Controlling JAPANESE

JAPANESE beetles are notorious hitchhikers, but they had better not stick out their thumbs around the Cleveland-Hopkins Metropolitan Airport in Cleveland, Ohio, because last summer officials treated the field's 800 acres to effectively control these voracious pests that chomp on more than 275 different shrubs, trees, and plants.

Although Japanese beetles do not necessarily present a major problem to the airport grounds, their presence there poses a threat to agriculture west of the Mississippi River, where only a few have been found in isolated locations.

"Once they infiltrate an airport such as this, they can hop a jetliner and spread to California in a matter of hours," said Charles N. Shepeard, supervisor of the U.S. Department of Agriculture Plant Pest Control Division for Ohio and Kentucky. Steve Webster, USDA inspector for several counties in the Cleveland area, was directly responsible for the Cleveland project.

The airport, located about 10 miles southwest of Cleveland, was previously treated with DDT emulsion foliage spray to control adult beetle infestations. "We started using Sevin insecticide as a foliage spray in 1962 on recommendation of our Washington office. Some of the vital considerations for changing were its quick kill of Japanese beetles, its longer residual action, and its relative safety to humans and wildlife," said Mr. Shepeard.

Cooperating with the U. S. Department of Agriculture, the state and city authorities are vitally concerned with keeping airports free of Japanese beetles. And the airlines have also entered the picture.

Three years ago, the Cleveland-Hopkins field was badly infested. Beetles even buzzed customers in the terminal restaurants and stores. At that time, a residual soil insecticide program was initiated to control Japanese beetle grubs and a foliage spray was used to kill adult beetles which migrate from outlying areas.

To assist the program, the USDA furnished the equipment and trained the airline personnel in insecticide use. Airplane crews sprayed plane interiors

BEETLES at Cleveland's Airport

prior to take-off to prevent beetles from getting a free ride to uninfested areas.

Japanese beetles were first discovered in this country in 1916 near Riverton, New Jersey. They have multiplied and spread until they now are found in varying numbers from southern Maine southward to Georgia and westward to Illinois.

Last year, officials also treated the Akron-Canton Airport, south of Cleveland, and other strategic locations in the Cleveland area with Sevin. "Japanese beetles are abundant in about 30 counties in eastern Ohio," said Mr. Shepeard.

Rain Launched Beetle Attack

A dry summer in northern Ohio helped to keep Japanese beetle populations down last year, according to Mr. Shepeard. "This type of weather kills many of the newly hatched grubs and destroys many eggs," he said. But, he said, the rain during July triggered a beetle emergence from the ground, "and we went to work with our trucks."

"In the outlying airport areas, where the vegetation is dense, the adult beetle population was heavy," Mr. Webster said. He noted that beetles were especially prevalent on willow and wild grape leaves. These seem to be the beetle's favorite host plants in the airport area, which is almost devoid of its many other favored ornamental hosts.

Each hour, two men operating a pickup truck equipped with a mistblower, were able to treat 50 acres with insecticide.

Several large pieces of equipment, including the Buffalo Turbine hopper-fed machine in the background, were used in the Cleveland airport project. Equipment was periodically checked by this team of USDA scientists.

Spreader-Sticker Added

"We used 15 lbs. of insecticide to 100 gallons of water," Mr. Shepeard said, "and included a spreader-sticker substance to insure an insecticide deposit for several days on the plants and large black-top areas at the airport."

Since Sevin (carbaryl) insecticide is said to be safer to humans and animals than some other in-

Even the fringe areas of the giant airport were treated when USDA experts stopped the Japanese beetle infestation from spreading. Truck above was used to circle the airport grounds, as well as to lay down a protective mist on the runways themselves (below).

secticides, drift of the material does not present a hazard to property adjoining the airport. The spray crew reported the pesticide was well suited for mistblower application. They were not able to cover rugged terrain hardly navigable by jeep, but they fogged such areas with a thick cloud of mist.

"Sevin is easy to apply," Mr. Shepeard said, "and this is another reason for using it. Our men do not need to wear masks or special clothing while spraying. They just practice normal safety precautions.

"Sevin usually lasts about seven to ten days, or until it is dissipated by rain. It gives a quick kill to the adult beetles which emerge from under the soil, mostly during July and August in the Cleveland area."

After a four- to six week period above the ground, the beetles gradually disappear. Most of them are gone by the middle of August, but in New England some are around until frost.

"Most people forget about them when they are gone," Mr. Shepeard said, "but the damage has been done. They leave the plants on which they have been feeding and burrow into the ground, usually in turf. Then, they lay eggs which later develop into grubs.

"For some strange reason," he added, "Japanese beetles are attracted to airplanes. However, after we complete our spray program, more than 80% of the beetles at the Cleveland-Hopkins Airport will be destroyed, and we expect 100% control for a period of 10 years thereafter.

"Airlines didn't have to spray their planes last year because our continuing program took care of all the beetles in the immediate area. Our work last year indicated that, with the soil insecticide program to kill the overwintering grubs and the application of Sevin insecticide in the summer, we can keep the airport relatively free of beetles."

Beneficial Worms Can Become Lawn Nuisance

Although earthworms and night crawlers are usually regarded as beneficial, they can become so abundant in lawns that control measures are necessary, explains Bill Hantsbarger, Colorado State University extension entomologist.

Worm overpopulation in lawns can result in an uneven turf due to earthworm castings. Lawns damaged in this way are difficult to walk upon and more difficult to mow, the entomologist continues.

Earthworm control is limited, but numbers can be reduced by applying chlordane to the soil. One pint of 46% liquid chlordane should be mixed with 20 gallons of water. Ten gallons of this mixture will cover about 1,000 square feet of lawn area, Hantsbarger explains.

This earthworm control mixture can be applied with a conventional sprayer. After the insecticide has been applied, the lawn should be thoroughly watered. This will carry the insecticide down into the soil where the worms are working. When the lawn has dried, the turf will be safe for children and pets. One application of the insecticide should last an entire season.

Best results are obtained when soil temperature is warm and earthworms are working close to the surface. Late spring or summer applications are usually

Colorado Weed Book Published

A 218-page book, titled "Weeds of Colorado," has been published by Colorado State University Agricultural Experiment Station. The book is the work of Bruce J. Thornton, associate botanist, and Dr. H. D. Harrington, botanist.

Including nearly 150 drawings of weeds, the book also has an appendix containing summaries of Colorado pure seed law, pest law, and weed law. Copies of the book are available for $1, postpaid, from the Bulletin Room, Colorado State University, Fort Collins, Colo. 80521, Request Bulletin 514-S.

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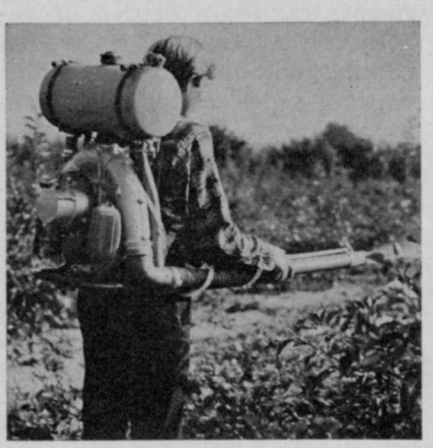

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Turfgrass Portraits III:

Bentgrasses

By DR. ROBERT W. SCHERY

Director, The Lawn Institute

Marysville, Ohio

This is the third in a series of nine articles on basic traits and maintenance procedures for common turfgrasses. Next month author Schery discusses "Wintergrass".

BENTGRASSES have long been the elite northern turf species, except for one "black sheep" of the family, redtop, a frequent nursegrass. Distinctions between bentgrasses are not clear cut, and varieties reflect local adaptation as much as anything. An outstanding example is Highland bentgrass, which has made a hilly section of the Cascade foothills in Oregon its own. The just-average rainfall of this area, with hot, dry summers, is hardly typical "bentgrass country." In contrast Astoria and Seaside varieties come mostly from lower lying bottoms nearer the coast, where rainfall may be double that of the Highland area.

Both Highland and Astoria are grouped as Colonial bents *(Agrostis tenuis)*, along with "Colonial bent" from Washington. Holfior, a Dutch selection, seems similar, though classified *Agrostis stolonifera*. Seaside, and more recently the hybrid, Penncross, are considered creeping bentgrasses, *Agrostis palustris*. The exquisitely fine-textured Velvet bent *(Agrostis canina)* is experiencing some revival of interest. All are available as seed. Seed of any sexual species carries a degree of genetic reassortment. A seeded population includes very slightly varying types, and profits from hybrid vigor. There is also the substantial convenience of easy planting.

Many golf greens have been planted to bent strains perpetuated vegetatively and thus held reasonably uniform (assuming no mutations or volunteer grass in the nursery). Such strains have been mostly local adaptations, noticed doing well under usage. They are primarily for specialized golf turf, under a regimen of care too tedious and expensive for homeowner, industrial, or general public usage.

Only the most fragmentary records exist of early bentgrass introductions, and what intermixture has occurred with native species. Mixed lots of "German bent" were early brought to Oregon, and spread widely west of the Cascades. Natural selection supplied successful types, which the agriculturists later chose for varietal designation. Today Oregon supplies most of the domestic fine-textured bentgrass seed, a large portion of which is exported back to Europe (from which it presumably originated). The exception is coarse redtop *(Agrostis alba)*, of which most seed has a midwestern origin.

Growth Pattern and Preferences

With breeds of bentgrass so diverse, it's hardly possible to characterize growth pattern exactly. All bentgrasses are "cool-weather" species, growing exuberantly in spring and autumn (temperatures ranging downward from 80°). They don't hold their color into winter quite so well as do Kentucky bluegrasses and fine fescues, but nonetheless retain a greenish cast, especially where protected by a snow blanket.

To a greater or lesser extent, bentgrasses spread by aboveground runners (stolons) that root at the joints. This is especially the tendency with creeping bents. Tillers are abundant, contributing to the superbly tight texture that makes bentgrasses so sought for bowling and putting greens. But this dense growth weaves a thatch of intercrossing stems, demanding precautionary thinning (dethatching) occasionally. Bentgrasses are thus not so self-sufficient and easy to keep as are most Kentucky bluegrasses and fine fescues. Some varieties are handled more easily than others. The creeping bentgrasses require most care. More erect forms, such as Highland, mat less, usually prove more suitable for lawns and fairways.

Any bentgrass deserves mowing at least twice per week, to encourage tillering from below. Otherwise a tuft of leaves forms at the tip of the stem, leaving brown stubble when removed by mowing.

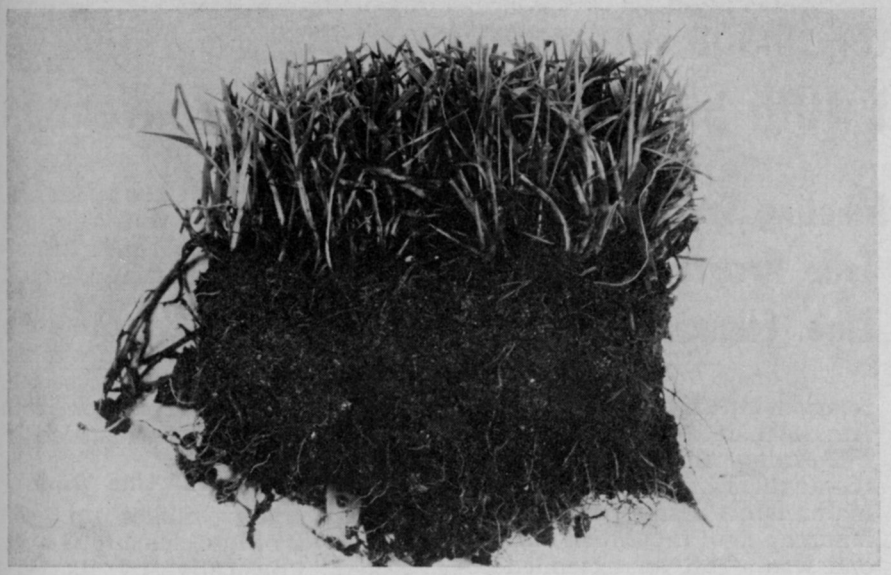
By and large, bentgrasses love the "full rich life." They do their best in misty climates, or where they are watered regularly. They relish fertilization, possibly partly because a rainy environment leaches plant food. Another consequence of abundant moisture is acid soil, of which bentgrass is quite tolerant.

Adaptation

Bentgrass is preeminent on the Pacific coast from San Francisco northward. It does reasonably well in the northern states east of the Great Plains, too, especially around the Great Lakes, and in some of the drizzlier sections of New England.

Most bentgrass varieties are widely adapted, with seeded types such as Highland and Penncross being utilized both East and West, North and (mid) South. The vegetative varieties often perform slightly better according to region. Washington, Arlington, and Congressional have rated near the top in Washington, D. C.; Old Orchard, Toronto, Cohansey and others in the upper Midwest; Evansville and Springfield in the lower Midwest. All bentgrasses perform better in full or nearly full sun, as compared to shade.

In the early days of packaged lawn seed, bentgrass of uncer-



Highland bentgrass, shown here, is one of the more erect of the bentgrasses. This sod is mowed to about a ¾-inch height. Photograph is from The Lawn Institute, which author Schery heads.

tain origin was often included. Some natural selections have found the Great Lakes area so to their liking that volunteer bentgrass has become a pest. Tight patches show up in Cleveland and Detroit lawns planted to bluegrass. Seed or live stems seem to occur in most soils.

Many named varieties of bentgrass are probably not the pest that is this volunteer sort. Lawn Institute trials so far indicate that Highland is not aggressive, does not invade neighboring bluegrass. If anything, it is too meek, letting bluegrass and clover invade it. Winterseeding tests in the South show it to be very mild mannered there. The pendulum may someday swing back to include bentgrass in certain seed mixtures (for turfs that must be mowed low).

Adaptation to low mowing is the main reason for choosing bentgrass. Its special usefulness for golf and bowling greens, usually clipped ¼ inch or lower, is obvious. But many fairways, and some lawns, are being low-clipped. Only under very favorable circumstances will bluegrass and fine fescue stand the ½-inch clipping height demanded for professional golf tournaments these days.

Propagation

Bentgrass seeds are very small and abundant, about 7 million to the pound. Consequently, seeding rates can be quite light, though limited on the low side by inability to spread small quantities of seed evenly. One pound per M suffices with a good seedbed. The seedbed should have been cultivated, generously fertilized, allowed to settle, leveled, and the surface reloosened. A good spreader distributes the seed more evenly than is possible by hand; for hand sowing the seed can be bulked with vermiculite, soil, cornmeal, or any dry materials to allow more leeway in distribution.

With the vegetative varieties, the usual practice is to order fresh stolons (fragmented stems from sod washed free of soil). The stolons are spread several bushels/M, topdressed lightly with soil, and watered regularly until rooted from the joints.

What To Watch Out For

Aside from thatch, one of the biggest headaches with bentgrass is disease. Brown patch and dollar spot are especially troublesome, the former under high fertility, the latter under low. Regular prophylaxis with fungicides should be part of the maintenance program, at least in muggy weather. Be careful of burn with certain mercurials and unproven formulations. Even in winter, snow mold (three or four different fungi) can blemish bentgrass. Preventive fungicidal treatment before snow falls, and during any open period of winter, helps forestall snow mold.

Insect damage is no worse to bent than to other grasses. If attack threatens, insecticides used as recommended should not harm or discolor bentgrass. But luxuriant bentgrass may be sensitive to fertilizer, or to certain herbicides (viz. Zytron, Silvex, certain arsenicals), especially on hot summer days. One would hesitate to apply a soluble fertilizer any stronger than 1 lb.N/M, and it is a good precaution to syringe even this light a rate into the turf during hot weather. There is a tendency with bentgrasses for fertilizer particles to perch atop the tight sod rather than sift through to the soil as would be the case with bluegrass and fescue.

Intensively managed bent, such as on golf greens, may winterkill occasionally. Seldom is this directly due to cold, but more likely a cumulative effect involving desiccation and perhaps subsequent disease. Where snow lies on the ground most of the winter, drying out is generally not serious, though snow mold may be intensified. Watson, of Toro, has been successful in protecting putting greens during winter with plastic covers.

In Summary

Bentgrasses offer the finest textured luxury turf available to more northerly regions. Such high status is not without its drawbacks, however, since bentgrasses must be well tended to live up to their potentialities. Involved are frequent mowing, high fertility, irrigation, and regular pesticide application. Disease prevention is particularly important. And vigorous varieties with creeping tendencies may thatch, which in turn can intensify mowing, thinning, and disease-prevention requirements. In spite of the more onerous maintenance, some of the less troublesome varieties merit further trial for low-cut turfs eastward of the Great Plains. Highland should not be the aggressive problem there that is volunteer bent.

Arborists: Build a Better Image, Unanimous Advice Of Speakers At 40th Shade Tree Conference Convention

450 Delegates at Houston Meeting Seek Expanded Municipal Tree Program, Set To Work on Line Clearance's Future

Since members of the American business community in general put an almost overwhelming emphasis on "public relations" these days, it's no surprise that delegates to the 40th Annual International Shade Tree Conference Convention should do so too.

In fact, a theme reiterated constantly throughout the 6-day affair was the importance of telling the public about the tree business.

But the 450 commercial arborists, municipal foresters, shade tree commissioners, park superintendents, and utility foresters who convened on the Shamrock Hilton Hotel in Houston, Texas, August 16-21, remembered to relate the vagaries of "public relations" to the more tangible values of sound technical know-how and boundless enthusiasm for the job at hand.

After all, the group decided, public relations, in a larger sense, relies on know-how for its substance, and on dedication for its fiber. Thus the varied program of this 40th Convention seemed specifically designed to give a broad base for developing the "better image" so many speakers cried out for.

Underlying themes which characterized the annual meeting (in addition to the public relations function) were (1) the interrelationship of other vegetation maintenance activities to tree work, and (2) the broader relationship of arboriculture to American industry as a whole.

Defining the first of these themes were talks on tree-lawn maintenance and on general landscaping. Pinpointing the second was a call for extended cooperation between the ISTC and such groups as the Edison Institute to help bring about a general uplifting of arboricultural standards and improvement in the actual appearance of our city streets, where trees and utility lines wage their cold war of coexistence.

But the fact that the recurring concern of delegates and speakers alike was to be the projection of a better image became apparent early in the week when widely known industry figure Keith L. Davey mounted the podium to discuss "Good Standards of Line Clearing."

Davey, president of Davey Tree Surgery Co., Ltd., in San Francisco, Calif., made his remarks during the Tuesday morning sessions on public utility arboriculture. This portion of the program was arranged by C. E. Lee, Southern California Edison Co., Los Angeles; Lee is chairman of the ISTC Public Utility Arborists Committee.

"Line clearing, as a recognized regular part of a utility's planned operations, has only developed since the midtwenties," Davey began.

Previously, he said, linemen removed interfering trees the quickest and easiest way known, which usually meant a ruined tree. "By the thirties," the pioneer arborist continued, "bad public relations as well as high costs brought contracting by recognized tree companies to the front. As could be expected, with this quick expansion, both good and poor work resulted."

Makeup of "Good" Line Work

What really makes up good standards of line clearing? Davey asked. "Basically, by its very public nature," he answered, "whatever is done must leave each tree structurally stronger and the neighborhood better looking than before." Then he reminded his audience that there is no shortcut to drop crotching and pruning to a lateral, or in shaping the tree in line clearance.

So 40 years of line clearing, good and bad, has resulted in many inferior specimens of trees still standing on our streets as a result of poor work. Unfortunately, the Californian elaborated, line clearing has also been charged with all the other misplaced trees under or near the lines.

"This is not right or fair," Davey proclaimed, "but it does give us our brightest aspect for a good future utility image. A plan to remove and replace weed trees in utility tree-trimming will bestow real value to the community."

"I believe a carefully planned removal-replacement program using many clonal varieties, such as those developed by the Saratoga Horticultural Foundation, is our best final standard for line clearing. As the need for utility pruning decreases [because of planned planting and underground lines—Ed.] what a wonderful heritage we can leave for our children," Davey concluded.

Davey's address fell on ears already attuned to the public relations aspect of this plea for more responsible management of utility line planting. The previous speaker, a Texas utility executive, left no holds barred in his emphasis on what an image can mean both to utilities and to the companies which contract to

New ISTC president Joseph Dietrich (left) of Greenwich, Conn., was congratulated by longtime ISTC leader and Cleveland municipal arborist John Michalko.

Davey: "A wonderful heritage of trees for our children."

clear their lines and rights-of-way. W. B. Thornton, Right of Way Agent, Houston Lighting and Power Co., said from the outset that he knew no group which is "in greater need of a good public image than are members of the rights-of-way profession."

"You gentlemen whose companies are doing work for the utilities have a public image to protect and improve—not only for the utility company itself, but for your own firms as well."

Thornton said every man and woman working for an investor-owned utility company today, whether directly or indirectly, must assume full responsibility for "selling" the company to all with whom they come in contact. This must be done, he added, "if the investor-owned utility companies are to continue on their own merit and strength, without government domination and control."

"Whether you contract for work with the Detroit Edison, Mountain Valley Electric Co., or my own company, Houston Lighting & Power, you are an integral part of the formation of the public image of those companies, right down to the man burning brush," the Houstonian commented.

One way to get a better "PR" performance from employees is to ask utilities to send one of their public relations executives to address line clearance crews and office staff.

"Ten years ago, Houston Lighting & Power Co. had 373,995 customers in its service area. The Trees of Houston Company doing our transmission and distribution line clearing, contacted 12,961 of these customers for permission to trim and remove trees. In 1963, Houston Lighting & Power Co. had 521,230 customers. Our contractors contacted 24,982 residents or customers. Thus the foreman for Trees of Houston probably came into actual personal contact with more customers of Houston Lighting & Power Co. than all of the employees of the company itself combined." The public relations aspect of this point is obvious, Thornton implied.

In conclusion, Thornton said, "Every man working in our employ should be an ambassador of good will to everyone with whom he comes in contact, whether by idea, by thought, or by action. This is the fundamental way, and the only way, to acquire, keep and project a good public image."

More ISTC City Tree Say-So?

A proposal that the International Shade Tree Conference extend further its program in municipal aboriculture was announced by Edgar G. Rex, Executive Secretary, New Jersey Federation of Shade Tree Commissioners, New Brunswick. Rex was also part of the Tuesday morning program.

Thornton: "Every arborist an ambassador of good will."

While many of our large cities have organized street tree plans, Rex began, all too many need help in these plans. Rex, in his relationship of arboriculture to community industry, recommended that municipalities without full-time arborists hire a trained consultant who can direct tree planning activities.

"Impulsiveness in tree plans must be discouraged," Rex added. "We need to assemble a truly integral representation of major utilities to discuss problems of mutual concern, with the promulgation of street trees as the ultimate goal."

Rex suggested that the ISTC might work in this regard with the Edison Institute, a trade group headquartered in New York whose members are the investor-owned electric utilities.

City's Look/Muny Arborists Team

"If we are to preserve any of the beauty of our cities, the municipal arborist must lead the way." This was the opinion of James T. Oates, longtime city tree authority and now City Arborist for Richmond, Va., who spoke during the sessions on municipal arboriculture. These municipal meetings, which take place concurrently with the National Arborist Association Meeting, are under the direction of John G. Michalko, Shade Tree Commissioner for the City of Cleveland, Ohio, and chairman of ISTC's Municipal Arborist Committee.

"I recently took a 2,000-mile tour through many cities," Oates said. "Many of you here are representatives of utilities, and many of you, as line clearing people, probably belong to the International Shade Tree Conference. If so, and you condoned the work I saw, we then have a tremendous job as municipal arborists—that of selling you on the idea that there is an era of *community* responsibility facing us."

Oakes wants standards of performance set up within the ISTC and within the Municipal Arborists group specifically. He also imposed larger responsibilities on arborists when, while discussing a series of slides, he asked, "Are you prepared to put the proper plants as a whole in a park? Lay out a rose garden? Landscape a median strip?"

Rex: "Impulsiveness in tree plans must be discouraged."

These are all duties which increasingly fall under the responsibility of the municipal arborist, Oakes suggested.

Remaking St. Louis' Tree Dept.

How he brought a poorly organized municipal forestry department to a highly complex and effective level was explained by Edward J. Schrader, Commissioner of Forestry for the City of St. Louis, Mo. Schrader said he was shocked, when he first assumed his municipal duties in St. Louis, to learn that arboricultural standards were not considered in the Forestry Division's operations. There was no in-service training program, and only a few employees were trained at all in municipal forestry techniques.

Trimming schedules were unheard of, equipment obsolete.

With these problems facing him, Schrader set out to remake the entire tree maintenance program for the city.

First step, he said, was to obtain the necessary tools for his men. Then he set up a training program, which he implemented by adding a standard operating procedure manual.

"Now," Schrader said, "we were beginning to shape up."

Schrader cut his crews from six or seven men to four men each in order to cover more city area and to increase efficiency. He established work quotas to govern how many trees each crew could remove or trim in a day.

"From this inadequate forestry section in 1954," Schrader said proudly, "We have made considerable progress."

Where before there were 35 men in the section, now there are 62 regular tree workers and 10 additional ones just on weed control (the latter function is considered an allied job and is administered by the Forestry Division in St. Louis). Schrader's operating budget is $299,000 with an additional $60,000 for contractual trimming.

Hurried conference before an address on equipment enabled ISTC outgoing prexy Dr. Spencer Davis to match notes with Fred C. Galle, (right) Director of Horticulture, Callaway Gardens, Pine Mountain, Ga.

Schrader says he now has the following equipment: 23 trucks; 2 tractors; 2 Sky Masters; 7 chippers; 3 mistblowers; 3 hydraulic stump cutters; 1 tree mover; 6 weed mowers; 1 hydraulic planting auger; 3 weed sprayers; 28 chain saws; and a well-stocked warehouse of small tools.

Returning to the dominant theme of the convention, Schrader said the city forester must be a good salesman if the forestry division is to become a prominent city department. "You must conduct a good continuous public relations program, educating both the citizens and the city fathers in the value of shade trees and the necessity for their proper care."

As part of his program, the city has had an active campaign to urge citizens to plant trees, and there seems to be an upswing in general interest in tree care in St. Louis, he concluded.

How In-Service Training Works

Schrader had lamented the lack in St. Louis of an in-service training program when he went there to reshape the arboreal face of the city. The following speaker gave a dynamic illustration of how such a program is established.

Outlining a training program for municipal arborists was Frank Vaydik, Superintendent of Parks for Kansas City, Mo., and formerly with Detroit's park and tree agency. He used a bank of three projectors to spread a 30-foot wall of color slides before the audience as he spoke. The presentation was most enthusiastically received.

"The greatest resource any organization has is its people," Vaydik began. Therefore it is obvious that training is of primary importance in efficient operation.

Vaydik feels that too much of today's training material is directed at supervisors, while "underlings" actually need the training most. "Only through training can personnel in the lower echelons develop to their fullest capacity," he summarized.

Vaydik's plan is divided into four phases: (1) *initiation* of program; (2) *selecting type* of program; (3) *obtaining time* to conduct it; and (4) *designing* the actual program itself.

The person to initiate the training schedule, in municipal arboriculture, is the Commissioner of Shade Trees or City Forester, Vaydik said. Then he must remain concerned with the training plan throughout its duration to make sure it doesn't simply wither and die.

The time training sessions are conducted depends, of course, on location, although most shade tree supervisors prefer to schedule their sessions during the winter months, which is generally a "slow" season in many sections of the country because of inclement weather.

"Certain programs relating to specific seasonal work, such as tree spraying, should be held just prior to the start of operations," Vaydik remarked. "It has been proven that training on proper spray methods given in December will produce little results in July."

Vaydik described how City Forester Wilbur Brown, who works in Vaydik's department in Kansas City, carried out a typical training series. After surveying all forestry operations to see what kinds of work are actually done and what is needed to implement skills in doing these things, Brown confers with his foremen. In one case, it was decided that a training session in spraying techniques and operation of the mistblower was needed.

Brown selected March for the mistblower training period, since his men would then be ready for early spring spray operations.

First, the men were given a

Training program for arborist crews was explained by Frank Vaydik (left) who illustrated a point for Professor E. W. Zukauckas of Texas Tech in Lubbock.