These microscopic plants utilize carbon dioxide, water and sunlight to manufacture carbohydrates and other energy chemicals, thus serving as the beginning of food chains which support most higher forms of aquatic life.

When a water bloom occurs the water may turn brown, green, yellow or even red.

Some forms of planktonic algae may even release toxins in the water which are dangerous to animals, including man. Others can impart a distinct odor and/or taste to the water.

The 'moss' or 'pond scum' that appears on the surface of a body of water is make up of long strands of filamentous algae. These algae form floating mats of the pond scum, while other types form the green, fur-like coating on stones and other objects in the water.

Filamentous algae usually begin growth along the edges or bottom of the pond and float to the surface buoyed by the oxygen produced. The attached-erect, or weed-like algae, most frequently occurs in quiet waters in areas with limestone soils. This is the most advanced form of algae and is commonly mistaken as weeds. Commonly known as muskgrass or stonewort, this these algae are readily identified by a musky odor and often are encrusted with a noticeably rough, gritty calcium deposit. The plants have an erect, central main stem with whorls of branches at various intervals. They may grow two or three feet tall and can completely cover the bottom of a pond.

Nitrates and phosphates encourage the growth of algae. When these nutrients accumulate in the winter when temperature and light are not favorable for growth, a rapid bloom may occur in spring as the water warms up and the algae rapidly multiplies. The algae uses great quantities of oxygen and can shade the bottom and kill off other aquatic plants. This can result in a total oxygen depletion and a fish kill.

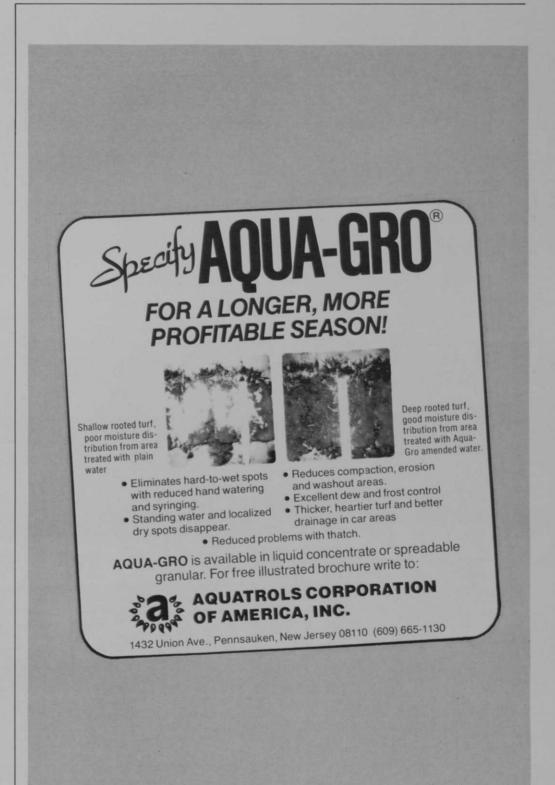
Liquid, powder, granular, or pellet formulations of chemicals are available for the treatment of algae. Most all will produce good results, provided application is properly made. Algae are growing vigorously and thus, most susceptable to herbicide application on warm, sunny days. Control is probably most effective if done before the algae become dense enough to become a serious problem. This can only be done through regular inspection, becoming familiar with the peculiarities of a body of water.

Copper compounds provide very ef-

fective control. However, the number of required treatments can vary with the hardness of the water. If results are not visible within a week of application, another may be necessary.

Trout are very sensitive to chemicals in general. Fish in soft water are more vulnerable to algaecides. It is necessary to maintain a balance between chemical application, so as not to directly kill fish, while maintaining a balance of food organisms. Algae is an important part of the food chain.







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# Municipal course improvement A committee's recommendations

Editor's note: GOLF BUSINESS has had a lot of print about municipal golf courses lately. It is hard to get daily fee and municipal operators to agree on any facet of the difference between the two. However, I think any superintendent will agree that a golf course should be run to the limits of available resouces, quality-wise. We received a case study recently from a group which is trying to iron out the problems involved with four municipal courses within a fairly large city. We are going to run a series, beginning with this article. The next will involve operations. Notice in particular that the courses do not have a superintendent per se, meaining a qualified individual. Perhaps some of these problems could have been avoided. However, with superintendents on the committee to clean up the act, it shouldn't be long, if their recommendations are followed, before the courses are the most attractive part of the city.

It is quite apparent to the Golf Council members that the present system of having each course being solely responsible for its own condition is simply not working. With each course having varying degrees of inadequate maintenance supervision, the results are quite evident. None of the courses is maintained properly nor are they of the high quality one might expect from a city with a populace of over 750,000. We are not a small city and yet better courses can be found in cities one fourth our size. We feel that a truly qualified expert in course maintenance should be hired, separated from operational responsibilities with specific responsibility of improving and maintaining all four of the public courses. His yearly job retention should be predicated on accomplishment alone. The present course managers and superintendents simply do not have the qualifications necessary to get the job done adequately. Under an expert's care, they would

have a better chance to offer finer golf facilities. We also feel that the appointment of the present golf administrator has compounded the problems at the four courses. Although he is a golfer of some merit and a former businessman, the positions we envision require persons with a better working knowledge of golf course operations and maintenance. Some of Mr. — attempts at improving the course appear very questionable. It is felt that an expert in his position would not have implemented such counterproductive measures as cart paths in the center of fairways and high mounds of dirt and rough to slow down play. His accomplishments of merit thus far seem negligible. The lack of respect of his managers and other personnel at the golf courses is a serious concern. To say he hasn't done his best is not intended. He should be complimented for at least trying to improve the lot of the public golfer. We feel, with his background in con-

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struction, he could be more productive in other areas of government which better utilize his expertise in that area. The Council heartily agrees that the position of administrator should be non-political and only available to someone who meets the most expert qualifications. One who will command respect because of past accomplishment, having successfully improved and/or maintained similar public facilities. Now is the time for such a change if we are serious about improving the public golf courses. The golfing public demands and deserves a vast improvement to these recreational facilities. These improvements can only come about through utilization of hired talent. Our present system simply doesn't work nor are the results acceptable. We further believe that a standardization of improved procedures is sorely needed. The individual golf course operations managers should have more clearly defined responsibilities, greater responsibility with more authority. As it is now, they just do not act on their own without clearance from the administrator on almost all matters. Much of the work they should

be doing is left undone as a result. We strongly feel that the operations manager should not have any authority over the condition of the golf courses. Their concern should be centered on operations only and service to the public. They should, however, be allowed to discuss the condition of the courses with the department if they feel the conditions have an adverse effect on the golfers using the course.

Under this proposed separation of golf course maintenance and operations responsibilities, the presently owned maintenance equipment can be pooled and used more productively under a new planned schedule at each of the courses. Better and more productive equipment should be purchased to benefit all the courses equally. The present system used with each course having its own equipment, most of which stands idle a good deal of the time, is both wasteful and costly. For example, aeration of the greens and tees does not require daily, weekly or even monthly use and vet each course, except number four has its own expensive aerating equipment. Herbicide application and fertilization equipment are also in the same predicament. Some of the herbicide application is even being done by hand. This is certainly a good example of non-productive, unnecessary and costly maintenance. Modern equipment for that purpose under the new system could be transported to the different courses as needed and the job completed in less than 10% of the time it now takes. This system would soon create experts in each phase of maintenance who would ultimately take greater pride in their accomplishments and do an excellent job.

Since manpower in all phases of the maintenance and operations of the golf courses must be productive as well as expert, we recommend a complete review and revision of all job descriptions and expert evaluation be made of the people presently employed. These newly written descriptions should give supervisors greater latitude in the use of their people. For example, we don't feel that it is proper for maintenance people to perform operations requirements but they should be expected to perform all phases of maintenance such as cut-





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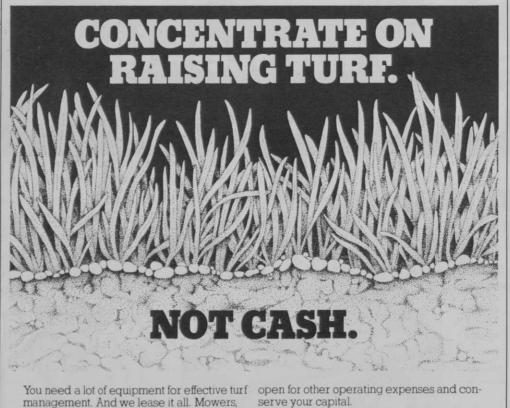
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ting, weeding, fertilizing, herbiciding, digging, sodding and similar tasks. The only specialists in the maintenance area should be in equipment upkeep. Keeping the equipment in top notch condition is mandatory to productive maintenance.

Based on the philosphy that everyone should have someone else to whom they will be responsible, the Golf Council strongly recommends the establishment of a permanent Golf Council, comprised of carefully selected citizens who will volunteer their services on a yearly basis to continuously and consistently evaluate the maintenance, operation and improvements of the public golf facilities. Only by this method can you ever feel reasonably certain that the same conditions we have today will not be repeated again in the years ahead. The Golf Council should answer only to the Board of Parks and Recreation but have some communication relationship with the Department of Parks and Recreation's Director, Operations Administrator and Maintenance Administrator.

This is an appropriate time to effect this change in the system and lines of authority. The Director of Parks and Recreation is a recent appointment. He has indicated a desire to improve all facets of the Parks and Recreation spectrum. He may welcome the improvement of the present status quo, poor organizational procedures and carry-over responsibilities which he inherited. We doubt whether he can effect any great degree of change for the better with the present attitude of negativism which is shared by most of those charged with the responsibility of providing good facilities and conditions for the public golfers' enjoyment.

In conjunction with these orgainzation changes and improvements, we heartily recommend a strong public relations program be planned to improve the image of public golf courses and operations and especially that of the Parks and Recreation Department. Let the public know what is being done and what will be done in the near and distant future. As it is now, the public feels slighted and cheated. They feel that no one cares enough to improve the facilities. They feel resentful of a system which suggests "take it as it is or leave it". The public cries out for hope of change and benefit. They've been disappointed over the years when other groups such as our Golf Council with a similar purpose has proven to be ineffective. Let's not let them down again.

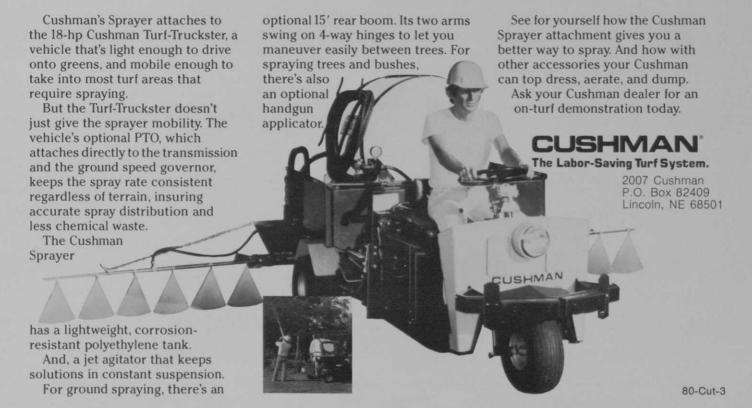
One of the most desired

improvements needed at two of the four courses are full 18 hole cart paths. Containing golfers and carts on the cart paths during rainy weather or while improving sections of the course is the only sure-fire way to improve and maintain the courses. Any new golf course which may be developed should include cart paths within the original plans for the course. It is mandatory that the grass areas be kept free of as much traffic as possible.

The simple at-random installation of cart paths in the fashion now being used is not practical. Such a system should be designed by experts with concern for both safety and convenience. As we stated earlier, running cart paths down the left side or center of fairways is counter-productive. It tends to slow down the play by inconveniencing the majority of the golfers. We note that the new cart paths at course number one have not taken this factor into consideration. The paths on the second and seventeenth holes are on the left side. Another consideration which should have been taken was the safety and convenience of the golfers approaching the next tee while the foursome ahead is in the process of hitting. The new course one second hole path begins its turn and return down the second hole at or near the forward most (ladies) tee. It puts approaching carts directly in line with wayward tee shots to the right. The Council advisors who have experience in such design matters agree that the back-most (championship) tees should be approachable by cart paths. In the case of the second hole, the path should, or could, have proceeded all the way back and around the rear of the tee with stop points along the left side of the tee. It could then proceed a few yards and cross over to the right side a short distance in front of the tee so as not to have an effect on the flight of the ball. Ball washers also are now placed in very inconvenient and meaningless locations. With the continuous cart path system, the washers should always be placed adjacent to the rear-most tee area on the principle that everyone riding carts must pass the tee while enroute to the tee of their choice. Golfers will often proceed by foot forward to the ball washer while golfers behind them are teeing off. Even though they have little regard for their safety, it should be the obligation of the golf courses to make the courses as safe for play as possible. This Council urges consideration and immediate action to relocate the present ball washers to meet a newly designed cart path route which services the entire course from first tee to eighteenth green. We realize that cost considerations have been part of the reasoning behind the failure to put in cart paths to date. The Golf Council also understands that funding will be a continuous problem in the implementation of such improvements. This capital should be sufficient to fund such improvements to a large degree.

The ball washers now in use are also very poorly maintained. Brushes are worn, many are without water, without cleaning detergent, and have no shoe scrapers. Each tee box should have a serviceable ball washer with cleat scrapers. A clean ball and dirtfree shoe cleats are required to effect the maximum hit of the ball. Golfers who do not have this required set up are disadvantaged. There should also be benches installed at each tee for those who must wait to tee off and shelters appropriately placed throughout the course for protection. Again, the positioning should be well thought out taking into consideration not to place them where they might obstruct play or endanger the users.

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#### Executive from page 18

land too valuable to keep only for golf. An owner may decide he would be better off to shorten his golf course and sell the freed land for development. Sometimes a private club may sell its old physical plant to a city or private enterprise, and move further into the country. Zoning may dictate that at least part of the land be saved for golf or open space.

Highway extension or condemnation has chewed off sections of many courses in modern times. Attempts to squeeze a course tighter but keep the same playing length have too often resulted in freak holes or unsafe

Redesign of an older, spread-out course might permit sale of one third or more of the ground, yet allow the same number of holes. If loss of space is significant, the answer may be to have a golf course architect make a new routing, with interesting and safe holes, and a more playable "challenge" length.

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# Designer's forum

By Dr. Michael J. Hurdzan



Michael J. Hurdzan, Ph.D., is a partner in the golf course architectural firm of Kidwell & Hurdzan, Inc., Columbus, Ohio. Dr. Hurdzan received his Doctor of Philosophy in Environmental Plant Physiology and his

Master of Science in Turfgrass Physiology from the University of Vermont. Dr. Hurdzan is a member of the American Society of Golf Course Architects, and is on that association's Board of Governors. He is also a member of the Ohio Turfgrass Foundation, USGA, NGF and the Golf Collectors' Society. Dr. Hurdzan has authored many articles on golf course design and maintenance and is currently writing a book on the history of golf course architecture.

## Executive is... not a dirty word

In golf there are some words that carry very strong negative connotations, such as shank, choke, and vippes. Likewise the Golf Superintendent would rather never hear words like pythium, burned-out, or broken. All of these terms conjure up images of bad experiences in golf and golf course maintenance. But there is one term in golf that elicits negative responses more out of misunderstanding rather than as a result of bad experience. That terms is "Executive Golf Course". Perhaps like a friendly ghost, when you learn its personality and purpose, you may enjoy its com-

Although there is no strict definition of what is an Executive Golf Course, most would agree that it is a course with a par somewhere between 58 and 68 with an average par of 62. Any golf course with a par less than 58 is considered a par 3, and any course with a par over 68 is a full size course. The main difference then, between these brothers, is that the Executive Golf Course usually has all par 3's and par 4's with no par 5's. However, physically, the Executive course is undistinguishable from the full size course for it has full size tees, greens, and sandtraps with the only real difference being the amount of fairways and roughs. An average par 72 golf course may occupy 150 acres while an average par 62 Executive may only need 80 acres of land.

This means then that an Executive course is cheaper to build (less land cost, reduced seedbed preparation and seeding cost, less irrigation, less tile, small pumps), cheaper to maintain (less fairway and rough to water, fertilize, mow, and apply pesticides to), and has a smaller requirement for labor, power, security, etc.

It is my belief that the Executive Golf Course is the reasonable middleground between the increasingly costly full size course and building something that looks like a golf course, but does not receive enough patronage to make it profitable. The Executive may be the most viable alternative that the investor with limited funds may have, for even at today's cost for construction and maintenance, a well planned and properly built "Executive" can make money.

First one must understand the purpose, concept, and demographics of this golf facility. If you have ever spent a day on a public golf course and observed the skill, or lack thereof, exhibited by most golfers, read the frustration on their faces, or been exposed to the dissolution of civil and social order caused by a slow group of players, then you understand that many golfers, especially beginners, women, and seniors, may find a full size golf course beyond their physical abilities, a socially hostile climate, and not much fun. These people want to play golf but they have few alternatives. They find most par 3 courses overly repetitive (boring), lacking in shot value (no fairway woods and irons), and depriving them of a respectable golfing image.

To some golfers it is almost demeaning to play a par 3 course that only requires 5 or 6 different clubs that can be carried around like a handfull of pencils; and he feels like a fool going out there with a \$500 set of clubs, a 14' bag, and an \$80 pair of shoes. As a result you have damaged his golfing self-image for he needs to feel like a golfer and he needs to have a justifiable reason for sporting all of his nice equipment. The properly planned Executive Golf Course does all of these things for it provides a golf course of par 3 and short par 4 holes that are within the limited skills of the patrons, it requires hitting every club in the bag, it is less expensive to play, requires less time, and is socially

more comfortable than a place populated with accomplished, but frequently impatient golfers.

However to be successful the Executive Golf Course must not only provide a full array of golfing excitement, it must also be located very near its patrons. As stated earlier, the demographics of the Executive would indicate it to be most used by beginners, women, seniors, and those seeking a quick round of golf. Thus the course must be located so that little effort or money is needed to get there. Ideally people should be able to ride their bikes or walk to the course or drive not more than 10-15 minutes. By nature, the golfers most likely to use an Executive course, are the ones that are least likely to travel any distance. Perhaps it is for this reason the Executive length course makes an ideal companion for a housing complex, or as a use for flooplain land in the heart

The Executive Golf Course may be our best hope for wide spread acceptance of golf as a sport, for it encourages beginners, it is affordable to our youth, and it permits elderly people with fixed incomes and fading skills to continue to enjoy golf. The Executive course is ideally suited to family golf where the course is entertaining to all family members no matter what their individual skills. In how many other forms of physical recreation can parents share of their experiences, teach their children sportsmanship, and perhaps start an activity that the family members can enjoy together all of their lives? Dwell on that question a minute.

Perhaps on strict utilitarian reasons alone, the Executive course should be considered by golf course developers for they can produce attractive profits for the money invested. Income statements from properly located, designed, and built Executive Golf Courses have consistently substantiated or surpassed expected revenues estimates. But it must again be stressed that proper planning is the key to success and your best source is a golf architect experienced in doing profitable Executive golf courses.

The world is ever evolving and so are some things in golf. The dirty words in golf may never change, but "Executive Golf Course" should not be among them.