

Here today...



...goner tomorrow

Ethion kills chinch bugs . . . ends destruction to lawns, parks and fairways. Ounce-for-ounce no pesticide outperforms it. Tests show just one application gives outstanding results and provides total control. And Ethion is easy-to-use, safe, economical, long lasting. U.S.D.A.-approved to curb sod webworms, halt mites in Bermuda grass, too. Write or call your supplier today for details.



TECHNICAL CHEMICALS DEPT., NIAGARA CHEMICALS DIVISION, MIDDLEPORT, NEW YORK

When Writing to Advertisers Please Mention WEEDS AND TURF

W-11

POTTS MIST BLOWERS

Made to USDA Requirements



For pastures, crops, forests, corn, milo, soybeans, vegetables, small grains, crawfish, fire ants, shade trees, lawns, yards, fly & mosquito control, municipalities, highways, brush & weed control along rights-of-way, barn & cattle spraying, and custom application.

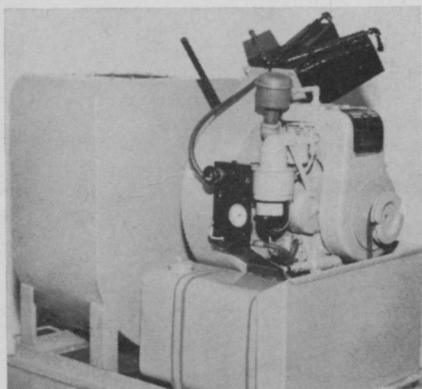
THREE DIFFERENT MODELS

P-48-S Big 13 hp. model for rapid coverage — treats 50-foot swath. Thoroughly tested and proven. Delivers 4,800 cu. ft. of air per minute. Weighs 475 lbs. \$1100-1350.

P-24-S Rugged 300 lb. mist blower. Triple square or round outlets will deliver up to 2,400 cu. ft. per minute. \$800-900.

P-24-E Economy model, with single outlet or triple outlet, does not include spray tank. All features of P-24-S, including standard pumps, pressure regulators, gauges, etc. Weighs 265 lbs. \$710.

A granule and pellet distributor is available as auxiliary equipment for each of the S. F. Potts Mist Blowers at \$50-75, for applying insecticides, herbicides, aerosols, or fertilizers, while avoiding spray drifts. Tractor P.T.O. units are also available.



Model P-24-S, with square outlets, is shown above

Now an authorized distributor for the Back-Pack Mist Blower "SOLO"

S. F. Potts is now an authorized distributor of the portable back-pack Mist Blower "Solo," manufactured in West Germany. Applies dust, spray, or granules. \$279-298.

As originators of Mist Blowers and the Concentrated Spray method, we are equipped through extensive experience and research to help each purchaser with information and suggestions on chemicals, equipment, and how to spray safely, economically, and effectively. Take advantage of our 35 years research in this field with colleges, experiment stations, and the U.S. Department of Agriculture.

Write today for full details on the big, standard, and economy models.

S. F. POTTS

Box 51, Crawford, Mississippi
Phone Crawford 2241

of hard-shelled beetles of many sizes and colors which feed upon the foliage of shade trees and shrubs. They may eat holes in the leaves, as in the case of flea beetles, or they may devour the foliage completely. Some common examples are the elm leaf beetle and the willow-poplar leaf beetle. Leaf beetles may be controlled by spraying when the leaves are $\frac{3}{4}$ expanded, or whenever the insects are found, with dieldrin or DDT. DDT may cause an increase of mites, so incorporate a miticide in the spray. Lead arsenate is also effective.

Leaf-rollers and Leaf-tyers — The caterpillars included under this heading are described separately because the injury caused by the insects is quite typical, and is seen more frequently than the insects which do the damage. The caterpillars are mostly small, greenish-yellow, and about $\frac{3}{4}$ inch in length when mature. These larvae feed in concealment which they provide for themselves by rolling, folding, or tying leaves together. Control of this group of insects involves early application of the insecticide before the larvae have completed their shelters. The most commonly recommended control is TDE. Arsenical sprays are also of considerable merit. Other newer insecticides which have shown promise in leaf-roller control include Endrin, Phosdrin, Trithion, Sevin, and Guthion.

Sawflies — Many shade and ornamental trees are attacked by colonies of caterpillar-like larvae which strip the plant of its foliage. The larvae have five pairs of prolegs and the adults have transparent wings and a sawlike ovipositor, hence the name. Some species are called slugs, because they superficially resemble small, naked snails. The latter group skeletonize the foliage by eating off the lower surface of the leaf. Sawflies are easily controlled with applications of DDT.

Borers and Boring Insects

The larval stage of some beetles and moths are called borers. Some of these insects work in the terminal shoots, while others work beneath the bark, frequently girdling and killing the tree; still others tunnel in the heartwood, which makes the tree subject to

rots and windthrow. A few species of boring insects are capable of attacking healthy trees, but the majority attack trees and shrubs only after they have been weakened or injured from some other cause, such as transplant shock, drouth, flooding, and dirt fill over the roots. The presence of borers is often not evident until it is too late to save the tree; therefore, preventive measures are of the utmost importance. Spray the



Fall webworm, a common pest of white oaks and other shade and forest trees, is responsible for the heavy webbing on this forest tree.

trunk of transplanted trees with dieldrin, DDT, or lindane prior to wrapping. Be sure to use wettable powder formulations, since oil formulations may injure the bark when the trees are wrapped. Wrap the trunk of the tree with commercial borer wrap, burlap, or even with aluminum foil.

The beetles which act as borers are classified into three groups:

1. **Flat-headed borers** — the sun-loving, metallic-colored wood borers of the family Buprestidae, the larvae of which work in the cambium region.
2. **Round-headed borers** — the long-horned beetles of the family Cerambycidae, the larvae of which bore into solid wood.
3. **The bark beetles** — the shot hole borers of the family Scolytidae and others. The larvae and adults work in the cambium region and are attracted to weakened trees.

The larvae of some of the

common moths also infest the trunk and larger branches of trees. Common examples are the carpenter worm, leopard moth, peach tree borer, and dogwood borer.

Borers may be killed by spraying before the young larvae hatch from the eggs on the bark. The sprays should be applied at monthly intervals during May, June, and July. Direct this spray at the trunk and larger branches. Materials which have been found effective are dieldrin, DDT, lindane, and BHC.

Borer larvae in the cambium beneath the bark may be cut out with a sharp knife. The exposed wood should then be treated with a good wound paint.

Borers in the wood can sometimes be killed if the tunnel is first cleaned out with a piece of wire, and then nicotine sulfate, malathion, or carbon disulfide is injected into the hole. The hole should be sealed with mud, putty, or caulking compound after injection, to confine the fumes.

Leafminers

The category of leafminers contains many different kinds of

insects, the larvae of which feed between the upper and lower leaf surfaces. This feeding may take the form of tunnels which may be either straight, serpentine, or blotch. Some of the more common leafminers are the holly leafminer, arbor vitae leafminer, boxwood leafminer, birch leafminer, locust leafminer, hawthorn leafminer, and the gregarious oak leafminer.

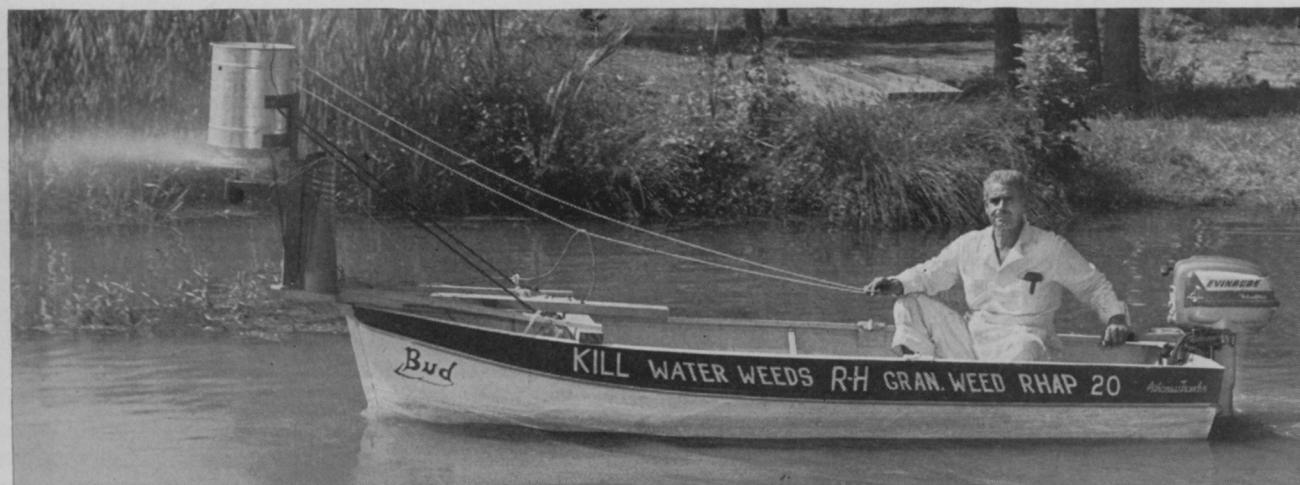
The control of leafminers depends largely upon proper timing of the insecticidal application. If the insecticide is not present on the foliage before the adults lay their eggs, the larvae already inside the leaves may not be killed. The first applications should be made early in May and repeated at monthly intervals for the species which have more than one generation per year. Insecticides commonly suggested for the control of leafminers are DDT, dieldrin, and lindane. Other insecticides which show promise in the control of leafminers are Ethion, Trithion, Cygon, Endothion, malathion, phosphamidon, and Dibrom. Some of the systemic insecticides, such as phorate and

Cygon, have given long-lasting effects when applied to the soil in mid-April. Use a 5% granular formulation at 1 ounce of actual insecticide per inch of trunk diameter at chest height, or apply one pound of actual toxicant per acre.

Galls

Galls are abnormal growths on leaves or petioles induced by insect attack. The forms of galls vary from the simple to the grotesque and unusual. Each species of insect produces a typical gall formation. Galls are produced by various insects, such as midges, wasps, and aphids. Several different mites also produce galls, of which the hackberry witches' broom and the maple bladder gall are common examples. Oak and hickory trees are the favorite hosts for several hundred different gall insects.

Damage from galls is rarely serious enough to justify chemical control, and since the gall tissue protects the insect inside, sprays applied after the galls have developed are ineffective. When only a few galls occur, they may be



CYCLONE MODEL 20 HAND SPREADER. For fast, precision spreading of pelleted and granular chemicals; also seed. Galvanized hopper holds 3 gals. or approx. 20 lbs. Covers a 6- to 8-foot swath with most materials. Feathered-edge spread prevents streaks and double overlaps. Shield protects operator.

Cyclone

MODELS FOR LAND AND WATER FOR HERBICIDES, FERTILIZERS, SEED

The Cyclone Electric Model shown on boat, above, also mounts on garden tractor or front or rear of large tractor, truck or jeep. Powered by a self-contained electric motor which operates from the electric system of the vehicle upon which it is mounted. Models also available which operate from

heavy duty, flexible drive shaft which fits tractor PTO. Double agitator, easy setting rate gauge, and positive shut-off. Spreads up to a 30-foot swath, depending on material being spread. 1-, 2½-, 3- and 5-bushel sizes. Time and money savers that can put many extra dollars in your pocket.



CYCLONE LAWN SPREADER. Famous for speed, freedom from streaks, accuracy. Ideal for fast, precision spreading of pelleted and granular fertilizers, herbicides, insecticides, seed, ice melters, etc. Covers a 6- to 8-foot swath. Feathered edge spread to prevent streaks and double overlaps.

See your distributor or write for further information

THE CYCLONE SEEDER CO., INC.
Urbana 36, Indiana

pruned off and destroyed by burning.

Individual trees which have been heavily attacked by galls in previous seasons may be protected by preventive sprays applied early in the season. Dormant sprays of liquid lime sulfur are effective in preventing attack by Cooley's spruce gall, the eastern spruce gall aphid, ash flower gall, and the maple bladder gall. Where staining by lime sulfur makes its use impractical, delayed dormant sprays (applied just as the buds are swelling) of malathion are equally effective. Similar sprays of malathion and lindane are effective in preventing hickory pouch galls. Several galls, such as the hackberry nipple gall, vein pocket gall, the marginal fold gall of pin oak, honey-locust pod gall, and the gouty oak gall have been successfully prevented by applications of insecticides when leaves are about $\frac{3}{4}$ expanded. The insecticides showing the best results have been dieldrin, Sevin, malathion, lindane, and DDT. Treating the soil beneath infested trees in early spring and in the fall with the above materials is helpful. The aerial and subterranean galls of woolly apple aphids on crabapples have been prevented by monthly application of phorate and demeton. Apply the sprays to the soil, trunk, and foliage.

Mites

Mites are not insects, but are tiny animals closely related to spiders and ticks. They are sometimes called "spider mites" because they spin silken threads over the host plant. Most mites are so small that they can barely be seen with the naked eye. The best way to be sure that mites are the cause of trouble is to hold a white sheet of paper beneath a branch and tap it sharply. If mites are present, they will fall onto the paper and can be seen as tiny specks as they crawl about. These specks, correlated with the typical speckling and webbing, or bronzing, of the foliage, indicate the presence of mites. Evergreens and deciduous trees are both subject to mite attack. Some of the mite species commonly associated with ornamental plants include the two-spotted mite or red spider, the spruce mite, the European red



This pin oak tree has been heavily infested with the marginal fold and pocket galls. Note how the foliage has been twisted and distorted by the infestations.

mite, the honey-locust mite, and privet mite. Any plants sprayed with DDT should be closely watched for mites, since these pests are not killed by DDT but many of their natural enemies are. It is always wise to include a miticide with DDT sprays to prevent mite buildup.

During the past 15 years, a number of new chemicals have been developed for control of mites. These materials, called miticides, do not have any effect on insects. Some insecticides, such as Cygon, phorate, malathion, and parathion, are effective against both mites and insects. Most miticides should be reapplied at periodic intervals throughout the summer.

Some of the newer, more effective miticides include Kelthane, Dimite, Chlorobenzilate, Eradex, and Aramite. Tedion and Ovotran, primarily ovicides, are most effective when applied before mite populations become abundant.

This discussion will probably make many CAs and PCOs hesitate to tackle the job of controlling insect pests for their customers because it might appear as though there are too many insect pests with which they would have to become acquainted. However, many operators are already very well acquainted with several of these pests. For example, many already control the boxelder bug, the elm leaf beetle, and the

hackberry psyllid when these insects leave their plant hosts and invade homes in the fall of the year. Actually, these insects are easiest to control by attacking the insects while they are still on the host plant; therefore, many PCOs have already entered the field of ornamental insect control. Since pest control operators have found this endeavor profitable, it is only logical to help the customer by controlling their other ornamental insect pests while the equipment and materials are at the scene.

Successful control of insect pests depends upon thorough coverage, whether they are indoors or out-of-doors on trees and shrubs. In order to get adequate coverage out-of-doors, the small one- and two-gallon sprayers, commonly used by the PCO servicemen, will have to be replaced with larger power equipment. The type of sprayer selected will depend upon the extent to which one is going to engage in the care of trees and shrubs. Small trees, 35 feet in height, may be adequately covered with some of the small sprayers used in termite work; however, tall trees such as the American elm, oaks, etc., require hydraulic rigs, or even the new air blast sprayers and mist blowers.

When sprays are applied to a wide variety of plant materials under varied conditions, plant injury is always a hazard. Two plant sensitivities are worthy of

particular attention at this time. Cannaert junipers are browned by applications of malathion, and DDT sprays will defoliate Amur river privet. A compilation of known phytotoxicities was published in *Pest Control* magazine in June 1960, and should be consulted for more specific details.

Those investigating the possibilities of entering the field of ornamental insect control should be interested in selected references. The four references listed below will provide the basic information

needed to provide ornamental insect pest control services for customers' outdoor problems.

Suggested References

Anonymous. 1956. Lawn Insects, How to Control Them. USDA Home and Garden Bulletin No. 35. Superintendent of Documents, Washington, D.C.
 English, L. L. 1956. Illinois Trees and Shrubs: Their Insect Enemies. Illinois Natural History Survey Circular 47.
 Schuder, D. L. 1962. Insect Pests of Trees and Shrubs. Purdue University Mimeo E-41.
 Westcott, Cynthia. 1956. The Gardener's Bug Book. Doubleday and Company, Inc., Garden City, N. Y.

Be Cautious Near Power Lines

"CAs must learn to live with the hazards of electricity," John M. Ferguson, extension agricultural engineer at Kansas State University, Manhattan, points out. "Just using good judgment and not taking any chances will help."

Pruning, spraying, and moving large equipment near high-tension lines were cited by Ferguson as possible dangers for CAs who do power line or substation weed control work.

New  TWIN TANK model POWER KNAPSACK MISTBLOWER DUSTER

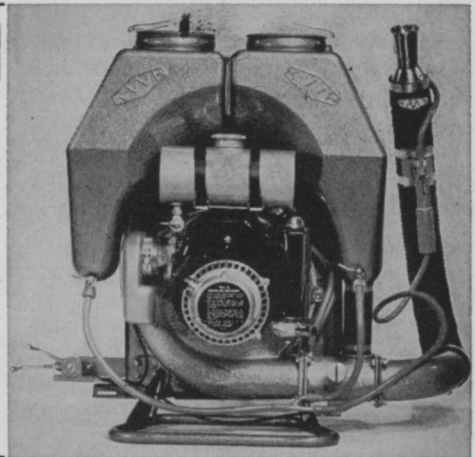
Spray, dust, wet-dust, and apply granules with the same machine; no extra attachments needed.

NO DISMANTLING OR REBUILDING — Two separate back tanks and the exclusive KWH 'non-clog' nozzle permit single or simultaneous application of wet and dry chemicals. Cover up to **40 ft. swaths**. Simple fingertip controls give precise regulation of output and allow instant switching from liquid to dust or granules and vice-versa. Sturdy all-metal construction yet **only 27 lbs.**

— Choose from 1 and 4 HP DIRECT DRIVE models —

Contact your dealer or write to:

VANDERMOLEN EXPORT CO. 378 Mountain Ave. North Caldwell, N. J.



Every application proves you're an expert



Doggett Fison XL TURF SPECIAL

28-7-14

Water Soluble Fertilizer

You're always right with XL TURF SPECIAL, the fertilizer that starts to work almost instantly, feeding through the *blades and roots*. Provides better control of growth, texture and color. Apply *whenever needed* at the prescribed maximum dosage, or for continuous controlled feeding ... *it will not burn!* XL TURF SPECIAL is compatible with all Doggett Fison Insecticides and Fungicides, and most others ... cuts labor cost to the bone!

Seeing is believing. Try some now!

FREE SAMPLE

WRITE OR CALL US, we'll send complete information on XL TURF SPECIAL, and other products for custom application. Your local distributor will RUSH a Free Sample of XL TURF SPECIAL.

DOGGETT FISON COMPANY

Springfield, N. J.
Phone: 201 — DR 6-5900

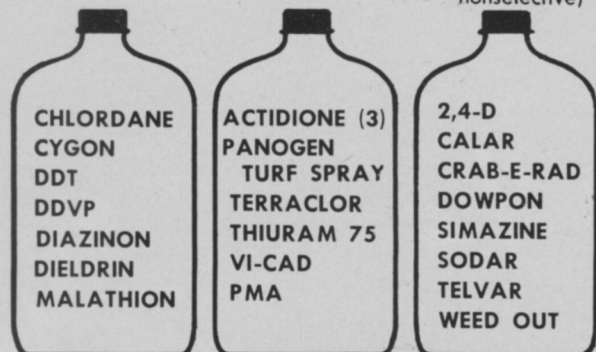


First to develop DDVP formulations.

PRESENTS
A
COMPLETE
LINE
OF:

INSECTICIDES/FUNGICIDES/HERBICIDES

(selective and nonselective)



AND MANY OTHERS —



ALCO CHEMICAL COMPANY
19220 PIONEER BOULEVARD, ARTESIA, CALIF.
Dealer Inquiries Invited

Improved Management Techniques Stressed at 2nd Fla. Turf Show

By **WALTER D. ANDERSON**

Executive Secretary, Florida Turf-Grass Assn., Jacksonville, Fla.

While a threatened downpour of badly needed rain held off, the Second Annual Florida Turf-Grass Trade Show, May 2-4, got off to a successful start.

Nearly 300 registrants participated in various phases of the show, held at the University of Florida Experimental Station Plantation Field Laboratory in Fort Lauderdale, and at the Seville Hotel on Miami Beach. Florida Turf-Grass Association members from as far away as Puerto Rico, Texas, Virginia, and New York flew in especially for the show, which grew appreciably in attendance and number of exhibits over the successful First Annual Show held in 1962.

More than 200 CAs began with a field day and demonstration at the Plantation Laboratory, and followed Dr. Evert O. Burt, assistant turf technologist, on a tour of the turf research being conducted there. Guided tours were conducted over the research plots and areas during the morning, while registration was continuing.

Demonstrations of turf equipment followed a barbecue prepared by Bob Pryor, Broward County Agent, and lasted through the afternoon.

A complete range of equipment used in the turf industry, from the largest down through the smallest was shown: tractors, mowers, and fork lifts to fertilizer spreaders and

small mowers. As the demonstrations ended—and the rains began—the spraymen headed to the Seville Hotel in Miami Beach for the next two days' sessions, which included a business clinic and the opening of the exhibits.

Business clinic on Friday morning featured Drs. A. J. Noetzel, Dean Emeritus of the School of Business Administration of the University of Miami, Coral Gables, Fla., J. Everett Royer, chairman of the University's accounting department; and Curtis Millen, of Florida Advertising, Inc., Fort Lauderdale.

Aim of the clinic was to assist registrants, most of whom are small businessmen, with the latest thinking and services available to them.

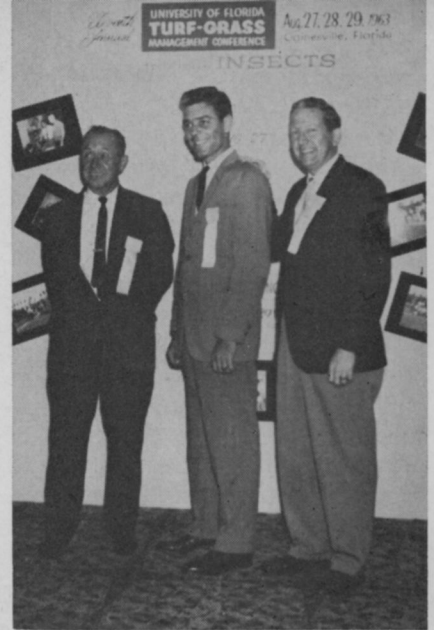
Dr. Noetzel began by noting that in 1962 more than 15,000 small businesses failed and 100,000 others were on a shaky footing due "primarily to management inadequacy." This inadequacy, he indicated, was shown in four basic areas:

1. *Lack of insurance:* Many small businesses fail to take advantage of insurance against risks such as fire, theft, etc. He stressed the need for a well-rounded insurance program, covering not only these areas, but also workmen's compensation, insurance for the executives and employees, and hospitalization programs.

2. *Debt mismanagement:* Many



Saturday's Clinic was open to the public, and more than 300 people came in to look at exhibits and question turf experts on the panels, which rotated members for six hours. Dr. Evert O. Burt (right), prepares to answer a query about a lawn blight, after examining a piece of turf brought in by a homeowner. General show chairman James E. Ousley, Sr., looks on. Both Ousley and Dr. Burt were among the turf specialists who filled in on the panels for a while.



Jubilant officers of the Fla. Turf-Grass Assn. commend each other on their successful Trade Show. Left to right are James L. Blackridge, secretary-treasurer; Ralph White, Jr., president; and Dr. Gene C. Nutter, vice president.

businesses fail to consider a consolidation of their entire listing of debt accounts, to take advantage of lower, minimal interest rates. Consideration should be given by all small firms to the consolidation of all of their debts into one package.

3. *Lack of account analysis:* Need is obvious, Dr. Noetzel said, for a continuing study of all accounts, so that the financial picture of the firm is clear at all times, and it is apparent which accounts are not profitable and should be discontinued.

4. *Failure to make lease arrangements:* Outlining the advantages and disadvantages of leasing arrangements not only for buildings, but also for storage space, equipment, etc., Dr. Noetzel stressed that in many cases lease arrangements could be far more profitable than outright purchase of the facility or equipment.

A detailed review of simplified accounting procedures was presented by Dr. Royer, who discussed accounting forms available for the use of the small businessman. "Many of these could be put into use as a tool for better management," he recommended.

Stressing that the simplest accounting system possible that does the job is the best one, Dr. Royer urged the weed and turf businessmen to take advantage of consultative services offered free by office equipment firms to set up the necessary business systems. Underlining Dr. Noetzel's remarks, he emphasized the need for a

Veteran sprayman
 Charlie P. Johnson, of Charlie P. Johnson Spray Co., Inc., Miami, a familiar figure whenever CAs get together, gives a disease's diagnosis to a questioning homeowner, as Dr. Evert O. Burt and Dr. Gene C. Nutter wait for additional questions from the curious crowd.



continuing cost analysis of the entire business operation, and pointed out that one of the biggest items of business operation often overlooked is the overhead costs. "This is where most businesses fail to properly assess their production costs."

Speaking about advertising and its application and use to the small businessman, Curtis Millen suggested that there were six approaches to follow in setting up an advertising campaign:

1. Is this for an immediate effect or a long range program?
2. Is it sensibly planned from financial and timing aspects?
3. Is it carefully budgeted to take advantage of the best rates for desired accomplishments?
4. Is it designed to find and reach the potential customer?
5. Does it keep the name of the firm and the product constantly before the public?
6. Is it good, responsive advertising that does not get off base?

"By studying advertising done by many types of businesses represented in the turf industry, we've found that these businesses often have a great need for information and education," Millen revealed. "This would lead to a general upgrading of their advertising approach to potential customers."

With the number of capable men involved in turf, Millen said, a good, solid advertising program could help upgrade not only their own individual businesses, but the entire turf industry as well. Agreeing with Dr. Royer, he also suggested that consultation services of advertising agencies be used.

After the business clinic was over, the Exhibit Hall, with exhibits in 56 booths, was opened. As in the field demonstrations,

exhibits contained the whole spectrum of turf supplies.

Evening program on May 3 consisted of an informal reception, dinner, and dance, with much time spent in table-hopping, conversation, and relaxation.

Exhibits were open to the general public as well as registrants on Saturday. More than 300 people toured the hall and participated in the rotating lawn clinic, which lasted for six hours and featured a constantly changing panel of experts from every segment of industry, plus the University of Florida and the Florida Experiment Stations and Extension Services. Homeowners asked questions on every subject of lawn care, maintenance, growth, diseases, and insects, and a few even brought in patches of turf from their lawns to learn the solution to their problems.

At the conclusion of the lawn clinic, which ended the Second Annual Trade Show, both the contract applicators and members of the public who were present were enthusiastic about this session, and plans are being made to open this part of the Trade Show to the public again next year.



One of the nearly 300 contract applicators who registered for the Second Annual Florida Turf-Grass Assn. Trade Show was Walter Ferguson, president of the Florida Horticultural Spraymen's Assn., whose group meets later this year.

Book Review

Concepts of Forest Entomology

by Kenneth Graham, Reinhold Publishing Corp., 430 Park Avenue, New York 22, N. Y., 1963, 388 pp., \$9.50.

Practical uses of theoretical information about the detrimental effects of insects in forests is offered in the latest of Reinhold's biological books, *Concepts of Forest Entomology* by Kenneth Graham.

Long associated with forest management, both in industry and at the University of British Columbia, author Graham has assembled some 935 references which attempt to depart from the usual texts on forest entomology.

Placing emphasis on principles of entomology as related to forest management, rather than simple identification of trees and insects which attack them, *Concepts* takes an economic tack. Proper evaluation of damage will give indications of what trees can be saved for marketing, a chapter on economic evaluation shows.

Insects are not treated superficially; rather, in-depth discussion on the pest and the manner in which it damages trees, whether by boring, leaf mining, or root chewing, gives the student of forestry a sound basis upon which to determine causes of timber loss. A table is included which sets forth the principal insects found in forests and what part of trees they damage. This makes damage detective work simpler.

Ground-based and aerial application devices, formulas of commonly used pesticides, and various methods of treatment are part of the large chapter on applied control, and should be useful to any operator offering tree spraying, whether in a forest or not.

Although *Concepts* contains easily read, informative material, readers will slow their speed when presentations of mathematical determinations for damage and loss analyses appear.

An academic work with a refreshing, practical slant that pinpoints the study of entomology in the scheme of forest management, *Concepts of Forest Entomology* will be useful to most outdoor spraymen.

FIELD BINDWEED
(*Convolvulus arvensis*)



Field bindweed (sometimes called wild morning glory, creeping jenny, or European bindweed) is a deep-rooted perennial which reproduces by seed and buds from spreading roots. The Southeast, because of its climate, is the only portion of the U. S. not bothered by it.

Of all twining or vining weeds with morning glory type flowers (funnel-shaped) and arrow-shaped (saggitate) leaves, field bindweed can be most quickly identified by the flower size, being about 1 inch across, and the small bracts (scale-like leaves) found on the flower stalk 1/2 to 2 inches below the flowers. A characteristic which distinguishes field bindweed from hedge bindweed, *Convolvulus sepium*, is the leaf. Both are arrow-shaped but field bindweed's leaves are blunt at the tip; hedge bindweed's leaves are sharp-pointed and have large, square-shaped basal lobes. On all other "strangler weeds," leaves are either heart-shaped or flowers are much smaller or significantly larger than 1 inch in diameter.

Stems are slender, trailing (creeping on the ground), or twining, smooth (not hairy), and without tendrils. They may reach a length of 7 feet when uncontrolled.

Leaves (4) are alternate on stems, arrow-shaped with expanded basal "wings." They have long petioles.

Flowers (1) are white or pinkish, about 1 inch wide, funnel-shaped, and arise from axils of leaves (point where leaf meets stem). Seeds (2, 3) are about 1/8 inch long, ovoid, with one or two sides flattened. Their color varies from brown to dark gray. They may remain in the soil many years before sprouting.

Slender roots grow in all directions downward, sometimes to a depth of 20 feet or more. New shoots are produced from buds on the roots. After stems reach the five-leaf stage, cutting off tops will not destroy field bindweed, for at this point of development roots will only send up new shoots.

2,4-D in its various formulations is effective against field bindweed. Applications should be made when the plant is actively growing and in the well-developed vegetative or bud stages of growth. Applications of 2,4-D must be repeated to cause eradication.

Sodium chlorate, monuron, fenac, and 2,3,6-TBA are effective soil treatment herbicides.

Prepared in cooperation with Crops Research Division, Agricultural Research Service, United States Department of Agriculture, Beltsville, Maryland.

(DRAWINGS FROM NORTH CENTRAL REGIONAL PUBLICATION NO. 36, USDA EXTENSION SERVICE)

**39th Shade Tree Conference
Set for Aug. 4-9 in Toronto**

Increasingly complex problems involved in preserving tree populations in North America will be the focal point of concern for delegates to the 39th Annual Convention of the International Shade Tree Conference, scheduled for August 4-9 in Toronto, Ontario, Canada.

More than 800 commercial arborists, contract applicators, city foresters, and park superintendents are expected to attend the five-day, fact-filled conclave. Center of activities will be the Royal York Hotel, in downtown Toronto.

Convention is being sponsored in association with the National Arborists Association. In addition to the panel discussions and information sessions, an extensive Trade Show is also planned.

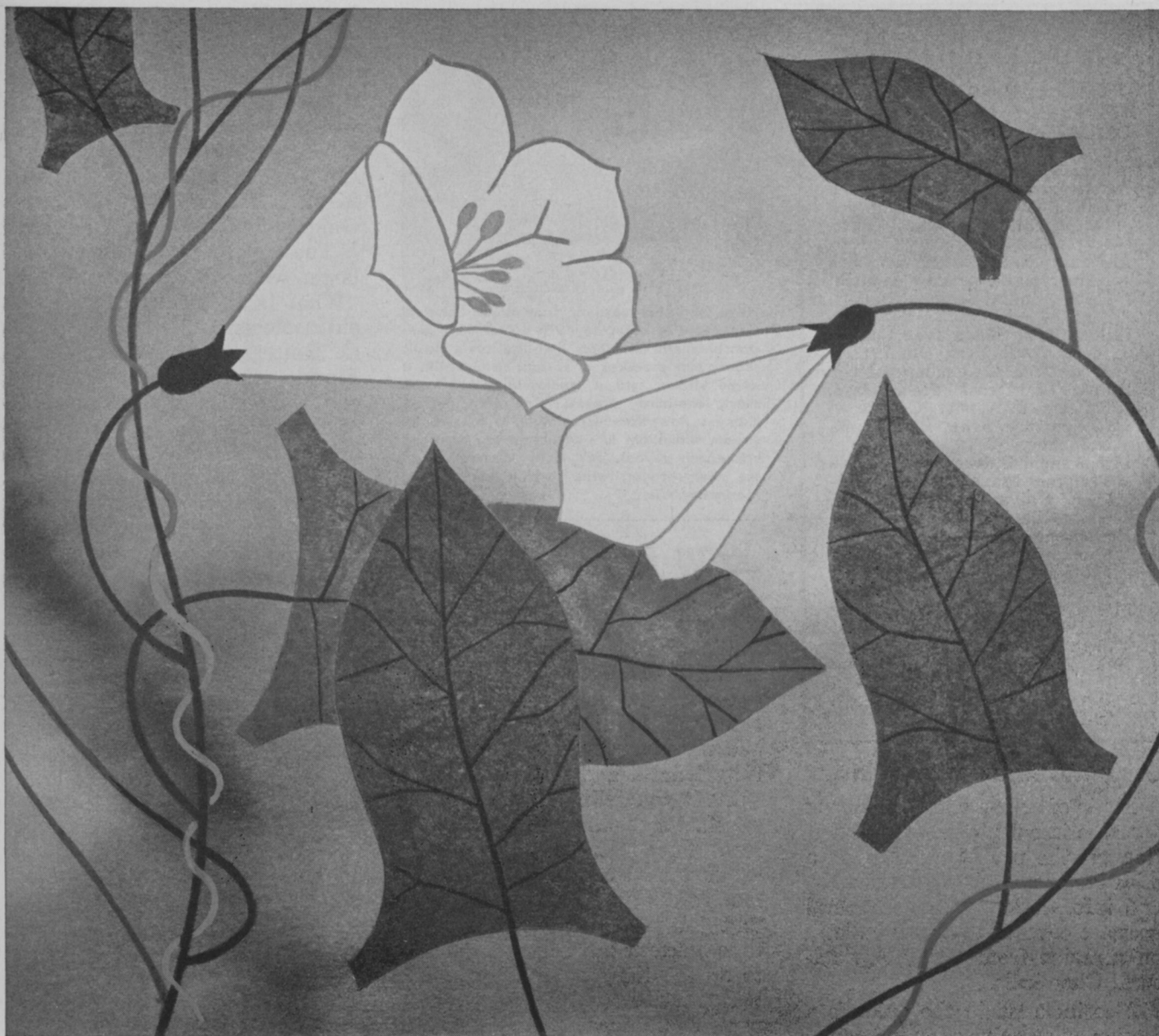
Registration opens Sunday afternoon, August 4th, and a reception for all delegates will be held that evening.

Monday's sessions will cover the relation between soil and tree growth, plus an examination of salt damage from snow removal programs. Panelists will also detail many common tree diseases, including birch dieback, maple decline, ash dieback, and sweet gum blight.

Various approaches to tree management will be outlined Tuesday. C. Elmer Lee, chairman of the Utility Arborists Committee, will explain his committee's operations; program of the National Arborists Association will be covered by Paul E. Tilford, executive secretary of that group; and John Michalko, chairman of the Municipal Arborists Committee, will survey the MAC's activities.

Business aspects, landscape design, professional arboriculture, and a resume of the facts on pesticide usage are also on the docket.

For more information on the conference, or advance registration forms, CAs should write Dr. L. C. Chadwick, Secretary-Treasurer, International Shade Tree Conference, Ohio State University, 1827 Neil Ave., Columbus 10, Ohio. For hotel reservations, delegates are urged to write directly to the Royal York Hotel.



KILL BINDWEED WITH HOOKER SODIUM CHLORATE

After more than 35 years of weed killing, it's *still* the most effective chemical for destroying such pests as bindweed, Johnson grass, Canada thistle, and Russian knapweed.

Hooker sodium chlorate reaches deep into the soil to kill germinating seeds and growing roots—and goes on working for months.

Costs little. For only 25¢, you can sterilize 100 square feet of drainage ditch, fence line, or roadway for a year or longer.

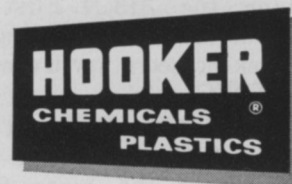
Fast-opening drum has a single lever that opens and reseals the drum with

a metal band. Full-open head makes pouring, scooping, or shoveling easy.

Available in drums of 50 and 100 lb. net.

Technical aid. Our full-time agronomists can help you with weed-control plans and advise on handling, storing, and using sodium chlorate.

For descriptive folder, please write HOOKER CHEMICAL CORPORATION, 407 Buffalo Avenue, Niagara Falls, New York. *Sales offices:* Boston, Buffalo, Chicago, Detroit, Los Angeles, New York, Niagara Falls, Philadelphia, Tacoma.



AGRICULTURAL CHEMICALS

When Writing to Advertisers Please Mention WEEDS AND TURF

W-19

Meeting Dates

USDA Field Day for industrial cooperators. Plant Industry Station, Beltsville, Md., July 10.

American Assn. of Nurserymen Annual Convention, Shamrock Hilton Hotel, Houston, Texas, July 20-24.

Alabama Nurserymen/Southern Nurserymen Annual Convention, Hotel Admiral Semmes, Mobile, Aug. 4-6.

International Shade Tree Conference, Royal York Hotel, Toronto, Ontario, Canada, Aug 4-6.

Rutgers Turfgrass Field Days, Rutgers University College of Agriculture, New Brunswick, N.J., Aug. 7-9.

11th Annual University of Florida Turfgrass Management Conference, University of Florida, Gainesville, Aug. 27-29.

Nurserymen and Growers Annual Short Course, University of Florida, Gainesville, August 28-30.

Midwest Turf Field Day, Purdue University, Lafayette, Ind., Sept. 9 (repeated Sept. 10).

70th Annual Farm Equipment Institute Convention, Roosevelt Hotel, New Orleans, La., Sept. 29-Oct. 2.

Geigy Has Atrazine Bulletin

Mode of action and behavior of atrazine in soils, current information on the use of atrazine as a selective or nonselective herbicide, and information on experimental uses are covered in a new bulletin on atrazine from Geigy Agricultural Chemicals.

Also included in the guide is a section on atrazine as an industrial herbicide, and recommendations of other herbicides which may be combined with atrazine.

CAs who would like a free copy of the 16-page bulletin, No. GAC 700-20, should write to Geigy Agricultural Chemicals, P.O. Box 430, Yonkers, N.Y.

NCWC Conference on Microfilm

Proceedings of the North Central Weed Control Conference, from 1944 to 1954, are now available on microfilm from University Microfilms, Inc., 313 N. First St., Ann Arbor, Mich., according to G. C. Buskirk, secretary-treasurer of the NCWC.

Microfilms of the Research Reports from 1947 to 1954 are also available from the same firm, Buskirk notes.



New fiberglass sprayer from Ansul Chemical Co. is said to be up to 40% lighter than comparable metal containers. Self-lubricating plastic slide pump produces a 35-foot stream with a single stroke, and a continuous stream with short, one-third strokes. One-piece nozzle changes flow from wide-angle to long-range stream with slight turn of nozzle tip, company spokesmen reveal. For more information on the new sprayer, write Ansul Chemical Co., Marinette, Wis.

— W & T Mailbox —

W&T Aids Expansion

We operate a lawn-shrub-tree fertilizing service, and expect to expand, as we qualify, into insecticide and herbicide applications. We find your magazine wonderfully helpful and informative.

Do-it-yourselfing is always less satisfactory than professional services. The homeowner probably won't take the time to learn as much as he should, to do a competent job on his yard, and even then he can't have the equipment to do the job quickly and easily.

If service (with our trained personnel, knowledge, equipment, etc.) isn't the last refuge of small business, what is? Anyway, I'm counting on people being lazy.

James G. McClure

Fertiligator Sales & Service
Vista, Calif.

Keep All Issues

I think you should be complimented on bringing out a fine publication for the weed and turf industry. It certainly satisfies a need.

Usually I skip through a magazine and may tear out something for filing or for forwarding to others. However, I now find myself currently wanting to keep the entire issue of *Weeds and Turf* for reference.

Harry L. Haynes

Union Carbide Consumer Products Co.
New York, N.Y.

Insects Theme of 11th Fla. Turf Management Confab, Aug. 27-29

Close scrutiny of the insect enemies of turf and ornamentals will mark the opening sessions of the 11th Annual Turf Management Conference, scheduled for Aug. 27-29 at the University of Florida, Gainesville.

Tuesday morning sessions will begin with an examination of "What Is an Insect?" by Florida entomologist G. W. Dekle. Dr. L. C. Kuitert, of the University of Florida's Department of Entomology, will explain the fundamentals of insect control, and extension agents Dr. Stratton H. Kerr and Dr. J. E. Brogdon will discuss specific pests of lawns and plants.

This part of the program will conclude with an evaluation of new approaches and trends in insect control, by Florida expert Dr. Carroll N. Smith.

"Industry Hour," Tuesday evening, is a new feature of the program. Representatives of firms marketing chemicals and fertilizer products for turf who exhibited at the Trade Show will be allowed five minutes each to discuss one or more of their products.

Professional discussion sessions on golf turf; play fields, parks, and cemeteries; retail dealers and garden supply centers; horticultural sprayers and lawn service agencies; and turf nurseries conclude the formal part of the program Wednesday.

Delegates will also tour the turf research facilities and experiment grounds at the University of Florida.

For more information on the conference, write to Walter D. Anderson, Executive Secretary, Florida Turf-Grass Assn., P.O. Box 5284, Jacksonville 7, Fla.

Chart Describes Thiodan Uses

All registered uses for Thiodan insecticide have been included in a new guide from Niagara Chemical Division, FMC. Listed are more than 40 crops and ornamentals on which Thiodan can be applied to control a total of over 100 insect pests.

Copies of "Thiodan, the Grower Approved Insecticide" are available from Niagara Chemical Division, FMC Corp., Department A, Middleport, N.Y.