Model 88 Walk Behind Aerator

# Olathe

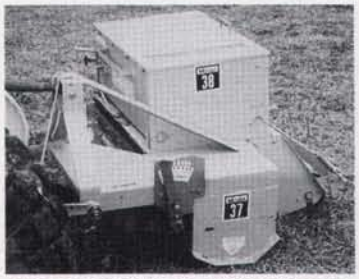
# OLATHE EQUIPMENT IN YOUR SPORTS TURF PROGRAM!


Model 61 Leaf & Debris Blower

A dense wear-resistant turf is essential on athletic fields and sports areas to provide player safety, good footing and a pleasing appearance. The successful sports turf contains proper soil, sufficient irrigation, appropriate grasses, disease and insect control programs, and mechanical grooming procedures. For over 17 years, Olathe has provided the turf professional with the proper equipment needed.

Core and slicing cultivation are desirable practices to allow percolation through the profile. Aeration with **Olathe Models 88, 96, 686, 687,** and **75** opens up holes and removes plugs which may be broken up and returned as topdressing. An ideal method of core cultivation is the **Olathe Model 56 Plug Pulverizer,** which lifts areation plugs off the turf and pulverizes them into topdressing. Slicing with machines like the **Olathe Models 83/93, 37/38,** and **71** develops slits that allow deeper penetration of air and water.

Many sports fields have limited prospects for improvement because of lack of irrigation water. The introduction of water-absorbing polymer into the ground with equipment like the **Olathe Model 71/831 Aerator/Polymer Planter** may provide an answer for these problems.



Model 37/38 Aero-Thatch/Seeder

Model 83/93 Aero-Thatch/Seeder

Model 71/831 Polymer Planter


Model 54HL Turf Sweeper

Where areas are thin or worn, slit seeding with units like the **Olathe Model 83/93, 37/38,** and **82** should be done on a regular basis. These PTO units power a blade into the ground and place the seed into the slits where a good root system can develop for stronger turf. An additional benefit of slit seeding on established turf is to relieve surface compaction and bring topsoil to the surface.

Sports turf requires mechanical mowing and grooming for a healthy and aesthetic appeal for spectators. Turf equipment like the **Olathe Model 54HL Sweeper** removes grass clippings, thatch and other debris from sports fields and large turf areas. Specialized units like the **Olathe Model 61 Blower** and **Model 67 Blower** help remove light snow or windrow grass for later removal.

Olathe products are especially geared for the sports turf industry and are supported by nationwide sales and service centers. Don't miss the opportunity to view some of these products on your sports turf areas.

Write or call your local Olathe/Toro distributor for free demo or call toll-free 1-800-255-6438.

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# THE FRONT OFFICE

## OPINION PAGE

### *A THEORY THAT HOLDS WATER*

When I was a junior at the University of Missouri College of Agriculture, one of my professors described how certain parts of the country simply would not have enough water to keep up with growth in the future. He was sounding an alarm, one based on supply versus demand.

Twenty years later, his prediction appears accurate. If anything, it fell short of the mark. Droughts have created shortages in regions generally considered to have plenty of water. Water tables in some states are dropping at alarming rates. And, as the professor figured, most of the growth in the country is taking place in locations with the least available water.

To learn a lesson in college is one thing, to apply that lesson in real life is another. The professor's solution to the problem was to control growth by pricing water to control demand. Some of the money generated from higher prices would then be funneled into research on water conservation. Looking back, his ideas were sound in theory. Implementing them has been the problem.

Water conservation research is probably the greatest need of the recreational turf industry today. Without water for irrigation, the golf and sports turf industries could not exist. Yet, how much money is being spent on this type of research by water purveyors, those agencies charged with finding, treating, and distributing water in this country? These agencies have saved parks and golf courses in some areas by providing treated and recycled water at lower cost. But, they have not participated in finding new ways to save water in the long run.

From what I've seen, virtually all the support for water conservation research at universities has come from manufacturers and industry associations. With little to no support from the U.S. Department of Agriculture or water agencies, university turf specialists have still been able to show that it is possible to conserve between 20 and 50 percent of the water we use through more efficient turfgrasses, computerized irrigation controllers linked to weather stations, wetting agents, and more effective ways to deliver water to turf and plants. Still, they have only scratched the surface and need our continuing support.

Much more research needs to be carried out on perfecting moisture-sensing devices, subirrigation, and polymers and other amendments for rootzones. Only when research demonstrates that these and other methods of water conservation are effective and practical, will they be fully accepted by managers of existing facilities and by architects and builders of new ones.

I think my professor had an excellent idea. Water purveyors need to play a greater role in water conservation. They control the use of water because they control the price. That price should include a percentage for conservation research. They must assume a major role in helping find new ways to conserve water in the future.

Bruce F. Shank

# EVENTS

## CALENDAR

## JUNE

### 19

Buildings and Grounds Maintenance Exposition, Santa Clara Convention Center, Santa Clara, CA. Contact: Richard Mauck, Public Works, 1500 Warburton Ave., Santa Clara, CA 95050-3792, (408) 984-3151.

### 20

Fourth Annual Athletic Turf Field Day, Kitchener Auditorium, Ottawa Street, Kitchener, Ontario, Canada. Contact: Michael J. Bladon, Sports Turf Association, 185 Edinburgh Rd. South, Guelph, Ontario, Canada N1G 2H8, (519) 824-4120, Ext. 3460.

### 20

Midwest Sports Turf Institute, College of Du Page, Glen Ellyn, IL. Contact: STMA, 400 N. Mountain Ave., Suite 301, Upland, CA 91786, (714) 981-9199.

### 21

University of Massachusetts Turf Research Field Day, Turfgrass Research Center, South Deerfield, MA. Contact: Dr. Richard Cooper, Dept. of Plant and Soil Sciences, University of Massachusetts, Amherst, MA 01003, (413) 545-2353.

### 25-26

Second Annual Summer Turfgrass-Fest, Western Washington Research and Extension Center and High Cedars Golf Club. Contact: Northwest Turfgrass Association, P.O. Box 1367, Olympia, WA 98507, (206) 754-0825.

## JULY

### 18

Facilities Management Workshop, Davidson College, Davidson, NC. Contact: PGMS, 10402 Ridgland Rd., Suite 4, Cockeysville, MD 21030, (301) 667-1833.

### 29-31

International Lawn, Garden and Power Equipment Expo, Kentucky Fair and Exposition Center, Louisville, KY. Contact: Expo 90, P.O. Box 70465, Louisville, KY 40270, (800) 558-8767.


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**The Pond 1 by Lake Aid Systems is a wind- powered vertical aerator.**

# Dissolved Oxygen Key To Lake Health

The world is quickly accepting the fact that fresh water is a limited resource. Whether on the surface or hidden in subterranean aquifers, water is attracting the attention and concern of a growing number of people. Its protection is a national priority and is largely in the hands of managers of recreational areas.

Sports turf managers and golf course superintendents today are expected to guard closely the health and appearance of lakes, ponds, and reservoirs under their care. At the same time, they are being forced to utilize recycled water for turf and landscape irrigation. As a result, they must expand their knowledge of lake management and apply all available technology.

Algae blooms, odors, fish kills, and infestations of aquatic weeds are all symptoms of imbalanced biological activity in water. Sunlight, temperature, and the presence of organic nutrients from runoff, plants, or wildlife must all be balanced with an adequate supply of oxygen to prevent lakes from degrading. After all, the natural process of evolution for lakes is to fill in and disappear. People speed this process up with some of their actions. On the other hand, they can also slow or reverse lake degradation.

Leaves, clippings, animal wastes, and dead aquatic plants in water are broken down by bacteria rapidly when enough dissolved oxygen is present. If this vital gas is lacking, organic waste settles to the bottom where bacteria and other microorganisms slowly break it down without oxygen. Anaerobic (without oxygen) decomposition releases hydrogen sulfide and methane, the sources of odors often associated with stagnant lakes.

Undecomposed debris accumulates on the bottom and gradually decreases the depth of the lake. As Charles Barebo of Otterbine Barebo, Inc., points out, a two-acre irrigation reservoir can lose one third of its capacity to hold water within five years because of sludge buildup. As lakes become shallower, sunlight can reach the bottom, allowing aquatic weeds to get established. Without a management program, lakes have to undergo expensive dredging frequently.

The primary natural source of dissolved oxygen is wave action. Aquatic plants also release oxygen during respiration. Nature depends upon these to supply oxygen for bacterial decomposition. Anything which limits or disrupts air flow over a lake can result in a serious reduction in dissolved oxygen. Plant production of oxygen is dependent upon sunlight, stopping at night and slowing on cloudy days.

The other important aspect about dissolved oxygen is that it is often trapped near the surface unless mixed into the lower depths of a lake by wave action or current. As temperatures rise in the spring, warmer water near the surface becomes more buoyant than the water below. Without some form of mixing, layers of water form in a process called stratification. Warm water also holds less oxygen than cold. Not only does the warm surface layer hold less oxygen, it blocks this vital element from reaching lower levels. Fish and other organisms continue to withdraw oxygen from the water regardless of the season.

The only other natural source of oxygen is respiration by plants. Algae, floating plants, and emerged plants near the shoreline are of little benefit to stratified lakes. Yet submerged plants, such as bladderwort,

coontail, elodea, naiad, waterstargrass, and watermilfoil may produce enough oxygen on sunny days to prevent fish kills.

Lake managers should be on the alert for fish kills in the summer when clouds block the sun for extended periods. Cold summer rains or strong winds have also been known to kill fish by mixing oxygen-deficient bottom water with the other water in stagnant or stratified lakes. Fish kills can also take place in the winter. A long-lasting, thick cover of ice and snow blocks air exchange and sunlight.

Algae is perhaps the greatest problem of irrigation reservoirs and lakes. It thrives on nutrient-rich, warm water near the surface. These conditions cause a bloom of dense algae growth or mats. The mats restrict wave action and block light from penetrating the lake surface. Without light, plants below the surface die and bacteria utilize any existing oxygen to break them down. As a result, there is little to no oxygen left for fish or further decomposition. Lakes in this condition are known as eutrophic.

Avoiding eutrophication and degradation of lakes requires a combination of curative and preventative measures. It starts during construction and never ends. Lakes should be at least eight feet deep and have relatively steep banks to discourage establishment of bottom-rooted weeds. Liners can be installed for the same reason or to prevent leakage. Lake shape and location can influence natural wave action. Managers should realize that well water contains no oxygen if wells supply lakes and reservoirs.

Dyes can be used in problem lakes to block sunlight from algae and submerged aquatic weeds to prevent establishment and growth. They will not harm emerged or floating plants or trees with roots extending into lakes. Algaecides and aquatic herbicides can be used to eliminate weed infestations. Pay close attention to desirable shoreline vegetation and observe restrictions and delays required prior to irrigation. Be aware that aquatic vegetation killed by dyes or herbicides increases the oxygen demand on the lake for proper decomposition.

In certain states, plant-eating fish can be stocked to control aquatic vegetation. Sterile white amur can be carefully introduced in limited numbers, depending upon the amount of excess vegetation and habitat required by other fish. Tilapia is a fish recognized for its consumption of algae. However, they are not sterile, can overpopulate, and cannot survive water temperatures below 50 degrees F.

**The Toro Aire $O_2$ is an electrically-powered horizontal aerator.**

***By eliminating stratification and increasing dissolved oxygen levels throughout lakes, aerators improve the biological balance.***

Mechanical methods of aquatic weed control include dredging, harvesting, and aeration. Dredging removes bottom-rooted plants and built-up sediment. A lake's depth can be increased to prevent sunlight from reaching the bottom. The exception is sewage lagoons, which are generally six or less feet deep to prevent stratification.

Harvesting is simply cutting and removing bottom-rooted plants. Removal is essential to relieve a lake from an oxygen drain during decomposition. It does not prevent regrowth, and is generally followed by or used in combination with chemical treatment.

Aeration is the process of increasing the oxygen levels in lakes through injection, fountains, and mixing. The role of aerators in lake management has grown significantly during the past decade as parks and golf courses lean more toward prevention. By eliminating statification and increasing dissolved oxygen levels throughout lakes, aerators improve the biological balance. Aerobic decomposition is therefore able to keep up with nutrient loads and eutrophication is avoided.

Aeration is not a complete solution to aquatic weed control and lake health. But experience has shown it is a valuable tool when used in conjunction with other methods, in some instances reducing dependence on the other methods to a degree.

The value of aeration was established by water treatment facilities. By keeping organic solids suspended in oxygen-rich water, decomposition occurs at a faster rate. Aerobic breakdown also reduces odors. Fish farmers use aeration to improve productivity by increasing the holding capacity of ponds, contributing to the health of fish, and speeding up decomposition of wastes.

A variety of aeration devices are now available for lakes at recreational facilities.

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**Lake Health**

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Just as no two lakes are the same, neither is the right type of aeration for each. A combination of aerators may offer the best solution in some cases. Lake depth, shape, use, and budget must all be considered.

Lake aerators are generally classified in one of three groups: vertical, horizontal, or diffused air. Vertical aerators lift water from below to the surface, where it is exposed to air. They break through statified layers of water to the depth of the intake. The heavier, cold water brought to the surface

**The Rain Jet Aquavator is a fountain-type vertical aerator by Hardie and offers eight different spray patterns and floodlighting for night display.**

pushes warm surface layers down. This mixing alone is beneficial to lake health by cooling surface waters and improving decomposition of materials previously trapped beneath the surface. By turning water over within a vertical column, algae is deprived of both the warm water and exposure to sunlight it needs. In the winter, when water from beneath the surface is warmer, aerators prevent formation of ice.

Vertical aerators float on the surface. Since many models pump the water into the air so it can absorb additional oxygen, vertical aerators are often called fountain aerators. This characteristic can be used to make the aerators an attractive addition to lakes and to help point out water hazards to golfers. Light kits are also available to highlight the water spray at night. But as Barebo points out, aerators should not be confused with fountains. "Typically fountains do not move large volumes of water. Aerators move more than 500 gallons of water per horsepower minute."

These aerators are powered by electric motors, generally ranging from 1/3 to ten horsepower. Installation is a matter of anchoring or mooring the unit and having a qualified electrician connect it to a watertight power line from the shore. Manufacturers of electric vertical aerators include Otterbine/Barebo, RainJet Division of Hardie Irrigation, Lake Aid Systems, Airlake Aeration, Inc., and Air-O-Lator.

Lake Aid Systems also offers a wind-powered vertical aerator for locations without an available supply of power. A pump connected to a vertically mounted fan lifts water through an intake tube to the surface, where it is released horizontally. This device relies upon aeration from wave and wind action instead of spraying water into the air. It also requires a location with adequate winds at appropriate times of the year. However, since water does not have to be thrown above the surface and the intake tube can extend to the lake bottom, this unit can be used effectively on deeper lakes than can fountain-type aerators.

One limitation of vertical aerators is their area of influence. They improve water in a vertical column, though wave action and currents may help distribute the aerified water beyond the column to a certain degree.

Horizontal aerators were developed to overcome this limitation. Floating on the surface, they inject air at an angle beneath the surface. Like a boat, a propeller on the end of the aerator creates a powerful stream of water in the top few feet of the lake. Air from the surface is sucked into the stream and enters the water as fine bubbles. The current generated by the aerator can be aimed at problem areas or directed to improve circulation in the lake. Moving water helps keep debris suspended for aerobic decomposition.

Like their vertical cousins, horizontal aerators are electrically powered and installed fairly easily. They do not offer a dramatic display like a fountain, and are usually concealed with an artificial rock or lattice cover. The area of aeration they provide tends to be larger, but the depth of aeration may not be greater. The angle of injection can be adjusted to obtain the right combination of depth and horizontal flow.

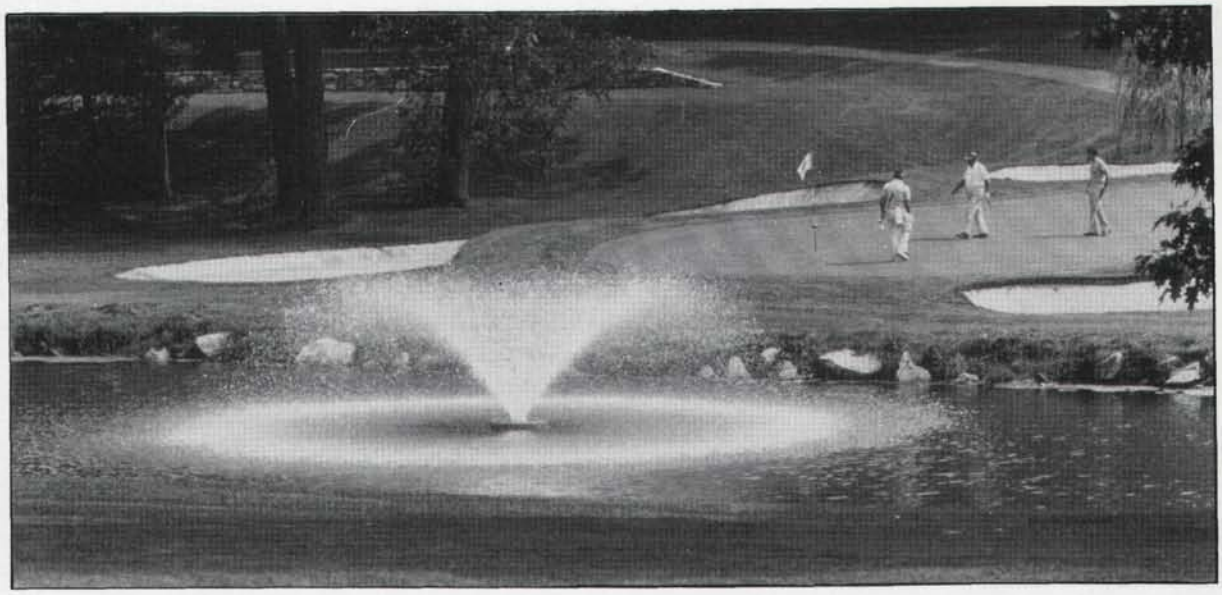
Toro is the prime supplier of horizontal aerators in the turf industry under a marketing agreement with Aeration Industries. Airlake Aeration also markets one.

Studies by the Louisiana Agricultural Experiment Service showed that the actual amount of oxygen transferred to water is

*continued on page 18*

# "We had a tremendous algae problem. To solve the problem we purchased an OTTERBINE® Aerator".

Bob Jackson, Superintendent MEADOWLANDS Country Club



**"...The water quality and algae problem were cleaned up; so last year we purchased our second OTTERBINE Aerator".**

Literally thousands of golf courses around the country are already benefiting from OTTERBINE® Aerators. These aesthetically pleasing, floating mechanical aerators help keep water hazards clean and clear by controlling algae and its unpleasant odor.

Available in a wide variety of models: OTTERBINE Aerators serve as an on-going water management tool. They reduce or eliminate the need for chemicals — And when water is used for irrigation, help to purify the water before it passes through the irrigation system.

Highly efficient, economical and self-contained; OTTERBINE Aerators are safety tested and approved by the Electrical Testing Laboratory. Simple to install and easy to maintain, their elegant beauty and "down-to-earth" practicality make them a welcomed addition to any course.

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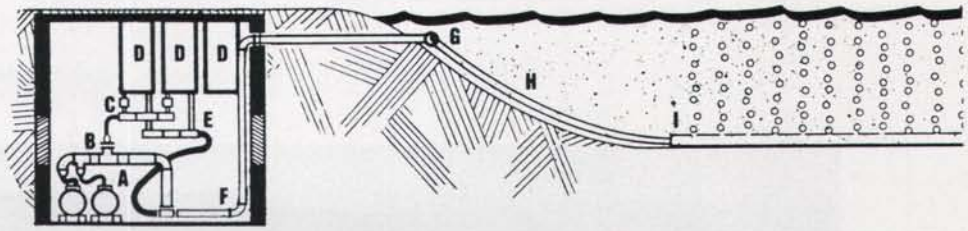
Photo — Lehigh Country Club

ACTIVATED OXYGEN AND AERATION
Process Flow Diagram

A - Air Compressors
B - Air Supply Manifold
C - Activated Oxygen Feed Manifold
D - Activated Oxygen Generator
E - Activated Oxygen Collection Manifold
F - Activated Oxygen & Air Mixing Pipe To Shoreline
G - Lake Manifold
H - Lead Weighted Feeder Tubing
I - Lead Weighted Aeration Tubing




**Flexalon's Restoration System mixes and aerates water with diffused air from the lake bottom.**

## Lake Health

*continued from page 16*

approximately the same per horsepower hour for vertical and horizontal aerators. Choosing between the two is often a matter of lake size and shape. As mentioned before, some lake managers are using a combination of the two for better results.

The third type of aerator, diffused air, injects air along the bottom of lakes through a network of weighted pipes. A land-based air pump blows air through pipes to emitters or perforated tubing placed on the lake bottom. Air bubbles rising to the surface exchange oxygen with water molecules and help mix colder bottom layers with warmer surface layers. The amount of oxygen transferred to the water increases with the depth of the lake.

Diffused air systems have several advantages: The pipe can be laid to fit any contour in the lake, they mix water from the bottom to the surface, there are no power connections within the lake, and the pump is easily accessible for maintenance. However, installation and repair of pipes or emitters may be entailed.

Flexalon and Airlake Aeration, Inc., offer diffused air systems. Flexalon believes it has simplified installation by using weighted plastic tubing in its Lake Restoration System. The flexible tubing can be installed from a boat if necessary. There are no emitters. Air is released through perforations in the tubing.

The company took an extra step by adding an ozone generator to the air injection system. Ozone is a short-lived gas consisting of three oxygen molecules instead of two. Like chlorine, ozone kills harmful bacteria and is used by an increasing number of water treatment facilities. Unlike chlorine, it breaks down quickly to become oxygen gas and leaves no residue. However, it is corrosive to some metals. The ozone generator increases the percentage of oxygen in the air injected into the lake. Air typically contains less than 20 percent oxygen.

Diffused air equipment is most practical to install during lake construction. Spacing should be determined by trained individuals, as the systems produce little water circulation. Since oxygen transfer improves with depth, diffused air systems are most effective on deeper portions of lakes.

No aerator provides an immediate cure for symptoms of poor lake water. They gradually raise levels of dissolved oxygen, and improve the biological balance in lakes over a period of weeks. Many users report odors when aerators are first installed, as gases and sediment trapped in oxygen-deficient lower layers are brought to the surface. However, this is a short-term problem and proves the aerator is correcting stratification.

Aeration should be considered more of a preventative tool than a cure. Do not wait for symptoms of poor lake health before running aerators. And, as just about every manufacturer will tell you, aerators do not constitute a complete aquatic weed control program. However, they are perhaps the most important tool a lake manager can utilize to renovate a sick lake outside of complete reconstruction.

A better understanding of lake management is imperative in today's environment. Each gallon of fresh water is climbing in value. Sports facilities are being judged on the condition of their lakes as well as the quality of their turf. Managers of these facilities today must respond with the best combination of chemicals and equipment available to get the job done.

## RECREATION TO PLAY ROLE IN FEDERAL BUDGET

President Bush's Fiscal Year 1991 budget (FY 1991) proposal reflects the strongest commitment to recreation programs and natural resources in a decade, according to officials from the Office of Management and Budget (OMB).

Speaking before a group of 20 American Recreation Coalition leaders recently, Ronald Cogswell, chief of the OMB Interior Branch, said that the Interior budget contains increased funding for land acquisition, recreation enhancement, and resource protection.

"The Administration is prepared to spend more on recreation if new revenue sources can be found," he added. Cogswell also stated that the Administration is generally opposed to taking revenue from existing accounts and applying it towards new programs, but is encouraging new revenue-raising ideas, such as user fees, to fund recreation programs.

Bruce Beard, chief of the OMB Agriculture Branch, told the group of recreation community leaders that the Forest Service's FY 1991 budget proposal continues to expand the agency's emphasis and spending on recreation programs. He said that the "America the Beautiful" component of the Forest Service budget is a cornerstone of the President's conservation initiative, and provides funding for land acquisition and an ambitious tree planting program.

"Another new program will evaluate the feasibility of phasing out controversial below-cost timber sales, offsetting the economic loss from timber with expanded recreation and tourism activity," said Beard. "The cutbacks will affect 12 National Forests initially in a pilot program."

Beard continued, "The Forest Service is also seeking new legislative authority to charge fees as part of the test project. Currently, fees can only be charged in areas that provide specific facilities and services. The budget proposes separate legislation that would allow the Secretary to charge new fees on the test forests, including fees for boat ramps, campgrounds, swimming sites, wilderness use, a motorized vehicle parking permit, and admission fees to "concentrated use" areas. Twenty-five percent of the fee would be paid to the states, and the remainder retained by Forest Service and applied to recreation programs."

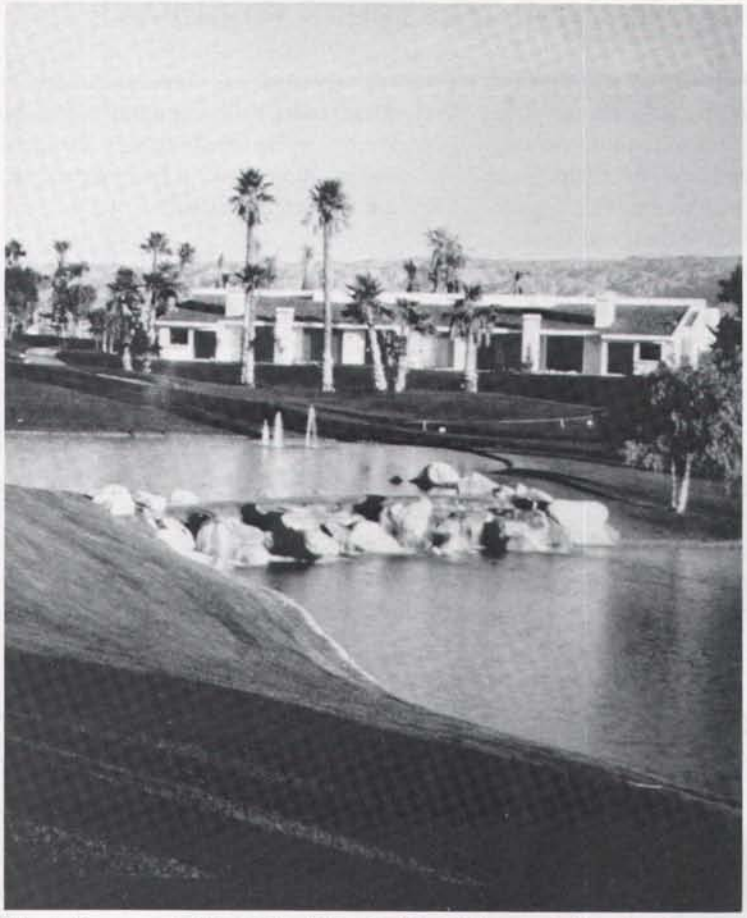
## MIDWEST INSTITUTE RETURNS TO DUPAGE

The Midwest Sports Turf Institute returns to the College of DuPage in Glen Ellyn, IL, on June 20. The popular one-day event, sponsored by the Sports Turf Managers Association, includes an educational program and trade show designed specifically for groundskeepers at stadiums, parks, schools, and universities.

Keynote speakers for this year's institute are groundskeepers Harry Gill of the Milwaukee Brewers and David Frey of the Cleveland Browns. Ken Mrock of the Chicago Bears will also be available for questions. Park turf care will be discussed by Mike Trigg of the Waukegan Park District and Mike Fugiel of the Park Ridge Park District. Field safety will be addressed by Kevin Marks from the Park District Risk Management Agency. Communications in managing college turf programs will be covered by Dr. Ken Kolbert, vice president of administration affairs at DuPage, and Dr. Richard Canton of Turfcon.

Suppliers imparting advice to the seminar attendees include Steve Stewart, Chicago Turf & Irrigation, speaking on selection and use of field equipment, and Hunter Industries' Phil Robisch, who will cover Field Irrigation: Dos and Do Nots.

Lunch will be served during the two-hour outdoor trade show. For further information contact George Rokosh, (708) 858-2800, Ext. 3067 or 2319. The College of DuPage is located at 22nd Street and Lambert Road in Glen Ellyn, IL.



The golf courses at Palm Valley helped sell 1,266 homes in less than five years.

# *Palm Valley: A Community Centered On Golf*

Real estate developers have been responsible for much of the growth in the golf course industry during the past 20 years. By building new communities around golf facilities, they offer home buyers a much-sought-after country club lifestyle. Experience has shown that not only are buyers willing to pay more for homes in golf communities, they are less likely to be discouraged by poor economic conditions. This has given developers and home buyers a more reliable return on their investment and helped finance construction of new golf courses.

Palm Valley Country Club in Palm Desert, CA, is a good example of the power of golf in selling new homes - 1,266 homes to be exact, in less than five years. Sunrise Company, with the assistance of golf course architect and community planner Ted Robinson, created Palm Valley to appeal to the health-conscious home buyer of moderate means. In addition to an 18-hole championship course and 18-hole executive course, the community features a full-service spa and racquet club, 85,000-square-foot clubhouse, and impressively landscaped, gated grounds.

Palm Valley is the most recent project by Sunrise. The company was founded in the '60s by William Bone, a young graduate of Stanford University and Harvard Business School. Bone had witnessed at first hand the power of golf in the hotel/resort industry. He reasoned that an untapped demand existed for moderately priced homes in a country-club-type community.

Bone selected a site in Rancho Mirage near Palm Springs for his first major venture, Sunrise Country Club. The plan was to enhance the sale of 750 moderately priced homes by including country club membership rights. Homeowners would not have to pay an initiation fee, just an affordably-priced membership charge for golf and tennis.

Robinson was commissioned to polish Bone's design concepts. His education and background in urban planning and landscape architecture, as well as his experience as a golf course architect, were unique and fitted Sunrise's needs perfectly. For more than 25 years, Robinson has been the consultant for all of Sunrise's projects in the Palm Springs area.

In 1973, when the typical development in the area sold one home per week, Sunrise Country Club sold 196 homes on opening day. The remaining 450 homes sold in just 30 months. By 1976, the project was sold out and Bone was planning more developments.

The company's next venture was one of the desert's first master-planned destination resorts, Rancho Las Palmas Country Club. Using a 27-hole golf course, 25 tennis courts, and two clubhouses as a base, Sunrise constructed 858 condominiums and a 465-room resort hotel with Marriott. The condominiums were all sold within 18 months.

By 1986, Sunrise had completed two more golf communities in Palm Desert: Monterey Country Club and The Lakes Country Club. Monterey consists of 1,206 condominiums surrounding a 27-hole golf course. At The Lakes, 900 homes were built adjacent to an 18-hole golf course dotted with 21 man-made lakes. The value of golf to the communities was clearly established. Furthermore, the quality of its golf courses had to meet the high standards of the region.

Palm Valley was the culmination of everything Sunrisehad learned in more than 15 years of developing country club communities. It boasts the largest array of re-