50-50 chance of pulling through. Best results occur when the arborist spots flagging in the initial stages and begins treatment immediately.

The sharp arborist eyes the situation beginning at the tree top and then moves down to take in such things as other elms adjacent to the diseased elm, elm bark beetle infestations, regular tree maintenance and other standard practices. Of equal importance is nearby dead elms which continue to be the main source of disease.

Many arborists are beginning to report increased use of injection systems because of a willingness of the customer to do something about a diseased elm and the potential for making a sale by treating the elm. As one homeowner explains it, "It is better to spend a few dollars to try to save an elm than to spend several hundred dollars to have it removed. We want to keep our trees, not have them removed."

The future of SIReservoir appears optimistic. Its success in Wisconsin last year is expected to be duplicated in other states this coming season. And as more knowledge is gained in the control of DED, this injection system will no doubt play an even bigger role.

All-Ohio Safety Congress Feature Arborist Session

The 43rd All-Ohio Safety Congress will be held at the Sheraton-Columbus Hotel, Columbus, Ohio on April 10-12. A special arborists and tree service operators session is planned for April 11.

Theme of this year's session is "Safety is a Shield." The current program of the all day session includes nine speakers.

Topics include what manufacturers are doing about noise abatement, chain saw safety, employee safety practices, treatment of accident victims, rope safety and the tree of life safety program.

For more details, contact Dr. L. C. Chadwick, 3634 Olentangy Blvd., Columbus, Ohio 43214.

Turf Products Catalog Issued By Toro

The Toro Company, has announced the availability of its 1973 institutional catalog of turf maintenance equipment.

The catalog contains double-page reproductions of nine full-color photographs of the Toro equipment.

On the fly-leaf of the left-hand pages are complete specifications on the various models of each machine and their accessories.

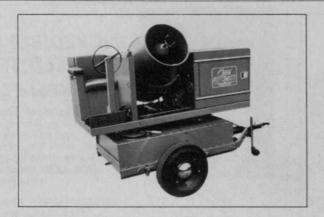
Penn-Del Chapter, I.S.T.C. Holds Arborists Course

The Penn-Del Chapter, International Shade Tree Conference and the Pennsylvania State University have just completed a course for beginning arborists in Philadelphia.

Twenty students enrolled in the week-long course which was taught by Andrew Moore, Mayland Professional Tree Surgery, Lansdale, Pa. Moore designed the course of instruction as part of his duties as chairman of the educational committee for the Penn-Del Chapter. Students had classroom instruction for half the day and field training during the second half.

Stressed in the sessions was climbing, pruning, use of hand and power tools, tree removal, wound treatment, climber's safety, tree identification and other important aspects of arboriculture.

The Fairmount Park Commission, Philadelphia, provided the field laboratory for students to work.



Get the tops in shade tree spraying

John Bean rotomist sprayers have the power to put protection where it's needed most—in the tops of the trees. Straight-through air delivery, unrestricted by elbows, angled air passages or deflectors, breaks up droplets for uniform deposit of chemicals and carries them throughout the tree for full coverage, economically and fast.

ROTOMIST Sprayers are available in

four basic models for all kinds of spraying jobs from trees and shrubs to mosquito and fly control, weed and brush spraying, windrowing leaves, spraying livestock, zoos and other areas where pesticides are needed. Find out how to save from 50 to 75% on equipment and labor with multi-purpose ROTOMIST. Ask your John Bean dealer now.



Jonesboro, Ark.-Ocoee, Fla.-San Jose, Calif.

PROTECTION FROM EXPOSURE (from page 37)

shirt-type undershirt.

Under such conditions workers should be encouraged to at least wear a long-sleeved cloth jacket, overalls, or tightly-woven heavy grade shirt that will not be easily penetrated by pesticide, and preferably one that can be properly washed.

Clothing should be changed and laundered daily.

If shirts, jackets, or coveralls used during application are merely hung up to dry after work and used repeatedly, as is often the practice, it doesn't take long for the pesticide material to work through where it will make contact with underclothes or skin.

Although waterproof protective clothing, and especially jackets, are often kept close at hand by pesticide applicators, it has been our observation that they usually will not put on the clothing until drift of pesticide increases to the point where they feel protection is necessary. Unfortunately, by this time there is often considerable contamination of skin and conventional clothing. Covering contaminated skin by impermeable

protective gear may create conditions which lead to increased absorption.

Whether or not there would be less absorption under these conditions than if the protective clothing were left off entirely, depends upon the potential exposure which might occur after the worker puts on the clothing. Although the amount of increase in absorption of pesticides by covering contaminated skin with various items of protective clothing is not known, it is certainly sound advice to put on protective gear before the skin has been contaminated to any great degree.

High exposure to hands is usually the result of contact with the more concentrated formulations during mixing and loading. The hands are more subject to cuts and abrasions which allow a more direct route into the body.

This brings to attention the need for wearing gloves. Some feel it is better not to wear gloves that are somewhat contaminated on the inside; something which invariably occurs to some degree. This sounds logical; however, our research indicates that, unless there is gross contamination of the inside of the gloves, the potential exposure is less when wearing gloves than when not wearing them, regardless of a certain amount of inside contamination.

Gloves should be kept clean on the inside; thus, cloth linings are undesirable because of the difficulty in decontamination. Unlined rubber gauntlet gloves provide the best protection. Heavyweight gloves, although durable, do not allow adesuate freedom of movement, especially finger flexibility, and they are also difficult to turn inside-out for cleaning. On the other hand, some lightweight gloves, although flexible enough to allow freedom of finger movement, wear out rapidly and are easily torn. Therefore, it is advisable to secure gloves of a grade that is somewhat durable but yet light enough to be acceptable to the worker.

Comfort and acceptability by the worker is also important when selecting protective jackets and trousers. Heavy grade clothing is not very flexible and dark-colored materials absorb more heat. During recent years several jackets, jacket-trouser combinations, and gloves that are lighter in color and weight have been available. Although less dur-







able, they are less costly to replace. Our tests have shown that a light yellow or white waterproof jacket may reflect enough heat to cause the temperature at the skin surface underneath to be as much as 8 to 10°F lower than when wearing a black jacket when worn under conditions of intense sunlight when ambient temperature is around 90°F. Nevertheless, there is still considerable discomfort in wearing any waterproof clothing during hot weather because of the trapping of body heat.

Disposable paper jackets have been tested and found suitable for use only under conditions where heavy wetting does not occur. Such paper jackets were found to be much cooler and thus more comfortable than other jackets tested.

Respiratory Route

Protection of the respiratory route is especially important where toxic dusts and vapors or very small spray droplets are prevalent, or where application is in confined spaces. We have found that when applying dilute sprays with conventional application equipment respiratory exposure is usually relatively low, probably due to the large droplet sizes produced. Where low volume equipment is used, smaller particles or droplets are produced, increasing respiratory exposure.

Respiratory protection for most types of outdoor application can be provided by use of cartridge-type respirators, or, in certain cases, gas mask-type respirator devices with special cannisters which have greater absorbent capacity than cartridges. Proper care of respirators is important, especially the regular replacement of filter cartridges and regular cleaning of the face-piece with soap and water. Solvents should not be used for they may damage certain parts of the respirator. When fumigating or applying highly toxic pesticides in confined spaces it is

wann ween control

advisable to use a respirator with a special compressed air supply tank so that none of the contaminated ambient air is inhaled.

Oral Route

The most serious oral exposure may be brought about by splashing of liquid concentrate into the mouth while pouring and measuring pesticides. Contamination may also occur through licking the lips, by rubbing the mouth with contaminated arms or hands, by careless actions such as attempting to blow out clogged spray nozzles with the mouth, or by eating, smoking, or drinking while hands are contaminated. Pesticide label precautionery statements to the effect that hands should be washed before smoking or eating is sound advice.

Discussion

Regardless of how specifically the measures for protection of workers from pesticide exposure may be stated for any particular situation, people who work with such compounds must realize that there is some element of risk involved. Accidents occur, even among workers who are careful. The importance of

dermal and respiratory exposure certainly warrants the use of some type of protective gear. Improvements in protective equipment are needed to bring about better protection of workers. We at the Environmental Protection Agency, Wenatchee Research Station laboratory are continuing with studies on protective gear to determine effectiveness and acceptability. □

REFERENCES

Bidstrup, P. L., and D. J. H. Payne. 1951.
Poisoning by dinitro-orthocresol. Brit. Med.
J. 2:16.

Maibach, H. E., R. J. Feldmann, T. H. Milby, and W. F. Serat. 1971. Regional variation in percutaneous penetration in man. Arch. Environ. Health 23:208.

Malone, J. D. G. et al. 1971. Paraquat poisoning — A review of nineteen cases. J. Irish Med. Assoc. 64:59.

Masterson, J. G. and W. J. Roche. 1970. Fatal paraquat poisoning. J. Irish Med. Assoc. 63:261.

National Clearinghouse for Poison Control Centers. 1972. Toxic insecticides to replace DDT. Bulletin, Nov.-Dec. 1972. U.S. Department of Health, Education, and Welfare, Food and Drug Administration, Bureau of Product Safety.

of Product Safety. Swan, A. A. B. 1969. Exposure of spray operators to paraquat. Brit. J. Industr. Med. 26:322

Wolfe, H. R., W. F. Durham, and G. S. Batchelor. 1961. Health hazards of some dinitro compounds. Effects associated with agricultural usage in Washington State. Arch. Environ. Health 3:468.





- ONE-MAN OPERATION
- SAVES 80% ON LABOR
- . NO DAMAGE TO TURF
- . NO TRENCH TO FILL

Write for free brochure.

The faster, lower cost way to install sprinkler pipe

PIPE PIPER makes pipe burying a fast, easy job and assures customer satisfaction because no turf or earth is removed. You can bury flexible and semi-flexible pipe up to 2" diameter in one continuous operation around corners, shrubbery, and other obstacles. You can also use the PIPE PIPER to install low voltage lighting and communication systems.



JACOBSEN MANUFACTURING CO.

Sod Master Division
6 WASHINGTON AVE. NO.
MINNEAPOLIS, MINN. 55412



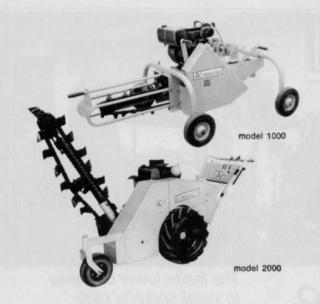
Plastic Stakes and Signs: Coursigns, Inc., Chicago, Ill.

Make signs do your communications job. These high yellow signs are of heavy-duty plastic construction. Signs are $2\frac{1}{2}$ inches deep and 8 inches wide. They slip fit and lock on to a 12 inch or 14 inch stake. Stakes have a wedge type rope notch which provides for rapid assembly and take down. A 3/16 inch rope is available in conjunction with the stakes and signs to rope off seeded, wet or worn areas. For more details, circle (705) on the reply card.



Backhoe/Loader: J I Case Company, Racine, Wisc.

This 780 backhoe/loader is now available with an optional turbocharged engine. Direct injection, open chamber design and spiral intake passages offers big capacity, free air flow and thorough mixing capacity in the combustion chamber. Engine is rated at 120 hp. Backhoe/loader features include a 21,000 lb. working weight, unitized main frame weighing 1½ tons, and a two speed full powershift transmission with torquie converter. Backhoe digs to a depth of 18 feet and reaches 22 feet 6½ inches from swing pivot. Loader features hydraulic self-leveling design. For more details, circle (706) on the reply card.



Safety-Designed Trenchers: Arps Corporation, New Holstein, Wisc.

Safe, easy operation and rugged dependability are spotlighted on these two Trench Devils. Models 1000 and 2000 are designed to allow complete control of the digging function away from the digging end of the machine, thereby keeping operator clear of moving parts. Trencher pictured at top is lightweight and portable. Digging widths of 2½ or 3½ inches and depths of 18 or 24 inches are available. Standard features on Model 2000 include infinitely variable hydrostatic transmissions, hydraulically operated boom, top mounted reservois and ammeter. Cutter widths are 3 to inches and boom depths are available in 2, 3, or 4 foot capacities. For more details, circle (707) on the reply card.



SPRIG PLANTER: Bermuda King Company, Okarche, Okla.

Bermudagrass popularity is growing. Quick coverage in thick stands is what users want. This new four-row sprig planter can do the job in short order. Mounted on the standard three-row frame, the planter double-sprigs in closely spaced rows of 20 inches, in one operation. Unit completely cultivates the ground and with its quick coverage, eliminates the competition of unwanted grasses and weeds. Handles sprigs of Bermuda as well as Alisa, Zimmerly, Coast Cross, Pangola and other top-growth root planting with ease. For more details, circle (708) on the reply card.





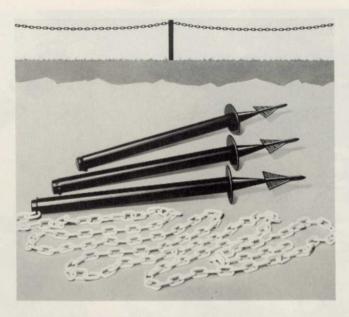
Model 1000 Tractor: Tractor and Implement Operations, Ford Motor Company, Troy, Mich.

If you're looking for a grounds-maintenance tractor that will handle a variety of jobs, consider this 23 hp tractor from Ford. It offers rugged styling and extra visibility teamed up with a two-cylinder diesel engine and a ninespeed transmission. Attachments for this tractor include a mid-mounted rotary mower, a front loader, front mounted blade and a rear-mounted rotary tiller. Transmission PTO gives 540 rpm at 1,955 engine rpm. Tractor has Category I, live three-point hydraulics. Comes equipped with creature comforts including, roomy step plates, bucket-type cushion operator seat and key ignition. For more details, circle (709) on the reply card.



INCLINOMETER: Milben Corporation, Ingleside, III.

How much incline is too much? Avoid unnecessary tips and spills with this unique Strawson Inclinometer. It operates on the pendulum principle through reciprocating rods mounted in gimbals. Unit was developed to replace the conventional bubble type level which in many instances is too sensitive for quick and accurate reading. Combined audio-visual warning system is easily installed in all types of off-the-road vehicles, mobile lifting platforms, buckets, tractors and other equipment. Models are available for six, twelve, twenty-four and forty-eight volt systems D.C. It's designed for flange mounting on any part of the main frame. Minimum maintenance is required and re-calibration is a simple operation involving the adjustment of three leveling screws. For more details, circle (711) on the reply card.



Plastic Chain: PCC Corporation, Hebron, III.

Put the prestige look into your plant grounds, walkways or other areas. Add low-cost, easy-to-handle, high-density polyethylene chain. Its molded in several sizes. Because it's plastic it is non-conductive, non-magnetic and can't rust or corrode. It stays bright and clean for years with low maintenance. Three sizes are available. Tensile strengths range from 18 lbs. for small chain to 300 lbs. for large chain. Stakes are heavy grade plastic construction. For more details, circle (710) on the reply card.



Sprayer-Duster-Blower: Robco Inc., Redwood City, Calif.

Here's a new lightweight back-pack mist sprayer-dusterblower that can go anywhere a man can walk. It packs a powerful 240 mph blast. Helpful in clean-up work, with a range of over 35 feet for either spraying or dusting. Great for blowing leaves and lawn cleanup. Just let your imagination go and you will quickly find a use for this machine. For more details, circle (712) on the reply card. Arnold Palmer says:

"It takes followthrough to prevent birth defects"

Give to the

March of Dimes

Pumping Plant Package Makes Irrigation Design Easy

Modular construction in golf course irrigation systems is sweeping new life into the industry. Pumping plant modules seem to be where all the action is.

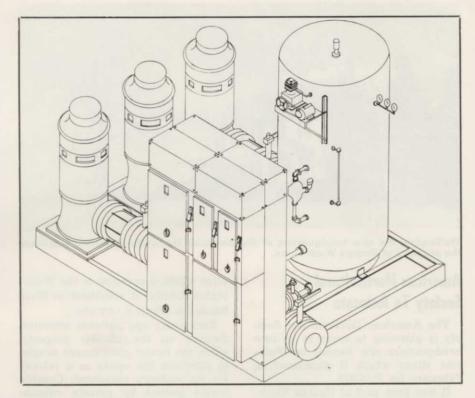
Latest unit to make the scene is called Hydro-Pac. It's made by Irrigation Supply Co., Inc. of Louisville, Ky. It essentially is a drop-in package that can be hooked up to an irrigation system in about as much time as it takes to read the operating instruction booklet.

Everything is built and pre-tested at the factory. This eliminates much time lost in testing and adjusting on-the-job. Efficiency in design assures lowest operating and maintenance cost for the owner.

About the only items an owner need do is connect the electrical supply and discharge piping and bolt the columns to the discharge head.

Constant pressure is maintained on the Hydro-Pac System by use of pressure regulating valves and modern control techniques keep operation at peak efficiency regardless of system demands.

The pumping plant is fully auto-



matic, using vertical, centrifugal or turbine pumps. The plant consists of three pumps operating on a demand basis until total output has been reached.

Each plant is equipped with a

main disconnect along with all starting equipment. Transformers for 120 volt single phase current are supplied. System carries a one year warranty. For more details, circle (720) on the reply card.



Why Use Oregon **FINE FESCUES** for Overseeding?

FESCUES Fare Well During Dry Spells OREGON FESCUES Grow Well in Shade FAST GERMINATION - Blends With Other Grasses



WHEN WATER'S SHORT ... **FESCUES** KEEP ON GROWING

FREE OVERSEEDING

FILL OUT COUPON, CLIP and MAIL TO:

OREGON CHEWINGS AND CREEPING RED FESCUE COMMISSION

1349 Capitol N.E., Salem, Oregon 97303

Name Address

OREGON CHEWINGS AND CREEPING RED FESCUE COMMISSION

1349 Capitol St. N.E., Salem, Oregon 97303



Wellington, the new headquarters of the American Horticultural Society was once the property of George Washington.

American Horticultural Society To Relocate

The American Horticultural Society is planning to move to its new headquarters site located on Potomac River which it purchased in February for \$800,000.

It was once part of George Washington's River farm, belonging to the first president's extensive Mount Vernon holdings. Washington gave it to Tobias Lear, his private secretary, who lived there until his death

after which it reverted to the Washington family. It remained in their hands for about a century.

Two years ago national attention focused on the historic property when the Soviet government sought to purchase the estate as a retreat for its embassy personnel. Considerable protest by private citizens led the U. S. Department of State to disapprove the purchase. At that time Congress enacted a law forbidding property belonging to a former president from being sold to

foreign interests.

The Society plans to develop the newly acquired Potomac riverfront site as a national center of gardening and horticulture. Activities and exhibits will stress the social as well as the esthetic role of gardening in improving the environment.

According to executive director, O. Keister Evans, the Society will move in late March from the modern office building in Alexandria where its staff is now spread on three floors. This is the second move in two years for Evans and his staff who have watched the Society blossom as its membership increased seven-fold in just 20 months.

The Horticultural Society intends to develop a National Center of Gardening and Horticulture on the site, featuring activities and exhibits that would stress the social as well as the esthetic role of gardening in improving our environment. Special programs will emphasize urban horticulture and the urban landscape while environmental activities will also be featured. A particular effort will be directed toward introducing young people to "environmental gardening" and senior citizens to "plant-oriented leisure activities."



SIGNS AND STAKES

High impact plastic STAKES AND SIGNS designed to direct golf carts and golfers away from wet, worn, seeded or sodded areas. Design provides wedge type rope notch for economical installation and removal. Choice of 14 sign inscriptions fit over any stake.

 12" stakes
 \$30.00 per hundred

 14" stakes
 \$34.00 per hundred

 Signs
 \$40.00 per hundred

 (Choice of any mix of inscriptions)

 Rope
 \$25.00 per thousand ft.

 (3/16" polypropylene—yellow)

 Minimum order
 \$50.00

Write for FREE samples

COURSIGNS, INC.

6502 N. Clark St. CHICAGO, ILLINOIS 60626 (312) 465-6330



MERTECT 140-F. Tough on disease. Easy on you.

You can easily control the major turf diseases with nonmercurial MERTECT 140-F. It works systemically against dollar spot, brown patch, and

Fusarium patch.

But along with that, it also saves you time and money.

Measuring, mixing, and

easier because MERTECT 140-F is flowable. It won't clog spray nozzles even in low-

volume fairway spraying. Its long residual (2-3 weeks) control means fewer applications. And the low dosage rate makes it economical.

Follow the simple instructions on the label. MERTECT 140-F is not phytotoxic to grasses when used as directed. See your Merck distributor for a supply now. Or write us for his name.

Agricultural Products, Merck Chemical Division, Rahway, N.J. 07065.





Measure out the recommended amount of MERTECT 140-F (1-2 fl oz in 5-10 gal of water/1,000 sq ft). Notice the handy pouring spout included with each gallon.



Pour the measured amount directly into the spray tank. No need for a slurry, no hard-to-handle powder to mess with.



Just spray on the effective disease control of MERTECT 140-F. MERTECT 140-F requires minimum agitation and does not clog spray nozzles even in low-volume fairway spraying.

Checklist of Cultivated Hollics Now Available

The first part of an International Checklist of Cultivated *Ilex* (holly) is now available for distribution.

It is contribution No. 3 of the U.S. National Arboretum. Researchers have worked since 1964 in assembling and compiling this authoritative checklist. It describes more than 1,000 named cultivars of this widely grown native American holly.

For a copy of the checklist, write: International Checklist Committee for Cultivated *Ilex* U. S. National Arboretum, Washington, D. C. 20002.

Association VP Backs Green Industry Movement

Sustaining clean air machines through lawns, trees and gardens is making a worthy contribution to life, according to the executive vice president of the Florida Nurserymen and Growers Association.

In a release by the association, James F. Griffin, Jr. says it is reported that the percentage of carbon dioxide in our atmosphere is steadily increasing. This is due to the burning of fossil fuels to generate electric power, run our automobiles and factories, heat and cool our homes.

At the same time, more and more earth is being covered by highways, parking lots and buildings of all kinds. This is unfortunate, he says, since only green growth can metabolize excess carbon dioxide into growing plants, through the process of photosynthesis.

He says that one approach to the dilemma has been suggested by John Fischer in a recent issue of Harpers magazine. He agrees with Fischer in thinking that the next "Heroes of the Republic" may be those who plant trees instead of subtracting from our greenery with bulldozer and saw. Griffin further adds that Fischer might have included as heroes those who plant and nurture grass, shrubbery and gardens.

The association vice president says other positive action has been suggested. This would include mandatory provision for minimum landuse ratios of greenery in any new land development for homes, institutions, office buildings, industrial sites and shopping centers.

Griffin says that the Florida Nur-

serymen and Growers Association has provided model landscape and tree ordinances to many major Florida cities.

In addition, he adds, wherever possible green belts should be installed along highways and roadsides. The green leaves of trees and other plants trap pollutants which are then washed into the soil where they disintegrate into basic soil elements. Such green belts, when properly planted, provide tremendously effective sound baffles and barriers thereby reducing the effects of sound pollution by many decibels.

Ohio Chapter, I. S. T. C. Elects Officers

New officers of the Ohio Chapter, International Shade Tree Conference are: Kenneth H. Funk, Funk Bros. Tree Service, Inc., Ashland, president; Gary P. Mitten, Ohio Power Co., Canton, president-elect; William H. Collins, Cole Nursery Co., Circleville, vice-president; Dr. L. C. Chadwick, Columbus, secretary-treasurer; and Dr. Philip Kozel, department of horticulture, Ohio State University, editor.





- FAST! With an 84 and 68-inch cut, NATIONAL Triplex mowers cut grooming time in half around greens and traps.
- EFFICIENT! National's Triplex maneuvers sharply, climbs banks and hillsides easily and safely. Three, power driven, free-floating reels follow ground contour. Reels do a precision job without skip or scalping. Handles the clubhouse lawn and practice areas, too!
- DURABLE! Timken bearings; automotive-type transmissions; heavy duty, tubular steel tie rods and bed knife frame; and cutter lip bar...all add up to more years of use!
- SERVICEABLE! No-nonsense design makes normal service faster than any mower on today's market!

NATIONAL...our reputation is your guarantee of quality! Our start in 1919 makes us one of the (if not the) oldest power mower manufacturers in the U.S.A.

