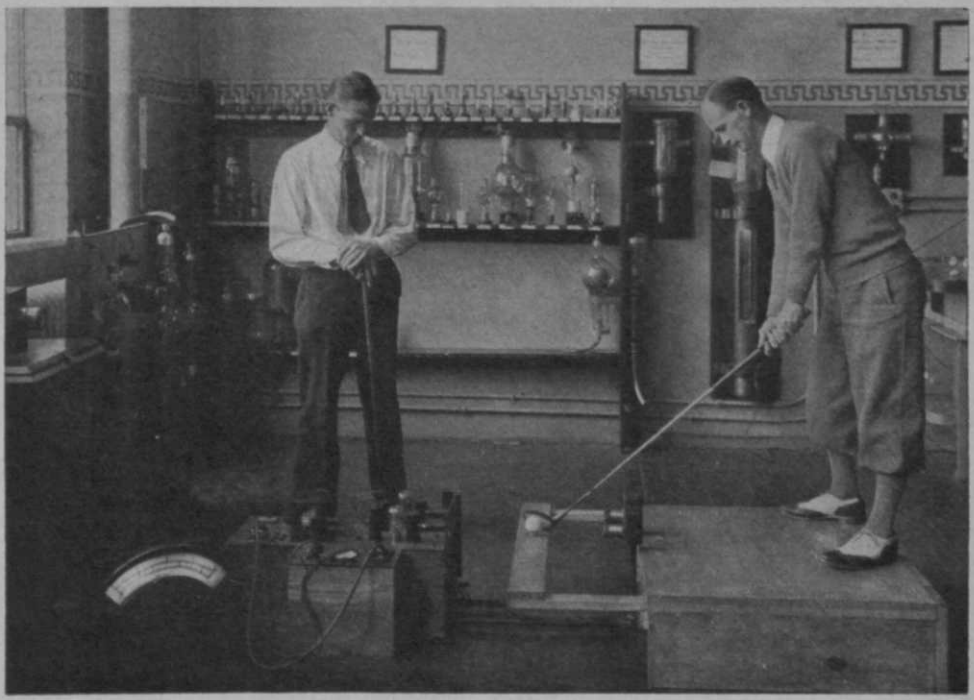


Jim Reynolds (left) and Alex McIntyre assisting in the clubhead speed tests, conducted in the G-E laboratories.

Pros Join With Scientists in Tests of Club and Ball Speed

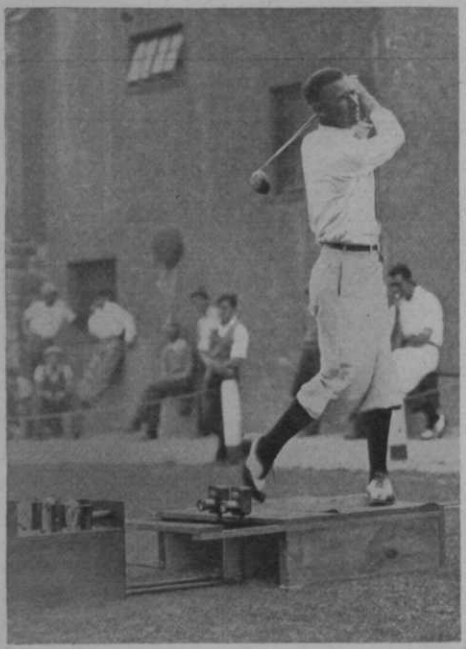
By J. K. THOMSON and C. S. McBRIDE

THOMSON and McBride, prominent officials of the Upstate New York PGA, who participated in General Electric Co. tests of clubhead speed at ball impact, give here the first full report of these interesting tests and venture some conclusions.

Following their material is data on the test of golf ball speed made at the Packard Motor Car Co. testing grounds with Gene Sarazen driving the ball and Col. J. G. Vincent driving the automobile.

RECENTLY THE General Electric Co. announced a device to measure the speed of a golf club at ball impact. The device was developed by H. W. Lord, vacuum tube engineer, and employs two photo-electric beams. The apparatus developed includes two phototubes and light sources arranged 6 inches apart, with the beams running at right angles to the path of the club and line of flight.

As shown in the accompanying photos, the club is swung from a platform. The ball is teed up so that the driver cuts the first beam a split second before it strikes the ball and almost immediately afterwards cuts the second beam. Both phototubes operate thyratron tubes, the first one causing a condenser to begin charging and the second one stopping it. The resulting voltage charge across the condenser is measured by a meter, which is calibrated



Outdoor test of the photo-electric device. The player is James Thomson, pro, Mohawk G. C. (Schenectady).

in terms of miles per hour. The calibration can be altered for much slower or much faster speeds, and it is possible to measure speeds up to about 1,000 miles per hour with the device.

The speed of those who have tried the apparatus ranges all the way from 50 to 130 some miles per hour. It has been contended pro and con that lightness rather than weight in the clubhead contributes to the higher rates of speed. Another question, that relating to the whippiness of the shaft, has crept in and the authors of this article have endeavored by a special series of tests to establish some facts relating to the importance of clubhead weight, length and whippiness of shaft. The results recorded herewith can not be considered conclusive since the tests were limited and only imaginary balls were hit. However, they are revealed for such interest as they may be to instructors, professional clubmakers and manufacturers.

Much more reliable data could be gathered and some real conclusions reached if this machine could be implanted in the ground (not a difficult set-up) so that actual driving conditions could be duplicated. Then tests could be conducted and both speed and flight noted so that some tie up between clubhead speed at hitting and distance could be made and average distances found for various speeds.

Conclusions by J. K. Thomson

Results of the tests as interpreted by J. K. Thomson, pro at Mohawk G. C.:

'Being at a loss in scientific research work, I readily admit that inferences indicated by the tests recorded here may not be of importance under real driving conditions. The period of tests were very limited and, as remarked, the machine's real worth could only be established under regular playing conditions. I found in an outdoor demonstration for the news reels that I got speeds that I later could not duplicate in the laboratory.

"Referring specifically to the tests, the following items were observed—

"1. Each golfer got higher speeds with hickory and limber shafted clubs.

"2. The slight change in clubhead weight did not seem to figure in.

"3. Where golfers tried more than two swings without a rest their speed decreased. I believe that this was due to the desire for increased speed and consequently caused pressing. This has a definite relation to actual playing conditions, where pressing for greater distance usually nets poorer shots and less distance.

"4. The group of golfers tested ranged from a good player to one who has never hit a golf ball. By checking the speeds of "Golfer D" with the others it will be observed that he obtained unusually high speeds for a novice. However, his swinging style readily indicated that on a tee he would have a terrific slice, if he was lucky enough to even hit the ball.

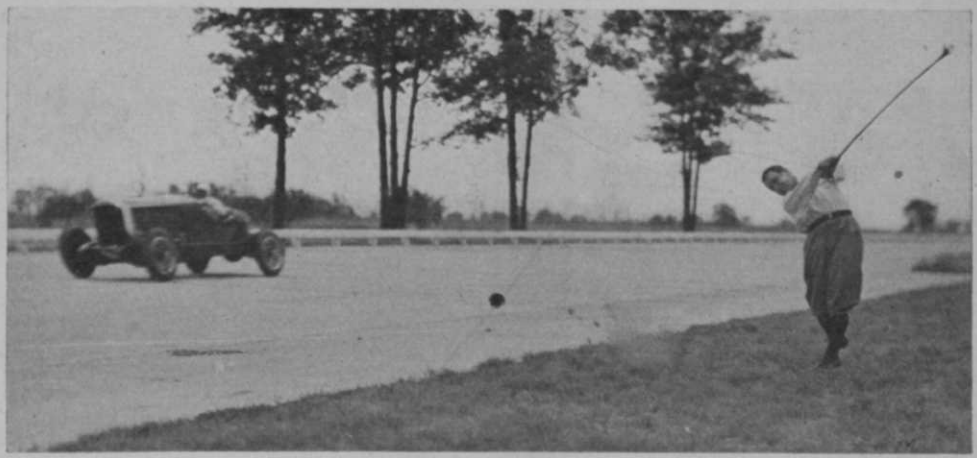
"Therefore, one conclusion can be made and that is that the mere passing of a club through the beams of light with its resulting speed does not necessarily mean a well hit ball.

"My guess from observation is that the average player or 100 man has a driving swing speed of about 65 miles per hour. The good driver's speed is in the neighborhood of 85 miles and the real driving champions have a swing speed of about 125 miles per hour.

Points Need of Tests

McBride comments on the General Electric tests:

"Witnessing and taking part in these limited tests brings home again the desirability of a PGA testing institute or test-



Sarazen's drives travelled as fast as the speeding car in this test at the Packard proving grounds.

ing committee. Here is just one of the many ways the PGA could make itself of real importance to golfers throughout the country and at the same time render a real service to the profession.

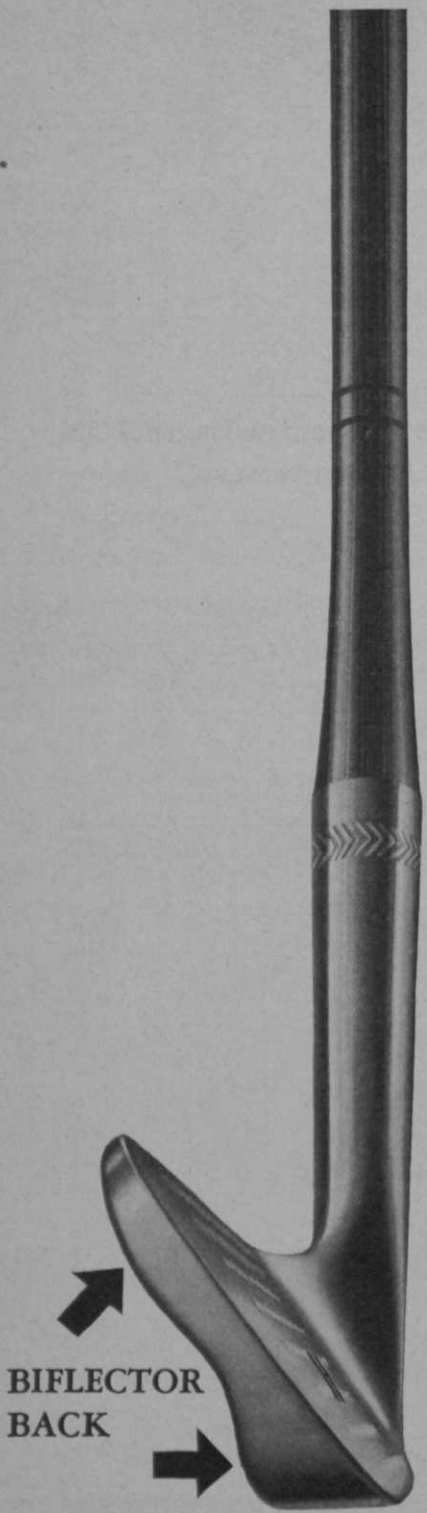
"It may be assumed that the results of these tests with this particular device are of little value to the average club swinger. Even so, the information found thus far puts the professional in a position where he can without fear of contradiction be assured again of the old thought, that speed

LABORATORY TESTS OF CLUBHEAD SPEED

Swing	Type of Shaft	Length Ins.	Weight Oz.	Miles per hr.
Golfer A—				
1	Graduated Steel	43	13¼	77.5
2	*Graduated Steel	41¾	12	95.0
3	*Graduated Steel	41¾	12	80.5
4	Torsion Steel	43	13½	75.5
5	Hickory	43	13	80.0
6	Hickory	43	13	80.0
8	Very limber	43	13¼	85.0
9	Very limber	43	13¼	95.0
10	Very limber	43	13¼	84.0
Golfer B—				
1	Graduated Steel	43	13¼	82.5
2	Hickory	43	13	102.5
3	Very limber	43	13¼	110.5
4	Very limber	43	13¼	110.0
5	*Graduated Steel	41¾	12	70.0
6	*Graduated Steel	41¾	12	90.0
Golfer C—				
1	Graduated Steel	43	13¼	59.0
2	Graduated Steel	43	13¼	59.4
3	Hickory	43	13	61.0
4	Hickory	43	13	67.0
5	Very limber	43	13¼	71.5
6	Very limber	43	13¼	75.0
Golfer D—				
1	Graduated Steel	43	13¼	70.0
2	Hickory	43	13	82.0
3	Very limber	43	13¼	85.0
4	Very limber	43	13¼	92.5

*Standard Ladies' Club.

Designed . . . . but



or 1933 . . . . . .

eady for you NOW . . .

aybe you've heard about the new Hagen irons—maybe you've seen one the few sets that are out—maybe you've played with them. If you have ied them yourself—you'll probably agree that these new Hagen TOM OY irons are the finest irons ever developed. They're new all right—ey were designed for 1933 but we're giving them to you now so you n still make some real profit in old 1932. As an example in profit, ere's what one pro did. Within ten days after displaying a set in his op, he sold four complete sets. The whole secret of these TOM BOY ons is the Biflector back and the Bulger grip. This new back has a real vofold purpose. The lower weight helps the club head to go through. ut—the top weight compensates the lower weight and keeps the ball om "skying." The Bulger grip gives you more control in the left hand more confidence and more feel in the head of the club. And, as com-nions to these new irons, we've designed an entirely new set of wood ubs—also made with the Bulger grip—known as TOM BOY woods. 's not too late to make some real profit this season. Display Hagen OM BOY woods and irons and watch your sales soar.

THE L·A·YOUNG GOLF CO.

Hagen Products

Detroit . . . Michigan

at impact rather than brutal hitting strength is an essential element.

"During the past few years many devices for testing golf clubs, balls and so forth, have appeared. Most of the devices used are now in control of various individual manufacturers. However, should the PGA start a program of testing and approving golf equipment it would not be long before a real good line of testing apparatus could be assembled for use. As a starter, I believe that co-operation of such unbiased companies as General Electric would be forthcoming and at little or no expense.

"To set up a testing institute somewhat in line with *Good Housekeeping* would be a big task and require several years of real effort with full cooperation of the leading golf goods houses. Even so, a start is something—in fact is the most difficult part of all undertakings and if our association with its wealth of high class members cannot make a start, then the whole idea of a testing institute so ably put forth by a writer in GOLFDOM earlier this year must die a natural but sorrowful death."

4.5 Seconds for 230 Yard Drive

Tests conducted by Gene Sarazen, Alvin Macauley, pres., and Col. J. G. Vincent, v. p. of engineering, Packard Motor Car Co., lacked the photo-electric measurement of the General Electric tests. Stop-watch timing at the Packard proving grounds indicated that the ball leaves Sarazen's driver at the rate of 130 miles an hour. Inspection of the super-slow motion instruction pictures made in 1930 by the PGA indicated the ball's speedy leap from the clubhead and as near as can be determined by pro golf investigators, the PGA pictures check with pro tests at the General Electric and Packard establishments.

Timers with stop-watches were placed where the car came abreast of Sarazen and along the track. Some timed the ball; others the car. Timing of Gene's swing was judged and after several trials Col. Vincent driving his Twin-six speedster synchronized the car and the swing. Driving out of an almost perpendicularly banked turn into the straightaway at a speed of 120 miles an hour, Vincent's signal for starting the swing was so perfectly caught by Sarazen that the clubhead met the ball as the car crossed the starting line.

Not one of the drives made by Sarazen varied more than a foot in distance. They averaged 230 yards. On the first drive it took the ball 4.5 seconds to make the 230 yard flight. The car made the distance in 4.1 seconds. Each time the car beat the ball for the distance by 4/10 second. For about half the flight the ball led the car.

Gene concluded that the clubhead must have been traveling somewhere around 115 miles an hour at impact. It will be noted that the fastest time shown on the photo-electric tests is 110.5 miles per hour and with a very limber shaft. Maybe Gene guessed his clubhead speed too high, or it may be that his high speed is part of the answer to two national open championships this year.

Pro Vet Notes Scores and Sales Keep Step

ELMER LOVING, veteran professional, observes that the far greater part of golf equipment bought by players who shoot 85 or better is bought from pros. Consequently, reasons Loving, it is greatly to the advantage of the pro to see that his players are so taught that they score well.

"The poorer golfers make up the greater part of the store trade and go for the 'Christmas jewelry' type of club," observes Elmer. "They go out to play and notice that the fellows who are getting the most fun out of the game are those who are scoring well. It also comes to their attention that the reason these other fellows are scoring well is because the pro is giving their games some attention. It's only human nature to take an interest in the fellow who is a customer of yours rather than a customer of a competitor, as the store purchaser quickly realizes. His next clubs, then, he buys from the pro.

"The same principle holds good in other lines of merchandising. A man buys a Cadillac because he expects service, but he expects it on his Cadillac purchase from the Cadillac dealer and not from the Packard dealer.

"It's not any fairer for a club member to expect pro service to purchasers of store goods than it would be for the Cadillac owner to expect interested and expert service from a Packard dealer, except with the idea of showing up the competitor's product and making a replacement sale.

"When the pros put across the idea that advisory and instruction service follows-up all of their sales they won't have much complaint about store competition," concluded Loving.

TO THE PROFESSIONAL GOLFERS OF AMERICA

●

GENTLEMEN:

In this year of groans and headaches you have done a job which most of America's businessmen leaders might very well envy. I wish to thank each one of you, personally, for the part you played in the gratifying success of Wilson golf clubs and Hol-Hi golf balls.

L. B. ICELY,

President.

WILSON-WESTERN SPORTING GOODS COMPANY

Pros Plan to Avoid Costly Penalty of Dead Stocks

By HERB GRAFFIS

ACTION OF the Illinois PGA in effecting transfer of slow-moving shop merchandise between its members in August was significant to manufacturers who already are beginning to wonder if 1933 will be the sharp and deep pain in a tender spot that 1932 proved to be.

The Illinois enterprise followed along the lines of the work pros in the Kansas City section have done and which was described in earlier issues of GOLFDOM. In brief, the move means minimizing pro-shop inventories and getting the shelves and bills cleaned out for a fresh start next season. Department stores and other golf goods retailing outlets, exclusive of the pro-shops, have had a disappointing time of it trying to get rid of the excess inventories of manufacturers that were picked up at bargain prices. Apparently people suspect the cheapness of "down town" stuff, for many reports indicate that sets at $60 were highly popular even in the store sales.

On the other hand, pro-shop sales conducted in association with Spalding, Wilson, U. S. Rubber, Hagen and Kroydon pepped up the unit number of sales made through the pros in what might otherwise have been a sad season. This simply means that the pros, by taking full advantage of the remainder of the active playing season and early holiday shopping, can be all set to anchor themselves stronger in the driver's seat of the golf market during 1933 while the competitive stores retain in stock some of the distress merchandise of 1932.

Pros and Makers Joined

What this continued sluggishness in the store buying of the manufacturers' output is going to mean to the pros is easy to surmise. It will mean that the smart manufacturers and the smart pros will be working together stronger than ever before. On the pros' part there will be an extension of the lively selling effort that has grown sharply during the last three years and a strengthening of the pro business men's effort to reduce manufacturers' credit losses and high selling expenses in the pro field.

The manufacturers may be expected to show a continuance of their ambitions to control retailing so the pros' legitimate profit and the pros' due share of the market will not be subjected to unwarranted peril. Difficulty of production control on golf goods and factory facilities geared to the ravenous demand of the 1930 market have given manufacturers plenty of headaches and monthly nightmares of red spots dancing in front of their eyes. What the manufacturers looked to the stores for in retailing was unloading frozen and obsolete stuff to the fee and municipal course players. Especially in the smaller towns have manufacturers considered stores rather than pro-shops as outlets during the past.

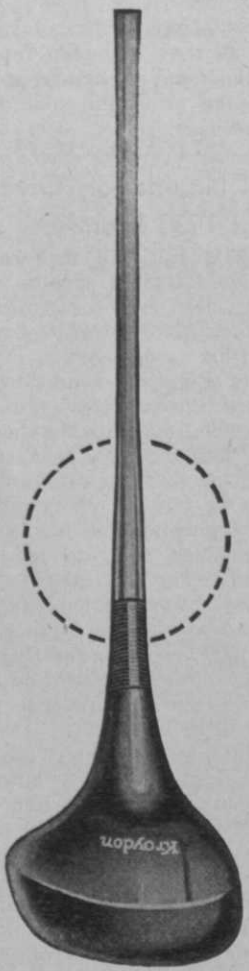
Fee Courses Offer Outlet

Examination of the personnel records of fee and municipal courses during 1930 and 1931 revealed plenty of reason for this policy. Going over such records with a number of experienced pros who were acquainted with local situations one would arrive at the conclusion that at least half of the pay-play courses had no pros and in too many of the cases where so-called pros were located these men, or boys, were pitifully lacking in qualifications.

GOLFDOM'S investigation of the pay-play course field made earlier this year indicated that although such courses were only approximately 27% of all the country's courses they would have about half the total volume of play for 1931 and 1932.

Obviously then, this would be the field for the manufacturer trying to turn his surplus into cash at reduced prices. But, as a general thing, the stores have flopped in getting this trade and the pros have awakened in time to command it. In seeking an explanation, two answers seem logical. One is that the fee or municipal course job formerly considered beneath the station of a man accustomed to a private

Even Dubs Become Apt Pupils *This* Way!



The Kroydon Hy-Power Steel Shaft has the greatest diameter where it joins the club head, with its narrowest diameter well up toward the grip. This principle of design, known as Reverse Tapering, is exclusive with the Hy-Power Steel Shaft. It moves the whip up nearer the hands, thus permitting greater distance and accuracy.

You Pros know what it means to the average golfer to chop a few strokes off his score. You've seen dignified captains of industry and sober bank presidents whoop it up like schoolboys when, with your help, they'd cured a troublesome slice, or ironed out a hook that was ruining their game.

You were "a great guy", then—"a gentleman and a scholar, and a damn good judge of golf!"

Pros who have improved THEIR OWN game with Kroydon Hy-Power Clubs—and there are literally hundreds of the ablest players in the country who swear by them—have discovered that one of the quickest and surest ways to "win over" club members is to put Kroydon Hy-Powers in their hands. For it's been proved time and again that Kroydon's "reverse tapering" principle of construction, used exclusively in the Hy-Power Steel Shaft, gives added power and better control—whether in the hands of the novice or the expert.

Kroydon Clubs are profitable to sell, too, because Kroydon protects the pro against price-cutting and unfair competition. See your local Kroydon representative, or write The Kroydon Company, Maplewood, New Jersey.

PROFESSIONAL BY

Kroydon

CLUBS

club connection now is recognized as a highly desirable spot for a smart pro merchant who will work and who gets the opportunity to do so under any reasonable sort of an arrangement that profits both him and his employer. The other answer is that store retail selling of golf goods usually can't stack up within three brassie shots of pro-shop selling where the average competent and alert man is on the job. At the store is a clerk who gets his clerk's pay so long as some business is coming in. At the pro-shop is a fellow who knows that if he doesn't sell the right thing, at the right price and time, to the right person, the wife and kids and he are going to have to do without something. It makes all the difference in the planetary system.

Pros at private clubs have reached out and gathered in a fair amount of pay-play course business this year. Easing up on trade tournament and greens-privilege restrictions at the private clubs have brought new trade to the private club pro-shop. Free lessons given with purchase of clubs, club sweepstakes in addition to the ball sweepstake events, punch-boards when permitted, and all other sorts of trade inducements have been used by the alert pros to keep their 1932 business much nearer normal levels than has been the case with the nation's business in general or the sporting goods business in particular.

Sales to Women Helped

Women's continued growing interest in golf got more sales and service attention than ever before from the pros. A few of the brainy experimenters sold expensive matched sets to women by getting them to buy the mid-iron, mashie, mashie-niblic and niblic early in the season and then selling them the rest of the set month by month after the shock of the first outlay of money was forgotten.

More interest in instruction naturally went along with this necessity of fighting off the sheriff by keeping up shop sales. The pros were impressed with the close connection between competent instruction and business-like shop operation in 1932 more than during any other season. Club officials and members who saw any indications of sluggishness in either one of these essentials of pro department operation were not at all backward with comment about the availability of talent to replace the indifferent ones. This, of course, put a wholesome amount of pepper into places where it did good.

There remains a good month for clean-outs by most of the pros in the northern and central states. With the boys quite aware of how they have struggled right side up through the worst business season in American commercial history, it is to be expected that they will complete the job of getting an early start for 1933. The indifferent brother who expects to coast through a hard winter or the weak one who thinks he is whipped now had better snap out of it during the few weeks of the dying season, or else . . . .

In the meanwhile the bright laddies will be getting set so they can plan for 1933 without the handicap of hangover from errors of omission or commission during this departing season.

Golf Ball Liquidation Gives Bright 1933 Promise

REPORTS FROM golf ball makers indicate that liquidation of surplus stocks of golf balls has been rather satisfactorily accomplished despite generally sluggish action in sporting goods market.

Stocks of the old "larger and lighter" ball with which the makers were stuck plenty by the official mandate making that ball practically obsolete have been cleared out at prices as low as $1.20 a dozen retail. Although the pros felt the effect of these clearances, they were able to buy balls at prices which enabled them to meet this competition and bring ball business back to the pro shop. Most serious sufferers from the clearance sales were the department stores that had been cutting into the pro ball business by knocking off a nickel or a dime from the pro shop standard prices of well known balls. Prices got so low these stores lost their exclusive command of the cut price ball market.

There have been some outspoken statements to the effect that the ball manufacturers won't get caught again by a combination of legislation and enthusiasm. Early forecasts of manufacturing schedules show a conservatism that may make a shortage or delay in shipment of leading brands of balls not altogether improbable in 1933. A lot worse things could happen to both the manufacturers and pros.

Another detail of the situation that promises the ball market won't repeat on its 1932 misery soon is the fact that smaller manufacturers of balls got caught over the barrel this year and were paddled to death. That such a fate was possible