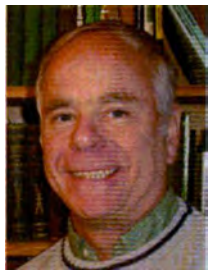
BY Bob Jewett



MORE THE MERRIER II

A few more multi-player games that may be new to you.

LAST TIME, I covered the rules for ring 9-ball, a multi-player game that was a favorite in the room where I first learned to play. When the better players got together, they tended lo play ring 10-ball, which uses the same rules but with one more ball to slow down the runouts. This time I'll cover some other games that more than two can play.

In a ring game, it's usually necessary to remove safety play because a good safe doesn't benefit the player who played it; the safety helps the player two spots down the shooting order. A game that puts safety back into the ring-game format is called "Liability." This is played mostly with normal snooker rules on a snooker table, but you could probably adapt the basic idea to 9-ball. Only six reds are used, and the game starts with the normal safety break, with players after that shooting in order in the standard ring-game style. The scoring is like snooker, with one point per red ball and two to seven points for the other balls ("colors"), which return to the table until the rotation phase when the reds are gone.

The tricky part is the scoring: Any points you make are charged only against the player who preceded you; he is liable for your scoring. If you foul, those points are credited to that same player since it was presumably his good play that forced the error. Fouls count from four to seven points as at snooker. Safeties are handled slightly differently from snooker, in that on any shot some cushion must be contacted either before or after contact with the object ball. This rule is to prevent the "cheap" safe play normally available which is to roll up softly to a color without any cushion contact to leave your opponent snookered on all the reds. If you foul, the following player can ask you to shoot again, but the liability for any points you score is then on him.

One way to adapt any two-player game to four players is to use a "scotch doubles" format. The players on each team alternate shots until the team misses, then the other team begins alternating shots. There are several ways to set the order; here's one: the first breaker is decided by the breaking team. When they miss, the other team decides who will play their first shot. After that, the order for that game is set. If someone plays out of order, it's a foul and the incoming team restores the correct order. In subsequent short-rack games, the winner's partner breaks and the opposing team again has the choice of first to shoot.

With partners games, you have to decide whether coaching is allowed or not. I think in games that are not too serious, and with mixed abilities, it's good for partners to share shot choices, but any comments should be brief, such as "try to leave me on this side of the 6 ball." Serious instruction, though, should be saved for the practice table. If your partner totally botches your well-intended suggestion, it is unlikely that your opponents or your partner will want to listen to your post mortem.

A dynamic partners game is "Chicago," which is a kind of 15-ball rotation game. It is called by various names, and around the rec center where we played it while avoiding homework, it was known as "Money Ball." It also has several variations of rules; I'll only cover the way we played it.

Chicago is played by four players. A full rack of balls is used, and you have to hit the lowest ball first on each shot. Slop counts, so turn up the energy when there's no obvious play. The 1 ball is racked in front with the 2 and 3 on the corners, and the 5, 8, 10, 13 and 15 balls are safely buried in the middle of the rack as they are the worth one "way" each. The numeric values of the balls also count as in standard 15-ball rotation, so the team scoring 61 points or more gets two additional ways for a total of seven available each game. The easiest way to keep track of who has made which balls during a rack is to have a cache spot assigned to each player, such as the ball tray or the left ball bin in the front of the table.

The rules for fouls are mostly the same as for ring 9-ball, including

Summary of Rules for 9-Ball and 10-Ball Ring Games

- **NO SAFETIES: A good safety will force the next player to sell out to the player after that, so aim to make a ball.**
- **NO BALL IN HAND: , Fouls are played where the cue ball lies. Scratches result in the incoming player getting ball in hand in the kitchen.**
- **ALL BALLS SPOT: If a ball is pocketed on a foul or driven off the table, it's placed on the foot spot.**
- **SHOOT AGAIN AFTER FOULS, MAYBE: A foul gives the incoming player the choice between shooting or passing the shot back to the one who committed the foul.**

"shoot to hit" and "shoot again" for a foul. All balls made illegally are spotted, but you never lose a ball you've made legally.

While the 1 ball is not worth anything directly, it is the "partners ball" and whoever makes the 5 is partners with the owner of the 1. If those are the same player, the maker of the 8 will be paired with the 1-5, and so on. Once the pairing has been established, the partners alternate innings, not shots, and the order may change slightly if two partners were following each other before partners were decided.

It may be that one player manages to make the 8 before the 5 ball is pocketed, but that does not decide partners. If one player has the 1, 5 and 8 while another has made the 13 and 15 but the 10 (the last remaining money ball and partners decider) has not been pocketed, the two pointless players both want desperately for either of them to make the 10 to avoid a sweep by a partnership of the two rich players.

An example of the 'Chicago' rack.

If there is a complete sweep by one team — five money balls and two ways for 61 or more points — the score is doubled. It may be that a rack ends without partners being formed if one player gets the 1 ball and the five money balls. If that player also has the highest points count, he is paid double by the three other players. Since the six important balls total 52 out of 120 total points, the money ball monopolist probably will get the ways for points as well, although a 5-2-0-0 split is possible.

The rack ends as soon as all ways have been decided, so there may be one or two balls left up if the 15 has fallen prematurely. Whoever makes the last ball breaks in the following rack and the order decided in the previous rack continues into the new rack although the partnerships are dissolved with the new break.

One of the best features of Money Ball is the constantly shifting partnerships. The weakest player always has one of the better players on his side, and the strongest player is not guaranteed to win. I think the game works best for social rather than serious play, and it stops being interesting if any of the players is likely to run out a rack. If the scene at your poolhall is getting a little stale, try some Money Ball or one of the other ring games for a little variety. I'll share a few more multi-player games next time.

BY Bob Jewett

MORE THE MERRIER III

Cutthroat is a starting point, but there are plenty more options.

IN MY last article, I mentioned scotch doubles, a game for two pairs of players with the players on a team alternating innings. At the Mosconi Cup in London last December, this idea was taken to the limit with the 10 players from both teams taking turns shooting in the first match of the competition. I think it worked quite well to introduce the players to the audience. It was interesting to see the interaction between the players — all of them champions — when deciding what position to play for the following player. Of the **otheT** matches, about half were in the doubles format, and the pairings added to the atmosphere of the event.

Here are some more fun games for more than two.

Three is generally an awkward number for a game of pool. It is not really enough for a ring game, and most games are based on two players or two teams. The game of Cutthroat is an excellent game for three friends of roughly equal ability if there is little chance that anyone will run the table. There are several versions of the rules; I'll cover the way we used to play it many years ago at the Cal Rec Center.

The balls are divided into groups, like 8-ball, with 1-5 belonging to one player, 6-10 to another and 11-15 to the last. The goal is to keep your balls on the table and sink the other two groups of balls. Rack the balls with one of each group on the corners. Choose the order of play by any agreeable method. The game begins with an open (smash) break. There is no call shot and any ball may be struck first. If you make a ball, you continue at the table.

When a player makes his first ball, he chooses which group of balls be his. The last player to make a ball has no choice, of course. You continue to shoot in the starting order, but if all of a player's group is gone, he doesn't get a turn. When a player fouls, the penalty is that one of each of his opponents' balls is spotted, so it's possible for a previously eliminated player to return to the game. If all of a group is already on the table, nothing spots for that group. Any ball pocketed on an illegal shot or jumped off the table is spotted as long as it doesn't belong to the fouler.

The last player to have a ball or balls still on the table is the winner. We played by the additional rule that if a player happened to pocket his own last ball, he could continue at the table with a chance to clear all the balls and win the game. We also played cutthroat as a scored game, with the winner getting one point for each of his balls left up at the end. The winner of the game breaks in the next.

I think it's clear that cutthroat loses its charm if any player is likely to run 10 balls, or even clear off one group from the break. If a runout is not viable, the two main strategies become the two-against-one game and bumping your group to safer areas of the table. When not shooting, you can try to persuade the shooter that the third player's balls are well disposed for annihilation.

There are at least two multi-player games that use three-cushion billiards as their basis. "Box Billiards" is described in Robert Byrne's "Wonderful World of Billiards." More common where I played was "fifth billiard," which can be played by any number of players. The rules are the same as for three-cushion with the players shooting in order, each scoring as many points as possible in his inning. Score is kept on a common string or counter, and whoever scores point number 5 wins one unit from each of the other players. Points 10, 15, 20 and so on are similarly remunerative. The problem with this scoring is that no one will want to score the first point of a set of 5, so a multiplier is added: any point scored in a run of 5 or more is paid double. This encourages everyone to play aggressively. If you make a run of six with scoring points on each end, it's doubled to 4 points. The traditional bead scoring strings are very convenient for this game, as each fifth bead is normally a different color, and a quick glance at the beads tells you how far away your next payday is.

Normally in ring billiard games, an incoming player will take as his cue ball whichever ball was not the shooter's cue ball on the previous shot. This is known as the "still ball" option, using still in

Summary of Rules for CUTTHROAT

3 PLAYERS, 15 BALLS: Each player has a group of five balls (1-5. 6-10, 11-15). Your goal is to sink your opponents' balls while keeping yours on the table.

GROUP DECISION: The first player to make a ball chooses her group, then the next player to pocket a ball chooses.

WIDE OPEN: There's no call-shot and any object ball may be struck first.

FOULS HURT: When a player fouls, each opponent spots a ball (thus, a previously eliminated player can return).

LAST ONE STANDING?: The winner is the last player to have a ball or balls on the table.

the sense of motionless. An alternative is the "optional cue ball" option in which the incoming player may choose which cue ball he wants to use for that inning. A big advantage of optional ball is that there is almost no way to play defense and the game moves along faster.

Last October 1 had the pleasure of visiting what may be the nicest pool room in the U.S. — Fargo Billiards in Fargo, N.D., which is a past winner of the BD's annual Best New Rooms contest. Host and owner Mike Page introduced me to a new format for ring 9-ball he calls "Fargo Flip." The game can be played by three or more players, but 1 think it is best for four to eight. The rules of play are the same as for tournament 9-ball, including safeties, ball in hand for fouls, and three fouls for loss of game. Each rack begins with each player flipping a coin to determine teams. The Tails play the Heads with the Tails breaking.

The rotation of play is the same as scotch doubles, so the players on a team take one shot each in turn until a miss or foul. The order is determined by agreement within each team as the need for a shooter comes up. At first I thought this would lead to confusion and arguments, but there was never any problem. For strategy, I suppose you could put up the weakest player for a shot that is either easy or impossible, but in practice the person nearest the shot who hasn't shot yet probably takes the shot.

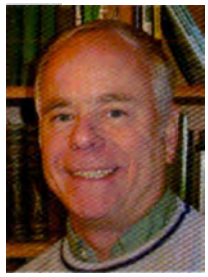
Scoring is a little different. Let's say you are playing for jelly beans. Each player on the losing team pays one jelly bean to each player on the winning team. If Heads wins with four players on the team and Tails has two players, each of the Tails puts four jelly beans on the table, and each Head picks up two jelly beans. If there is only one player on a team, he has a lot to win or lose while the players on the opposing team are only risking a single jelly bean. Before you flip, you should make sure that you have at least as many jelly beans in your pocket as there are other players in the game.

This form of ring 9-ball has several advantages over the traditional style. First, you use the standard rules of nine ball. You can and should play safe as appropriate, and a good safe is rewarded with ball in hand for your team. Also, the teams are constantly rearranged, so you are not stuck in a bad position for long. It is easy to take a short break by just not flipping at the start of a game and getting back in when a later game is starting.

As with any ring game, whether a new player can get in is up to the majority in the game, but the usual advantage of a strong player is well diluted by the Scotch format. There is little reason to exclude a champion if the stakes are not excessive. Let Johnny, Shane or Efren play — coaching is allowed and you might learn something.

If you have any other ring game formats I haven't covered, please send them to me at Jewett@sfbilliards.com and they may appear in a future column. I've already received a couple of suggestions prompted by the first column in this series.

BY Bob Jewett



MORE THE MERRIER IV

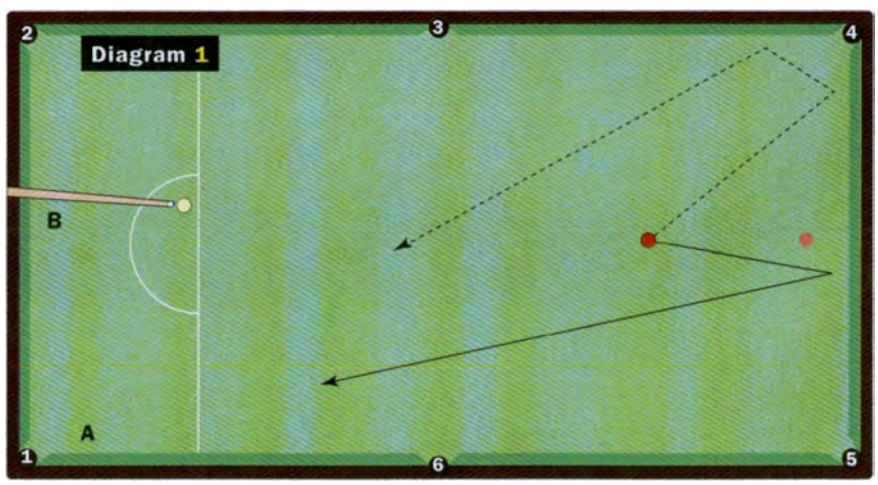
Golf and pool are linked by more than a few similar concepts

POOL AND golf have many similarities: the flow of the game, precise ball placement, judgment of speed, the green. There are several top pool players, including Johnny Archer and John Schmidt, who do well at both games. It's not surprising that concepts from golf have been adapted to indoor play on pool or snooker tables. It is surprising how many different games of "golf" have developed over the years. The Brunswick-Balke-Collender Company rulebook of 1916 has two different forms for pool tables. I won't describe the one with a ditch, a sand trap and "long green" on the table, but the simpler form is below.

First I'll describe the most common form of cue-sport golf in the U.S., which is played on a snooker table. Like all forms of golf that I've found, it is very well suited to multiple players — even 7 or 8 is not too large a crowd. If you're still learning the basics, you could play the game on a pool table, but with more skill, the challenge of a larger table and smaller pockets makes the game much more interesting. A full set of rules is in the BCA rulebook, but there are many local variations; I'll summarize the printed version and then mention a few alternate rules I've gathered from local players. If you are a new player in an established group, it's best to ask when you are unsure.

Each player has his own object ball, and all players use a common cue ball. The goal is to make your ball in each of the six pockets in order. The break shot is shown in **Diagram 1.** The cue ball begins in the D, and the standard shot is to bank your ball one cushion to pocket 1. If the first player does not make the break shot, the next player shoots his break shot with the cue ball in the D. After the last player has had his break shot, the cue ball is played from where it lies. When a player pockets his ball in the proper pocket, it spots back up and he gets to shoot for the next pocket in numerical order. An alternate path for the break is also shown. It is used when the direct path is blocked or the final breaker wants to get the cue ball to the other end of the table for a safe.

Play usually proceeds with a series of soft shots intended to leave the object ball very near the pocket. This is useful offensively since each shot is difficult and a soft shot at least makes some progress toward the pocket, and is useful defensively since a ball close to the pocket can block an opponent who is trying for the same pocket. Hard shots are restricted to bank shots, position play from a ball very near the pocket, or safety shots where speed is required to foil the player who follows you.



In order to keep track of who is on which pocket, you need a chalkboard, which is also needed to keep track of fouls, which in this game are called "hickeys." At the end of the game, which happens when a player finally makes the "six hole," he collects a sum from each of the other players as well as a smaller sum for each hickey that each opponent has collected. If you win, your hickeys are cancelled.

There are many ways to collect hickeys. You must hit your own ball first on every shot. If you contact someone else's ball first, he has the choice of putting his ball back where it was. You must make rail contact at some point in the shot, either before or after ball contact and with either the cue ball or some object ball. All other normal fouls, even touching a ball by accident, cost a hickey. Making any ball in the wrong pocket — that is, not the pocket that ball is intended for — is a foul.

If you foul and leave the next player snookered, he is entitled to a "lift." This means that any blocking ball between the cue ball and his ball are marked and temporarily removed from the table so he has a direct shot. In case a ball moved on the shot blocks replacement of a lifted ball, there's a problem and the rulebook provides no good solution. I propose spotting the lifted ball if it can't be replaced. The BCA rules suggest spotting balls as soon as they are off the table, but a common variation is to spot a ball when the owner's turn comes around. After a scratch, the cue ball is in the D and may be shot in any direction.

Often you will want to bank the cue ball off a cushion to hit your object ball. For example, on the opening break, you have left your object ball at A in Diagram 1. The player before you has

been careful to leave the cue ball at B so you have no direct shot. A standard shot in this situation is for you to play the cue ball off the far end rail with just enough speed to progress your ball toward the 1 hole, even though you can play directly at your ball. This situation has an added penalty: if you fail to contact your ball when you have a direct shot, you get a hickey and your ball spots so you lose your investment in the position.

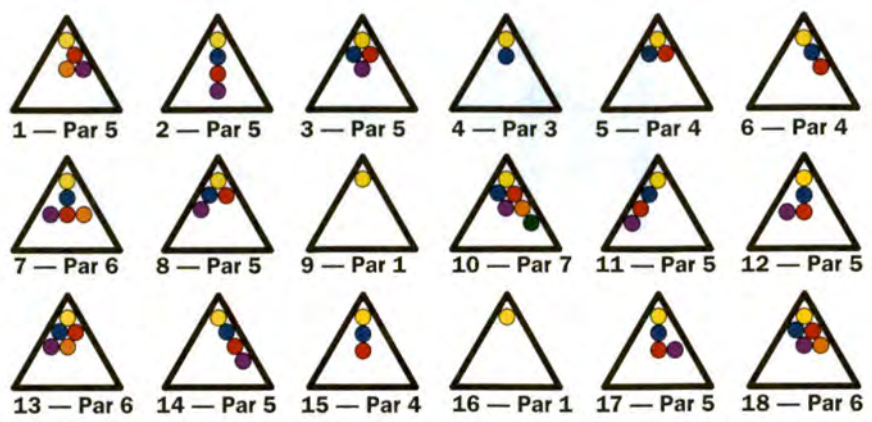
The best way to get yourself barred from playing with a group of veteran players is to fail to play a reasonable level of safety; you should almost never leave the next player a direct shot. This means that if you are snookered and have no good shot to hit your ball, your main goal is to deny the next player any way to advance his position. That might involve just rolling the cue ball to the end cushion and taking a hickey. Remember that the lift rule may be in effect after such a push-out. A common safety technique when an opponent's ball is very close to the hole is to play a combination or carom to move it away.

Some local variations that I've seen or heard of include: for any foul, your ball comes off the table; the 6 hole cannot be scored by a direct shot, it must be a bank or a kick; if you hit an opponent's ball first, you must pay him an immediate fine; after a foul or on a small table, the alternate spot is used; the person who precedes the winner must pay double for letting him win. Some of these conflict with each other. If you have other variations and especially if you have a complete set of written rules, I'd like to hear from you.

The version of golf described in the 1916 rules uses only one object ball for all players or teams. The cue ball begins on the head spot and the object ball on the center spot. The first player shoots until he makes the ball in the left side pocket, counting total strokes. Then the next player shoots from the break position until he makes the same pocket. After the last player has made the first hole, the cue ball remains in position when the next player comes up. (Of course, when you make the ball and thereby end your turn, you want to leave the cue ball in a bad place for the next player.) Scratches are a three-stroke penalty, and you continue to play with the cue ball being returned to the "tee" or head spot. Making the ball in the wrong pocket or not hitting a cushion on a shot is also a three-stroke penalty. After the first hole, the pockets are played in clockwise order for a total of six holes.

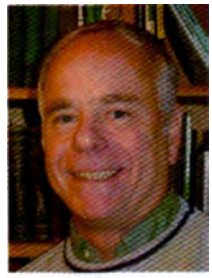
Diagram 2

18 Holes of Golf



A third form of golf is shown in **Diagram 2.** The balls are racked according to the drawing for each "hole" at the start of each player's turn and the total strokes a player needs to clear the table are counted. A scratch is just a one-stroke penalty, but you have to spot any ball you made on the shot. If you want to break par, you will need to make balls on the break or slop (or carom or combo) them in on subsequent shots. Study how the breaks work and find out which balls are dead or can be made dead. This game is from the excellent booklet, "The First Five Years of Chalk-Up" which was published by the A.E. Schmidt company in the 1960s. It has lots of interesting games and promotions for room owners to use.

BY Bob Jewett



STROKE FIDDLING

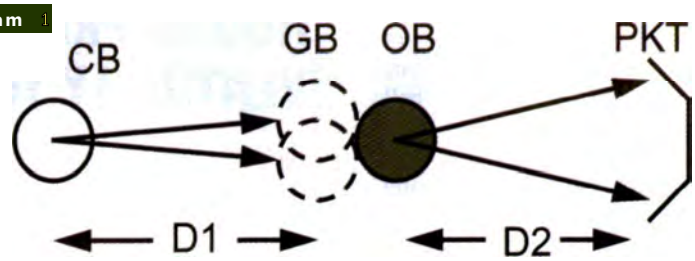
An examination of the impact of tinkering with your mechanics.

LATELY I'VE been working on some major changes to my stroke and stance. You might think that after playing for almost 50 years I would have settled in to my mechanics, but I've been inspired to look a little deeper by playing and watching snooker. To see what I mean, check out YouTube videos of world champions such as Ronnie O'Sullivan, Stephen Hendry and Neil Robertson. In one 5-minute, 20-second segment you'll see O'Sullivan run out a perfect game of snooker in the championships that got him more than $200,000 for making 36 shots in a row. Note Ronnie's stance on the final black.

In particular, what I've noticed for a lot of snooker players, and quite a few pool players as well, is that their bridges are quite a bit longer than necessary for many of the shots that they shoot. For years I ascribed such "excessive perspective" to those players having fallen into bad habits along the way. It's not hard to find occasional bad fundamentals in champions, such as squeaky chalking or a swerving stroke, but the pressure at snooker — both from the very large prize funds and difficulty of shots on a 6-by-12-foot table — should tend to eliminate any player who has serious mechanical defects. Is there a method to the madness of a bridge too long?

My suspicion is that a longer bridge can lead to more accurate shot-making than a shorter bridge, depending on the conditions and the shot. Let's look at this idea in detail, starting with a review of how much margin of error is available in the stance of a player in terms of bridge and backhand position when playing a typical shot. **Diagram 1** shows a very short shot to illustrate the basics. The cue ball is a distance (DI) from the object ball, and the object ball is a distance (D2) from the pocket. Also shown are two ghost balls. (A ghost ball is an imaginary ball in the position of where the cue ball will be when it strikes the object ball.) The two ghost balls illustrate the extreme spots where the cue ball can hit the object ball and still get the object ball into the pocket. Let's consider the size of the target, starting from the object ball and working back.

Diagram 1

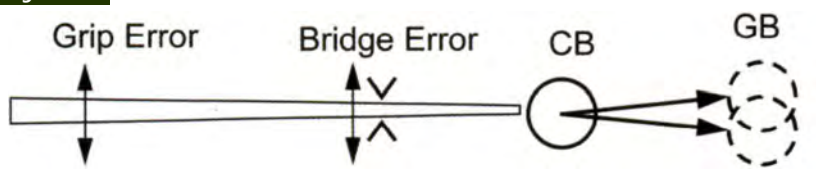


We can think of the target size in either degrees or inches. For a given pocket opening size and object-ball distance D2, the pocket will offer a particular range of angles that will make the shot. In the diagram, that angle is about 30 degrees. The two ghost balls represent the target as seen from the cue ball. For this easy shot, that target is about half a ball or one inch wide. From the perspective of the cue ball Dl away, that angle is about 10 degrees for this illustration. The main thing to note here is that as either distance Dl or D2 increases, the shot becomes harder, which is to say the angular target as seen from the cue ball decreases. This means that we can assign a difficulty number to each shot that's simply the product of the two distances, which are conveniently measured in diamonds. Let's call that difficulty D so we have the equation D = Dl x D2. For example, if you had a straight-in shot with the cue ball at the head string to a corner pocket with the object ball even with the side pocket, Dl would be 2 (diamonds) and D2 would be 4, yielding a difficulty of 8.

How accurate does the stick placement have to be to make the shot? Two possible sources of error are shown in **Diagram 2** — the bridge hand and the grip hand. If you accept for a moment that cue sticks and balls work ideally, the simple answer is that the angular error in stick alignment due to bad placement of the hands at the instant the stick strikes the ball must be less than the angular size of the target. That "stick error angle" is formed by two distances: the distance between the grip and bridge hands and the net error in hand placement across the line of the shot. As an example, if your hands are 48 inches apart, and your bridge hand is perfect but your back hand is off to one side or the other by an inch, the error in stick direction is about 1.2 degrees.

A simple way to think about the required accuracy is that if you have a shot of difficulty D, and your bridge placement is perfect, your back hand must be in a window only 1/D inches wide at the moment the stick hits the ball. In the 2-diamond/4-diamond shot de-

Diagram 1



scribed earlier, that would be an eighth of an inch — or 1/16th inch to either side. That's the thickness of a nickel. It's amazing that anyone ever makes a ball with accuracy requirements like that on shots of medium difficulty.

In the above analysis, I slipped one major and not very accurate assumption by you: that the cue ball will travel parallel to the cue stick. It's been known for over 170 years that if you hit the cue ball on the left side (maybe for intentional left English) the cue ball will move offline to the right by a small angle. This phenomenon is sometimes referred to as deflection, but I like to call it "squirt"; there are several kinds of deflection in pool, and this divergence of the cue ball from the expected line of travel is important enough to deserve its own name.

How does squirt get involved with shot accuracy, and in particular with bridge length? That's shown in **Diagram 3.** The bridge hand is again represented by the two Vs and is placed perfectly to drive the cue ball straight along the line to the right for a center-ball hit. Instead, the player has mispositioned his back hand, perhaps by bad alignment or by a swoop to the right as he comes through on the stroke. It makes little difference how it happened; the result is that the tip lands well to the left of center on the cue ball.

Now for the player's undeserved redemption. Because the cue ball will squirt away from the side the tip hits on, there's a chance for squirt to the right to cancel the stance misalignment to the left side of the ball. It turns out that for typical sticks and typical bridge lengths, this happy result is possible and fairly common. Note that several things have to be right for the off-center error to cancel. The more the stick squirts, the shorter the bridge needs to be. That's because if the pivot point (bridge position) is closer to the cue ball, moving a particular distance to the side of the ball for sidespin will require a larger pivot angle and vice versa. The larger squirt is cancelled by the larger angle change, due to the shorter pivot.

Other factors complicate the correction, and they need to be included if you want perfect cancellation. The sidespin will also cause the cue ball to curve. In effect, this will cancel some of the squirt because it brings the cue ball back toward the new line of the stick. The amount that the cue ball will move to the side of the spin on its way to the object ball depends on the amount of sidespin, the amount of cue elevation, the time of travel and the stickiness of the cloth. More of each of these will cause more "restoring" movement on the cue ball, and in effect make it appear as if there was less squirt on the shot. A final factor is that when the cue ball lands on the object ball, the side spin will drag the object ball to the side as the surfaces of the balls are slightly sticky, and this slightly changes the desired target on the object ball.

This is all pretty complicated and variable, but let's suppose for a moment that for the shot and the bridge length you are using, there will be perfect cancellation. This means, in effect, that the position of your grip hand is not important to making the shot. Half an inch to the right or left of grip hand error on a degree-of-difficulty-10 shot and the object ball still goes in. Wouldn't that be nice to have as part of your game? I know it would be for me, because all too often I get unintended sidespin on the cue ball due to an unintended swoop that I acquired more than 40 years ago.

(Whether the cancellation is perfect for you or not, it's usually helpful. There is a method of squirt compensation I've mentioned before called "backhand English" [BHE] in which you aim without sidespin and then pivot, usually around the bridge hand, to the new cue stick line with sidespin, and the cue ball goes nearly along the original line but with English. A complete backhand English system would have to include corrections for the details I've mentioned above, but usually BHE adherents do OK without worrying about the details.)

What does all this mean for shot difficulty and required accuracy? It means that bridge placement is potentially far more important than the grip hand, that you may want to use a longer bridge than you are used to, and that stick selection may be far more important than a lot of people think.

The main idea is illustrated in **Diagram 4.** Note that the cue stick has disappeared. That's because with perfect cancellation, the line of the cue ball will be directly away from the bridge hand, so only the bridge hand (indicated by Vs) is shown. What is the error in the angle of the path of the cue ball now? It's given by the left-right error in the placement of the bridge, or EB, and the distance D3. For a given allowed error angle, the allowed error in bridge placement goes up with a longer bridge (D3). At the same time, you can make a longer bridge the correct length for perfect cancellation by selecting a cue stick that creates the correct amount of squirt.

Maybe this idea of good cancellation with a bridge length that matches stick characteristics is the underlying reason that modern players have moved away from the old orthodoxy of using a bridge no longer than the shot requires. Mosconi exhorted us to never us a bridge longer than eight inches; how many top players today ever use a bridge as short as eight inches? Certainly not Earl.

Here's your cue: Go to the table and try various bridge lengths for shots at various speeds. Make the shots at least as hard as an 8. See what works for you. Remember this though: Your bridge placement will be critical. If you find the sweet spot for perfect cancellation, it will be far more important than having a straight stroke.

Next time I'll discuss some related details of stroke and stance.

Diagram 3

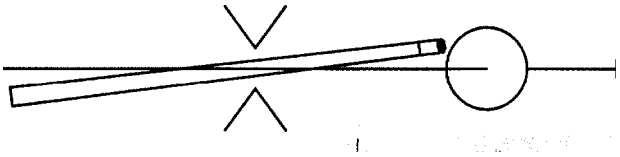
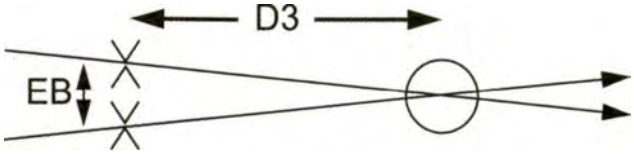
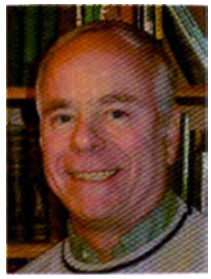


Diagram 4



BY Bob Jewett



FORCED ACCURACY

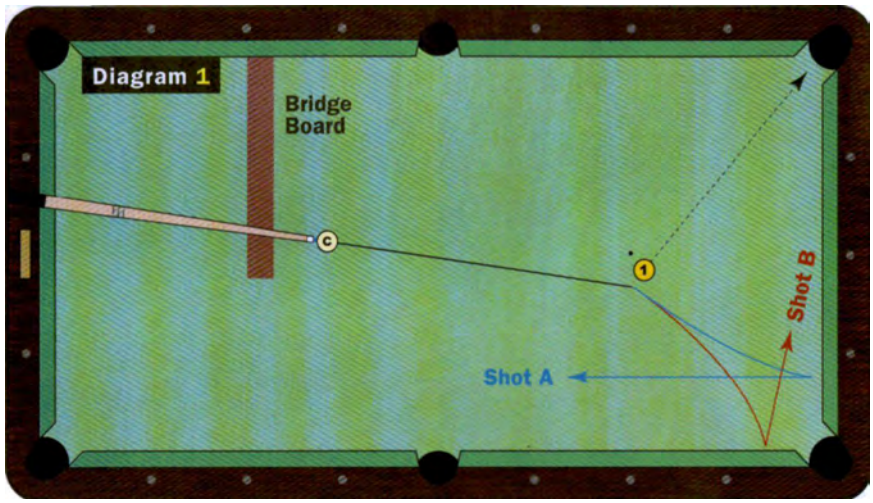
Perfecting the placement of your bridge can pay big dividends.

IN MY last column, I tried to persuade you that placing your bridge hand exactly where it needs to be for a shot can greatly increase tolerance for an inaccurate stroke. This is important because bridge placement is a "static" part of the shot that can be done with as much care and attention as the shooter is willing to put in, while the stroke is an "active" part that requires precision from the moving parts of your body. If you tend more toward the klutz end of the spectrum rather than the brilliant-athlete end, this concept could give your game a major boost.

As mentioned last time, the main reason you can reduce the importance of an accurate stroke motion is that two factors come into play when you don't hit straight through where you intend: 1) the stick has "swooped" off to one side at an angle (assuming that you have kept your bridge steady), and 2) the cue ball will "squirt" to the other side at another angle. If these two opposing factors can be made to cancel, it doesn't matter that your stroke isn't laser-straight, and the ball will go toward the intended target, even with mediocre mechanics.

That's all fine on paper, but it's pretty radical to say that you don't need to have a straight stroke to make tough shots. I thought I better reconnect with reality to make sure my reasoning was truer than my typical follow-through, so I did an experiment. It's fairly easy to do, and I urge you to try it, if you have some spare time and an old board or two.

The idea of the experiment is to place the bridge at precisely the same spot for multiple tries at the same shot and see if the theory holds up. To make sure that my bridge was in the same place on every shot, I was sure I couldn't trust my hand; the repeatability had to be within about a hundredth of an inch or better. I made a simple mechanical "bridge board" out of a two-foot poplar board that was three-quarters of an inch thick and an inch and a half wide. I carved a smooth notch into one edge of the board near an end. I then placed the board on the table as shown in **Diagram 1,** with one end against the cushion and the bottom edge even with the headstring, which was marked on the 9-foot table I was using. With my stick resting in the notch, I could repeat the position of the cue stick with sufficient accuracy. (An inch and a half was not quite wide enough, so get a two-inch board if you try to duplicate my setup.)



The next problem was finding a way to place the balls so their positions could be easily repeated. I could have used the standard donut-shaped paper reinforcements, but I wanted industrial strength positioners, so I cut some small squares from a manila folder and punched holes in them. With a little Scotch tape and some adjustment, I placed the balls for the shot on the 1 ball shown in the diagram.

The result was startling. With the balls on their guides and the stick in the bridge board, anything close to a straight stroke put the ball in the hole. A friend who was watching commented that I kept making the ball in the same side of the pocket, which indicates both that I didn't have the balls set quite perfectly and that the shot accuracy I achieved was perhaps twice as good as necessary for this shot. (With more time, 1 would have moved something to re-center the shot.) The guys on the neighboring table stared in amazement as the ball kept going into the pocket with no apparent effort made at aiming. (Either that, or they had never seen a solid-state particle physics experimenter in action.)

Up to this point, all of the shots had been without intended sidespin. The next step was to see how the bridge position would work for serious spin shots. I found that with the standard setup, I could also make Shot A with a lot of left English and follow to bring the cue ball straight back up the table. Of course, the shot had to be done at a particular speed, because the cue ball curves on any shot with sidespin, and the sharpness of the curve depends on the speed of the shot. Using right draw

and shooting from the same ball and bridge positions, 1 could make Shot B to kill the cue ball on the end rail once I found the right speed.

How much accuracy was I getting? It is fairly easy to calculate that the bridge board was placed too far to the right by about 1/70th of an inch (giving too thick a hit). Was I getting the benefit of squirt/swoop cancellation? Without the help of that cancellation, my back hand would have had to be within about a 20th of an inch of the ideal location to pocket the ball. My own experience is that my stroke is not nearly that consistent and often deviates by a quarter-inch or more. The conclusion is that I was getting something like a factor-of-five help from the cancellation.

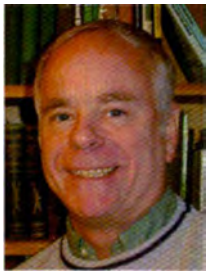
Emboldened by my success on a pool table, I moved on for a brief try on a 6-by-12-foot snooker table. The results were impressive, but not quite as amazing as on the pool table. I played about the same shot as in Diagram 1, but made the somewhat easier cut off the spot into the pocket at bottom right. The bridge board was aligned with the D with one end again against the cushion for left-right position accuracy. On the larger table with smaller balls, I found that my pocketing rate dropped from about 95 percent to about 30. My problem seemed to be my inconsistent stroke — I was not coming through straight enough for the correction to take care of the error. (If I had more time for the experiment, I would have searched for a better bridge length to achieve better cancellation. I was using a pool cue with snooker balls, and that is not the best match.)

To fix my crooked stroke temporarily, I remembered what Joe Davis had taught me. (Joe was the world champion at snooker for about 20 years and retired undefeated.) In one of his several books on how to play the game, he remarked that on each shot his cue stick was guided by three points other than his bridge hand and his back hand. In his now-standard low stance, his cue stick rubbed on his chin, his tie — people used to dress up for the game — and his chest. I moved my stance a little so my stick rubbed against my chest. My success rate shot up immediately to perhaps 75 percent.

I also tried sidespin shots on the snooker table. I found I could more or less duplicate the spin shots in the diagram, but speed on the larger table was even more critical to success.

How can all of this help your game? Start by paying a lot more attention to getting your bridge hand in the right place. If your bridge length is close to that which is required for cancelling unintended spin in a particular shot, much more swoop in your back hand can be tolerated. Experiment with different bridge lengths for different shots. Try making your own bridge board or something similar. You'll see how rarely you miss when you accurately align your bridge, even with a not-so-perfect delivery. Let me know how the trials go.

BY Bob Jewett



CLOCKING IN

Here's the long (and short) of it when it comes to keeping time.

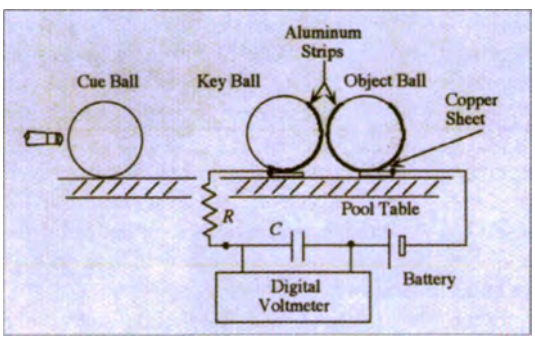
WE OFTEN think of pool as a two-dimensional game. Most of the shot diagrams in books and this magazine squeeze shots down flat. If you start to consider jump shots, then we enter into 3D. Let's go one step further, into the fourth dimension — time. How long do the various events on the table take?

10 microseconds — The shortest practical time in billiards that 1 could think of is how quickly a small gap in a rack is closed up when the rack is struck by a cue ball. With a break speed of 10 meters per second (22 MPH) and a gap of a tenth of a millimeter (the thickness of a sheet of paper), the gap will close in 10 millionths of a second or 10 microseconds.

16 microseconds — Collisions between balls are not instantaneous; the event takes time. The balls compress while in contact and spring back. One part of the compression is that the wave travels at the speed of sound from the contact point through the balls. The speed of sound is about 10 times higher in phenolic plastic than in air, so it only takes 16 microseconds for the back of the ball to learn that the front of the ball has been struck. Similarly, it took about 20 minutes for the shock from the recent earthquake in Japan to travel through the Earth to the opposite side.

200 microseconds — Two colliding balls are in contact for 100 to 300 microseconds. The total collision, including compression and rebound, is determined by the density and hardness of the balls. While the theory is pretty clear on what should happen, we have an actual measurement confirming the contact time. In 1994, Wayland Marlow published "The Physics of Pocket Billiards," in which he describes the experiment shown in **Diagram 1.** The two balls that will collide are partly covered with very thin aluminum strips that have been glued to the balls. The balls rest on separate metal sheets. While the balls are in contact, they complete an electric circuit that will charge a capacitor (think: very small battery) through a resistor (think: light bulb) from a real battery. The capacitor starts with no charge and is left with a charge that depends on how long the balls are in contact. After the collision, the voltage on the capacitor is read out with a meter, and after a little calculation the contact time is determined.

It turns out that the nature of the collision is such that the contact time for slow and fast shots is nearly the same, with fast shots having a shorter contact time. Marlow measured over the normal range of shot speeds and observed close to the expected variation.



350 microseconds — Just as a compression wave travels through the ball, a compression wave travels down the length of the stick during tip-to-ball contact. In maple, the speed of sound results in the compression not appearing at the end of the butt until the cue tip has been on the ball for about 350 microseconds. It is important that this time be short compared to the time that the tip is on the ball so that the energy that's stored in the motion of the back end of the cue stick can be transferred to the cue ball.

800 microseconds to 2 milliseconds — The contact time between tip and ball covers a range of times that depends on the hardness of the tip, the speed of the shot and the amount of spin being used. Most shots fit into a range around a millisecond (or a thousandth of a second).

3 milliseconds — Due to the speed of sound in air, it will take three milliseconds for news of the tip-to-ball collision to arrive at your ears. But see below about reaction/perception times.

40 milliseconds — While the cue stick compresses and expands along its length in a few milliseconds, the sideways wiggle of the stick is at a much slower rate of perhaps 25 vibrations per second, which is one vibration every 40 milliseconds. Because this time is much slower than the tip contact time, the stiffness of all but the front few inches of the cue stick is unimportant to the shot. It may be important to how the cue stick feels to you, though.

100 milliseconds — The reaction speed of the human brain is remarkably slow compared to the times listed so far. An experiment to see if people could determine the order of two events was done using both visual (two flashing lights) and audible (two different tones) stimuli. The time was varied and the accuracy for multiple subjects was measured. It turns out that for a 90 percent success rate, the events had to be 100 milliseconds (a tenth of a second) apart. From this, it's easy to conclude that for a lot of nearly simultaneous hits, it's not possible for the referee to actually determine which ball was struck first just by the order of events, and the referee must depend on his experience and the

reaction of the balls.

200 milliseconds — For a jump shot in which the cue ball just clears the full object ball, the cue ball is in the air for one-fifth of a second. Surprisingly, this time is independent of the speed of the ball as long as the cue ball passes over the object ball at the peak of its arc.

5 seconds — According to the rules, if a ball appears motionless near the brink of a pocket for five seconds, the shot is over. If it falls in later, it will be replaced. This is the only time (other than shot clock usage) that the referee needs to keep track of time.

10 seconds — The speed of the cloth can be measured by how long it takes the ball to roll the length of the table and stop just before hitting the cushion. The longest such "free flight" of a ball on fast cloth is about 10 seconds, which limits the maximum duration of any shot to about 20 seconds. The exception is when a ball is spinning in place, and I've seen that go on for 45 seconds.

20 to 50 seconds — This is the range of times in use for shot clocks. Twenty seconds without extensions was recently used in a special snooker event, and it was remarkable to see how quickly the players could get shots off even when using the bridge (or "rest" as the snooker players would say). Fifty seconds is standard at carom, with a few 50-second extensions.

200 milliseconds — For a jump shot in which the cue ball just clears the full object ball, the cue ball is in the air for just one-fifth of a second.

1 hour to 5 days — Matches have had a fairly wide range of durations. Most major events will schedule a minimum of an hour for a match. In the old days, some challenge matches were held in multiple cities and they could go on for over a month.

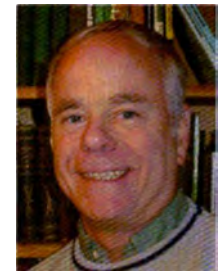
5 years — The current World Standardized Rules are on a five-year update cycle. The next revision is scheduled for 2013, and if you have any suggestions, corrections or complaints, please let me know and I'll pass them on.

50 years — There are a few players who have won championships over a half-century span, and I think this is about the upper limit for competitive career length. Think Mosconi, Crane, Lassiter, Hoppe and maybe Reyes.

400 years — Billiard games have been on indoor tables for about 400 years. I almost called them cue sports, but the cue did not enter the game until about 200 years after the start of billiards — earlier than that the mace was used, making the game more like shuffleboard.

400 million years — The slate that's the foundation of the games we play was deposited as sediment before the first dinosaurs appeared.

BY Bob Jewett



CLEANING HOUSE

Maintaining your equipment takes a little work between racks.

POOL, MORE than most sports, depends on various kinds of friction — the tip must grip the ball, the ball needs to grip the rail (but not too well), the friction from the cloth needs to slow the rolling balls in a predictable way. Sometimes friction at the wrong time can destroy a shot, such as when a cue ball with sidespin "clings" to the object ball, producing "skid" or extreme throw. Keeping the equipment clean is the best way to avoid surprises and have shots turn out consistently. Let's look at the various surfaces we need to tend to.

Cloth maintenance is the largest and most important cleaning task. The problem is that with each shot taken, the tip emits a cloud of powered sand — aka chalk — which settles onto the playing surface. If not removed, that sand will collect in the cloth where it increases the friction with the balls, which makes draw shots a lot harder, wears down the cue ball and object balls and changes the angles off the cushions. I have seen tables in the process of being recovered that had small dunes of sand under the cloth due to inadequate maintenance. If you keep the cloth clean, you won't have to replace it or the balls as often.

There are lots of ways to clean the cloth. When I was a part-time clerk at the Student Union and had the opening shift, I got to brush the tables with a bristle brush and sweep under the rails with a whiskbroom. In retrospect, I was mostly moving the sand around rather than actually removing it.

A vacuum cleaner is far more effective. At the recent U.S. National Three-Cushion Championships in Las Vegas, the tables were vacuumed after every match. This was not done with a little handivac either — the machine looked like a Shop-Vac on steroids and it had plenty of suction. Three-cushion players are particularly picky about the conditions of the equipment, and tables at major tournaments are cleaned often.

There is one potential problem when using a vacuum: It can pull up broken plaster from the joints between the slates of the table. The breaks are usually two and two-thirds diamonds from the end rails on three-slate tables. If the slates are done correctly with a compound that won't fracture, there is no worry. Otherwise, just avoid vacuuming where the joints are.

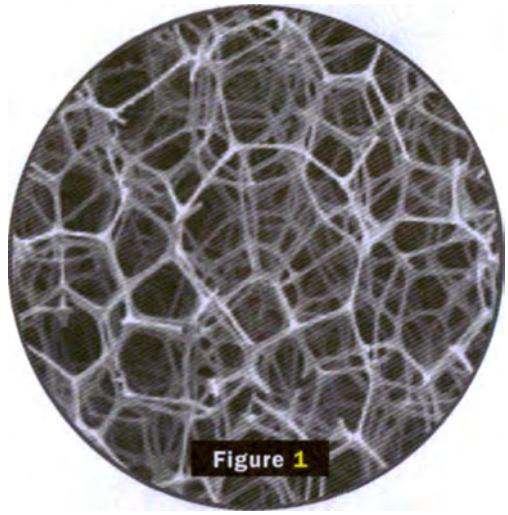


Figure 1

To finish the job, use a damp microfiber cloth to clean any remaining dust on the rails and to clean the noses of the cushions. The damp cloth can also do a fair job of temporarily cleaning the cloth if you don't have access to a Hoover or a brush. The moisture quickly evaporates in most climates as long as the cloth is only damp.

The balls are next in line for attention. The main culprit is again chalk, which is transferred from the tip to the ball on every shot. Miscues can leave serious scuffs on the cue ball, and "skid" events, which are usually caused by chalk at the ball-to-ball contact point, can leave scuffs on the object balls as well. The two goals are to remove any foreign substance and lightly polish away the scuff marks.

There are ball-polishing machines that will do the job, but care is needed to keep them clean themselves. I have seen balls come out of machines with streaks of who-knows-what on them. Probably this could be fixed by more frequent changes of the cleaning pads in the machine.

The way I prefer to clean the balls when I have the time is with Aramith ball polish. I apply a thin coat to all the balls in the set with a little rubbing while they are wet. After the polish dries, I use another microfiber cloth to remove the polish and make the balls shine.

Some people like to apply a wax or other slippery finish to the balls. This helps the balls slide into the pockets as if the cloth were brand new. The main problem with this addition is that it comes off during play. This attrition is fairly slow for the object balls but can be rapid for the cue ball, on a time scale of tens of minutes. I played in one tournament where they "greased up" the balls between matches and it was nearly impossible to predict where the cue ball would go for the first half of the match. I suppose this could be a useful gaff if you want to ruin an opponent's confidence in his position play — secretly slather the rock with silicone.

Don't use car-care products on pool balls. I had a well-worn set that I thought I could fix up with rubbing compound followed by car polish. The balls came out looking great, but there was some kind of reaction between the

chemicals and the plastic of the balls. The result was that the balls had about twice the throw that they had before the restoration, which made every cut shot guesswork.

If you want to experiment with other methods, use a set of balls you don't care about. I've heard of billiard disasters caused by dishwashers and various kinds of household cleaners. Do not use products containing ammonia or chlorine.

Finally, let's clean up that shaft that barely slides through your bridge hand. Chris Tate, an avid cue collector, posted the following suggestions online. I'll paraphrase his advice. Judging from the pictures he posted, his technique makes the shafts look like they just arrived from the cue maker.

Get a Mr. Clean Magic Eraser from the supermarket or home improvement store. It is made from melamine foam, the structure of which is shown in the microphotograph in **Figure 1.** Other brands may work as well, but you don't want one that has added chemicals or cleaning agents. The idea behind the melamine is that it can clean out crud from the pores of the wood without removing any (or much) of the wood itself. It is a purely mechanical process.

Applying a wax to the balls helps them slide into the pockets. The main problem is that this addition comes off during play – attrition that can be rapid for the cue ball.

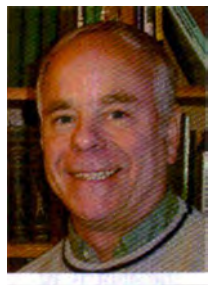
You need to wet the cleaning pad; Chris recommends water. (Others in the discussion recommended denatured alcohol to avoid wetting the is best. Rub the shafts until clean. You can rinse out the pad like a sponge if it gets really dirty. Expect the pad to break down with use as the fibers are not very strong. You may want to cut a pad into sections and use one section per job.

Let the shaft dry for about 15 minutes. The water will raise the wood grain a little. Use 1,500 to 2,000 grit sand paper (dry) to remove the grain. Use a paper shopping bag or parchment paper (used in cooking) to burnish the shafts. Finish with a soft cloth or paper towel.

Some online contributors suggested finishing with carnauba wax, but this gives a different feel to the shaft that you may not want.

A final suggestion: If you use hand talc, stop. It gets everything on the table dirty. If your bridge hand just won't let the stick slide freely, either change to an open bridge or use a glove.

BY Bob Jewett



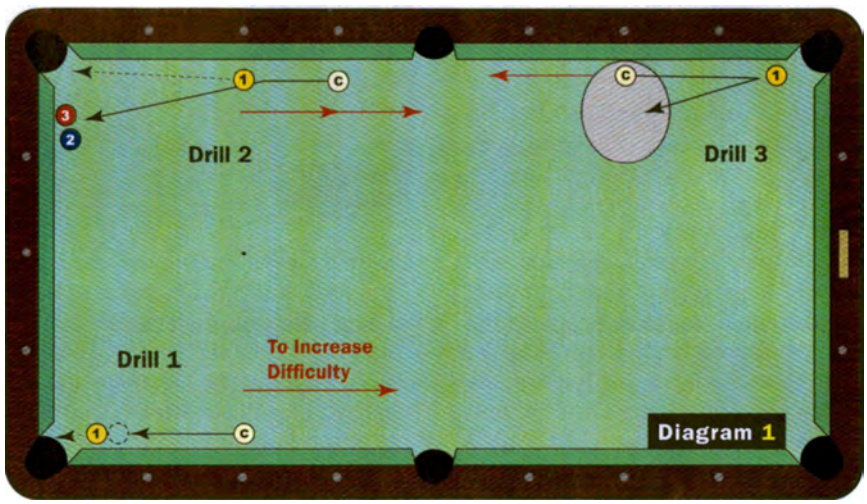
SECOND LEVEL

Your development depends on training an obedient cue ball.

LATELY I'VE been thinking about how people learn pool, and how the various parts of the process fit together to make a whole game. It seems to me there are four levels or categories of game development: 1) the basic mechanics of hitting the cue ball and sighting shots, 2) techniques for moving the cue ball to be in position for the next shot, 3) planning sequences of shots to accomplish the goals of the game, and 4) miscellaneous advanced techniques. These aren't written on clay tablets and you may feel that a different division is more reasonable, but I think these can give you a good way to decide what you need to work on to improve.

Some players who seem to have progressed well into Parts 3 and 4 still need a lot of work on Part 1. Their knowledge has outrun their basic ability to execute. I used to play regularly with a player who did well on most shots, but his arm didn't cooperate when a shot came up that needed a little more power. He had neglected Part 1, perhaps because the more advanced stuff seemed more interesting. In my March 2010 column, I covered five drills for working on basic mechanics. This month I'll give an outline of how to learn to position the cue ball.

Touch is a very large part of position play. **Diagram 1** shows three drills that will help you make the connection between power in your arm and movement of the cue ball. The goal in Drill 1 is to shoot a stop shot. The object ball is always near the pocket, as shown, and the cue ball is near the rail but not close enough to make bridging awkward. You must leave the cue ball overlapping the ghost ball, which is the position of the cue ball at the instant it contacts the object ball. You don't have to be perfect, but the cue ball can't move more than its own diameter.



This is a "progressive practice" drill, so if you achieve the goal, make the next shot a little harder by moving the cue ball back a half-diamond or so. If you fail, make the next shot easier. A coin will help you keep track of where the cue ball should be. The position of the coin at the end of the drill gives you a reference point to help track improvement.

Try the stop shot by two techniques: a firm hit just a little below center, or a softer hit well below center. See which is more consistent for you.

Drill 2 is similar, but the goal is to shoot a follow shot so the cue ball just touches the object balls on the cushion. The cue ball and 1 ball are a diamond apart and move up-table together to increase the difficulty of the shot. Carefully choose the exact position of the cue ball to allow you to touch the 2 and 3 balls, especially as the cue ball moves past the side pocket.

Drill 3 is a draw drill with the object ball always by the pocket, and the cue ball moving away to make the shot more difficult. The goal is to bring the cue ball back as close to its starting point as possible. You can pick the acceptable tolerance — perhaps a hand span or even a diamond's distance (shown in gray). I think you'll find that touch with draw is much harder to master than with stop and follow.

Next, we need to apply the basic shots to more practical position play. Here is a practice technique that will eventually cover every shot you need. I've used this while working with intermediate students, and I'm convinced that it's one of the best position drills available.

Begin by choosing two random points on the table, one for the object ball and one for the position goal (that is, where you want to send the cue ball). **Diagram 2** shows an example pair of points. Mark the position of the object ball. The position target could be a circle of paper with a challenging, but not impossible, diameter.

Can you see how to pocket the object ball in each of the six pockets and go to the target zone without contacting a cushion? Work through the angles before reading on.

Pockets A and F clearly need to be played with draw and a slight angle. I think you'll find for shots like these,

you want lots of draw for the speed of the shot, which means you will have to hit well below center. Try each shot until you land on the target.

Pockets B, C, D and E require follow, more or less. Pocket C happens to be straight, so it should be easy if you mastered Drill 2. The other pockets will require some cut angle.

It's important to learn the range of cue-ball positions with which each shot can be made. This knowledge will help you in Part 3 of your training, when you begin to join shots together to form runs.

Once you have figured out all the no-cushion shots for the position you're working on, try all the one-cushion possibilities. Do you see how to pocket the object ball in each of the six pockets and bring the cue ball off point X on Cushion 1 (roughly) to go to the position target? The side pocket is in an inconvenient place for this shot, so you'll probably have to use some sidespin on the cue ball or flirt with a scratch. In an actual game situation, you may decide to play less than ideal position so you can be more sure of making the shot.

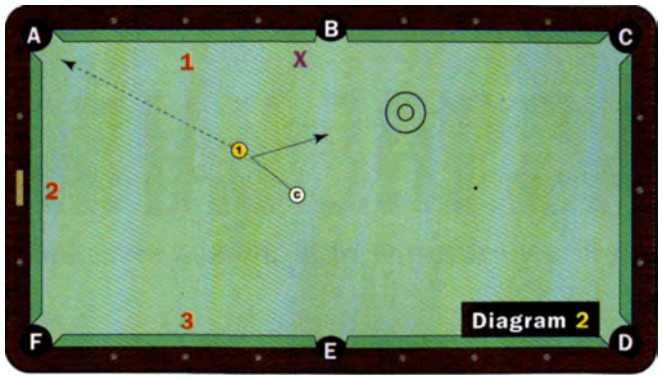


Diagram 2

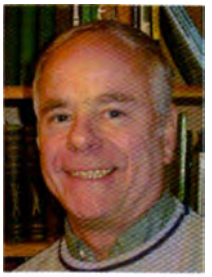
There are other reasonable one-cushion paths to the target, including off Cushions 1 and 2. It's a stretch, but you could go by way of Cushion 2 for all six pockets just as for 1. See if you can play two- or three-cushion position as well.

Remember, the point of this drill is to find both the easiest way to get from the shot to the position (with ball in hand), and the range of cue-ball positions that can be made to work for pattern.

A single pair of points like this can keep you occupied for an hour or so, if you really work through all the facets. It may be that one of the points in your random selection doesn't provide many possibilities. Consider an object ball on X and the same position target. There seem to be only two pockets available so the position might seem barren, but pockets D and F are available if you bank the object ball. Harder, yes, but you need to know not only how to make the banks, but also how to control the cue ball when you shoot them; far too many players abandon all hope of cue-ball control for these shots.

You may be stumped by some pairs of points for some of the shots. It will look like you should be able to get the position, but you never come close. For those shots, make a note of the position and come back to it later. Even better, ask a more knowledgeable player or an instructor how to bend the balls to your will.

BY Bob Jewett



INSIDE & OUTSIDE

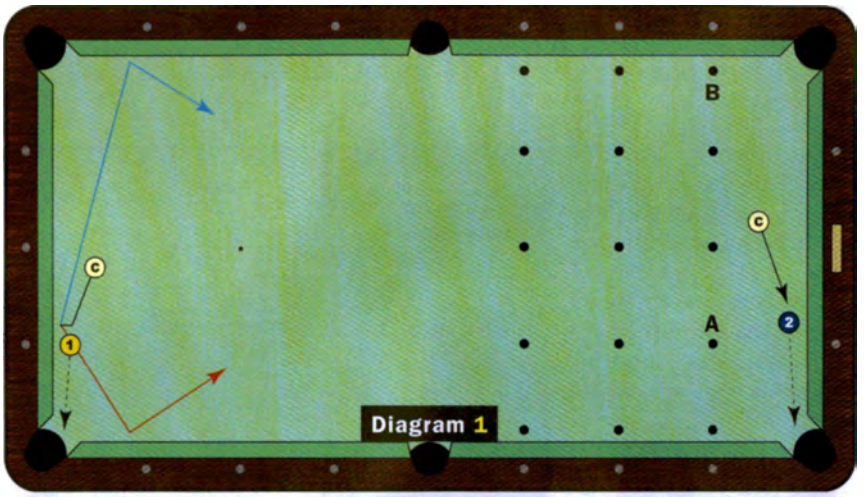
Practice playing position by changing your angle off the cushion.

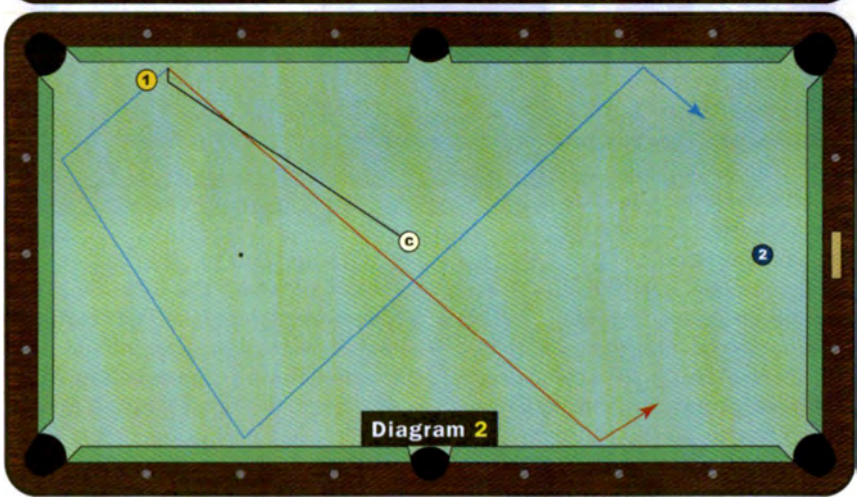
LAST MONTH, I covered some drills to help you learn basic position play. I hope you had a chance to work with them, especially the "random target" drill where you had to be inventive. This time, I'd like to cover the use of sidespin on the cushions to move the cue ball into position for the next shot.

A common situation is shown on the left side of **Diagram 1,** with the 1 ball near a cushion and the cue ball at a reasonable angle. When you need to move the cue ball several diamonds, sidespin can help a lot. Of course, if you want to keep things as simple as possible, you might play such shots with just draw or follow and go to the next spot directly from the short rail. Sometimes that path is blocked or the two-rail option gives a better approach angle to position, so using sidespin is necessary.

When playing with sidespin, I think it's useful to put the various shots into categories. There are three characteristics of the spin that affect the shot. The first is whether we are using inside or outside sidespin. "Inside" means that the cue stick is on the same side of the cue ball as the object ball, while "outside" means that the cue stick is on the opposite side of the cue ball. An immediate consequence of the spin is that an inside shot tends to need a thinner cut, while outside spin lets you hit the object ball more fully, both due to throw.

A second characteristic of sidespin is whether it makes the cue ball go faster or slower after the spinning cue ball hits the cushion. Usually you will use the side that makes the cue ball go faster, called "running" English. Occasionally you'll need to use the side that slows the cue ball down by rubbing the "wrong" way on the cushion. That's called "reverse" English. Finally, it's usually important to control whether the cue ball has topspin, backspin or neither when it hits the object ball. These are called follow, draw and stun, respectively.





Note that I don't talk about left or right sidespin. On any particular shot, you will have to choose which one is needed; for every shot that needs left, there is a mirror image that needs right. A shot's really important aspects are whether the sidespin is inside or outside and running or reverse.

The right part of Diagram 1 shows a drill to work on spinning the cue ball. The idea is to set up a fairly easy shot and then take the cue ball to each of the marked points, which are at the intersections of diamond markings. For all of the shots, take the two-rail path rather than the direct path. An example would be getting to spot A, which is easy to do coming straight off one cushion with a little follow and no spin, but that's not the skill we're working on. Instead, use inside follow to go two cushions. Work on each position until you come pretty close twice in a row. The order of the positions is up to you — if you randomize it, the drill will be more challenging.

You will find that to get to A off two

cushions, you will have to adjust the cue ball for a nearly full shot — that is, the cue ball will be quite close to the end rail. There are two parts to selecting that cue-ball position. First, find out where the shot is easiest. That's the place you would choose if you actually had ball in hand. Second, try varying the approach angle of the cue ball to see if you can make the shot work from other angles. To do so, you'll have to modify the amount of sidespin and draw or follow.

Some hints about making this drill work well: If you need soft follow with maximum sidespin, don't start the cue ball with any follow; hit it as far out as you can on the equator. The stun will turn into follow on the way to the object ball, and nearly all the sidespin will be retained. This technique works better if the cue ball is not too close to the object ball so that the "cloth-induced follow" has time to develop.

For a draw shot with outside, about the best angle you can pull the cue ball back along is the same angle you come in on. This will depend a lot on the equipment and the distance to object ball, but "angle in equals angle back" is a good place to start. For example, to get to spot B, start with your cue stick over spot B. If you can't get there with your best draw and spin, set up the cue ball for a slightly fuller shot.

Another factor having a large effect on the success of the outside draw shot is exactly how far the object ball is from the cushion. If it's a ball or so off, on a soft shot there is time for the draw to take and bend the path of the cue ball toward the desired line. If the ball is on the rail, there's no time for the cue ball to bend before it hits the cushion and the benefit of the draw is reduced.

As mentioned before, when coming off the end cushion, it may be possible to just bounce out with just a little follow or draw or a touch of sidespin to get the correct angle. In **Diagram 2,** you generally don't have the simple option and you must use a combination of inside/follow or outside/draw to travel the long distance needed for the next ball.

Try this much more challenging shot only after you are comfortable with the first set of shots. If you have trouble, reduce the distance from the cue ball to the object ball until you make the object ball and at least contact the last rail. Again, you need to find the best spot for the cue ball to get the indicated paths, and then go on to find the possible range of cue-ball positions that you can make work.

The follow path (in blue) is pretty safe as far as scratches go, but the outside draw path (in red) is perilous. If your spin fails you, the cue ball can hit the side pocket instead of the second side rail. If you have a fairly long shot as shown, much of your draw will be worn off by the cloth on its way to the object ball and the danger increases. For long shots like this, and especially on sticky cloth, it is helpful to emphasize the sidespin over the draw, with the goal of getting the cue ball to arrive with stun and let the sidespin do the work. While you are practicing this draw shot, try to note how the angle in corresponds to where you can hit on the second rail — maybe note how many diamonds you can pull it back or how close the angle back is to the angle in.

BY Bob Jewett

EVERY WHICH WAY

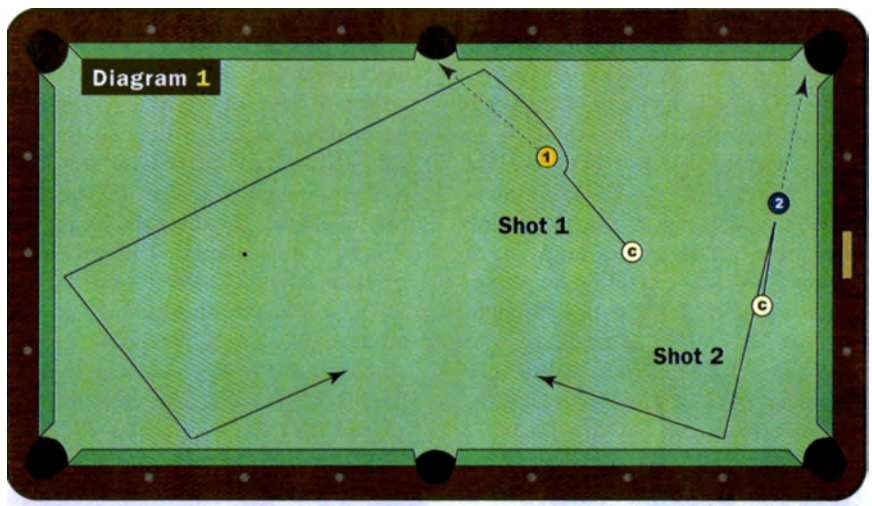
When it comes to sidespin, you've got options. Lots of options.

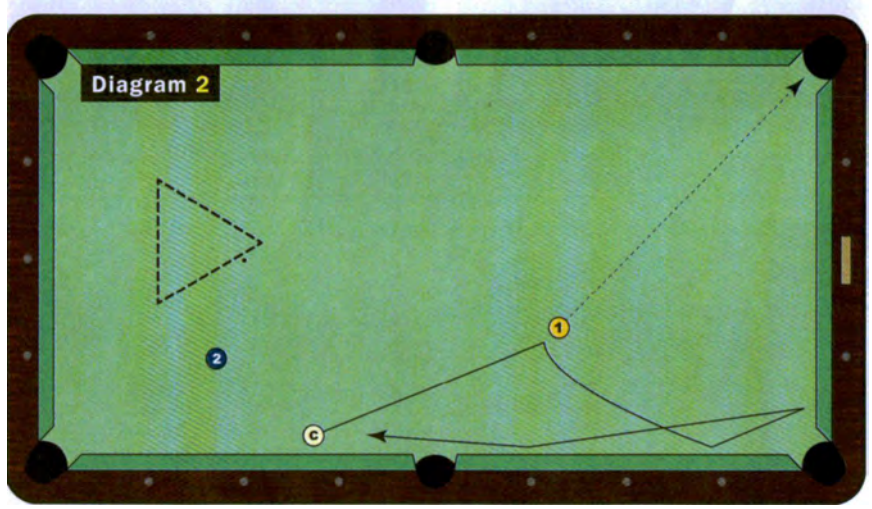
IN MY last column, I talked about using sidespin to help move the cue ball into position for the next shot. As you build up a repertoire of techniques, I think it's useful to categorize them to make it easier to remember them and to note whether specific categories have particular problems.

In **Diagram 1,** Shot 1 is a good example of what I call an "inside follow running English" shot. It has "inside" English because the tip is on the cue ball on the side you are cutting the hall to. Follow helps get the ball to the cushion where the sidespin is "running," which means it speeds up the motion of the cue ball by rubbing the "right" way on the rail. As a practice shot, see how far you can get the cue ball around the table in this situation. Three cushions back past the side pockets is good; five cushions to the end rail is excellent.

How many categories of shots with sidespin are there? On any particular shot, it may have inside or outside sidespin; follow, draw or stun as far as top spin or back spin are concerned; and when the cue ball gets to the cushion, the sidespin could be running or reverse. These three dimensions of the shot are more or less independent of one another, which means if we pick one from column A, one from column B and one from column C, we get a valid category.

There is one other kind of hit for the first dimension, and that's if we hit the object ball full so that there is no cut angle to the left or right. Let's call that a "center" hit, and it is neither inside nor outside English. An example of that is Shot 2 in Diagram 1. You have left yourself straight-in on the 2 ball and need to get to the other end of the table. Draw gets you back to the cushion, and then right sidespin speeds the ball off the cushion.





In total, we have 18 different types of shots with sidespin (or 3 times 3 times 2). Do we really need that many to play the game? Last time I covered inside running follow and outside running draw for shots that were near the cushion. If you're in that kind of position and need to move the cue ball several feet, you'll probably use one of those two, mostly because the running English helps you get distance without needing great power. **Diagram** 2 shows a situation where you need reverse English. The shot is one from straight pool where you have the 2 ball as an excellent break ball, if only you can return the cue ball to its present spot after shooting the 1.

The solution is the path shown in the diagram. Follow bends the cue ball forward, getting a path nearly parallel to the long cushion. Right English — for this shot it would be outside —

grabs on the end rail and pulls the ball back along its inbound path to return to the start. Because the angle into the first cushion is so shallow, the reverse has little effect there and the angle does not change.

This particular shot has a subtle trap that I discovered by missing it in practice four times in a row in exactly the same way. Because the cue ball is on the cushion, you will have to elevate the cue more than usual, which will cause more swerve than usual. Also, because you are using follow, whatever swerve happens will take place immediately and give the effect of even greater swerve. Sidespin shots in the "follow" categories need extra attention if the cue ball is close to a cushion or you are elevated for some other reason. How many shots can you think of from the 18 different categories of sidespin shots? Are there categories that just don't make sense? Can you think of any position that requires center stun? (Hint: There is such a shot.)

How many shots can you think of from the 18 different categories of sidespin shots? Are there some that just don't make sense?

Here's a contest. The prize is a one-year subscription to this magazine. (I'll see if I can talk the publisher into two prizes.) You need to come up with five shots that each demonstrate one of the 18 categories and are the best way to get a particular position. Your submissions will be judged mostly on practicality and clarity with minor credit for cleverness. If you are the only entrant to cover a particular category, that's a plus. If you can find an online video of the shot in action, that's a bonus and it avoids the need for a drawing. Also, you can't use any of the categories I've already covered here.

To make my job of judging the submissions easier, let's agree on a standard set of abbreviations for the categories. For inside, outside and center, use I, O and C. For draw, follow and stun, use D, F and S. For running and reverse they can't both be R, so let's use Run and Rev. The categories that have already been used up are IFRun, ODRun, CDRun and OFRev. The ones that remain are IFRev, ISRun, ISRev, IDRun, IDRev, OFRun, OSRun, OSRev, ODRev, CFRun, CFRev, CSRun, CSRev and CDRev. Please label each shot.

Submit your entries by Dec. 1, to BobJewett@sonic.net or by land mail to this magazine (Billiards Digest, 122 S. Michigan Ave., Suite 1506, Chicago, IL 60603).

Good luck. The judge's decisions are final.

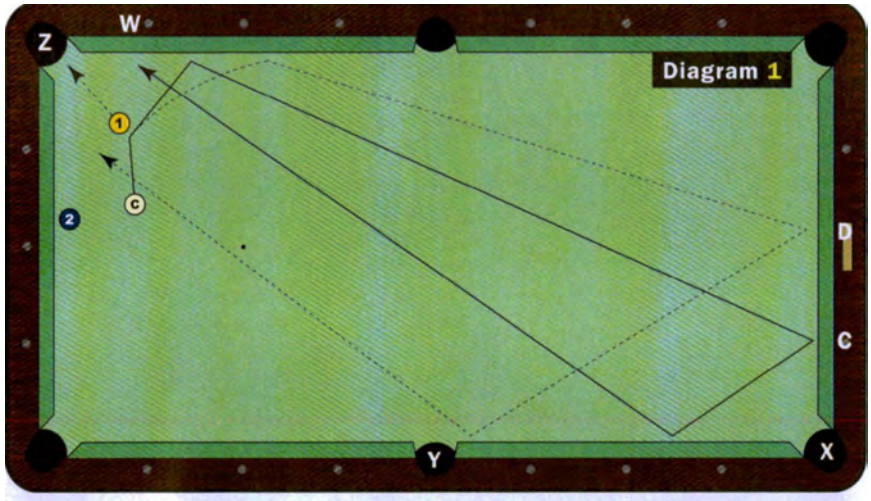
BY Bob Jewett

CONTROL, PART FOUR

You have options when sending the cue ball off multiple cushions.

IN MY recent columns, I've been covering what I think of as the second phase of learning how to play pool: controlling the cue ball. While you should try to keep the movement of the cue ball as simple and limited as possible — shorter position shots are inherently more precise — sometimes you have no choice. You will need to use multiple rails.

Often multiple-rail shots are treated with diamond systems, which involve measurements, counting, arithmetic, measuring again, etc. If you've been reading this column for a while, you know perhaps a dozen such systems, and I hope you have tried several of them. Such systems have a place, but this month we're going to go just with feel. Well, and a little theory on techniques for adjusting shots. Here are three standard situations where you need to use the bumpers.



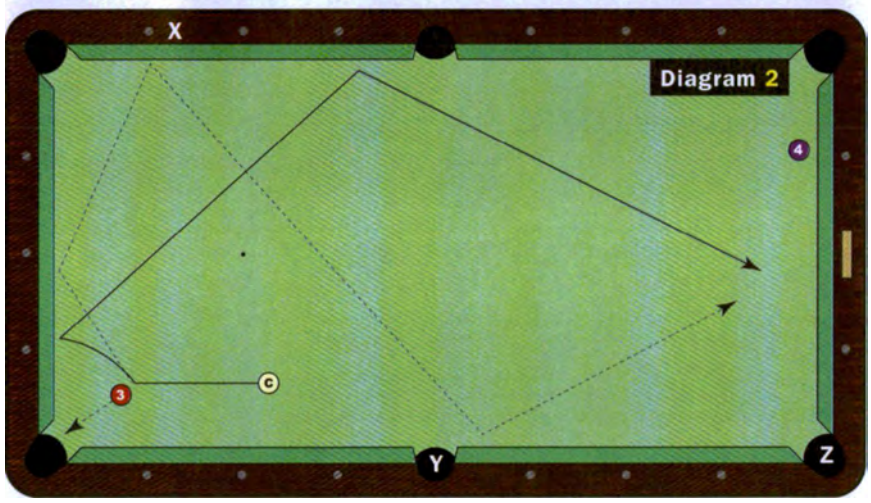


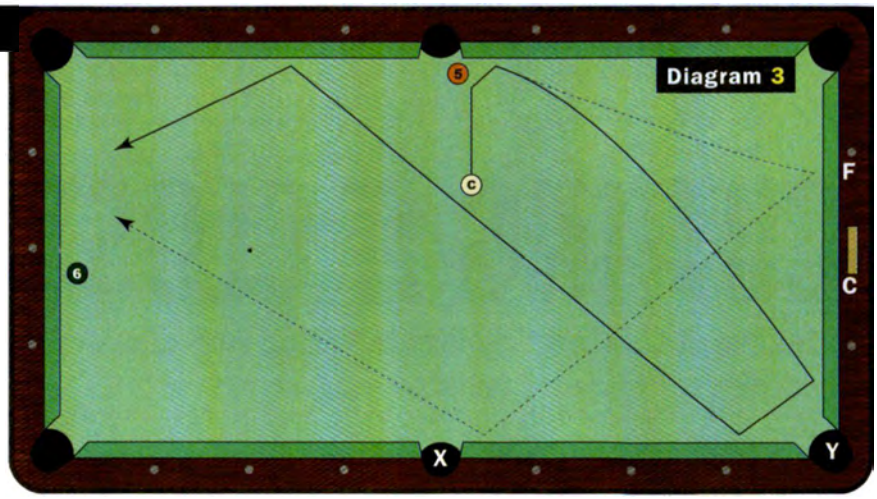
Diagram 1 is very common. You have to pocket the 1 and get on the 2. It's a nice short shot, but you're on the wrong side of the 1. On some tables you might be able to play the shot with left (inside) follow and come straight across the table, but let's suppose other balls prevent that option. A good plan is to play the shot with outside running stun, which is to say right sidespin without follow or draw (shown by the solid arrow). While the shot could be played with no sidespin, and sidespin complicates the aim, moving the cue ball is easier and more predictable with a little help from the English. Try the shot with center right, and see if you can get the speed down so you get good position on the 2.

The two immediate pitfalls of this pattern are the side and corner pockets (X and Y). When practicing this shot, first see how close you can get to the corner pocket. Reducing the sidespin or using a little follow will tend to make the cue ball come closer to the corner. Repeat the shot until you get the cue ball to hit the head rail within half a diamond of pocket X. Note where the cue ball returns, relative to pocket Z. On most tables, you will land up the side rail without a chance of a scratch.

Next, adjust your shot so that the cue ball hits far from X but comes closer to pocket Y (shown by the dotted arrow). The easiest way to do this is to use a little draw on the cue ball so it curves to a path more parallel to the first cushion, taking a much "longer" line. Can you adjust enough to lengthen the shot to hit Y? Can you reach beyond the side pocket? Again, note how you approach the 2 ball — you should come in to the short rail between the 2 and pocket Z without hitting the long rail near W.

How many times in a row can you run the 1-2 sequence? Try for five, and if that is too easy, go on to 10. To finish up your practice of this shot, adjust the starting positions of the cue ball and object ball a little to see what change is needed to follow the various paths for the cue ball.

Diagram 2 shows another common position where you need to come off the head cushion to get to the other end of the table. Two fairly natural alternatives



are shown. The two-cushion path is played with running outside follow (right English in this case), shown by the solid arrow. The follow carries the cue ball forward into a "longer" path off the side cushion, just above the side pocket, and down to the end rail for the 4. You need enough right sidespin to ensure that you hit on the correct side of the side pocket, and how much is required depends on the exact position of the 3 — for a thinner cut shot you will need more spin. For the zig-zag path, use a little bit of draw, which bends the cue ball into a "shorter" path to hit the first side cushion somewhere near X. Overdo the draw and you will go too short and scratch at Y, while underdone draw sends you to a scratch at Z.

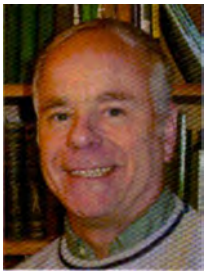
Fiddle with both paths to see what range of shots work on your table. Again, try to reach the limits on each side of the shot and find which combinations of draw/follow and side spin work most consistently.

Another common shot is shown in **Diagram 3.** Work on it like the other two, finding out what range of angles you can achieve with follow, draw and side. The main scratch danger is at Y rather than at X. Note that the follow/draw adjustment on this shot works differently than for Diagram 1. For draw (solid arrow), the cue ball will tend to curve after the first cushion bringing the ball into a "shorter" trajectory (one more parallel to the short cushion), while follow will tend to bend the ball back towards the long rail near F.

To begin working on these shots, you'll need to be able to hit the cue ball fairly consistently with moderate speed and well-controlled spin. If you don't have that part down yet, put these shots off while you work on that more basic stuff, which I categorize as being under the first phase of learning pool.

If you have not yet mastered position shots like the ones illustrated here, each one is worth an hour of your time. You will see them frequently in games and they can work very consistently. In particular, take each shot to the extreme angles, adjust the ball positions, and try for various speeds to stop short or go well past the positions indicated in the diagrams. Extend the boundaries of your comfort zone.

BY Bob Jewett



OPEN NOTEBOOK

A few observations from a week spent in Chesapeake.

I LEARNED to play pool in a university rec room which had no good players, and we rarely got over to the city. The first major tournament that I attended was a real eye-opener. By the end of the tournament — the 1969 U.S. Open 14.1 — I had seen many runs longer than ever before, a near fist-fight between two players, a dozen new moves, the audience's side of a TV production, and a couple dozen memorable characters who would keep reappearing during my other tournament treks, including some I'd play against.

My latest trip was to the U.S. Open 9-Ball Championship in Chesapeake, Va., and I found that there's still plenty to see even after my 42 years of spectating. As I arrived at the hotel, I noticed Larry Chiborak, the man behind Bonus Ball, in a quiet discussion in the breakfast area with several current and former world champions — I think you'll hear about the results of that meeting in the next month or so.

As an undercurrent this year, there was the "labor action" by the Association for Billiard Professionals, the new-players' organization, which sought some guarantee of prompt payment. Fortunately the resolution came early enough that the entries were not much affected, and 250 players were ready to go on Oct. 16th.

It would have been better if they had all been present for the players' meeting on Saturday night, as there were several rules that were new for the tournament and others that were new to some of the players. The main changes involved the break:

- All matches were rack-your-own;
- The 1 ball needed to be on the spot with the 2 in the back of the rack;
- The cue ball had to be in the 'box";
- The 9 ball didn't count and was spotted if it went in a foot pocket;
- At least three object balls had to pass the side pockets or go in, or the seated player then decided who would shoot next.

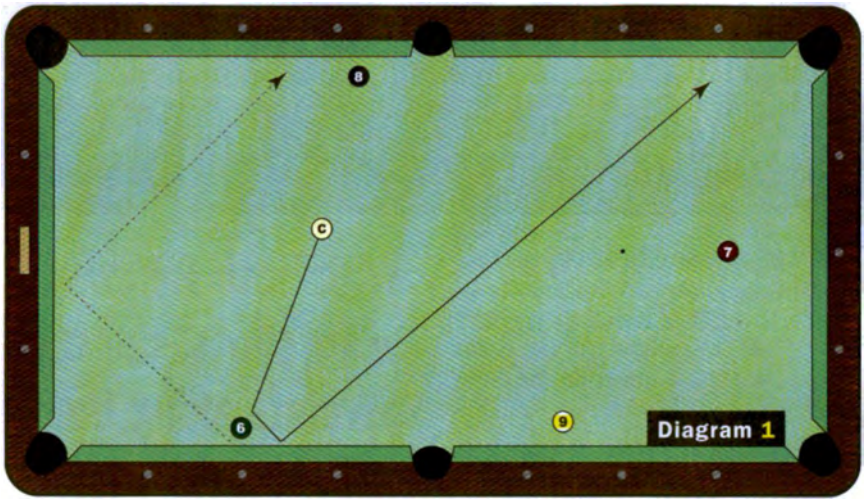


Diagram 1

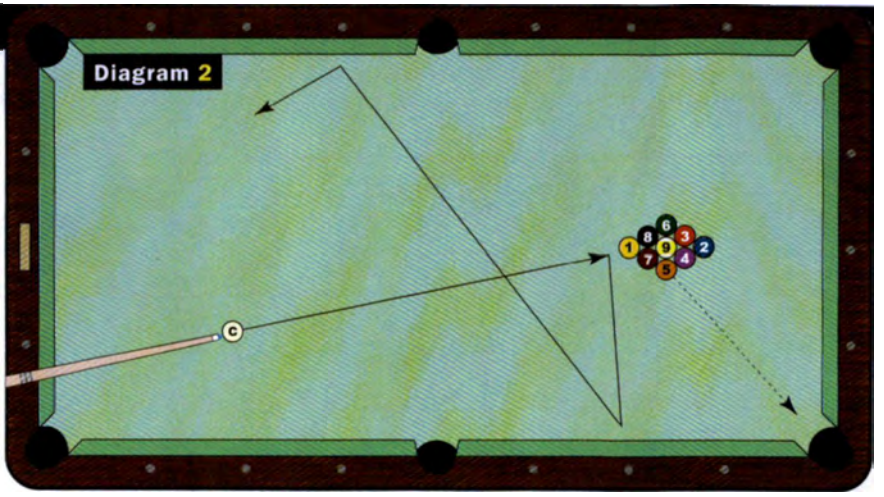
The three-ball rule was designed to prevent soft breaks, which have become a problem in 9-ball in the last decade or so. The referees reported only a half-dozen cases of the rule being needed.

At a big event like the U.S. Open, you get to see a variety of styles and approaches. Stefan Cohen, who won the World 14.1 Championship a couple of years ago, also plays excellent 9-ball and has been near the top in France and Europe for over 10 years at all forms of pool. In **Diagram 1** is a position he faced in a match against Bill Gallagher. I first thought Cohen would go for the 6, but I guess the combined difficulty of the shot and the position moved him to play the safety shown. All it requires is control of the speed of both balls to within a few inches. In Cohen's case, I suspect the control comes from having played the "small games" at carom billiards, in which you have to control the speeds of all three balls. Later in the tournament, I saw someone else play about the same shot, so maybe it's a good one to try in practice. Stefan did one surprising thing that reminded me of my days at the rec center. Before the match started, he cleaned the balls and the table. I used to do the same out of frustration and found that it always helped both my attitude and consistency. Must be a Zen thing.

The final match between Darren Appleton and Shawn Putnam I found interesting, although it wasn't very close. I paid particular attention to how the players broke. Both used what is called a "cut break," which is shown in in **Diagram 2.** The cue ball is required to start in the "box," which is roughly two diamonds wide. This is partly to make the "wing" ball, the 5 in this case, somewhat harder to pocket. Breaking from the side rail with a tight rack, a full hit on the 1 ball pockets the wing ball over 90 percent of the time. To get the same percentage from the box, you have to hit off-center so you land at about the same spot on the 1 ball.

The problem then becomes what to do with the cue ball. The standard is to use right (outside) English on the cue ball to bring it up-table where it will be close to the 1 ball, which nearly always ends in the upper half of the table.

The difference in the two players'



breaks was a large part of the difference in the score. Appleton broke 13 times, made the wing ball 12 of those times and made the 1 ball on the other break. He scratched once, which can be a problem with the cut break — too much or too little sidespin and you end in the corner or side pocket, respectively.

By contrast, Putnam broke six times, made the wing ball only twice and scratched twice. Strangely, while Appleton was having his success breaking from the right side of the box, Putnam broke from the left. After just a week of tournament play on new cloth, the rack area will have lumps and bumps and the rack develops a personality which may have to be catered to.

Some players believe that when racking your own, setting the positions of all the balls can help a run. For what it's worth, Appleton racked the 1, 9 and 2 in their required positions and the rest of the balls randomly. Putnam placed the "other" balls in nearly the same order each time, with the 7 and 8 always in front, followed by the 5 and 6 on the wings.

For me, the U.S. Open location has a lot of advantages. A nice small airport, five or six hotels near the venue including some extended-stay options, multiple malls within two miles, several nice restaurants (the tournament serves a buffet nightly if you're short on time or cash), and lots of good seating.

And if you are into American history, within an hour's drive you can see where this country started at Jamestown, Williamsburg and the Yorktown battlefield. I spent a couple of sunny days up there, had a great time just being a tourist, and got back in plenty of time for the evening matches.

While technology has brought us streaming video from tournaments both major and minor, it has not yet given us the varied experience and education we can get by actually being there. If you see me at a tournament, ask about the time I saw rain blowing horizontally across a table at a world championship.