adequate control in maintaining golf’s character and the integrity of the game and the courses on which it is played,” the combined association statement said. “We will view with alarm any rule changes hastily arrived at that could seriously affect the enjoyment that millions of golfers receive from golf and the equipment they select...”

The manufacturers of the new shaft—the graphite, of which you have been hearing so much in recent months—are emphatic in stating that it is not they who are making claims for all that extra yardage or that “laser beam” control. But they do say that graphite is easier for everybody to swing than any club that ever has been made. And, it is a “forgiving” club; it tolerates or suffers mis-hit shots to a larger degree than do other clubs.

The shaft of the graphite is approximately one ounce lighter than its steel counterpart. The weight that is saved is put in the clubhead. The shift in weight is what makes the difference as far as the energy factor is concerned. The combination of heavier head and lighter shaft enables older golfers along with women and others not so muscular to more closely approach the swinging efficiency of stronger and more athletic players. This, however, doesn’t come automatically. Learning to swing the graphite requires an adjustment in tempo, however large or small, for most players. Because the new graphite-shafted club is said to be well-balanced, this adjustment is not difficult to make. Or, at least, that is what the manufacturers are saying.

Toney Penna, a leading Professional Golfers’ Assn. tournament player from 1935 to 1950, who turned to clubmaking after retiring as a competitor, is among those who are enthusiastically endorsing graphite shafts. “They are what we’ve been looking for all these years,” says Penna. “Put them down as one of the great advances in clubmaking. Now we can put more weight points in the clubhead—exactly where they should be. Weight in the shaft alone means little or nothing. It’s the faster recovery factor that counts and this is the secret of the graphite-shafted club.”

Penna, who founded and now is president of the Toney Penna Company in Jupiter, Fla., says that he can’t get nearly as many graphite shafts as he’d like. The shafts have been in production for less than a year, and supply lags far behind demand.

Until recently, only two companies, Shakespeare/Plymouth Professional Golf Div., Plymouth Meeting, Pa., and Aldila, Inc., a small San Diego firm were producing the shafts, but now Fansteel has entered the field and at least a couple of others are rumored to be getting ready to start production, including a leading shaftmaker.

By putting more mass into the clubhead and lightening the shaft so the club can be swung faster, as is done with graphite, there is a threefold, step-up in the kinetic energy that is imparted to the ball. The additional mass and increased swing velocity (combined, they are known as the moment of inertia) account for the larger part of the added energy input. Then, too, the fact that graphite clubs can be swung faster than ones shafted with steel or aluminum gives rise to another force that favors the new material. It comes from the increased angular momentum that is converted to linear motion in the hitting area. The result of these added forces produces more clubhead speed and a more direct hit.

That these different forces have been more effectively harnessed than ever before could result in the
over-all reduction of club weight, says one clubmaker. Possibly by as much as one ounce. This could be beneficial to the senior golfer or the woman player. Both of the latter have always needed a lighter club that gives more clubhead speed with a lower expenditure of effort.

Swing weight and balance readings naturally have to be closely checked when a pro fashions a graphite club for one of his members. A few professionals, incidentally, are doing quite a bit of this. When the new shaft is installed in a driver, the swing weight is reduced by about five points, from a D-0 to a C-5, for example, and so it is necessary to put compensating weight in the clubhead to restore the balance reading. This is usually done with tape, on a trial and error basis, with the clubhead being built up to the player's feel. As one professional says, this is customizing at its best.

The Shakespeare/Plymouth company started experimenting with graphite shafts about five years ago. It was an outgrowth of the company's production of fishing rods and bows, both of which are now widely marketed. Extensive studies of stress patterns and torsion properties, worked out with a computer, were made before the three flexes, in which the golf shafts are available, were decided upon. The stiffest shaft is the Sigma X, an all-graphite model.

Slightly less stiff, but heavier, is the Sigma S, a blend of fiberglass (10 per cent) and graphite. The heaviest shaft in the group is the Alpha, which is composed of 25 per cent fiberglass and 75 per cent graphite.

Shakespeare was the first to introduce graphite shafts, displaying them for the first time at the 1972 PGA Merchandise Show. In the last year or so the company has increased its production of the shafts fourfold, and as of May 1 had a six-week order backlog.

The other manufacturer of the shafts, Aldila, Inc., has been producing them for about one year. It builds the shafts in 15 flexes—the higher the number, the stiffer the shaft. Typical flexes are: No. 3, soft; No. 6, regular; No. 9, medium stiff, etc. One professional who has used the No. 13 flex, says that it is altogether too much club for him even though he considers himself a reasonably strong swinger. Most of Aldila's production is in the 7 to 9 flex range.

James Flood, president of Aldila, is said to have gotten the idea for a graphite golf club shaft while using a graphite fishing rod. It is not known if the rod was a Shakespeare model, but at least there is no dispute between the two companies as to which originated the graphite club. Aldila is an Italian word meaning "far beyond," which might imply that a shaft of the same name propels a ball well beyond the limits of other materials. But like the Shakespeare people, those at Aldila disavow claims to an extra 25 or 30 yards for their woods. What they call attention to is the "universal" shaft, one that everyone may be able to swing effectively.

Fansteel is one of the larger industrial conglomerates with divisions that make primary metals, forgings, castings and sheet metal. It already is known in the golf field for investment cast stainless steel clubheads. The company's advanced composites engineers in Newbury Park, Calif., have developed a series of graphite shafts with stiffnesses equal to and labeled the same as the present steel shaft. They are in increasing order of stiffness: L-ladies; A-soft; R-regular; S-stiff, and X-extra stiff.

Fansteel will only supply the shafts to club manufacturers; it will not get into the club business.

Dave Fernandez, general manager of Fansteel's Recreation Products Group, says that the company first seriously got interested in graphite shafts last fall. "However, we are also interested in graphite in general—there is a large market here in such products as skis, bicycle frames and other sporting good applications where weight is a factor. We believe there will be a substantial reduction in cost for all products utilizing graphite once these markets are developed."

Although Fansteel currently is offering the standard flexes described above, Fernandez says they have the ability to supply "in-between" flexes if a club manufacturer requests them. He added: "Should a customer require greater or lesser torsional stiffness than normal throughout the range of flexes, he can have it. Put another way, we have the capability of producing a shaft with more flex, but still retaining torsional rigidity."

Fernandez says that Fansteel has a new testing machine that has proved the durability of their shafts against fatigue failure. This is highly significant because many golfers have asked about the durability of graphite.

Other clubmakers in the graphite market are Ram, Pedersen and Northwestern, and by publication time there could be more new entrants.

Ram is producing a graphite-shafted driver only right now. However, president Allen P. Hansberger, says the company is looking at possible production of graphite-shafted 3-, 4- and 5-woods. The driver is being sold individually or can be ordered as part of the company's top pro-line set, Ram XS-1000. But 95 per cent of sales have been individual. The suggested retail on the driver is $150, and Ram has shipped several thousand drivers since the first of the year when the company introduced it, according to Hansberger.

Northwestern is offering graphite-shafted clubs in all 15 Aldila flexes, but the majority of orders are for three stiffer flexes—Nos. 7, 8 and 9. The graphite shafts are available in Northwestern's top models. Suggested retail for a wood is $160. Irons are sold as a set, 2 to 9, plus a pitching wedge, at a suggested retail of $1,080. However, the majority of orders are for a driver only. Some of those who have bought a driver were back two or three weeks later for a 3- and 4-wood, according to marketing manager Al Wiswell.

The latest clubmaker to enter the field is Pedersen Div. of O.F. Mossberg & Sons, Inc. Ronald E. Miller, vice president, said the division will pursue a complete marketing program in graphite-shafted clubs. It plans to produce 1,000 clubs a month with the new shafts, both stock specifications and custom.

Only one of the Big Three club manufacturers is known to be testing...
Westinghouse golf cars tackled the Baja.
And beat this tough, rugged waste.

We drove our cars into the formidable Baja.* Dust, sand, rocks, and brush. Westinghouse electric golf cars took them all on and won. How tough is your course?
Westinghouse electrics deliver. Powerful. Ruggedly reliable. Built to take it mile after mile when the going gets rough. And they're priced right to help you make money. Safe, too, with automotive-type brakes on both rear wheels. The important thing is they're built to operate from dawn 'til dusk, day after day, on an overnight charge. Looking for power? Reliability? Look to Westinghouse electrics. Westinghouse Electric Vehicles, Westinghouse Building, Pittsburgh, Pennsylvania 15222.

*Test was sanctioned by the U.S. Auto Club with Westinghouse 3- and 4-wheel golf cars using six McCulloch 6-volt, 110-minute batteries.

For more information circle number 177 on card.

You can be sure...if it's Westinghouse.
This is what makes our new Super Sox Super.

It's our great fat fluffy pom poms that are going to give your sales a big fat boost.

Wait till your customers see that Super Sox are made of 100% Creslan® acrylic fiber. So they can wash them all they want without worrying about shrinking, stretching or fading those bright bouncy colors. And they are available in 17 different color combinations. Super Sox. They make sense. And sales.

*exclusive of ornamentation

Super Sox
Super Pom
Knit Club Sox
Reliable of Milwaukee
233 E. Chicago Street, Milwaukee, Wisconsin 53202

Graphite

Graphite is produced also as a yarn. Union Carbide extracts it from rayon, which is heated to 3,000 de.

Graphite from page 22

Graphite. The head clubmaker at this company says he is impressed with the material, but is far from convinced that everyone can handle the new shaft. "Some sweeping statements are being made in this respect," he says. "The good swinger will adapt to graphite without much trouble, but there is no assurance that it will be of much help to the hacker. Regardless of what a club is made of, the golfer has to learn to swing it."

Another reason why this company is not rushing into market the graphite is that it isn't at all sure golfers in large enough numbers are willing to pay the $85, $100 and $150 or more quoted retail prices of a single graphite wood. (However, Shakespeare's Alpha, made of 75 per cent graphite, retails for $42 per wood.) This company also may be guided by the reasoning expressed by the Midwest sales manager of another of the Big Three firms. Influenced by all the talk he has heard about how much greater distance the new club gives, and not by its supposedly inherent control qualities, he wonders if it isn't strictly a hitter's club. "A player may be willing to pay $100 a piece for graphite woods," he points out, "but is he willing to buy graphite irons? Imagine a set that is priced at $1,200 or $1,400, or even $600 or $700, if they are able to cut the graphite price in two. Who is going to pay these prices? I have a hunch that the market for graphite clubs is going to be restricted to woods and not too many companies are going to get in it."

Why are graphite club prices so high? Beyond research and start-up costs, the manufacturers are dealing with a space age material that isn't yet being produced in quantity. Hence, its cost is still stratospheric—from $55 to $200 a pound. Union Carbide, which has been processing graphite for about a decade, originally sold it to the aerospace industry as a cloth for reinforcing plastic heat shields, rotor blades and various hardware items. In these applications, it serves as a cement as well as a cooling agent, enabling plastic to withstand extremely high temperatures.

Creslan acrylic fiber is produced of American Cyanamid Company, Wayne, N.J.
If 95% of all major golf tournaments, and the PGA, selected us to make their official crests, maybe they know something you should.

Gold Crest is the world's first name in crested products. Handmade, 3-dimensional gold and/or silver bullion crests. New PermaStamp bag tags. Blazers and sweaters. Tournament awards, prizes, and great golf gifts. Send for our free catalog.

Gold Crest Ltd.
12307 Ventura Blvd., Studio City, Calif. 91604
(213) 877-2665 Cable: CRESTOGOLD

For more information circle number 185 on card.
Beautiful drive! Just par for the course for us.

High-fashion elegance isn't the main reason Harley-Davidson golf cars are the most popular in the world. But it doesn't hurt.

There are other reasons. Engineering excellence. Special features. And quiet.

Engineering? Our four-wheel cars have independent front wheel suspension, mounted on trailing arms. Plus coil spring shocks. For the rear wheels—coil springs, hydraulic dampers and a torsional stabilizer. And both our four-wheel and three-wheel models deliver sharp, effortless steering. And all Harley-Davidson golf cars are protected by rugged, chrome-plated bumpers, front and rear. Plus side moldings to guard against nicks and scrapes.

And now . . . quiet on the tee! And the fairway. And beside the green. Our gasoline golf cars are quieter than a voice in normal conversation.

And our electrics run much farther. Because they go longer between charges. (Thanks to less power requirement at low speeds.)

That's our story and we're stuck with it. Happily. Gas or electric golf cars. Three wheels or four. The most popular name in the game is Harley-Davidson. Why not get in touch? Make us prove it.

AMF Harley-Davidson
Milwaukee, Wisconsin 53201
Courtaulds of Coventry, England, have a licensing agreement with Hercules, Inc., of Wilmington, Del., has been producing graphite fibers for aerospace applications, under a licensing agreement with Courtaulds of Coventry, England, for the past seven years. Last year, the company began production of graphite for club shafts for Aldila. Hercules produces its graphite in tape form, three to 12 inches wide, which can be provided in continuous lengths.

Charles E. Jordan, manager of advanced composites at Hercules' Industrial Systems Department, points out the phenomenal effect the sporting goods market already has had on the United States consumption of graphite. "In 1970, it was 5,000 to 6,000 pounds, in 1971, it went to 10,000, in 1972 it was 20,000 and in 1973, with increased production of graphite-shafted clubs, consumption is expected to reach 100,000 pounds." Of this quantity, Jordan says, the club market is expected to account for 60,000 to 70,000 pounds.

The result of this increasing production has had an advantageous effect on price for the buyer. Three years ago, graphite was going for $350 to $500 a pound. At Hercules, it now ranges from $50 to $150, according to Jordan. "In the next two or three years, we expect it could be $25 to $50 per pound," he notes.

"There's a lot of psychology in it," Hunter explains. "When you first pick it up, the club feels better than anything you've ever had in your hands before! Everything about the club, the fact that it is easier to swing because of its good balance and the way it is hung together, does a lot for a player's confidence. It should help everyone, from the professional to the high handicapper, but it can't be forgotten that it takes a good swing to get the most out of it."

Two conclusions reached by Hunter after doing quite a bit of fitting with the new club: swing weights might be reduced slightly for many players who use graphite—such as from D-1 to C-9—and woods with the new shafts might be built with slightly more loft.

Like Toney Penna, another professional cites the "recovery" aspect of the graphite club; the club snaps back much more quickly from the flex position, giving the hit a solid, compact ring.

Another quality of the graphite shafted clubs, cited by this professional, is the reduction of vibration. This can be detected by giving the club the cold-hand test. On a cold day there is considerably less sting in hitting a ball with a graphite than a steel one. As for vibration, everyone knows it causes power to splutter just a little. It may not amount to much in a golf shot, but neither is it adding anything. Finally, there is that "forgiveness" factor, mentioned earlier. In a game where practically everyone has to endure a preponderance of mis-hits, the pro says, it is nice to know that a club has been found that can effectively neutralize them.
Preoccupation with price as a competitive force leads many professionals to forget areas in which they can have a distinct advantage over the "downtown" competition. "Service above all" is the motto at Columbine’s pro shop, and sales volume proves the wisdom of these words.

by JERRY CLAUSSEN

“I don’t ever want to put up a sign saying, ‘Closed, We Undersold Everybody.’”

Tony Novitsky was smiling, but completely serious about serving the members as professional at Columbine CC, in Littleton, a suburb just outside Denver.

“We are always available for the members’ convenience,” he continues. “We rely on and expect their support. We want the best for a member. We want him to buy only what fits him and what he can enjoy.”

Novitsky is emphatic about dealing with the “problem” of competition from discount stores, closeouts and other “deals” available today to golfers.

“This isn’t a new problem. We don’t try to compete; we don’t intend to try,” the section’s 1967 Pro of the Year answers. “Low price is always easy to sell. But no one else can compete with us in giving service.”

Novitsky also feels this question touches on the long-range future of golf and country club operations.

“A country club is not so different from any other organization. If members don’t support the club, it will be hurt and maybe die,” he points out.

A veteran of 14 seasons at Columbine, the astute head professional puts service first in all phases of his pro shop business and personal planning. He works at:

- Keeping a flexible schedule to stay available to give a lesson, play a few holes with members, advise on buying clubs, attend club committee meetings and answer questions from his staff and golfers;
- Buying merchandise only from reliable sources that can guarantee latest styles and in quantities he needs when his members need them;
- Having a Feature of the Week promotion, not one or two major closeouts a year, so that members may save on needed items throughout the season. Example: A lucky size shoe discount. “This says, ‘Thank you for your support’ all year,” says Novitsky;
- Accepting returns of merchandise with no questions asked;
- Meeting often with the club manager and course superintendent to coordinate activity schedules and solve mutual problems;
- Leading groups of members on annual vacation-tournament junkets to golf retreats in Scotland, Bermuda, Hawaii and Acapulco;
- Keeping a complete file of every purchase by every member, noting all sizes or specifications, on unique record cards he designed;
- On the latter, Novitsky is a strong believer in simple, useful records.

“There is no end to forms, but our simple file serves well,” he reports. “The size, color and so on of each sale are put on the cash register sales slip, then transferred to the file card. We even mark down slack inseam lengths when a man has a pair altered. As the golf season comes and goes, you would be surprised how some sizes change. We want current records always.”

These same cards, plus shipment invoices and memos on trial merchandise, serve as the inventory record.

“We used to keep a perpetual inventory,” he continued on page 31...
Here is a gleaming, functional IRON club so timeless in concept that I believe it is destined to become a classic!

A clean, no nonsense IRON head design has been combined with the renowned APEX shafts to give you a better, more rewarding golf game.

These fine golfing instruments offer improved visual alignment of the blade, plus great "feel" in hand-crafted forged heads. A larger blade impact area with a lower center of gravity helps get the ball airborne quickly.

I invite you to place one of these superb IRONS behind a ball and try it. I am sure you will experience a new sense of confidence with my new Classic APEX '73's.

Sincerely,

Ben Hogan
Neither wind, nor sand, nor heat can keep the Otis from its appointed rounds.

Finding a golf car that will operate perfectly under harsh conditions is a tough job. So, to make your job easier, Otis has developed the most rugged, powerful, safe and dependable car you’d ever want. The Otis body is vacuum molded of high-impact Cycolac®, the individual seats are all-weather vinyl with the driver’s side easily adjustable. Combine this with a heavy-duty, 2 hp electric motor, 6 heavy-duty 220 amp batteries, hypoid drive train, and a combination spring/shock absorber suspension system and you’ve got hushed power, passenger comfort and all-day dependability.

Standard four-wheel stability, automotive type steering, drum-type brakes, and a low center-of-gravity help make the Otis the safest car to ever ford a dry gulch.

For the details on how to bring your golfers out of the rough, contact our factory and we’ll have one of our brochures in your hands before the dust settles in this photo.

Otis Town & Turf
Otis Material Handling  Otis Elevator Company
P.O. Box 8600, Stockton, California 95204  (209) 948–2751

For more information circle number 147 on card.