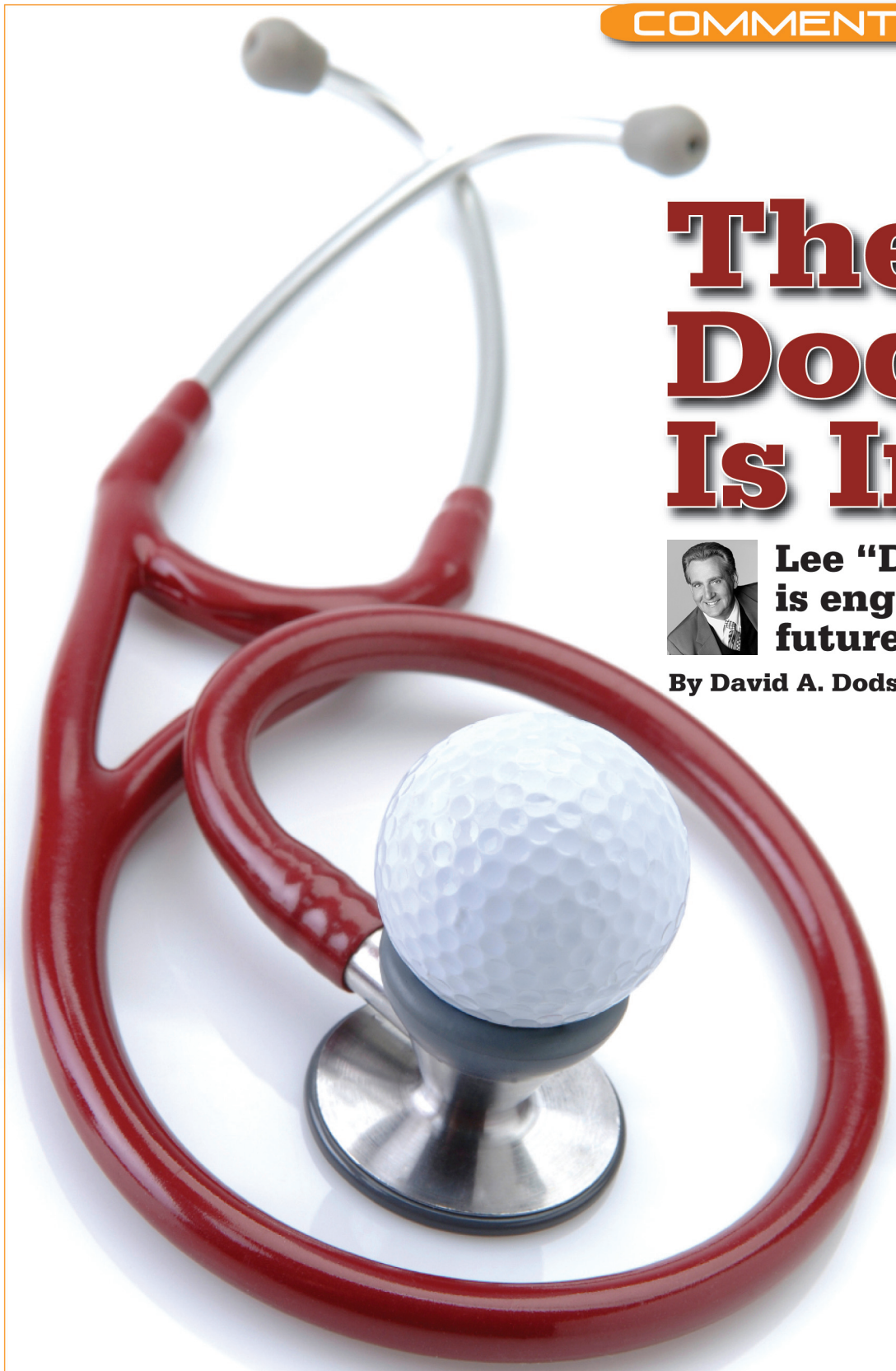

The Doctor Is In

Lee "Dr. Feel" Miller is engineering a new future for golf

By David A. Dodson

Anyone who says that club making isn't rocket science has obviously never talked to Lee Miller. With degrees in Mechanical Engineering (MDTA), and his MBA and a Ph.D. in engineering, he knows a little bit about the mechanics behind a good stick. His background in business is also quite remarkable. From 1977 until 1996, he was the President of Hilco Technologies, Inc., a high-tech supplier to the aircraft, medical and automotive industries and a prime Department of Defense contractor to the military and NASA. From 1976-77 Miller served as Vice-Chairman on the board of directors for Checker Motors under the chairmanship of Ed Cole, his mentor and the former President of General Motors. As a member of the Professional Golfers Association (PGA) and an associate member of the Senior PGA Golf Tour, he knows a little

about golf, too.

In fact, it was his love of golf and engineering that made him who he is today. While trying to break into the pros, he spent a lot of time with other PGA players and eventually started tinkering with their equipment. Using his education in physics and his experience on the tour, he began adjusting players' club balances and grinding innovative sole designs on their wedges. Dubbed "Dr. Feel" by Charlie Sifford, he quickly gained a reputation as sort of a go-to club doctor among the pros.

But things changed one rainy day while sitting in a locker room with Miller's fellow players. Golf-great Bert Yancey asked, "Why don't you make wedges for us, since you already own manufacturing companies?" Miller protested that he was a player, not a club maker, to which a couple of majors chimed in, "We hate to tell you this, but you're a much better club maker than a player!"

So in 1987, Feel Golf was born. And with Miller as CEO the company has since turned out innovative concepts in sole shape, shaft balancing and even a radical re-think in grip design. GolfRave was lucky enough to be granted access to one of the most colorful personalities in golf engineering and to hear Miller's insights into what makes a good club, the truth behind MOI and the challenges faced by smaller companies in today's market.

I guess we should start with your education. From financial analysis at Davenport to engineering at Beverly Hills — that's some diverse schoolin'!

Well, do you remember the Bionic Man? Remember his nephew, the one that had been in and out of 42 different universities and colleges? The guy had been in and out of more schools than probably were available, you know? Because he'd get in there, get bored and then leave, go back and so on. But education … let's see … an undergrad in mechanical engineering, double MBA and a Ph.D. in engineering. My mentor was the former president of General Motors. I'm 184 years old. Got more moss on me than a giant Cyprus tree.

So I guess when it comes to club design, you've got the background? You're not just some guy that jumped in and started sticking shafts into heads and calling yourself a club maker?

Actually, at first I did. Because going through the PGA, you're lead to believe that you're the most intelligent person on the face of this earth, and no one ever has the authority to question anything that you say. So I'm out on the tour and I'm doing the same thing. "O.K … hit your clubs off the board and let's see what the lie looks like … blah, blah, blah. Bend 'em up, bend 'em down, hit 'em." Then one day I'm on a tee line, and Bert Yancey calls me over and says, "Doc, look at this. Every eight shot will peel off to the right." So I'm standing there and sure enough seven more right on line and his eighth shot just peels off to the right and I'm thinking, "What the heck?" Because Bert Yancey was a pure ball striker. He says, "What do you think this is?" I said, "Well, somewhere in there the torque is building up the resistance and the thing just isn't releasing." He says, "I don't know what the hell any of that means."

But I thought, "Well, now that's interesting." [At the time,] I had a manufacturing operation that built aircraft engines and stuff for NASA. So I called back and said, "Ok, here's what I want you to do …" They set me up with a three thousand foot bonded lab with all the high-tech equipment that we use for aircraft, weapons and so on. And I proceeded to buy every make of club and every make of shaft from 1948 to 1986, wherever I could find them. So we started to check every club and every shaft, and we were like, "Now wait a minute, these things are all over the place." So we said, "Ok, the shaft is the workhorse of the club and everything has to be in perfect harmony." We started testing shafts and we found that there are no two shafts identical; they're as different as fingerprints on a person. So we wondered, "Now why is this?" Well, when you manufacture and mass-produce, you don't have purity.

How did you solve the problem?

To make a long story short, I said, "OK, here's what we gotta do. We have to figure out how to keep this distribution of mass even throughout the shaft." With steel shafts the flex is determined by the weight of the shaft. Now, for example let's take two X-flex shafts … 130 grams each. So in the grip section of one we'll say we have 100 grams, the rest of it we have 30. Now pick up the other shaft, hypothetically, we have 30 grams in the grip end, 100 in the rest of it. Those two shafts aren't going to be anywhere near each other are they? So we decided in order to have pure and proper shafts, they have to be made a certain way. And that's what we've been doing ever since. It was painstaking to finally develop that and get the weight of a shaft that is equally distributed throughout. Now you can do that to perfection in steel, and graphite probably about 85% of the time, because a majority of them are

made by hand or in some mass production, then run through a sizer and all kinds of stressors. And that's why our wedges and other clubs feel so good.

I'll give you that — your wedges have an outstanding reputation for reliability.
Forty-six through seventy-three, each one will weigh the same. Same balance points, same frequency, same total weight, same everything. The only thing that changes is the loft.

Speaking of which, I noticed that your 73-degree wedge has actually won an award or two.
Oh yeah, the PGA Partners' Best Overall Wedge of 2007. They gave us 100% wedge approval out of all their testers. It's by far our best selling wedge, ever. Up until last month we were sold out the first two weeks of each month. I mean, it was just amazing. You know, even with all the backorders we never had one order cancelled. They're finding their way into tour bags … it's just a freakin' amazing stick.

Now your Pro Tour 787 PR Driver will be available in stores in the spring, but it's been available on your website since the end of last summer. How have sales been, since players can't actually get one in their hands before buying it?
Great. In fact I think we've got maybe a dozen left. We've even got one guy who has the original prototype and I'll be damned if he'll give that sucker back. He just isn't giving it back. We let him hit it … he took it out one day and we didn't see him for a couple of days. So I called him up and I say, "Hey, Doug, where's our driver?" "What driver?" I said, "The driver … the prototype?" "What about it?" I said, "Well … we gotta have it back." "Bullshit." So I say, "No, we gotta have it back." "You're not getting it." Yeah, they're working out pretty doggone good.

So what's the big idea behind that particular driver?
We were sitting around and I said, "Ok, what can we do to improve our driver?" Everybody said, "Nothing … it's as long as we possibly can make it." So one guy said, "Well, can we make it straighter?" And I said, "Yeah … make it straighter. How do we do that?" So we decided that we really have to be careful with the shaft and the moment of inertia (MOI). If we get the MOI too high, then your average player is never going to be able to close it down. So we shifted some of the weight and changed the shaft slightly. Then when we went to testing, we had people out there with their drivers … you know their Callaways and their Nikes and so on. We found that we hit the fairway 22% more with our driver than they did with theirs.

Let's talk about your new Release grips.
The new Pro-Release is doing quite well. In fact, hopefully here within the next couple of weeks one of the top five players in the world will start using them.

What made you think of turning the grips around like that?
It was a combination of a whole bunch of things over the years. Watching the players going to smaller and smaller grips, for one thing. And as a teacher you always had the problem of trying to figure out if the student was holding [the club] right. Finally, one day a guy says, "You know, if we had a smaller grip, we could hold it a lot better." Then all of a sudden it just clicked. Golf is the only sport that has the smallest fingers holding the largest part of the grip, and the longest fingers holding the smallest part of the grip. Only the advanced players playing daily could feel the grip in their fingers.

So the shape sort of forces you to hold the club the correct way? In your fingers, as opposed to your palm?
Right, if you grip it up in your palm, you're done. It works. That's all there is to it; it simply works.

In the golf industry, just like any other industry, there are fads that keep popping up and fading away. A few years ago it was movable weights in the drivers, now the big "in-thing" is bizarre, geometrically shaped club heads that capitalize on MOI. What's your take on the MOI movement?
MOI is not a new secret. Really what you have to look at is what we call the "work axis." Anything that is dynamic has to have a point where the work gets delivered at the point you want it to. In other words if you are hammering a nail, the best work axis is right in the center of the hammer's head. Where you are going to deliver the most [impact] with the least [effort]. Well, what's happened over the past few years is that the shaft insertion into hosels has gotten much shorter. It saves [club manufacturers] money if they don't have to bottom out the shaft into the hosel, so that the shaft will have a good seat. Well, ours goes in deeper than anybody else's club. That increases the work axis and decreases the torque, so that you can hit our clubs on the toe or anywhere else and not feel any vibration. The deeper you can get [the shaft] relative to the sweet spot on the face of the club, the easier you are able to trap the ball. If you look at a tour player's clubs or wedges you'll see that their sweet spot is about the size of a dime, as far as where they are hitting the ball. And that's what you have to have in your product. It's very important to us that our work axis is right on the money.

Any big changes for 2010?
Well not so much on the design front. We don't make changes for the sake of change alone. Sort of like Rolex — if it's for the better then we'll make changes.

We just have to say, you guys are one of the best-kept secrets in golf.
Not intentionally (laughs).