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professionals

WEST

In spite of uncertainties in the economy and changes in the golf business, professionals in the West are having a steady year, most of them far enough ahead of last year's business to feel they are staying even with inflation. By mid-year however, few held hopes for 1974 turning out to be a great year.

It appears to be a year that rewards those with enterprise and the willingness to experiment, those who will deviate from traditional practices if necessary and those who can sell the sizzle even when their steaks are no different than the competition's.

What pays off for professionals in one area might not work in another.

For example, one professional (Dale Mead, Del Rio CC, Modesto) has reacted to the pressure from discounters by limiting his club stock basically to two lines. Demonstration sets of three others are on display, and even more available on order, but he has concentrated his inventory on only two — Ping and Lynx.

A metropolitan area municipal course professional (John Fry, Harding Park, San Francisco) has tried to keep up with the proliferation of club brands, but admits it creates an "inventory crunch", and "cuts up the pie so many ways".

He has been instrumental in working with the Northern California Section of the PGA to establish a travel arrangement whereby professionals represent the travel agent in helping arrange golfing tours abroad for members. The agreement includes contribution of a percentage of the total business to the section, and the opportunity for the professionals to travel as tour directors.

He sees a round of price increases in golf equipment this Fall, and believes the business may be headed for another buyers' market, as opposed to the sellers' market that has been in effect for about a year and a half as demand outpaced supply.

"The biggest challenge we face is keeping golf business in the golf shop," said another private club professional (John Zontek, Contra Costa Country Club, Richmond). Downtown discounters have lured a significant amount of club business from him, so he has increased his emphasis on soft goods. "This is holding well so far," he said, "but we'll get close-out pressure there too." He expects a drop in total volume in his shop from 1973.

A remodeled and expanded golf shop is paying off for another private club professional (Bob Moore, Peninsula CC, San Mateo), who took the occasion to install an old barber chair in his shoe department as an interesting sales gimmick.

After two or three years of good volume in low-priced shoes (\$25 range) he is convinced that higher priced shoes are better for him and his members. Even though manufacturer's "make-goods" replace faulty cheap shoes, the buyer is upset by the inconvenience and delay, and the professional's time is occupied in replacement. Higher priced shoes tend to satisfy all parties.

He has noticed a strong preference among his members for forged-head irons, in spite of the recent popularity of investment-cast clubs. "We allow our members to try sets of clubs before buying, and they tell me they simply hit the ball better with forged clubs," he said, "so that's what we sell mostly, though the others are available."

Downtown discounters have made inroads in his club sales

volume, and he has turned to soft goods in defense. Now, however, he plans to reduce his soft goods inventory, "because the department stores can offer such a wide selection."

One private club professional (Mead) has developed a rotation system for clubs and soft goods that satisfies his members and maintains a healthy level of sales. He emphasizes a given item about every three years. For instance, his inventory of men's slacks is normally about 150, but he has 350 pair this year. Next year he'll return to normal, and the following year he'll double or triple his stock of women's soft wear. It gives his inventory a freshness, avoids saturation of his members and builds anticipation for the special years.

He has found the same system works well in clubs by specializing in one or two different manufacturers each year. In spite of this he too is feeling the effect of price-cutting in the club business, and plans to emphasize soft goods sales more. "After all," he said, "nobody asks for trade-ins in clothing."

CENTRAL

As business in pro shops in the Chicago area goes, it is not the best of seasons; nor the worst. At clubs where volume for 1974 at the end of June exceeded that of 1973, the range was from 5 to 10 percent. At clubs where business was lagging, a decrease of from 5 to 10 percent was most frequently quoted.

A total of 15 clubs was recently surveyed by Golfdom, and pros at six of these said current volume is higher than it was last year. Five pros said it was down and four others reported that it was very close to what it was in 1973. Overall for the season, it

(continued on page 58)

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superintendents

WEST

The higher cost of almost everything — if it can be found — is first on the list of concerns for superintendents in the West. The more fortunate ones have been allowed budget increases to cover rapidly rising costs, while others are looking for short-cuts and time-savers.

"We're experiencing more delays all the time", said one superintendent (Cliff Waggoner, Del Rio CC, Modesto), "and if you don't order fertilizer (up at least 50 percent over last year) far ahead you just don't have it when you need it".

He specified increased costs of electricity of about 15 percent; parts, 20 to 25 percent; and varying increases in the prices of equipment. "We've received a justified increase in our budget, but eventually it will cause an increase in dues, and nobody wants to do that," he said.

Because much of the equipment and supplies a superintendent uses are hard and slow to get, one (Paul Paulsen, San Francisco GC, San Francisco) said: "A breakdown can become a catastrophe. It seems like everybody stalls, and you can't get things done. It makes patchwork necessary".

Even though his club has its own wells for irrigation the cost of power to pump the water has increased. "We're walking more instead of taking power carts," he said, "but that costs us something in time."

He continues to cut the greens five times a week, but fairways don't get mowed so often, and they have been narrowed to reduce the area the mowers cover.

Another superintendent at a major San Francisco club (Ed Berardy, Lake Merced CC) said everything he uses has just about doubled in price, but club management has increased

his budget to cover it. He echoed the common complaint about having to wait when equipment items are ordered.

A superintendent at one club on the San Francisco Peninsula (John DaDalt, Burlingame CC, Burlingame) added another worry that has plagued him this year, abnormally wet weather in the early season, and in the spring and summer, high winds and hot spells. He fights a traditional battle against pythium, but has confidence in the chemicals he is using now.

Because most of his fairways are lined by eucalyptus trees the winds mean not only drying conditions but trashy fairways that must be cleaned by his small crew of six.

He referred to another looming cost increase, compliance with newly imposed safety regulations of the Occupational Safety and Health Administration (OSHA).

Maintenance employees seem plentiful in Northern California. "Almost every week we have people looking for work," one superintendent said, "all of them claiming to be experienced. Of course, we often find after hiring them they have no experience."

Another superintendent said a round of wage increases underway this summer in closely related fields that compete for his help, such as construction, will mean yet another cost increase soon — salaries.

None of the superintendents interviewed could begin to predict where the increases in the cost of maintaining golf courses will end, if ever.

CENTRAL

Superintendents who have been around for 25 or 35 years can't recall when golf courses in the

Chicagoland area ever were in finer shape than they were as of Memorial Day. Since the State of Illinois became befuddled and seemed to elect two Memorial Days this year, May 27 and May 30, there may be a little confusion as to when the splendor of the courses reached a penultimate. But their almost ineffable beauty easily blanketed both these dates, and barring blight or some other of nature's quirks, were a good bet for keeping their cosmetic luster throughout the summer.

The winter of 1973 to 1974 was quite the most equable that superintendents, such as Bob Williams of Bob O'Link and Adolph Bertucci of Lake Shore, both golf husbandmen since the late '30's, can recall. March and April didn't exact retribution, as is often the case following a mild winter, by serving up stern weather that equalizes everything for the winter-spring period. Both months were good for turf growth, and in April ground crews were able to get in more maintenance work than usual.

May was a different story. The early part of the month was unseasonably cold. As so often happens, there was no week or 10 days of warm weather in the first three weeks of the month. Until the first Illinois Memorial Day, the entire month was accompanied by rain — 19 of the first 26 days. It was enough to discourage golfers, keep farmers out of the fields, according to agricultural reports, and it did a good job of keeping course maintenance crews confined to their sheds.

April was a better month for golf than May. According to Jim Husman, manager of Midwest CC, a 36-hole, semi-private club, there were more playable days in the former month, but the trouble is that most golfers aren't in the mood this early

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superintendents

to unsheath their clubs. However, on the next to last Sunday in April, good weather beckoned nearly 500 golfers to Midwest, almost as many as will be entertained on any Sunday from June through September. Thereafter, the weather turned disagreeable and it was Memorial Day, the first one, before the golfers were able to swarm out again. Considering the play they had to forego during the first three weeks or so of May, a pair of Memorial Days were needed to make up for the rounds that had been involuntarily back ordered.

As was reported in the clubhouse article, club business didn't suffer because players couldn't get out on the course. They did a great deal of spending while sitting around lounges, lobbies and dining rooms wistfully watching the greens explode in the grass and scanning the sky for the first sure sign of the sun. Pro business started to pick up around mid-May, but not enough to appease the shop custodians. "For all the people we've got milling around the club, we should be doing better," said one pro. "But we have at least 10 days of golfing weather in May to get them buying. We'll catch up to some extent, but I don't expect to have as good a season as I had hoped for."

Except for a few isolated cases, courses on Memorial Day one were in superb condition. With the exception of the roughs, which are being allowed to grow a little higher this year by design, playing conditions were as good as anyone would want. While golfers and farmers were being kept confined during most of May, superintendents were slipping their men out to mow and do other chores between showers. The result was that course maintenance hadn't fallen too far behind.

However, Pete Voykin, at whose Idlewild Club on Chicago's south side the final United States Open qualifying round was played on June 3, nearly got stymied. On the weekend before Memorial Day one, his acres were partly submerged by a creek that overflowed its banks. Three greens and several fairways were flooded. A goldfish was netted in a trap at Number 12. A lot of

debris piled up, and it was necessary for Idlewild to spend around \$2,000 in extra labor to haul it away. Voykin has had to neglect paring the roughs to some extent, providing an exacting but fortifying test for those who hoped to go on to Winged Foot, and it wasn't possible to replenish all the sand that was washed out of the traps. But by working furiously and overtime, Voykin, who has been at Idlewild for 16 years, came close to restoring the course to normalcy. He brought it back so far, in fact, that Bob Sender shot a brilliant 132 in the single day, 36-hole qualifying trial. The rest of the field, however, came closer to posting scores that had been predicted for Idlewild's quasi-tough 18 — 141 and up.

When prices are mentioned, superintendents here emit a cross between a moan and a whistle. Since last fall, herbicides, fungicides and fertilizers have advanced at least 50 percent. Urea, has doubled. Green mowers that could be purchased for \$500 last summer are selling at \$700, and it takes no less than six months for delivery. As far as anyone knows, mowers are hard to come by because they are being sold to the Japanese, who have put several hundred courses into play in the last two years or so. More patched-up mowers, tractors and other equipment are seen on country club estates this year than at any time since the immediate Post-War period. The only real sanity this year is in labor costs. They are up only 10 percent over 1973.

The expected gasoline crisis didn't materialize, because supplies rather miraculously, and suspiciously, loosened up a little more than a month before the courses got back into large-scale consumption of gas this spring. But a price, and a stiff one, had to be paid for the resumption of the flow. It costs 40 or 42 cents a gallon to have gas delivered to a club this year, compared to last year's 22-cent tariff. The average monthly gasoline bill is now between \$250 and \$300 for 18-hole clubs.

At quite a few places, supplementary tanks have been installed. Superintendents are far sighted enough to realize there can be serious shortages again this summer when the heavy vacation travel crunch is on, and so many of them

decided last fall or last winter to put in an extra tank or two — all with locks, incidentally. Right now, ample gas is only a phone call away, but where a two- or four-week supply was considered sufficient last year, it has been increased to four to six weeks.

The same far sightedness that superintendents have shown in increasing gas shortage facilities was exercised last fall when fertilizers, fungicides and herbicides were being ordered for the new season. Just about everybody laid in a full year's supply of these now priceless ingredients. They were contracted for spring delivery at October, 1973, prices. As a result, clubs didn't get shocked by those staggering 50 percent price increases that suppliers were forced to tack on at a single pencil stroke this winter. So 1974 is pretty well taken care of, but now the cry is, "Wait until 1975 — we'll get murdered." However, most superintendents feel that prices have begun to stabilize. They'll pay a lot more for fertilizer this fall than last, but there is a feeling that prices will taper off slightly by the time 1975 orders are placed.

One good thing: club officials are fully alert to those crazy price fluctuations. They know they can't depend on the foresight of their course custodians to keep costs down another year simply because it is impossible for superintendents to place orders more than a year in advance. In 1975, clubs are going to be at the mercy of the market. Budgets for next year are going to be worth approximately the paper they are written on. In fact, those who were prepared for this year's operation have been pretty much circumvented. Although it was possible to avoid those big increases for fertilizer and other soil and turf amendments, due to the placing of orders last fall, many other maintenance costs have gotten out of hand. Some have gone up so fast that it has been impossible to keep control over them. In addition, all that rain in May knocked the labor budget out of square. Poor weather always does. Even if it's possible to squeeze in a lot of maintenance work in spite of adverse conditions, a point is reached when it no longer can be done. That leads to overtime. Overtime is budgeted, of course, but usually never to the ex-

tent it has to be used. So far this year, it has easily exceeded the hours scheduled for it.

One question that is hanging in the air in these inflated times is, "How much maintenance do country clubs really want?" Probably more clubs than not still insist on keeping their courses in the condition the members have become accustomed to over the years. Yet, there is a good deal of grumbling over the high cost of doing so. A few superintendents say they are running into equivocation regarding the degree of excellence in which the club properties are to be kept. It's one of those on again, off again things.

Maybe it is agreed that the roughs will be allowed to grow a little higher than in the past; tees aren't to be mowed quite as often as they used to be; trimming around traps and trees is to be reduced; ditto the weeding of flower beds. It is not an out and out austerity, but corners are to be cut. Sooner or later in some cases the superintendent is criticized because the course doesn't look as well-groomed as it was in years past. There is even a modicum of shabbiness about it. Moreover, longer grass in the roughs slows up play. "What will visitors think of our club?" is a plaint quite often heard.

Cutting back on mowing, trimming, or weeding won't have such a deleterious effect in the summer when growth slows down, but in an extremely wet spring, it shows plainly. Maybe the green chairman comes hurrying down to the maintenance building with word that the order to skimp on maintenance has been rescinded. It requires some overtime to catch up with trimming and weeding of areas that have been partially or fully neglected. In a week or so, though, the countermand has been forgotten; the next thing the superintendent knows, he is being asked to explain why he is spending so much on labor.

It is really not a latter day dilemma. Superintendents have been putting up with this for years, but the current high cost of even starting a motor or taking a trimming tool down from the rack is making everyone keenly aware of how expensive maintaining a golf course is.

The consensus among superintendents is that it is up to each in-

dividual to get a hard and clear decision as to the degree of maintenance his club wants. If it's necessary to go back over all cost figures with the green committee, this should be done. In addition, it's a good idea to get someone up in the clubhouse to outline the new austerity program in writing, if one has been adopted. These clarifications will help protect the superintendent.

EAST

From a Superintendent's viewpoint, East Coast operations halfway through the 1974 season are pretty much on schedule. Planned maintenance programs and special projects too.

Brief delays due to rain, minor disease breakouts and some equipment problems are being taken in stride at most locations. Major construction this season has not been mentioned very often but planned programs for tee enlargement and resurfacing are underway at several courses.

A repeat of last season's rain damage in the North is not expected now that the mid-season mark has been reached without additional heavy rainfall.

Labor problems, other than attracting experienced help, seem to be minimal too. As usual, much reliance is being placed on the college crowd to keep crew levels at peak operating efficiency.

No serious complaints arising out of gasoline shortages were voiced. An occasional late delivery here and there summarizes that category of potential headaches.

Opinions on equipment were universal in announcing few breakdowns but long delays in getting replacement parts. Even some items covered by warranties.

In Rod Karchner's tee enlargement program for the Corning CC in New York, he wisely did one tee first to get a feeling of what the members really wanted before proceeding with the entire operation.

Karchner reported a small amount of Dollar Spot which has since been cleared up, as his only struggle with disease to date. Their preventive spray program got under way in late June at Corning.

Karchner commented on a slight delay because of downpours in May and June with about a week's delay resulting by the end of June.

He runs his fairway vehicles on diesel and has had no side effects from the gasoline shortage.

Karchner's six-man crew does five to ten hours overtime each week and, of course, he does close to about eighty hours a week himself.

Commenting on labor, Karchner had this to say recently, "It's getting pretty damn hard to compete with the industries around here as far as hourly rates go. I've lost four good guys I'd planned on having come back this year."

Bill Blackert at Turf Valley in Ellicott City, Maryland, claims he's ahead of schedule. A relatively dry Spring in his area gave him the opportunity to get a good jump on 1974.

"We thought we'd have a problem in January and February with gasoline shortages," Blackert said recently, "but it never happened." Separate tanks for the course and clubhouse areas were kept full enough to permit pumping from one to the other when necessary, which only happened once. Turf Valley's supplier, Mobil, did an outstanding job for them, according to Blackert, even giving some extra fuel because they missed one shipment.

In two separate plans some heavy face lifting is set for this season. Blackert reports a move into a tree planting program starting with the purchase of liners that are being sent to a nursery and the rebuilding of some of the 36 tees. He plans to sod the fronts and seed the backs. The course bunkers are in for an overhaul as well in a Rototiller operation. Ambitious programs but typical of a given season at Turf Valley.

Little disease is reported by Blackert. Small amounts of Brown Patch have been eliminated.

"Replacement parts are a real problem and the costs associated with them are astronomical now too," Blackert voiced his most serious consideration this season.

At Pine Tree in Kennesaw, Georgia, North of Atlanta, Paul Petrie is also in to a tee rebuilding program. All his men's tees will be resodded this year.

(continued on next page)

(from page 10)

Petrie's maintenance plans are right on schedule with very little disease reported. Of course, in the Atlanta area there is no general rainfall, rain takes the form of thunder-showers, so Petrie doesn't have to share the concerns of his Northern brethren. However, there is the heat. It can be tremendous in Georgia. Petrie reports Pine Tree's Bent greens are doing well this season, in spite of the heat.

Parts are hard to get down South too and anything sent out for repair is very slow getting back, according to Petrie.

After a slow start caused by wet weather, Terry Wueschinski's program is back on schedule at the CC of York, Pa.

Running a couple of diesel tractors has helped alleviate any potential gasoline shortage problem at York. Wueschinski cleared up a strain of Dollar Spot with Daconil in the latter part of June and reports no further turf problems.

The Pennsylvania State Women's Amateur was contested at the CC of York in July and in anticipation of the event three of the ladies' tees were reconstructed this Spring.

Wueschinski reported minor problems with not being able to get replacement parts but said it wasn't too bad.

It would appear that superintendents in 1974 may not have to face a major crisis such as that growing out of the pending fuel shortage that might have proven disastrous if it had come to pass.

Perhaps even the weatherman may balance his early season outpourings over the Northeast with more gentle showers during the rest of the season. It is hoped that he too may have forgotten 1973!

Disease and blight, not apparent to any great degree at mid-season, may well be a sometime thing this year.

The parts replacement problem, with no ready solution in sight, will probably continue to plague superintendents.

Most East Coast superintendents, looking forward to a good season in their own inimitable style, will no doubt willingly exchange the minor annoyances currently being expressed for the relative peace of a season without major strain.

bers are entertaining more. Dinner business was 10 percent over last year, which was as good as any we ever had. On the top of this, the club, which caters only members' parties and weddings, is booked solidly until Labor Day."

A dozen other club managers who were queried weren't, with the exception of Biltmore's Bill Blackwood, quite as enthusiastic as Norman Norman in describing their clubs' business in the early weeks. Most estimated they were doing better than last year, but because the weather in April and early May kept going from rain to cold and back to rain almost continuously, the consensus was that things hadn't really opened up. Still, there was general agreement that food and drink volume so far in 1974 was possibly 10 percent better than it had been a year ago.

For reasons not fully explained except that it has a young and hardy membership, Biltmore got rather exceptional play from mid-April on. Courses at other clubs, except for Easter Sunday, which was relatively clement, were largely deserted in the early weeks, but even Biltmore is located in the northern section of the Chicago District, it was getting at least an average quota of play from April 1 on. This, coupled with expensive renovation of two grills and the addition of a dining room, completed last fall, was responsible for keeping members pouring in. Blackwood's early statistics were just about as glowing as those reported for Flossmoor.

The general increase in club patronage was, of course, attributed to gas rationing. It was being referred to in mid-May as the "late crisis," because by then gas hadn't been in short supply for six or eight weeks. But many people were wary that the crisis might re-surface during the July vacation crush, and even more were disgruntled by the huge increase in the price of gas. Consequently, the mood was to greatly curtail vacation-taking this year and choose recreation and entertainment close to home. Country clubs started profiting from this attitude

immediately upon reopening this spring. What was Florida's loss was their gain, judging from the spring report.

One club manager, while acknowledging that the oil companies had driven people to the haven of club-houses and other near-at-hand entertainment, suggested that there is a new attitude abroad regarding spending. He wasn't sure if it was fatalistic or because people have unbounded confidence in the economy. "They've been more relaxed about money this year than they have been in a long time," this man said. "I wonder if it is because people are figuring you might as well spend while you have it, or because the threatened 1974 recession isn't turning out to be as severe as expected. Anyway, there is optimism in the air, but it could be false."

It is dimmed, of course, when people start thinking about prices. Menu prices at practically all clubs in the Chicago District have been increased around 10 percent, although in a few cases the increases are selective. Most managers say they have held the line on meat, but for the most part, it stops there. Norman Norman, who can quote the Cost of Living index without reference to props or to notes, along with a few other managers thinks that club-house prices should be up a minimum of 15 percent. However, the non-profit nature of the dining room operation doesn't make it imperative that cost increases be immediately recovered in their entirety. If a deficit is incurred at the end of the year, it can be easily adjusted by that great equalizer, the assessment. Anyway, most members feel better paying lower prices, even if they know there is to be an accounting later on.

In a way, it is kind of a miracle that country clubs have restricted dining increases to no more than 10 percent. Norman points out that in the last year there have been eight increases in dairy products, amounting

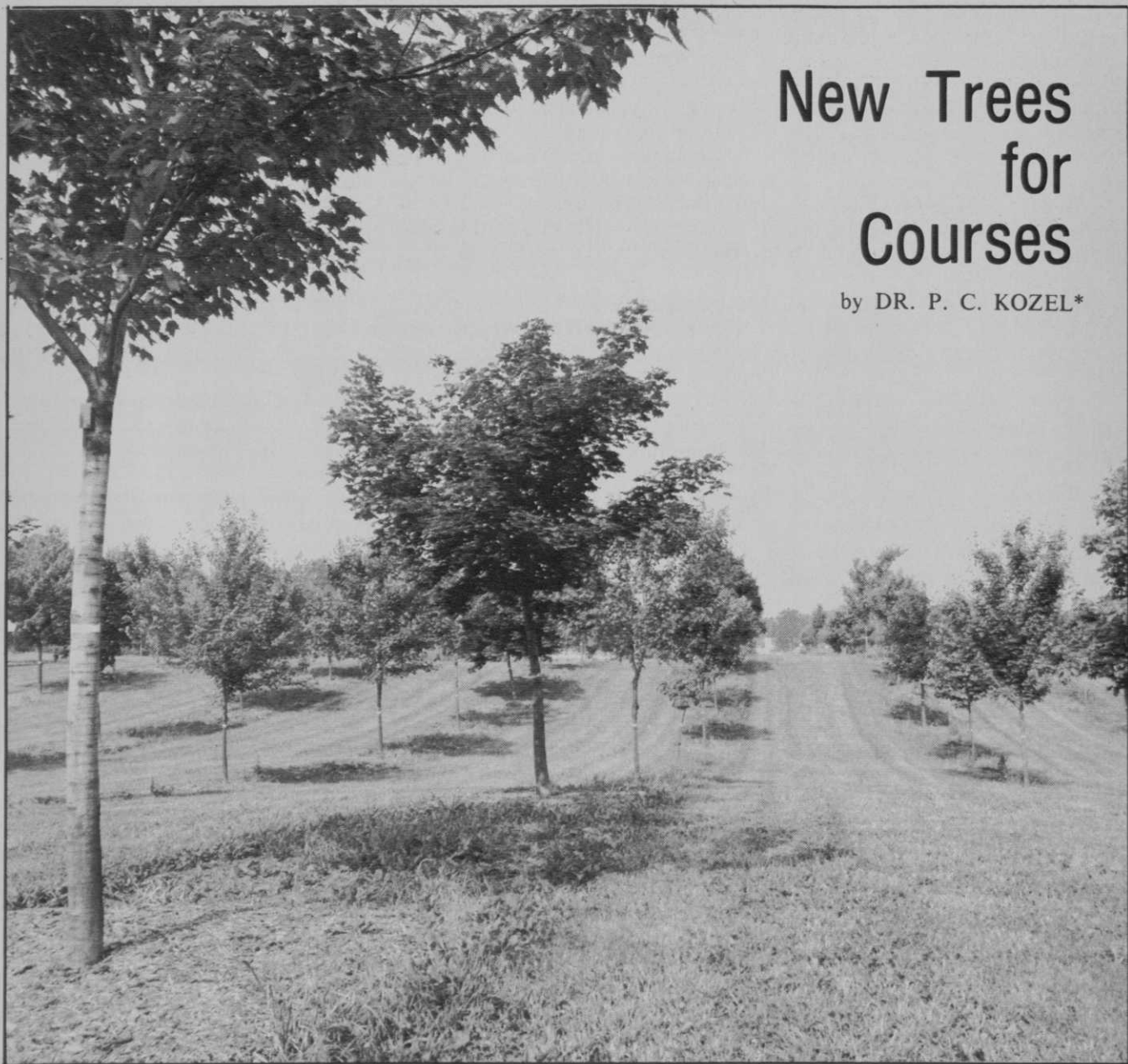
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by DR. P. C. KOZEL*



The proper tree for each location . . . this is an important emphasis area in golf course planting. Involved is the selection of trees resistant to disease and insects, as well as careful attention on appropriate form for the selected planting site, and the ultimate height and width of the tree.

In 1966, a shade tree evaluation project was started by The Ohio Agricultural Research and Development Center, under sponsorship of Ohio utility companies. The goal was to conduct a nonbiased scientific evaluation of new introductions for street tree use. Most of the selections for this purpose which are mentioned in this article can be found in the Shade Tree Evaluation Plot at the

Ohio Agricultural Research & Development Center, Wooster, Ohio. Of course, many trees in this study are well suited for golf course plantings.

The intention is not to mention all trees suitable for such plantings, but to bring attention to some shade trees which are relatively new.

Norway Maple

Acer platanoides: This plant has been used extensively in suburban and municipal plantings. The species which reaches heights of 65-75 feet is generally believed to be round headed, but is quite variable in overall shape. Trees grown from seed vary markedly in size, shape, and

resistance to leaf scorch under conditions of water stress. The following are improved introductions:

a. Cleveland — A compact, upright oval selection similar in habit to Emerald Queen. It does not grow as rapidly and is more resistant to winter bark injury as a young tree than Emerald Queen. The mature height is 50 ft.

b. Emerald Queen — This is a

* The author is an associate professor in landscape horticulture at The Ohio State University's department of horticulture, Columbus, Ohio. He is currently chairman of the International Shade Tree Conference's Plant Evaluation Committee, as well as director of the plant evaluation program at The Ohio Agricultural Research and Development Center.

consistent, upright, oval-headed, rapid-growing selection achieving a mature height of 60 feet.

c. Greenlace — A cultivar with light green, deeply lobed foliage. It is also noted for its upright habit. The mature height is between 50 and 60 feet.

d. Jade Glen — A selection with a rapid growth rate, straight stems, and a spreading branching habit. It has a golden fall color.

e. Olmsted — A wide columnar cultivar which is not as erratic a grower in youth as some other columnar varieties.

f. Royal Red — A maroon leaf variety more resistant to heat damage than other red leaf maples.

g. Summershade — A seedling selection of *A. platanoides erectum* which is broader than Emerald Queen. It develops caliper quickly and achieves a mature height of 65 feet. It is noted for leaf scorch resistance in hot summer weather, in addition to having a strong central leader and dark green foliage.

Red Maple

Acer rubrum: The species is frequently a plant with poor yellow fall color, probably due to natural hybridization with the silver maple (*Acer saccharinum*). Trees of this species are noted for their ability to withstand moist conditions. Recently, there has been interest in selecting superior types, especially those with good red fall colors. The mature height of this species is 60 feet. Improved introductions:

a. Armstrong — A selection upright in character and the narrowest of all red maples. It is noted for its rapid growth rate, with a maximum height of 30-35 feet. This is a good choice for a narrow tree lawn.

b. Autumn Flame — A cultivar with smaller leaves than October Glory, but which colors up 2 weeks earlier and defoliates at a much earlier date. The maximum height is approximately 60 feet.

c. Gerling — This is an upright pyramidal selection, but is not as narrow as Armstrong. The maximum expected height is between 30 and 35 feet.

d. October Glory — Selected for its excellent glossy green leaves, which become a spectacular scarlet with crimson color in the fall. The foliage of this globe-headed type per-

sists longer than others. The maximum height is 50-60 feet.

e. Red Sunset — A rapid and vigorous grower, achieving a mature height of approximately 50 feet. In addition to its good red fall color, it has a natural pendulous leaf character which is less apparent in larger specimens. The foliage is persistent in the fall on this broad, upright selection.

Sugar Maple

Acer saccharum: This is a fine large tree species with generally excellent fall color which recently has been subject to decline due to pollution. The mature height is approximately 65 feet. Improved introductions:

a. Columnare — A tight columnar, slow-growing variety, achieving mature heights of only 35 feet.

b. Green Mountain — A hybrid between the black and sugar maples. It has very leathery, dark green leaves which are resistant to leaf scorch. In addition, it has good oval form with excellent vigor and good fall color, with a mature height of approximately 65 feet.

c. Temples Upright — Formerly known as Monumentale, this narrow upright selection is too slow a grower for practical street tree use.

White Ash

Fraxinus americana: This is a native species with a rapid growth rate, achieving mature heights of approximately 70 feet, and has a variable yellow to purple fall color. The selected cultivars are more desirable. Improved introductions:

a. Autumn Purple — A seedless selection with a consistent good purple fall color and a mature height of approximately 65 feet.

b. Rosehill Ash — A selection with light green foliage changing to consistent bronze-purple fall color. The mature height is 70 feet. It is a male clone, eliminating the normal seed problem.

Green Ash

Fraxinus pennsylvanica lanceolata: This a native species of rapid growth, achieving mature heights of 55-60 feet, but has the liabilities of a heavy seed crop and irregular, often weak, branches. Improved introductions:

a. Marshall Seedless — A seedless form of green ash chosen for its pyramidal oval-headed char-

acter. The dark green foliage provides a dense shade. This widely used cultivar achieves a mature height of approximately 55 feet.

b. Summit — Not as vigorous as the species but it has a straighter upright growth habit with smaller leaflets. This male clonal cultivar reaches a mature height of 60 feet. The green ash selections are good choices for street trees, as they are tough and drought-resistant and very tolerant of de-icing salts. They grow well, even in very alkaline soils.

Ginkgo

Ginkgo biloba: This species has a very uniform foliage character, excellent disease and insect resistance, and appears to be quite tolerant of various air pollutants. It has an extremely variable growth habit and objectionable fruit on female forms. The male species achieves a mature height of approximately 60 feet. Improved introductions:

a. Autumn Gold — A male selection with a mature height of 45 feet and an excellent yellow fall color, in addition to an upright, more compact habit of growth than the species.

b. Fairmount — A good pyramidal male selection, densely clothed with foliage on ascending branches, with mature heights similar to the species. Young trees have a strong, straight, tapering leader.

c. Lakeview — A male selection achieving a mature height of 50 feet. It is noted for its compact, tight habit of growth.

d. Princeton Gold — A spreading upright male selection.

e. Princeton Sentry — A narrow columnar male selection.

Thornless Honey Locust

Gleditsia tricanthos inermis: Improved introductions:

a. Imperial — A selection with a mature height of 30-35 feet which has a denser foliage than the straight inermis.

b. Majestic — A tree with a more regular compact habit than inermis. It has dark green foliage with few seeds produced. The mature height is about 65 feet.

c. Moraine — A seedless selection with good green leaves. The spreading habit becomes vase-shaped with age. The mature height is 80 feet.

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