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Alternate pin positions are properly placed in relatively level areas off the slopes. Pins should be alternated front to back and behind or away from the hazards, according to climatic conditions, the purpose of the day's play and for variety.

PIN PLACEMENTS

There are no hard and set rules for spotting the cups. The USGA recommends fairness and variety, as reliable a guide as there is

By **ROBERT TRENT JONES, JR.**

The placing of pins is of great concern to the average golfer as well as the tournament player. Yet, rarely is much thought given by supts. and green chairmen to the location of the holes or of the tee markers. Wear of tees and condition of cup areas rather than playing factors usually determine pin placement. In many cases cups are placed by course workmen who don't play golf and don't know golf strategy.

When I was learning to play and had much more time to play on weekdays, I noticed that the pins invariably were in the front of the greens and in the openings, making the Montclair (N.J.) GC my

home club, a relatively easy course. On the weekends, however, the pins were set in much more difficult positions behind bunkers and the tees were set back. This seemed incongruous as it was the weekend players who had the least time to practice and were forced to play the most difficult course. This tendency is still prevalent. It would be better at all times to have a balance of difficult, easy and moderate pin placements.

Each hole should be considered in the early morning in the best judgment of the supt. as to climatic conditions as well as a sequence of holes which affords different degrees of difficulty in an enjoyable and varied pattern. The problems of



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traffic on weekends certainly should not be overlooked.

From the point of view of a shot into a green, the pin should not be placed directly on the downslope or the back slope of a mound. An excellently hit shot with good spin may land on the downslope a few feet from the hole and kick off to the back. Had the shot landed a few feet further, it would have stuck at that point. The unfairness of this type of pin placement is evident in gripes heard at the 19th hole.

12 Feet from Fringe

In general, pins should be placed as the USGA recommends — at a relatively level area minimum of 12 feet from the fringe of the green and in accordance with the conditions of the day, but not in an unfair position to receive a well executed shot. Fairness and variety are the best guides to proper pin placement. There are no hard and fast rules for establishing pin placements. Yet, when the tenets of fairness, variety and observation aren't followed, many players, pro and duffer alike, voice dissatisfaction.

I recently attended two well publicized tournaments, the Canada Cup at Royal Kaanapali in Maui, Hawaii and the Crosby National Pro-Am. The courses on which these tournaments were played provided vividly contrasting examples of the proper and improper placement of holes.

Let me emphasize that my remarks are not made to be critical, *but to be constructive*. My observations have indicated that mistakes in pin placement are so general as to be a blind spot in the course management program.

Design Directs Pin Location

The Royal Kaanapali course typifies the philosophy of flexibility of a Robert Trent Jones design. This is particularly so with the greens. The greens are large and undulating. Though natural in appearance, the greens were designed with a definite purpose in mind. In general, the rolls and mounds on the greens guard pin positions. A trap may be placed in conjunction with a slope on the green so that a shot into the green will have to be accurate in distance and latitude to end up near the hole. The mounds and rolls

USGA to Hold Regional Green Section Conferences

The green section of the USGA will conduct a series of three regional conferences in Pittsburgh, Mar. 22, St. Louis, Mar. 24, and in San Francisco, Mar. 26. Each meeting will deal with the subject Fairways and the Rough. Among the categories to be discussed in speeches and by panels are: fairway conditions the good player wants and expects; Techniques for efficient maintenance of rough grasses; Trees and shrubs in the rough; and Renovation and Irrigation of fairways. Sessions are scheduled in each of the three cities from 10 am to 1 pm and from 2 pm to 4 pm. Chairmen will be: Pittsburgh, Fred Brand, Jr., St. Louis, Joel Loveridge; San Francisco, Lynn A. Smith.

of the green prevent most of the poorly played shots from ending up near the hole.

The first day of the competition of the Canada Cup was the first annual world Pro-Am in which I participated. The greens had just been brought into shape under the direction of my father, O. J. Noer and J. D. Kilpatrick, supt. It became obvious as we played the first few holes that the pins had been set in extremely difficult and, in some cases, unfair places.

Keep Off of Slopes

It is not the intention of the designer to have the pins set on the slopes leading up to a pin position, but this was the case on many of the greens that day. These slopes, which exist on a large contoured green, are similar in purpose to the small slopes approaching the smaller greens of a former era. A shot landing on them simply doesn't roll much further uphill. But to set a pin in these slopes is similar to setting it on the front of the approach of a green. It is unfair and is not intended by the designer. Putts will break so severely on these slopes that even the shortest putt will give the world's best pros the jitters.

There were many complaints among the
(Continued on page 150)



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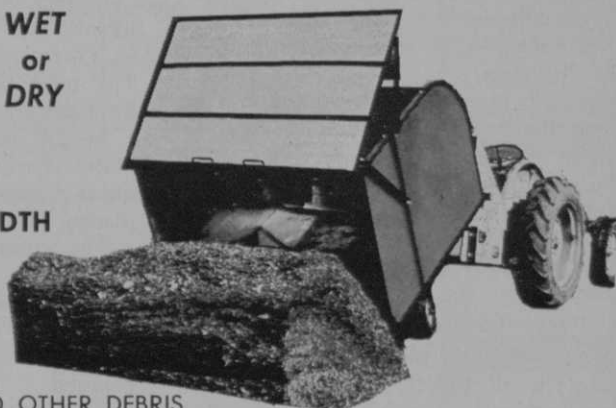
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BATTERY CHARGING

*Expert explains voltage, specific gravity, hydrometry
and other aspects of the golf car power unit*

(First of Two Articles)

By **EDWARD SZOSTEK**

Assistant Sales Manager
Motor Appliance Corp.

In order to understand battery charging, the replacement or restoration of energy to the battery, we must first understand the basic characteristics of a battery.

The storage battery is rated in ampere hours. This means that a 120 AH battery can theoretically deliver one amp of current for 120 hours or any other combination of amperes and hours that, when multiplied together, gives 120.

The standard 6-volt golf car battery is essentially three 2-volt cells connected in series. In a standard 36 volt system, 18 cells. This means that we have 6 6-volt batteries connected in series. Each battery having three cells, multiplied by the number of batteries, gives the total number of cells in series. Six three-cell batteries multiplied by two volts per cell, is a 36-volt system.

Specific gravity is the relationship between the weight of electrolyte and the weight of water. If a battery has a specific gravity of 1.260, the electrolyte (acid solution) is 1.26 times as heavy as water.

In a fully charged battery the positive plates consist of grids containing lead peroxide.

Electrolyte Solution

The negative plates contain spongy lead. The electrolyte is a solution of sulfuric acid and water whose specific gravity will range from 1.260 to 1.280, depending upon the strength of acid used as finished acid strength when the battery is manufactured.

When a battery is discharged the lead peroxide of the positive plates turns to

lead sulfate when it combines with the sulfuric acid. The lead of the negative plates also turns to lead sulfate.

On charge, the reaction is reversed. The acid is driven out of the negative and positive plates and they return to their original state of lead peroxide and spongy lead. When batteries are in a discharged condition, the specific gravity may have a low reading of approximately 1.140. In a charged condition they would read 1.260 to 1.280. This is relative strength or capacity of the battery.

Rectification is a method of changing alternating current to direct current. So, all battery chargers are rectifiers. Selenium rectifiers or silicon diode rectifiers have been used in golf car battery chargers. They restrict the flow of current to one direction, thereby giving direct current.

Automatic vs. Semi-Automatic

Battery chargers have been termed automatic (self-operating) and semi-automatic. There are several methods of charging. The most popular are the two-rate and the taper charge type.

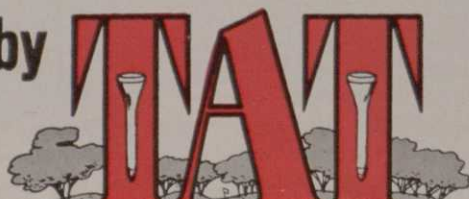
In golf car battery charging, an automatic charger is one that does not require a specific gravity reading prior to placing the batteries on charge.

The automatic two-rate charger operates with a terminal voltage relay which gives the batteries a finish charge when they reach their gassing point, or when they are approximately 80 per cent charged.

The semi-automatic charger is basically the same type of charger. However, instead of a (TVR) terminal voltage relay, the amount of charge must be determined through use of a hydrometer, or a percentage of charge meter and a timer pre-set to give the batteries the correct

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amount of charge.

Differential Operation

The taper type of chargers is automatic but operates on a different principle. The taper type charger operates from the difference between the battery voltage and voltage output of the charger.

Thus, when the terminal voltage of the batteries is low, a higher current is required. As the voltage of the batteries on charge builds up, the voltage difference between the charger and batteries decreases and the current tapers or decreases proportionately. At the end of charge the rate will be quite low.

Most battery chargers are equipped with timers. The timers, in addition to being on-off switches, are in reality a safety feature and should be used with this in mind. Whether you use the two-rate or taper-type chargers, if all the cells in the batteries are not in good condition the batteries will never reach the proper terminal voltage. Consequently, the charger won't know when to reduce the charging current. If you did not have a timer or some sort of turning-off device, batteries could remain in a higher-than-normal charge rate and could cause damage to the good batteries.

Take Occasional Reading

It is advisable to take an occasional reading to determine just what state the batteries are in. Good maintenance will reveal defective or low cells and these can be corrected immediately.

Open circuit voltage in relation to specific gravity and percentage of charge is as follows:

Specific Gravity	Open Circuit	Per Cent Charge
1.260	2.10	100
1.220	2.06	75
1.180	2.03	50
1.140	1.99	25
1.100	1.95	0

Theoretically, there is only one-tenth of a volt difference per cell between a charged and a discharged battery.

When the batteries are connected to a charger, voltage readings will be approximately as follows:



Bing Crosby holds plaque which has been installed in his name at the third hole at Green Tree G & CC, Victorville, Calif. He is shown with Barney McCoy (l), club pro, and Robert Tatum, owner. Hole is 610 yards long.

	Specific Gravity	Total Volts
At start charge		
2.13 volts per cell	1.140	38.4
At gassing		
2.37 volts per cell	1.220	42.7
At finish 2.4 to		
2.5 volts per cell	1.260	43.2 - 45.0

Consider Replacement

When taking monthly specific gravity readings, you should find a battery with a 40 point difference between the cells. This indicates a faulty cell or a potential problem. The battery should be watched for performance, or should be replaced. Proper charging procedures are important in charging batteries so that they give maximum service. Chronic overcharging and undercharging have a harmful effect on batteries and will shorten battery life.

A little experimentation with a hydrometer will show what charge is sufficient to bring your batteries to capacity. Observation of the hydrometer and different charging times will indicate the amount of charge needed for a car that has been out for 9, 18, or 36 holes. The most neglected tool is the hydrometer. When used properly it can save hundreds of dollars in battery replacements due to premature battery life.

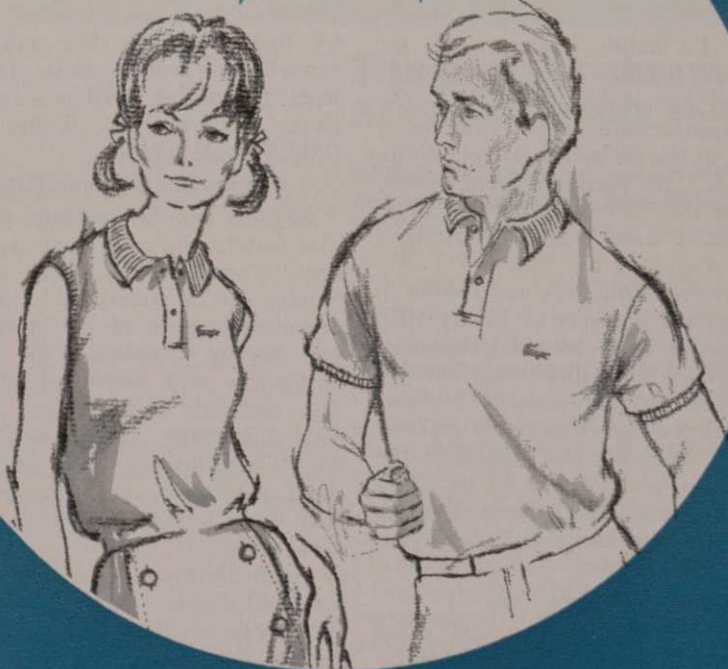
The second part of this article will appear in the April issue of Golfdom.

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Charles E. Smith

**1,300 Attend Annual
Education Meeting**

Smith Elected to Head Club Managers Group

Charles E. Smith, manager of the Chevy Chase Club, Chevy Chase, Md., was elected president of the CMAA during the organization's annual conference, Feb. 9-14, at the Shoreham Hotel, Washington, D. C. He succeeds Clem Young, manager of the Cleveland Athletic Club.

Also elected were William J. Hodges, general manager of the Paradise Valley CC, Englewood, Colo., vp, and Horace J. Duncan, general manager of Cherry Hills CC, Englewood, Colo., secretary-treasurer.

CMAA is an international organization of 2,300 professional managers of bona fide country and town clubs. It was organized 38 years ago to encourage the education and advancement of its members, and to assist club officers, through their managers, in successful club operation.

Seek to Reduce Tax

More than 1300 managers and wives attended the annual education conference. A trip to Capitol Hill on Feb. 9 was the first order of business for the managers attending. The purpose was to acquaint them with the work of their representatives and to encourage the passage of a bill to reduce the present 20 per cent excise tax on club dues to 10 per cent.

Dr. Noah Langdale, president of Georgia State University, opened the first business session with a keynote address on the "Anatomy of Failure".

Tax problems, important to an indus-

try that pays over \$75 million dollars annually in federal excise taxes alone, were thoroughly aired in a two-hour tax clinic, moderated by Walter Slowinski, CMAA's legal counsel.

Two-Day Seminars Popular

CMAA's two-day seminars were a popular feature. Jacques Aimi, general manager, Woodmont CC, spoke on "French Service, but for Americans". Herbert Auer, executive director of the Michigan Medical Society, conducted an overall investigation and review of club promotion material. Arthur Dana, New York food operations consultant, encouraged quality evaluation of club kitchen equipment purchases and discussed what to look for in terms of decor, durability and cleanliness.

Marge Derksen, administrative dietician for Kraft Foods, Chicago, discussed gourmet foods of the Middle East. Charles Sayles, director of research, Hotel School, Cornell University, brought CMAA members up to date on using unit record equipment in clubs. Wayne K. Short of the National Association of Hotel & Restaurant Meat Purveyors demonstrated the latest methods of preparing and cooking quality meats. The application of marketing research techniques to club management were discussed by Robert C. Wolfgram, marketing research analyst, Michigan State University.

A discussion of "The Perfect Club Din-
(Continued on page 106)