

Pacific Distributing, Inc.

Toro Pacific Distributing-San Francisco has been purchased by Louis A. Rinaldi, former general manager of that distributorship, and Gene Warne, former general manager of the Los Angeles distributorship. Their company name will be Westoro Distributing Co.

Toro Distributing-New York has been sold to Hartley D. Bingham, president of Elmco Distributors, Inc. Bernard Wollin, former general manager of the distributorship, has joined Elmco as a vice president and director.

All three companies will handle allied products of other manufacturers in addition to Toro.

TURFGRASS

NGF conducts survey of turf species use

Sixty percent of the respondents in a recent nationwide survey conducted by the National Golf Foundation rated Pennncross bentgrass "superior" for use on

putting surfaces.

Survey responses were received from 1,623 golf facilities representing a cross-section by type, size of course, and geographic location, according to NGF Director of Research Ed Wells. An analysis of the results reveals the following highlights:

- Bluegrass was the most frequently used species on tees (reported by 32 percent of the respondents), fairways (52 percent), and roughs (53 percent). Bentgrass had the second highest frequency of use on tees (26 percent), while bermudagrass was second on fairways (23 percent)

and roughs (19 percent). On greens, bentgrass was used most often (by 79 percent of the courses responding), followed by bermuda (15 percent). Climate was given as the leading factor in influencing selection of grasses.

- Sixty percent of the respondents rated Pennncross bentgrass "superior" and 26 percent "very good" for use on greens. The next highest rating was attained by the Seaside variety, which was rated superior by 8 percent of the respondents and very good by 24 percent.

- Sixty percent of the courses reported annual budgets for grass

seed of \$1,000 or under. The median figure was \$833, while the average was \$1,485.

- Fifty percent of the respondents overseed tees on an annual basis; 39 percent overseed greens annually; 31 percent, fairways; and 8 percent, roughs. The average amount spent per pound for bentgrass for overseeding was \$5.19.

- Manhattan was selected as the top preference of perennial ryegrasses (by 48 percent) out of 10 popular varieties listed.

- Expanded green renovation for next year was planned by 27 percent of the facilities.

NATIONAL GOLF FOUNDATION BOX SCORE

January-December 1978		REGULATION COURSES	EXECUTIVE COURSES	PAR 3 COURSES	TOTAL
OPENED FOR PLAY	New	50	14	4	126
	Additions	49	9	0	
STARTED CONSTRUCTION	New	46	5	2	92
	Additions	35	2	2	
PROSPECTIVE		100	10	6	116

**It's Winter
It's Green
It's Ryegrass!***

Why settle for a course that's truly playable only part of the year? Oregon Ryegrass will green up your greens and tees and make your fairways a lush carpet in a matter of days. And they'll stay that way throughout the winter. Oregon Ryegrass makes the difference!

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**“I’m a customer
and I have ideas, too!”**



You don't become the world leader in turf care equipment without paying attention to what people want.

So we listen to our customers. To our distributors. To people who buy our equipment. To people who service it. And to the people who go out under the hot sun and use it.

Then we design our products with new features. Make sensible improvements. And bring out new models.

All to be sure that every product we offer to you is made to match your needs.

And then we back our products with the kind of service and parts inventory to keep the equipment running like it should.

Next time you're ready to order turf care equipment, ask your Jacobsen distributor for his recommendation. And why.

The more you listen to what he has to say, the more you'll know we've been listening.

We hear you.

JACOBSEN
TEXTRON

Jacobsen Division of Textron Inc.

Let's get down to grass facts about golf business.

As an advertiser I'm not interested in reaching golf pros or clubhouse managers — they're not buyers of turf products.

GOLF BUSINESS reaches only those businessmen responsible for turf and course related expenditures (i.e., turf maintenance equipment, seed, sod, chemicals, golf cars, course landscaping, maintenance buildings, renovations/expansions, etc.).

These readers include: A) superintendents, greens committee chairmen and general managers of private golf courses; B) superintendents and owners of daily fee and resort courses; C) superintendents, parks directors and commissioners of municipal golf courses.

...Collectively these businessmen control the golf course turf market.

In 1979 these GOLF BUSINESS readers will purchase approximately \$95 million worth of fertilizer ... \$30 million in fungicides ... \$23 million in insecticides and other turf chemicals ... \$105 million in turf equipment ... \$75 million in irrigation systems ... \$15 million in grass seed ... \$26 million in sand and soil amendments ... \$16 million in trees and ornamentals ... and millions of dollars more for other course related products.

GOLFDOM lost its BPA audit in 1973 because of poor circulation standards. How do I know your circulation is any better today?

The Harvest Publishing Company purchased GOLFDOM (now GOLF BUSINESS) in 1974 and rebuilt its circulation as if for a new magazine.

In August, 1977 GOLF BUSINESS received its BPA approval and remains the ONLY magazine reaching the entire golf course turf market with BPA circulation.

You've made so many changes to GOLF BUSINESS. How do we know it's getting readership?

Harvest Publishing has monitored GOLFDOM's readership since its purchase in August, 1974 ... Since August, 1976 (when GOLFDOM became the new GOLF BUSINESS), we have pre-tested editorial subjects by direct mail ... conducted telephone and personal interviews ... made readership polls at GCSAA shows and sponsored numerous aided recall readership studies to evaluate how readers compare GOLF BUSINESS to THE GOLF SUPERINTENDENT and various "horizontal" golf market media. It's because of this commitment to product development that we (and a growing list of advertisers) have confidence in GOLF BUSINESS today.

Your advertising rates are too high compared to THE GOLF SUPERINTENDENT.

There are no bargains in advertising or marketing. In the golf market you get what you pay for ... and in some cases you pay more for less!

For example: measure the number of golf courses delivered by THE GOLF SUPERINTENDENT or SOUTHERN GOLF for the price of a 4-color page:

	Market Reached % of Golf Course	Adv. Cost Per Thousand
THE GOLF SUPERINTENDENT	0 10 20 30 40 50 60 70 80 90 100	\$215
SOUTHERN GOLF		\$212
GOLF BUSINESS		\$139

I'm only interested in reaching the southern golf market ... private golf courses markets, etc.

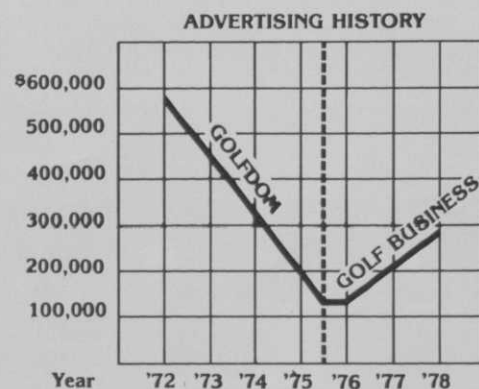
GOLF BUSINESS offers both geographic and demographic circulation buys. For example, if you're target marketing to southern resort courses in January and northeastern municipal courses in September, that's where we'll deliver your advertising message. We know of no other golf business publication offering this flexibility.

GOLF BUSINESS issues are too thin. It looks weak.

True, but all new trade magazines are thin — and GOLF BUSINESS is a new magazine. New name ... new format ... new circulation ... new editorial direction. A new magazine, but a magazine with a history, the negative side of which being that GOLFDOM (as a business) was neglected over the years and took a terrible plunge during its last 4½ years of life ... As a result, GOLFDOM developed a loser image and a reputation that GOLF BUSINESS has had to overcome.

It's tough to turn any business around ... It takes a good product and a lot of hard work.

How much more time can you afford to wait and watch?



golf business

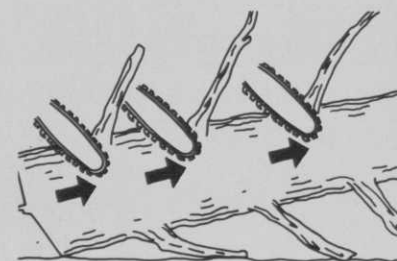
Serving the elite turf market.

Idea file

Tournament cements club-superintendent ties

Local superintendents' groups could help strengthen ties with private clubs in their area by copying a golf tournament hosted annually by the Ontario (Canada) Golf Superintendents Association.

In this event, the superintendent, greens chairman, and club president team up against similar teams from other clubs. Forty teams played in the OGSA tournament last year, making it one of the association's most popular events.



HOW TO TRIM A FALLEN TREE OR LARGE BRANCH

What to do about oil spills on turf

Detergent proved most effective in enhancing bermudagrass recovery from damage by motor oil, hydraulic fluid, and brake fluid spills in a recent study conducted by Dr. James Beard, professor of turfgrass physiology at Texas A&M University.

Researchers at the Texas Agricultural Experiment Station applied gasoline, motor oil, hydraulic fluid, brake fluid, and grease — all commonly used in turfgrass maintenance equipment — to bermudagrass. Calcined fine clays (kitty litter), activated charcoal, and detergent were applied within 20 minutes of each spill, and the results evaluated.

None of the corrective treatments were effective on turf damaged by gasoline or grease, though the grass recovered from gasoline spills 3 to 4 weeks without corrective measures. More than 10 weeks were required for recovery from grease spills.

Applying detergent to injured turf proved more effective. In the case of spilled motor oil and hydraulic fluid, turf recovery time was 3 to 4 weeks rather than the 8 to 10 weeks it took untreated turf to recover. Turf damaged by brake fluid recovered in 2 to 3 weeks after detergent treatment, as opposed to 4 weeks for untreated grass.

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more in body repairs. Keeps cars looking showroom new. And a fleet of attractive, damage-free cars not only enhances a club's image, it encourages careful driving and substantially increases resale value.

There are a lot of things to consider when choosing a fleet of golf cars. But, in the final analysis, it boils down to people-pleasing **performance** for your customers and **profit** potential for you. Test drive a DAVIS 500 LIGHT, check out the numbers — and you'll discover why more courses than ever before are switching to the DAVIS 500 LIGHT.

GET THE FACTS. Call or write. Give us the specifics on your course and fleet. We will show you exactly how the DAVIS 500 LIGHT will save you a bundle of money and problems. Won't cost you a cent to find out how you can save thousands!



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AERATION

Working with nature to improve water quality

an interview with Holman Griffin

There are ponds and lakes on perhaps 9,000 golf courses in the United States. Besides providing water for irrigation and fire protection, these ponds and lakes can substantially enhance the beauty of a course. All too often, however, water quality is poor, especially during the hot summer months.

With the advent of the floating mechanical aerator or "floating fountain," superintendents have an effective tool to keep pond and lake water in good condition, even when temperatures are in the 90's.

Holman Griffin has installed dozens of floating fountains in golf course ponds and lakes during the past 2 years.

GOLF BUSINESS: Mr. Griffin, you visit well over 100 courses per year as a consultant. Do you see many courses that have water quality problems?

GRIFFIN: Yes, practically every course that has ponds or lakes has water quality problems of one kind or another.

What are some of these problems?

The problems vary from course to course, but the most common is algae. During a "bloom" — a period of excess growth — algae may completely cover the surface of a pond or lake. Besides being unsightly, algae may clog irrigation equipment. And when an algal bloom dies, it sinks to the bottom of the pond or lake, forming a bottom sludge. Over the years, the sludge may fill up — and kkill — the pond or lake, a process called eutrophication.

What causes algal blooms?

Algae are photosynthetic plants that need nutrients, sunshine, and a

suitable medium — warm water — to grow in. Most golf course ponds and lakes are rich in nutrients from fertilizer runoff and the runoff of other organic wastes in the hot summer months. There's plenty of sunshine for photosynthesis. The water is warm, close to the surface. So conditions are right for the explosive growth of algae.

Is water pollution a problem in golf course ponds and lakes?

All too often it is. Fertilizer runoff, for example, is a form of pollution that upsets the ecology of the pond. And if the pond is fed by a stream, there may be organic wastes in the stream that also pollute the water. These pollutants may be so concentrated that natural pond and lake water cleanup processes can't operate.

How can a golf course superintendent tell if the water in his pond or lake is polluted by organic wastes?

An algal bloom is one indication of pollution by organic wastes. Loss of clarity of the water is an indicator of pollution, too. Even if the water appears to be in fairly good condition, it may have an unpleasant odor due to organic wastes. When the water is in good condition it has a clean, fresh odor. Polluted water stinks.

You mentioned natural water cleanup processes. What are they and how do they operate?

The two most important natural water cleanup processes are aerobic digestion, these wastes are biodegraded by aerobic bacteria — bacteria that require oxygen for respiration. In anaerobic digestion, wastes are biodegraded by anaerobic bacteria that do not require oxygen for respiration. Aerobic digestion is quite fast, efficient and odorless.

Anaerobic digestion is slower and less efficient and it creates odors — particularly the "rotten egg" odor produced by hydrogen sulfide, a product of anaerobic waste digestion.

Why don't aerobic digestion processes keep golf course pond and lake water clean in the summer months?

During these months, the supply of dissolved oxygen in the water may not be sufficient to maintain a large population of aerobic bacteria. When there

are large amounts of organic pollutants in the water, the supply of dissolved oxygen is quickly used up. It's replenished to some extent by photosynthetic processes carried out by algae while the sun is shining. It's also replenished by natural transfer of atmospheric oxygen to the water by wind and wave action. But this, too, is a slow process.

Another limiting factor on the amount of dissolved oxygen in the water is water temperature. Warm water can't hold as much dissolved oxygen as cooler water — another reason for hot-weather pond and lake water quality problems.

Are there any other reasons why pond and lake water quality tends to deteriorate?

Lack of circulation of the water — particularly vertical circulation — contributes greatly to algal bloom and pollution problems in the hot summer months. Since warmer water is less dense than cooler water, water heated by the sun tends to float on cooler water below. When this condition — called "stratification" — occurs, there's little mixing between strata of water.

How would better circulation help improve water quality?

With better circulation, algae and pollutants are carried away from the surface and dispersed, reducing the possibility of algae and odor problems. Dissolved oxygen is distributed more uniformly, too, promoting natural cleanup processes.

Many golf courses use chemical algicides to control algae. What are your view on this practice?

There's no question but that copper sulfate or certain trade-named chemicals designed for the job can help to keep algae under control. Chemicals have their place. But they are costly, must be applied repeat-



Holman Griffin, a graduate turf agronomist (Texas A&M), has spent his entire professional life helping golf course superintendents improve the quality of their turf and — lately — helping them improve the quality of pond and lake water used for turf irrigation. Griffin was formerly associated with the United States Golf Association and the National Golf Foundation. He now runs his own consulting firm, GCM Inc., headquartered in Plano, Tex.

edly to maintain control — maybe four times per year in a golf course pond or lake — and really treat symptoms, rather than causes, of algae problems.

If the pond or lake water is used for irrigation, caution must be observed in using chemicals. Some chemicals may kill or damage the turf. Others are designed so treated water can safely be applied to the turf some days after application. If a drought occurs during the waiting period, the water cannot be used and the turf may be damaged by lack of water. Government regulations on the application of chemicals to water are getting stricter, too. In some states permits are required for applications of chemicals, and the superintendent's plans to improve water quality get snarled in red tape.

Some courses dye their pond and lake water as a water quality control measure. Is this effective?

Pond and lake dyes are usually harmless, ecologically speaking. They provide some shade that reduces the photosynthetic activity of algae, thus helping to prevent an algal bloom. Some of these dyes impart an attractive blue color to the water and make it opaque enough to hide just how poor the quality of the water is. And, as with algicides, repeated applications are necessary to maintain the appearance of water quality.

If chemicals and dyes just treat symptoms of poor water quality, what other recourse does the golf course superintendent have?

I think floating mechanical aerators — "floating fountains" — are the answer. Courses such as Winged Foot, The Greenbrier, Camelback Country Club, Las Vegas Country Club, Hershey Country Club, and at least fifty others have been using Otterbine floating aerators for up to 2 years. They report that algae and odors are kept under excellent control through aeration, which is a strictly natural water quality improvement process.

How do these aerators work?

They're actually floating, low-head pumps, anchored or moored in the pond or lake. They're designed to pump the water into the air, creating a spray. The pumping action creates a gentle circulation that mixes the water, preventing stratification. The spray droplets absorb atmospheric oxygen as they travel through the air. As they enter the water, this oxygen is transferred to the pond where it stimulates natural water cleanup pro-

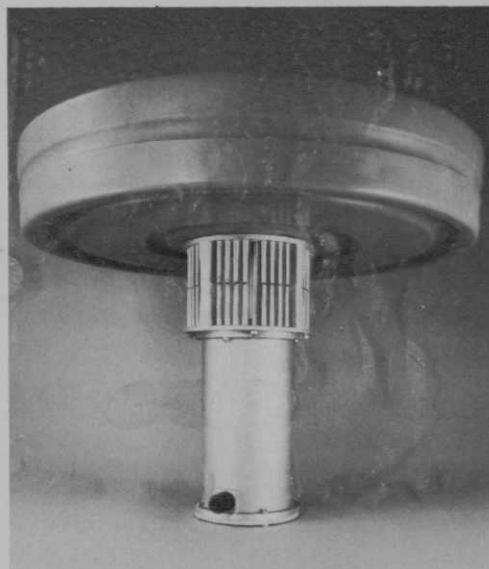
cesses. With better circulation and more dissolved oxygen, algal blooms are prevented and organic wastes in the water are more effectively biodegraded by aerobic bacteria. Result: cleaner-looking water. And no foul odors.

How are the Otterbine aerators powered?

The aerators are electrically powered. Power is carried to the aerators via underwater cables connected to on-shore electrical service.

Isn't it dangerous to have electrical equipment operating in the water?

For safety reasons, the aerators should be properly installed and properly grounded. This is a job for a qualified professional electrician, not an amateur.



Otterbine aerator consists of plastic float and underwater power unit. Water is pumped through 360-degree intake under float. Bar screen prevents debris being sucked into flow chamber.

How many aerators are needed to control water quality in a golf course pond or lake?

Generally 1 to 1½ horsepower of aeration capacity per surface acre of water will provide effective algae and odor control, even in ponds or lakes that historically have suffered from severe algal blooms and water pollution. Otterbine aerators are made in 1, 2, 3, and 5 horsepower sizes.

Are there any "secrets" to controlling water quality with aerators?

The secret of success, if you want to call it that, is to start aerating the water early in the season, even before the hot weather starts. That way, the water will be clean-looking and clean-smelling throughout the season.

Are you saying it wouldn't pay to install an aerator in the middle of the season?

An aerator will improve water quality whenever it is installed. But if an aerator is installed in a pond that's covered with a thick shore-to-shore algal bloom, it may take some time to fully clean up the water. If there is already a thick layer of dead algae, then nothing other than physical removal can eliminate this problem.

What about energy costs?

Energy costs depend on aerator horsepower, the number of hours per year the aerator is run, and the local price of power. When used strictly for water quality control, aerators are usually run only in daylight hours.

Energy cost of water quality control with a 3-horsepower aerator — which is usually more effective than alternative methods of water quality control — may run from \$150 to \$300 per year. Price of an installed 3-horsepower aerator may run \$1,500 or so, including shipping and taxes. When aeration replaces other, less natural water quality improvement methods, the aerator will easily pay for itself in two or three seasons of operation, depending on the severity of the water quality problem. (Severe problems may require more aerators.)

Will aeration help to control aquatic plant growth?

Aeration is only indirectly effective in preventing aquatic weed growth. It helps to minimize bottom sludge buildup. This means less rooting medium for rooted aquatic plants, hence less chance these plants will really take hold.

Use of aeration to improve water quality is quite new to golf courses. Are there other industries where aeration has a longer track record?

Aeration got its start in municipal and industrial waste treatment plant several decades ago, and practically all sewage treatment plants in the country use this principle to clean up waste waters.

Around 1971, some commercial fish farmers began to use aerators to improve water quality for fish production. Hundreds of floating aerators are used by commercial fish farmers today.

Mechanically, the waste treatment and fish farming aerators are identical to the models furnished to golf courses. But the golf course models have more attractive, "sculptured" spray patterns favored by golf course architects, superintendents, and golfers. With these highly ornamental spray patterns, mechanical aerators or floating fountains are a beautiful way to treat water. □

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Photographed at Rancho Murieta Country Club,
Sacramento, California



Controlling aquatic weeds with chemical, mechanical, and biological means

by Ron Morris, technical editor

Control of aquatic weeds in a golf course pond or lake can amount to thousands of dollars in a superintendent's budget. Further, efforts are made hazardous by aquatic herbicides' toxicity to the turfgrass that the water is used to irrigate. And in a pond with desirable fish and other animal inhabitants, efforts must be selective to avoid harm to them.

Aquatic weeds may be broken down into three general categories: floating, submergent, and emergent. Algae is a category by itself. However, it is not often that a superintendent will only have to rid his pond of just one type of weed. The problem is generally a combination of several weeds.

The first step in controlling a nuisance aquatic weed problem (and most other problems as well), is identification of the weed causing the problem. If the plants are growing completely under water, they are described as submersed aquatic plants. Plants growing in, but protruding above, water are said to be emersed aquatic plants. Floating weeds are divided into two categories: those such as duckweed and water hyacinth, which are not rooted, are surface aquatic or unattached-floating plants; those which are rooted are called attached-floating aquatic plants. Describing the growth pattern of an undesirable species of aquatic weed is instrumental in determining a control program. Obviously, a program centering on control of floating weeds will not generally be as effective in controlling submersed weeds.

Materials to aid in identification of aquatic weed species are available from many manufacturers of aquatic weed control products.

Chemical control

Economy in time, labor, and equipment still makes chemical weed control the most popular method. Methods of application include liquid and granular products.

After lowering the water level, liquids may be applied much as land pesticides are applied, to exposed vegetation. Diluted liquid herbicides are often sprayed over the surface of

the water or onto emersed species as contact herbicides. Liquid formulations may also be added to water to yield a predetermined concentration upon final dilution.

Granular materials may also be applied during a water drawdown of the pond. They can be broadcast into the water so that they sink and dissolve to form the final desired concentration. They may also be distributed over ice in winter (no more than 8-inch thickness of ice) to sink to the bottom as the ice thaws. The latter treatment works best on small ponds, as lake ice may tend to shift and the herbicide granules become strewn about in an ineffective manner.

Invert emulsions of herbicides into water have been proved successful. The bifluid system, coming out of Florida, has an oil center, an outer layer of water, and a third layer of oil around the water. Herbicides can be incorporated into either the oil or water phase or both.

A simple invert system has a layer of oil surrounding a water droplet. These methods appear to have good potential in controlling submerged aquatic weeds by carrying the herbicide to the desired control location. They are also instrumental in controlling drift.

The methods do have drawbacks. Materials must be mixed carefully

and accurately. The mixtures are usually lighter than water and must be weighted with an inert material to be effective.

One system currently on the market uses a mechanical inverter. It contains a phenoxy type herbicide to control broadleaf species of weeds. Another, to control grasses, can be added to the water phase of the system.

Being lighter than water, an invert system can be used for excellent control of floating species. Sprayed onto a weed such as duckweed, the invert will attach to the weed or float until it does come in contact.

By adding inert materials to weight the mixture, control depth can be modified to "get to the root of the problem." This can avoid problems from using granular materials in deeper water. The granules often tend to move to deeper areas which do not really contain the weeds.

In contemplating use of inverts, proper equipment to distribute the material, a good herbicide, and an emulsifier go together to make the system work.

Mechanical control

Mechanical methods of aquatic weed removal are usually restricted to larger lakes due to the size of the mechanical harvester. Basically, a mechanical weed harvester is simply an



Mechanical harvesters of aquatic weeds are usually too large for all but the largest golf course lakes, but fish such as the white amur can effectively control aquatic weed growth where legal.