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PRO LINE EQUIPMENT *Continued*
SHAKESPEARE

WOODS

MODEL	FEATURES	PRICE (Set of 3)	AVAILABLE IN STOCK
XLD	Heads of laminated maple bonded together to stand up against stress and wear.	prices Available from Shakespeare	Men's rt. & lft.
POWER-MATED	Power weighted with balanced center and heel-to-toe inserts.		Men's rt.
LADY SHAKESPEARE	Designed exclusively for women golfers.		Ladies' rt.

IRONS

MODEL	FEATURES	PRICE (Set of 8)	AVAILABLE IN STOCK
XLD	Blade weighted so weight is concentrated in clubhead. Designed by Gary Player.		Men's rt. & lft.
POWER-MATED	Long irons are toe weighted, short irons heel weighted.		Men's rt.
LADY SHAKESPEARE	Weighted at the percussion point; deeplined scoring, sandblasted faces.		Ladies' rt.

PUTTERS

P-506	Rocker style in solid brass.		Men's rt. & lft.
P-507	Blade style, in satin-finish chromed steel.		Men's rt.
P-510	Blade type, nickel silver head.		Men's rt.
P-511	Marble-insert blade type.		Men's rt. & lft.
P-512	Marble-insert mallet type.		Men's rt.
P-579	Rocker type, zinc die cast head.		Ladies' rt. & lft.

UTILITY CLUBS

	Sand wedges and pitching wedges are available to match the listed Shakespeare irons.		Men's and Ladies' rt. XLD models also available in Men's lft.
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SPALDING

WOODS

MODEL	FEATURES	PRICE (Set of 3)	AVAILABLE IN STOCK
EXECUTIVE	Unique flat top on driver puts all weight behind ball. Fairway woods have concave heads.	\$75	Men's rt.
TOP-FLIGHT "121"	Hydrosealed persimmon heads individually balanced by hand.	\$75	Men's rt.
TOP-FLIGHT "131"	In persimmon or laminated heads; shafts slightly forward to aid hand position.	\$75	Men's rt.
TOP-FLIGHT "141"	"Woodless" wood of terpolymen synthetic.	\$75	Men's rt.
TOP-FLIGHT	Titanic face inserts in persimmon heads, large hitting surfaces.	\$75	Men's lft. Ladies' rt.
MARILYNN SMITH	Resin-seal persimmon heads, red mahogany finish.	\$75	Ladies' rt.
JUNIOR TOURNAMENT	Set includes driver, spoon, 3, 5, 7, 9 irons, putter and bag.	\$65.40 entire set.	Junior rt.

IRONS

MODEL	FEATURES	PRICE (Set of 8)	AVAILABLE IN STOCK
EXECUTIVE	"Perma-Finish" 3-stage chrome plating; reverse threaded shafts without pins.	\$150	Men's rt.
ELITE	Top line of each iron head rounded to aid long iron confidence.	\$200	Men's rt.
TOP-FLIGHT	Relocation of weight has moved center of gravity closer to center of face.	\$150	Men's rt. & lft. Ladies' rt.
MARILYNN SMITH	Beveled leading edge, reverse threaded shafts without pins.	\$150	Ladies' lft.

PUTTERS

MODEL	FEATURES	PRICE (Each)	AVAILABLE IN STOCK
CALAMITY JANE	Exact replica of putter used by Bob Jones.	\$17	Men's rt.
CHICOPEE	Center shaft; brass.	\$14	Men's rt.
BLUE-CHIP	Flange style; offset blade.	\$14	Men's rt.
CASH-IN	Blade type chrome-plated steel head.	\$14	Men's & Ladies' rt. & lft.
JACKPOT	Aluminum mallet head.	\$14	Men's rt.

UTILITY CLUBS

MODEL	FEATURES	PRICE (Each)	AVAILABLE IN STOCK
SAND CLUB	Made to match any of above listed irons.	\$18.95-\$25	Men's & Ladies' rt. & lft.
TROUBLE LOVER	All-purpose approach club; wide flange.	\$18.95	Men's rt.
PITCHING WEDGE	Made to match any of above listed irons.	\$18.95-\$25	Men's & Ladies' rt. & lft.

U. S. ROYAL

WOODS

MODEL	FEATURES	PRICE (Set of 3)	AVAILABLE IN STOCK
ROYAL 1360	"Unilam" heads of selected sugar maple with screwless "Usilon" face inserts. Shafts are precisely matched.	\$76.75	Men's rt. & lft.

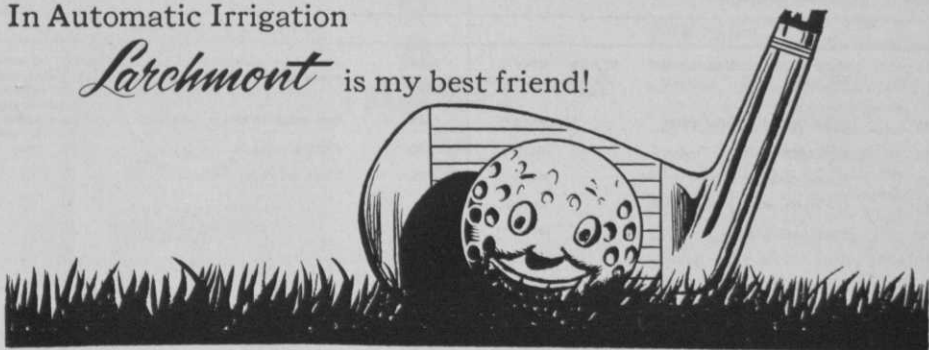
IRONS

MODEL	FEATURES	PRICE (Set of 8)	AVAILABLE IN STOCK
ROYAL 3160	Larger vertical measurement gives wider striking area. Impact-balanced heads to put maximum weight behind ball at impact.	\$146.50	Men's rt. & lft.

Continued on next page

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PRO LINE EQUIPMENT Continued

ROYAL QUEEN 2350	Same features as men's woods, but in Ladies' specifications.	\$76.75	Ladies' rt. & lft.	ROYAL QUEEN 4160	Same features as men's irons, but in Ladies' specifications.	\$146.50	Ladies' rt. & lft.
PUTTERS				UTILITY CLUBS			
5060	Mallet head in polished aluminum and brass.	All listed are \$14 each.	Men's rt.	5560	Sand wedge, advanced blade for more bite.	All listed are \$18 each.	All men's utility clubs come in left or right. Ladies' in right only.
5140	Center-shafted, polished nickel.		Men's rt.	5660	Dual wedge for sand or fairway.		
5150	Rocker type blade.		Men's rt.	5760	Pitching wedge.		
5070	Flanged design in polished chrome.		Men's rt.	5765	ROYAL QUEEN dual wedge.		
5240	Low profile offset, polished brass.		Men's rt.				
5050	Nickel headed blade.		Ladies' rt.				

WILSON

WOODS

MODEL	FEATURES	PRICE (Set of 3)	AVAILABLE IN STOCK
STAFF MODELS: SERIES 11 SERIES 1100 SERIES 21 PERSIMMON PATTY BERG	All STAFF models feature Aquatite bonding for protection against weather; perfectly matched shafts, Cycolon screwless face inserts cemented to head for life of club. New two-piece sole plate.	\$77.25	SERIES 11 comes in Men's right or left; BERG STAFF in Ladies' right. Others in Men's right only.
DYNAMIC X-31	Special Epoloc face is poured in liquid state. Self-adhesive, forms hard surface.	\$94.50	Men's rt.
SNEAD YOUNG CHAMP* (D5584)	Junior set includes driver, spoon, 3, 5, 7, 9 irons, putter and bag.	\$62 for entire set.	Junior rt.

IRONS

MODEL	FEATURES	PRICE (Set of 8)	AVAILABLE IN STOCK
STAFF DYNAPOWER	Dynapower places weight behind ball at impact. Shaft drilled completely through hosel to sole of club helps eliminate "dead" weight.	\$147	Men's rt. & lft.
PATTY BERG	Mates to BERG woods; same features as men's STAFF DYNAPOWER irons.	\$147	Ladies' rt.
DYNAMIC X-31	Drilled through hosel design with longer and deeper blade.	\$162	Men's rt

PUTTERS

MODEL	FEATURES	PRICE (Set of 3)	AVAILABLE IN STOCK
STAFF MODELS: D8803	All feature "fluted" shafts. Center shaft, blade type.	All putters listed are \$14 each.	Men's rt. & lft.
D8813	Flange style head.		Men's rt.
D8833	Brass head, blade type.		Men's rt. & lft.
D8843	Chrome head, flange type.		Men's rt.
D8853	Brass backed mallet head.		Men's rt.

UTILITY CLUBS

MODEL	FEATURES	PRICE (Each)	AVAILABLE IN STOCK
R-90W	Pitching Wedge with special broad sole.	\$18.40	Men's rt.
DB741	STAFF triple duty wedge.	\$18.40	Men's rt.
"300" DRIVER	Specially deep faced.	\$25.75	Men's rt.
"SANDY ANDY"	Weighted sole to keep blade from turning.	\$18	Men's rt.

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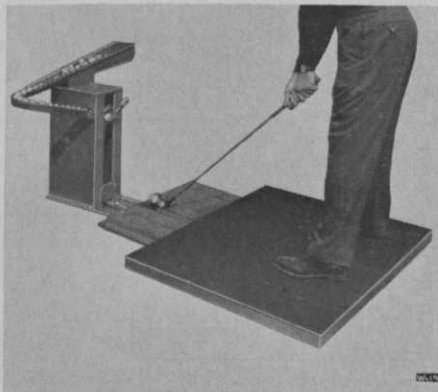
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Arnie's whole idea is to place in your hands a set of tools so mechanically flawless you can forget about everything except your form. "After an

hour," wrote one golfer, "the clubs began to feel like a part of my own arm."

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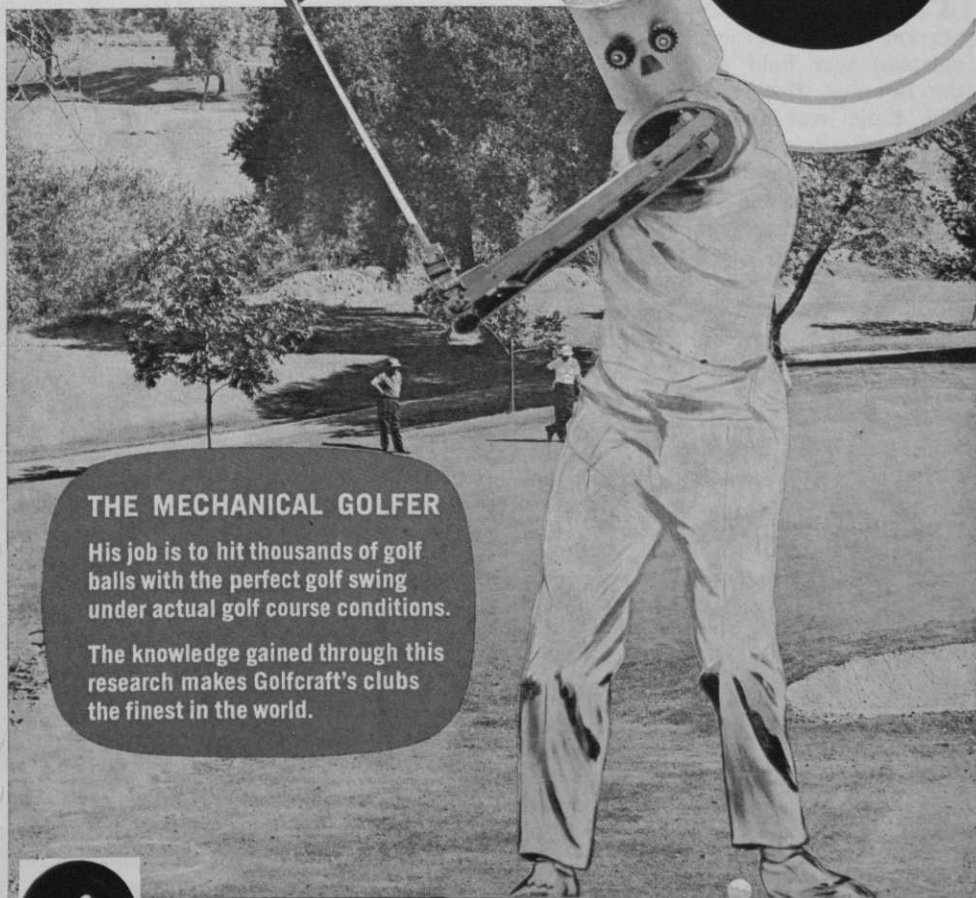
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Water still news in New York

USGA Greens Section devotes whole conference on golf course management to irrigation.

By DESMOND TOLHURST

The first of this year's USGA Greens Section conferences on golf course management was held on January 28, at the Biltmore Hotel in New York City. The topic was the irrigation of golf courses in all its ramifications—from design of sprinkler heads to sources of water.

After the introductory remarks by Henry H. Russell, Chairman of the USGA Green Section Committee, the morning's sessions were kicked off by Don Hogan, Professional Civil Engineer, Seattle, Wash., with a talk on "Designing irrigation systems for golf courses."

Hogan first discussed some general aspects of course irrigation systems, then delved into sprinkler spacings and patterns.

All the sprinklers discussed were of

the rotating nozzle type. They perform best, said Hogan, in what is called "triangular spacing." This spacing should be about 70% of the diameter of the throw of the sprinklers being used. The distance between lines of sprinklers, he added, should be .866 or 6/10 of the sprinkler throw diameter.

You require overlap, Hogan observed, because the further out from the sprinkler you go, the less water is thrown. Close to the head, the individual sprinkler covers completely. Therefore you must have a line of sprinklers fairly close to the rough for effective coverage of the fairway next to the rough.

Hogan then discussed charts showing the distribution curves of two actual sprinkler heads. (These charts are available on request from sprinkler manufacturers.) The charts demonstrate the efficiency of a sprinkler head by plotting the actual amount of water it delivers 5, 10, 15, 20, feet, etc., out from the center.

The demonstration showed that because one sprinkler has a diameter of throw of, say, 130 feet and another, only 80 feet, does not mean that the one with the larger diameter is the one to choose.

Continued on page 70



H. Burton Musser holds USGA Green Section Award plaque, as Henry R. Russell, left, and Dr. Marvin H. Ferguson, right, look on.

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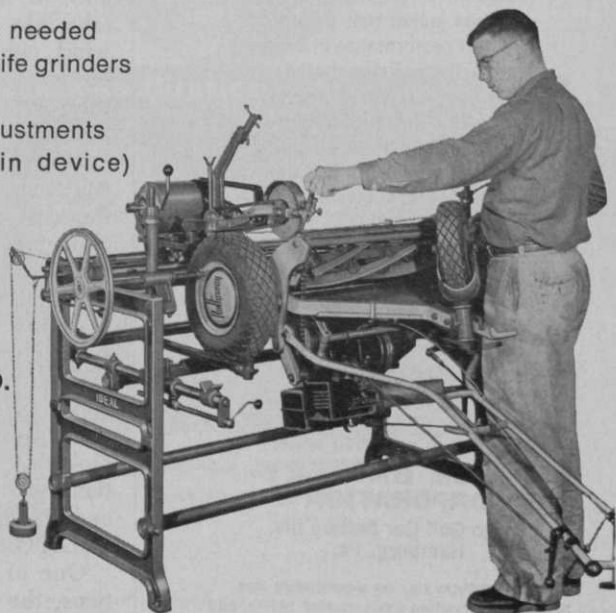
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WATER STILL NEWS

Continued from page 68

Only larger droplets of water have the weight to "carry" to the outermost point of a long-throw sprinkler head. In fact, it is desirable that smaller droplets be used for irrigating turf. The smaller the droplet size, Hogan observed, the better the water can permeate the soil, go through thatch, etc.

On paper, therefore, it sometimes can be very tempting to go for the longest-throw sprinkler offered, because theoretically they could be spaced further apart and reduce the number of sprinklers needed, thus reducing costs. But, said Hogan, as he had shown, this can be dangerous without first looking at the distribution curve charts of the sprinkler heads concerned.

As a rough rule of thumb, Hogan recommended that a 1/3 inch an hour is the maximum desirable. Also, plan for 80 foot spacing between sprinklers—then select the sprinkler that can do the job.

Some of the considerations for the design of a satisfactory irrigation system that Hogan detailed were: Determine total amount of water needed; evaluate water supply available; estimate the number of hours of watering needed in inches per week; evaluate the performance of various makes of sprinklers, and take into account such considerations as wind, climate and topography of land to be irrigated—not forgetting to evaluate the needs of shady and sunny areas, also areas with or without air movement.

Hogan closed his talk with this golden rule: The bid should always determine the cost of the system to be installed, and engineering should determine the design. If you allow cost to determine the design of the system—which is, he said, too often the case—you will likely land in a packet of trouble.

A panel discussion on "Water requirements of turfgrasses and irrigation practices" was next on the agenda. James L. Holmes, Agronomist, USGA Green Section, was Moderator, with Lee Record and Holman M. Griffin, Agronomists, USGA Green Section, on the panel.

One of the most important considerations, the panel thought, was the loss of

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