c.10 → A6W → CA7 [1]

c.1O → A6W → CA7

Rotation + Carry-Over Deadness + Structured-Peels:

Advancing Break-Play and Peeling in American Croquet

by

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With

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And a Foreword by

Paddy Chapman

We dedicate this book to C. D. Locock and thank him for taking up Croquet in addition to Swedish Poetry! [4]

Fulford: *One of the most important pieces of information*

I think some people in America don't get is ...

basically, just to tell them to try and play breaks.

Alman: WE DON'T PLAY BREAKS IN AMERICA...?

Fulford: *I don't think they've been told enough...*

The object of the game, REALLY, is to learn to score several hoops in one turn.

That's how you get started... We didn't know very much about the endings,

but we DID know that you were supposed to start off playing breaks.

(Croquet World Online, 2009)

PREFACE

In this book we follow Fulford's advice and… *tell them to try and play breaks,* by proposing a new way to teach break-play that expedites the process while keeping it fun and challenging. It is intended for players of all skill levels and interests (games), but it is particularly designed for those whose current goal is proficiency with American 6-wicket (A6W). Two themes run throughout:

> We teach *Strategy* first and *Shot-Making* second. To do this, we introduce a new *bisque-like* system where your allotment of *FIXs* allows you to repair *reasonable* mistakes, rather than replaying them or restarting a turn. FIXs are complemented by *SIMs* which allow you to *SIM*ulate a traditional two-ball Croquet Shot with two single ball shots. We place no limit on the number of SIMs you can use. As such, only single-ball skills (i.e., those *from GC*) are *technically* needed to run breaks.

> We use a game we named c.10 – for *circa 1910* – as the facilitator of break-play. With but minor *modernizing* exceptions, c.10 follows the rules that prevailed internationally in Croquet in 1910*.* This was the era when players in the US turned to A6W while those in the rest of the world turned to AC. The rules of c.10 *include* rotation but *exclude* carry-over deadness. This balance makes c.10 an excellent vehicle for learning break-play while maintaining significant strategic challenges.

We examined Golf Croquet (GC) and Association Croquet (AC) in previous books and considered how current play could be enhanced with new games based on established themes. These *Innovations* have you confront unfamiliar challenges which lead to intriguing strategic insights that are relevant to the new games, but *also* to their precursors.

In this book we turn to *the last frontier* – A6W. For a majority of players in the US, we see that break-play is but a dream and that actual strategies employed are circumscribed by intense fear of carry-over deadness. We suggest that these players turn to c.10 long enough to learn to run breaks and then return to A6W. Next, we provide the first comprehensive analysis of intermediate and advanced A6W strategies. Understanding and attempting these increases the intrigue and charm of the game.

Finally, in the last chapter of this book we present a new game, an *Innovation* based on A6W called Contact After 7 (CA7). It increases the challenge of A6W, and provides an interesting counterpoint to AC, with the inclusion of structured Peels.

We welcome comments and suggestions. Please send them to: Howard@Sosin.net.

FOREWORD by Paddy Chapman

My development in Croquet was focused on AC [5], much of which was guided by my mentor, John Prince. I broke down a lot in the beginning and when I did, John and I would often stop play and evaluate the situation, to seek the underlying cause. Generally it was not the obvious; it was not the last shot – the one that visibly failed – but rather, it was an accumulation of earlier partial missteps. These might be immediately in the past, for example: a rush that did not go where I wanted it to, followed by a Croquet Shot that left an awkward hoop, and then finally a failed hoop attempt. Or the root cause might even be less obvious still – perhaps the entire line of play was not efficient and there was an easier or more elegant route to the same goal.

What John was teaching me was that playing croquet was essentially about error prevention (and cutting out silly mistakes). I have learnt that playing croquet well is a result of mastering the easy strokes to a point that they're repeatable whenever needed. If you watch top-class play, you will notice that the best players make the game look very easy - in fact, the game they are playing *IS* easy, because they are hardly ever playing any difficult strokes; conversely, junior players who are yet to master the easy stuff are very often faced with difficult recovery strokes if they attempt to string multiple hoops together in one turn. It is no wonder that they can find croquet frustrating, and even resort to defensive and negative play to outscore their opponents.

Mastering the *easy* strokes is not something that can be done overnight and using bisques to recover can fundamentally change how the game is played and how long it takes. The system of FIXs in this book enables players to fix errant shots as they go (within guidelines), improving the position of balls without disturbing the flow of a break. There also exists the opportunity to replay shots which the striker deems wayward, identifying where a break is likely to fall apart, and do something about it before it happens. This is a key skill that top players have mastered and using FIXs for this purpose will help to develop this skill among improving players.

Turning attention to croquet strokes – a unique and amazing aspect to croquet that sets it apart from all other sports. There is no question that these can have a steep learning curve that often inhibit one's progress in learning the concepts of break play. This book introduces a system of SIMs which enable players who are already adept at single ball strokes but still learning the art of croquet strokes, to learn and feel the satisfaction of playing a break by utilizing their existing single-ball skills to good effect.

I hope that these concepts will make all forms of break-based croquet - be it AC, A6W or other variations described in this book and elsewhere - more accessible and enjoyable to both beginning players and experienced players alike.

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[5] As a kid, I was aware of the existence of A6W, having watched an ESPN special following the 1994 USCA Nationals on VHS (on repeat!), however to this day I have never played a full game of it. I am still coming to terms with strict rotation! *Perhaps I should have started with c.10…*

FOREWORD by Ben Rothman

My introduction to Croquet came in the 1990's through my uncle, Larry Stettner who later wrote the Mt. Desert Island Croquet Club's, Book of Puzzlers. The instruction he gives in his book and gave me personally was mostly on A6W; It was *baptism* by Carry-Over-Deadness and *salvation* by Rotation. I still remember my first all-around break. It was in 2001; I was in my 4th year of playing A6W. Since then I have won three singles and two doubles A6W USCA national titles. In that period I also took up AC and GC and have won national and international tournaments in those arenas.

I still relish tournament play but, like my uncle before me, a significant focus of mine is as an instructor. After several years of teaching and self-reflection, I think my progress in Croquet would have been quicker had my first game been c.10 – the precursor to both AC and A6W. I would have learned to run breaks without the distraction of managing Deadness or the complications of the Either-Ball Rule. This is what we offer you in this book – a quicker way to learn to run breaks using c.10.

Starting with the *right* game makes it easier, but we go further with FIXs and SIMs. **FIXS**: I support handicap play but *flinch* when I remember AC games where I was forced to *hide out* waiting for my opponent to use up his Bisques. Our system of FIXs is fairer and a faster way to manage handicap play. FIXs apply only to a single shot and are subject to our *Reasonableness Requirement.* **SIMs**: I often witness the frustration newcomers have with croquet shots and how failure with these can drive players away from A6W *and to GC*. Using a SIM as a substitute allows you to progress further into breaks by adopting strategies that were previously unapproachable. This lets your play be more adventurous which makes A6W more fun, and *worth the effort*.

After discussing break play, this book provides a guide to intermediate and advanced strategies of A6W. These are what create the intrigue of A6W when it is well played! We explain specialized drills you can use to familiarize yourself with these unique tactics.

Finally, included in this book are two new games – *Innovations*: (i): ***Advanced c.10*** limits a break to no more than 5 hoops and hoops made are reduced by one (*Striker's clip is moved back one hoop!*) if Striker makes a hoop but fails to Peel Partner at least once during the turn. (ii): ***CA7*** follows A6W rules giving Oppos a cleaning if Striker makes h(7). In addition, it gives the next Oppo ball to play a lift-to-contact. But this lift is not granted if Partner is Peeled at h(7). Thus, Peeling at h(7) takes on tremendous significance. Hopefully this will make games between top players more challenging and interactive and limit the need for lengthy Best of Three matches.

As always, have fun and play well!

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INTRODUCTION

History from 1910

In an appendix to the 1910 edition of his book <u>Modern Croquet Tactics</u> [6], C. D. Locock provides the rules that governed the play of Croquet at that time in Great Britain. These included: Striker-Balls play in *Rotation* (blue, red, black, and yellow), if a non-Striker-Ball is sent out of bounds on a rush, or Striker goes out with a hoop shot, then that ball is marked in one yard and the turn continues; in a Croquet Shot both balls must stay in bounds, there is deadness within a turn, but none carries over; there is no time limit on shots or on the length of a game (except for 2-on-1 endgames where there is a one hour limit); and bisque play is encouraged.

Complementing Locock's book was one that came out in 1914 by Tollemache entitled <u>Croquet</u>. While Locock focuses on tactics, Tollemache *confidently* takes-on the entire game, from shot-making to strategy. Putting it in terms familiar today, together these books discuss how good players ran breaks with turns that often started by getting *Spent for Partner* and could end by setting a *Cross-Wire Leave*. They also lay out various Peeling sequences (triples, quads, etc.) that are still valid today [7].

Locock and Tollemache shared a deep understanding of break-play and a concern that Croquet *was becoming too easy*! Tollemache evaluated one possible rule change – the *Either-Ball Rule* (*EBR*) – wherein the required rotation of the Striker-Balls is eliminated and, instead, teams alternate turns, each having the option to play either ball at the start of each turn. The EBR was trialed and then adopted *exclusively* in 1920. Optional lifts for Oppo if Striker makes 4-back (1929) and 1-back (1946) were added. Collectively these changes revolutionized Croquet – making the running of breaks more challenging, Peeling more relevant, and ultimately defined Advanced Association Croquet *(AC)* as it is played today [8].

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[6] Treatises on the strategies of Croquet have a history that begins well before 1910. See for example <u>Croquet Tactics</u> by Walter James Whitmore, 1868. But 1910 is an appropriate starting point for us because Locock's book, leaves Whitmore and his predecessors behind to become the first truly modern explication of break play – the focus of this book. Keith Wylie would have had access to Locock's book. We would like to think that the title of Wylie's book, <u>Expert Croquet Tactics</u>, 1985, was an intentional extension of Locock's, but, strangely, Wylie references Tollemache, but not Locock…

[7] It is difficult (*expensive*!) to obtain copies of these books as they have long been out of print. We propose that the various croquet associations around the world band together to make electronic versions available for free, much like they have done for Wylie's book...

[8] *The most fundamental reform ever made in croquet was the change from sequence to the either-ball game. It was introduced as 'Alternative A' in 1913 chiefly due to the intense propaganda by Arthur Brigstocke (husband of Miss May Chester, formerly a prominent player) although it had been tentatively proposed by P.G.S. Payne some years before.* <u>The History of Croquet</u>, D.M.C. Prichard, 1981, page 176. Our thanks to Chris Williams for bringing this history to our attention.

Croquet also had a big following in America. Jack Osborn wrote:

By the turn of the century the game had reached its zenith with hundreds of thousands of people playing basically the same version on both sides of the Atlantic. ... In the first decade of this century, however, some American Croquet Leaders disagreeing with newly adopted British rules which outlawed mallets with heads made of rubber, and introduced 6-wicket court layout, opted to retain their 9-wicket version, and a short-handled mallet with heads of metal on one face and rubber on the other.

9-Wicket *Backyard* Croquet continues to have a following, but many Americans joined the rest of the world by outlawing non-conforming mallets and adopting the 6-Wicket *Willis* layout as their main game [9]. Interestingly, Americans did not adopt the EBR but, instead, they maintained Rotation and went their own way with *Carry-Over Deadness* (*COD*) creating the game we call A6W:

... At first, this may be confusing for you ... because of the concept of "deadness." ... you're "dead" on a ball after you've struck it with your own. The only way to remove that "deadness" is to send your ball through the next wicket. Otherwise, if your ball hits the "dead" ball again, your turn ends [10].

<u>Croquet Laments</u> [11]

Croquet on both sides of the Atlantic (and *Pacific*!) continues to evolve driven by concerns on *both* ends of the skill-spectrum:

<u>It's too easy</u>! Consistent lawns, better equipment, analysis, and play have once again raised concerns that the games are too easy. We understand these concerns and made a proposal to keep AC challenging in our book, <u>Color-Order Association Croquet</u>, and make a different proposal to keep A6W challenging in Chapter 6 of this book with the game <u>Contact After 7</u>. Both games provide for *Structured-Peels* which make the games more interactive, more challenging to play, and more exciting to watch.

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[9] Locock and Tollemache were using the Hale Setting (2 Pegs, 6 Hoops) when their books were written. With minor exceptions, the same tactics applied.

[10] <u>Croquet the Sport</u>, 1989, page 23. <u>Winning Croquet: From Backyard to Greensward</u>, 1983, Page 36. These books do not identify the inventor of Carry-Over Deadness nor the deadness board that keeps track of it. We asked Johnny Osborn if he knew who was involved. Johnny kindly wrote back, *... As to how the concept evolved, I am not certain. I wish I could answer, or find someone who could, but I don't think either is possible...*

[11] Points are scored in A6W by running *wickets* and in AC they are scored by running *hoops.* We are agnostic in this linguistic debate and herein use both.

It's too hard! Perhaps of greater concern is the waning of interest in A6W and AC that is attributed, in part, to the ascendance of Golf Croquet (GC). Newcomers *and even die-hard defenders of A6W and AC*, are wooed to GC, but there is little flow in the other direction. We think we know why: GC *seems* easy to grasp and is fun to play at all levels. It is totally interactive, with single-shot turns, and requires learning only single-ball skills that *seem* familiar after a brief introduction. A6W and AC are more daunting to understand, more difficult to execute well, and much less interactive – they can have very long turns (up to 91 shots!). They require single-ball skills, but also 2-Ball Croquet Shots (and even 3 and 4-Ball cannons!) which take time and perseverance to master.

Back to the Future

GC is a great game and should continue to have a dedicated following, as well as attracting new players and *refugees* from A6W and AC [12]. *This book seeks to create a flow of interest and participation in the other direction, and especially toward A6W.*

We believe this goal can be achieved by re-introducing the *evolutionary* root of both A6W and AC, the game we call *c.10*, from *circa 1910*. We choose to do this in an environment that focuses attention on the strategies and intrigues of running breaks rather than on the mechanics of Croquet Shots. In particular, we introduce a new *bisque-like* system called *FIXs*. These allow Striker to *repair* rather than *repeat reasonable* mistakes and are played gross, *never* net; and defer the challenges of Traditional Croquet Shots with Simulated Croquet Shots (*SIMs*). These allow players to use two single-ball shots in lieu of (i.e., to *SIM*ulate) a single Croquet Shot.

Our observation is that people using *just* their GC skills, facilitated by FIXs and SIMs (!), can play c.10 and *cannot help but learn to run breaks.* They have fun doing it and come back for more!

With dedication and practice, newcomers become proficient at c.10. At that point, they get to decide how to proceed: They can adopt *COD* and switch to A6W; or they can adopt the *EBR* and go to AC. Best of all, they can experience and enjoy all break-running Croquet games – those from the past, those currently being played, and Innovations yet to come.

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[12] GC might have even greater appeal if variations were added. See our book, Variations on Golf Croquet, for four suggestion of games that create new and interesting strategic challenges and a suggestion for a new handicapping system that does not modify scoring, does not require special clips, and does not alter the basic structure of the game.

This book is intended for players of all classes. Naturally, the moderate, or the indifferent player will find most to learn from it; but perhaps even the expert may here and there come across something which is new to her (or him), and yet possibly true.
(Op. Cit., Locock, page iv)

The first time reader is expected to find on most pages something to make him pause from reading
for reflection, criticism, discussion with friends or experimentation on a lawn or on paper.
(Expert Croquet Tactics, 1991, Keith Wylie, page v)

This book has six chapters, a Glossary, and an Appendix:

1.. Facilitating Break-Play: We want readers to deal with the challenges (*and delights!*) of break-play from the very beginning. Towards this end, we give each player an allotment of *FIXs* that he can use to continue a break, and we promote the *unlimited* usage of *SIMs* to separate strategic considerations from Croquet Shot making skills. We end the chapter with a section entitled *New Takes on Drills for Basic Skills*. The subject matter will be familiar, but the way of proceeding may be new.

2.. Running Breaks: We review traditional teachings on 2, 3, and 4-Ball breaks and then describe lesser-known approaches – Pivot-Swaps, Load-and-Holds, and proceeding Ball-to-Ball. We end this chapter by asking you to solve five break-running puzzles that Locock presented in 1910. They are as relevant today as they were more than a century ago!

3.. c.10 – The Foundation: This chapter *re-introduces* Croquet as it was played in 1910 [14]. We take you to c.10 in four stages, with intentional pauses along the way to introduce new concepts:

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[13] While directed to A6W, much of the analysis in this book, and especially the desirability of starting with c.10 while using FIXs and SIMs to teach break-play, applies to AC. We hope these thoughts will be factored into the on-going debate about how to get people around the world to play AC rather than just GC.

[14] We have included new rules for the opening that facilitate a goal of this book, to have you progress to and play A6W.

a.. <u>FIXs Allocation</u>: We start by computing an allotment of FIXs for *you* that is based on *your* skill level. Using them judiciously and thoughtfully should give you a *high probability* (*but not the certainty!*) of progressing through a break.

b.. <u>6-Wicket Challenge</u>: We have you play a stylized *game* involving only 6-wickets. It *requires you to use all four balls to make each hoop, literally forcing break-play*. We simplify play by: (i) ignoring the complexities of *openings* – the balls start at pre-determined locations on the lawn, (ii) allowing 4-yard mark-ins, and (iii) having Striker start each turn with a *lift-to-position*.

Next, we provide a Primer on two tools that capitalize on Rotation: *Getting Spent for Partne*r and *Croquet-Outs*. While still foreign to many who play A6W, these tools were described and used effectively by Locock and Tollemache. We have you practice them in game-like situations, of course using FIXs and SIMs.

We also provide a brief analysis of Openings and Leaves that are used in *competitive* versions of c.10, our next stop.

c.. <u>14 and 26 Point Game</u>: We recommend starting with a 14-point game and later moving to 26. We also believe that these games are best assimilated in a 4-person, doubles format, with lots of *kibitzing*!

As confidence in break-running increases, the team that gains the innings in a c.10 game threatens to: (i) run an all-around break, (ii) set an *impossible* leave, (iii) watch an Oppo miss or finesse, and then (iv) finish on their next turn. This brings us full circle, back to 1910, and perhaps the fear that c.10 can become *too easy*!

We turn to COD (and A6W) as a possible *cure* in Chapter 4. But before going there, we conclude this chapter by exploring a way to keep c.10 challenging by including two concepts: (i) a Wicket-Limit (*WL*); and (ii) a Peeling Requirement reinforced by a penalty for failure to Peel Partner at least once during a turn that makes at least one hoop [15]. A WL instantly makes c.10 more interactive! Breaks must be established, and leaves must be set multiple times instead of just once in order to progress to the peg. But there is an added benefit: A WL plus a Peeling Requirement takes Peeling – which was viewed by Tollemache (and others) as basically *being for show, and not useful in serious competition* – and *weaponizes* it. Peels on Partner add a new dynamic to c.10 that can alter the number of turns required to win a game and the mindset of players.

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[15] Adding a WL is not a new idea. There is a 3-WL variation of A6W. However, a penalty for failing to Peel within the WL is new.

We provide a *Primer on Peeling* [16]*,* have you try it out, and then turn to games that use WLs and Peels.

    d.. <u>Advanced c.10</u>: We initially suggest a 6-WL and then turn to a more challenging 5-WL that is combined with a penalty of one point (*literally moving Striker's clip back one wicket at the end of a turn!*) if Partner is not successfully Peeled at least once during a turn in which Striker makes one or more wickets. In these advanced forms of c.10, a team can finish in 4 turns. Additionally, Advanced c.10 can be handicapped, some players having WLs (and/or Peeling requirements) and others not.

4.. A6W – On the Lawns in the USA: We take you to a typical club in the USA and observe two types of players:

<p align="center"><i>… those who run breaks, and those who don't</i>!
(Bob Kroeger)</p>

We explain why this is the case, and make recommendations for both sides of the ",":

    <u>For Non-Break-Runners</u>: We describe the game they play, the so-called *Palm Beach 2-Step* (*PB-2S*) and propose rule changes that promote/facilitate more aggressive play. These are: (i) adding extra cleanings at h(4) and h(10) – *perhaps on both balls*, and (ii) having COD *only carry-over* to the last ball Striker becomes dead on before his turn fails.

These suggestions make A6W easier and are enthusiastically received [17]. However, in the end, we want to caution that they are *band-aids* that do not address the underlying cause of the PB-2S – a failure to run breaks. We suggest that non-break runners shift their attention, *for a while*, to c.10, and then return to A6W, now with greater ability to run breaks, *facilitated by FIXs and SIMs*!

    <u>For Those Who Run Breaks</u>: Here we imagine that instead of the EBR, in 1910 Croquet adopted COD! We explore what Locock and Tollemache would have needed to learn to transfer their c.10 proficiencies to A6W.

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[16] Peeling was also recognized as being useful in high-low and other Handicap Games and is still used that way in AC but now only 4 peels are allowed. This limit prevents the Low-handicap player from using the High-handicap Player's bisques to move the weaker Player's ball around to the peg. According to Paddy Chapman, *Miss D.D. Steel, …, would partner a junior, take all the bisques and peel them successfully through all the hoops!*

[17] We want to thank Ruth Summers and her group of Wednesday players at the NCC for trying these variations in April and May of 2022.

We believe the over-arching need is a *change in attitude* – from asking – *can I do it*? – where the answer will usually be yes, to asking – *should I do it*? – where the answer is considerably more nuanced. This change in thinking is driven by three considerations that distinguish A6W from c.10: The (i) Interaction of COD and Rotation, (ii) Constricted areas of Play, and (iii) Time Limited games.

We searched the literature seeking help in this matter and found only two useful references – one by Kroeger and Prentis, and one by Stettner. We use both in our efforts to distinguish A6W from c.10 [18] and provide modern analysis from Ben Rothman.

5.. A6W – Intermediate and Advanced Tactics: In this chapter we provide examples that will help players, *and spectators alike,* better understand the potential of A6W at higher levels of play, and we present specialized drills to help *you* get there.

6.. CA7: The Next Step: We propose the game *Contact After 7 (CA7)* to keep A6W relevant for good players. We provide three fully narrated videos of games played by Sherif Abdelwahab, Matthew Essick, Danny Huneycutt, and Steve Morgan as well as *one master class* on various tactics.

CA7 adds new dimensions to A6W built around the possibility, but not the requirement, for *Structured-Peels*. CA7 gives Oppos a cleaning if Striker makes h(7), and, *in addition*, it gives the Oppo playing next an optional lift-to-contact. However, this lift is not granted if Partner is Peeled at h(7). Thus, *Peeling, or not*, at h(7) takes on *tremendous* significance.

If a Peel is not done, then Striker (call it k) must decide how far to progress in his break. k can go to the peg but will often choose to stop short, perhaps at h(12), h(11), or even h(10), forcing Oppo to Peel k to the peg if they desire to peg k out to create a 2-on-1 game. But this also means that k's Partner (u), *if he gets in (!)* and does not himself choose to stop before h(7), will need to complete Peels on k in order to finish on that turn. Hanging over his head is the knowledge that failure to complete his task will let Oppo take over *with a lift-to-contact*.

Two additional features distinguish CA7: (i) CA7 gives the Partner of a pegged-out ball a one-time option to advance its clip from wherever it is on the lawn to h(10). *This change alters the dynamics of 2-on-1 end game*s. And (ii), CA7 experiments with timing a game using a chess clock – each team starting with an hour. *This change eliminates time outs and any need for shot clocks.*

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[18] We found one reference document that distinguishes the rules of A6W from those of AC: <u>Differences Between American and International Rules for Croquet</u>, a pamphlet written by Leonard E Lyon in 1998 that may still be available from the USCA.

APPENDIX – THOUGHTS ON THE SCIENCE OF CROQUET: We end the book with an Appendix that seeks practical solutions to issues we encounter on the lawn. *NOTT* all Croquet *experts* will agree, but we hope our efforts will be the basis for further discussions. The topics are:

1. Objective and Critical Distances: We provide charts of *Objective* distances on the lawn that all should know. We follow these with *Critical* Distance charts that help you evaluate your likelihood of success at various Objective distances.

2. Collisions and Angles: We reference three key studies related to the mechanics of Croquet and use them to discuss Collisions and Angles and the 90-Degree-Rule which helps demystify rushes, in-offs, and bombards.

3. Croquet Shots: We **do not** *suggest a particular method for hitting Straight-Croquet Shots*. There are many ways to do this, and each of you must find what works. However, we do provide fundamental information on the transfer of energy in *Straight-Croquet Shots* illustrating that the force needed to move the two balls is *virtually* the same as that needed to move a single ball, with the Striker-Ball gaining its distance from a *second (or multiple hits)* from the mallet.

   Then we turn to *Split-Croquet Shots*. The surprising result for us, attributable to Martyn Selman, is that, in the main, Split-Croquet Shots can be assessed and accomplished by *simply re-orienting the aim of a Straight-Croquet Shot*. Thus, learning Straight-Croquet Shots is critical but a Split-Croquet Shot is, to a large degree, *simply* a mechanical adaptation of a particular Straight-Croquet Shot and need not be learned anew in each instance.

4. Take-Offs: We define a Take-Off as a Croquet Shot that does not involve a *second/multiple* hits by the mallet on the Striker-Ball. This leads to a discussion of how much force is needed (it is more than you might think!) in a take-off and a new way to aim a Take-Off to get a desired ratio of movement in the Striker and the croqueted ball.

5. Peeling, Pull, Side, and Negative Pull: There are various theories surrounding the mechanics of Peeling. We discuss these, including the 100-year-old mystery of *Side* and the more recent mystery of *Negative Pull*. We also describe an aiming system that does not require lying on the ground but relies (*legally!*) on using your mallet as an aiming tool.

6. Croquet Training Aids: With the assistance of David Bent, I developed a set of Croquet Training Aids that *provide instant feedback and allow precise repetition of shots*, all provided in the attached patent. We would like to license this patent at *no cost* to anyone who is willing to develop these aids. For more information, please contact me, howard@sosin.net.

1.. FACILITATING BREAK-PLAY

Bisques [19] are used in both AC and A6W to *level the playing field*, letting weaker players *compete more effectively* against stronger ones. The good thing about bisques in AC is that they are widely used. They operate by providing complete extra turns. Our concern is that along with learning to play AC a newcomer must learn to play a second game (*AC + Bisques*)! In fact, there is an entire literature devoted just to using bisques in AC! [20] A6W also has bisques, but they are *disdained and seldom used*. And, using them is complicated because they can be used in two ways: (i) to *replay* a last shot where all balls are returned to their previous positions before the bisque is used, or (ii) as an additional *continuation* shot from where the balls stopped after the failed/unsatisfactory continuation shot.

Our major concern with both systems is the same – they are used *net* in most situations. This *may* create a competitive environment between players of different skill levels, but it does not promote break-play. For example, a *17* playing a *10* gets 7 bisques, and the *10* gets zero. Both players suffer through a game without adequate bisque support leading to less successful break-play. In AC this leads to long/defensive games; in A6W it leads to wins on time, extremely low scores, and play dominated by the *PB-2S*.

FIXs

We want to encourage *sensible* risk taking that is necessary for break-play. Toward this end, each player is allocated an initial number of *FIXs*. *While they last*, a player can use his FIXs to continue his turn if a shot fails, *or* if he deems it to be unsatisfactory. As with traditional bisques, an allotment of FIXs is based on your skill level, ideally large enough to encourage break-play, but not so large as to promote cavalier play, and should be adjusted *downward* as you improve.

There are four basic *unintended* ways a turn ends. The first two relate to single-ball shots: (i) Missing a hoop shot and (ii) Missing a roquet. The last two relate to Croquet Shots where failure can be by: (iii) Not keeping both balls in bounds [21], and (iv) not gaining position on a hoop-approach (which will result in end-of-turn in 1 shot's time).

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[19] In addition to our Glossary, a good reference for most *terms-Croquet* can be found in Croquet Jargon.

[20] Plus One On Time, D. L. Gaunt; Bisques For Better Croquet, Donald Gugan; and Playing Croquet, Getting Maximum Bang For Your Bisques, Roger Mills.

[21] Early rules of Croquet allowed the Striker-Ball to go out of bounds on Croquet Shots which was very useful in the context of take-offs to boundary balls! This was deemed to be too easy and outlawed. James Heath, The Complete Croquet-Player, George Routledge and Sons, 1874, page 45.

In our FIX system, Striker *always* has free choice! He can *always* play any shot he wants, and he can *always* replay any shot at the cost of a FIX. In addition, if a failed/unsatisfactory shot was *reasonable* to begin with, then we allow Striker to *improve* his position before replaying it [22]. Here are our suggestions for *allowed* improvements – *At the cost of a FIX*:

(i) If Striker fails a hoop attempt, he *can* place his ball in hoop-running position, but not closer than 2 feet from it, and take the shot again; (ii) If he fails on a roquet/rush, or does not like the result, he *can* replace his ball *anywhere* around the target ball at its original position, but not closer than 2 feet, and try again; (iii) If one or both ball goes out of bounds during a Croquet Shot, then it or they *can* be marked-in where it or they went out, and his turn can continue; and (iv) after a failed hoop-approach, the Striker-Ball *can* be put in position at the hoop, leaving a minimum of a 2-foot shot.

Reasonableness Requirement: We suggest that these possible improvements *only* apply to shots that were 7 yards or less from the hoop, or target ball, to begin with*. Clearly this allows some *gaming of the system but less than that with traditional bisques* [23].

SIMs

No other ball and stick sport has the equivalent of Croquet Shots. Ultimately, they should be learned (!) and we provide thoughts on this process in the Appendix. But we also recognize that requiring them from the outset is a deterrent and a distraction from learning to play breaks and experiencing the strategic delights of Croquet. Therefore, we allow and *encourage* players to replace Traditional Croquet Shots with Simulated Croquet Shots [24]. *SIMs* can be used as often as desired, and at no cost [25].

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[22] Allowing Striker to improve his position with a FIX is intentional! During a game, we want Striker to continue a break and recover from a *reasonable* play that fails by paying a price, a FIX, but we do not believe that Striker should be forced to reenact his mistake, *(rub his nose in it)*. There is a proper time and place for replays – we believe it is during practice sessions.

[23] For example, in AC, regardless of the distance, a player can simply shoot out of bounds, perhaps near an Oppo ball, and use a bisque to restart a break. The requirement to be within 7 yards limits this behavior, giving a more realistic chance to the better player. *Other more complicated definitions of "reasonable" were considered and, so far, rejected. We are open to a discussion on what will work best without being burdensome.*

[24] A SIM can be used in lieu of any Croquet Shot, even a take-off. The section in the Appendix on take-offs suggests there is more to them than you might think!

[25] I recently injured my hip. During the recovery period I spared my hip by using SIMs for forceful croquet shots. I recommend SIMs for all infirmities.

Here is how a SIM works – Suppose u is the Striker-Ball and has just roqueted r:

In Traditional play, Striker picks up u (is *ball-in-hand*) and goes to r. Striker places u in contact with r and then *takes croquet* – moves both balls with a single shot that has the mallet strike *only* u – and then u follows up with a continuation shot.

With a SIM, Striker still goes ball-in-hand with u to r. But, instead of putting the balls in contact, Striker *marks* r – as he would a ball on a golf green. Next, Striker plays a single-ball shot, *hitting only r*, sending r where he wants it to go. Then, from the same spot – the marker – in a second single-ball shot, *hitting only u*, Striker sends u to where he wants it to go. The SIM is completed when these two *single-ball* shots are completed. Striker picks up his marker and goes to u to continue his break with a continuation shot.

Note that SIMs are intended to be used in a *reasonable* manner. For example, Split shots of more than 90 degrees <u>are not</u> *reasonable*. Stop Shots of extreme and implausible ratios <u>are not</u> *reasonable*. Pass Rolls of extreme ratios with minimal split angle <u>are not</u> *reasonable*. But, by the same token, a SIM does not have to only replace Croquet Shots that might at some point be possible for you, just ones that <u>are</u> *reasonable* for advanced players. For example, Hogan-Rolls <u>are</u> *reasonable* to execute with SIMs.

New Takes on Drills for Basic Skills

We presume that you come to this book having chosen, *at least for now* [26], a mallet, grip, stance, and other prerequisites for single ball shots associated with GC. Here we offer a series of warm-up drills and then consider additional drills, that focus on skills that are relevant to all Croquet games. The drills are described using a full-size lawn and up to 12 balls; however, they can also be enjoyed using only a fraction of a lawn and far fewer balls.

<u>Warming-up</u>

<u>Initial shots</u>: Take 12 balls and place them together somewhere on the lawn. Then shoot all 12 to a particular spot (a hoop, the peg, a penalty spot, one of the corners, etc.). The goal is consistency in distance, *feel, and even sound*. One way to encounter differences is to *close your eyes on the downswing* so that you detect impact first by feel and sound and only thereafter by vision. For variety, try sending balls in rotation to the four corners, trying to create tight groupings of three balls at each corner.

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[26] This qualifying clause should receive the heads-up from experienced players as it can take some time to truly commit to fundamentals and there are times where even the best players question their mechanics.

Lag to hoops: Next, lag a ball to each hoop, seeking position from wherever the balls ended up in the initial drill. You can do this in hoop order, but other ways of proceeding – reverse order, odd hoops first, short hoops first, etc. – are fine as well. The goal is to leave 12 makable hoop shots. *When lagging becomes routine, try sending take-offs or dolly-rushes to hoops,* or a combination of these ways of sending balls to hoops that seems relevant to your weaknesses on that day.

Attempt the Hoops: Some would say that a hoop shot should follow directly from each hoop approach. We understand the argument, this way of proceeding is more akin to actual play, but, that said, we tend to do all the approaches first and then attempt all the hoops later. It is up to you. Again, we find that closing your eyes on the downswing provides useful input.

Finishing-up: After each hoop attempt, we send that ball to a common point on the lawn to end the drill, or we send them to h(5) in preparation for the Croquet Shot drills that we propose in the Appendix...

Hoop Shots

How hard do you (*should you*) shoot a hoop? This drill provides information on this question. It involves three hoops and four balls. There is one *regular* hoop, one *wide* hoop (from a backyard croquet set) and one *imaginary* hoop. Put the backyard hoop in the lawn level with the *real* hoop. Then put single balls at a particular distance (perhaps 3-feet initially) and at a particular angle (straight-on initially and angled later) on the playing side of each of the three hoops. Finally, place a 4th ball – the *swish-length* ball – on the non-playing side of the *imaginary* hoop, at the distance you want all of the balls to travel through their respective *hoops* if they *swish* – that is, if they do not touch either stanchion while scoring the hoop.

The swish-length should be a function of the length and angle of the desired hoop shot, as well as the type, firmness, and tightness of the real hoop. I*t is often longer than you might imagine!*

Figures 1-1 and 1-2 show straight and angled hoops shots at 3 feet, at h(1). We put the swish-length ball at 3.5 yards in front of the *imaginary* hoop [i.e., level with h(5)] – which is 10.5 feet beyond the hoop – approximately 3.5 times the length of the hoop shot! While this distance may seem long, it is reasonable in most instances – long enough to allow the ball to hit a single stanchion and make it through, which is necessary and will happen with regular hoops on any angled shot; it is also long enough to allow a slightly mishit shot that causes the ball to hit both stanchions – to *rattle through.* But it is not so long that a return-roquet is overly stressful if the ball swishes.

1-1   **1-2**

Here is the Drill: Take a series of three shots: (i) *Make* the imaginary hoop, (ii) *Make* the backyard hoop, and then (iii) *Make* the real hoop. The goal is to hit all three shots with the same force, making them feel the same. Done perfectly, each ball will make its respective hoop. But, especially with the *real* hoop, and even with the backyard hoop, the margin of error is small, and a slight misaim, or deviation in the lawn may cause the ball to hit one or both stanchions. This is a realistic result and helps you determine how long the swish-length should be to compensate for this possibility.

It is possible that your hoop attempt fails. There are many possible reasons for this: Two obvious ones are that you may have stalked ineffectively, causing you to misaim. Or, you may have altered your swing (thus *re-aiming*) mid-stream, perhaps unknowingly – perhaps caused by *looking up* [27] or changing your grip pressure. It is often the case that beginners swing harder at real hoops than at the imaginary one, seeking *to help* their ball make the hoop, thus causing it to go much further than the swish distance. On the other hand, some beginners *decelerate* hoop shots, causing the ball to not make it through the hoop, even if is properly aimed. These issues can be identified and addressed with this drill.

Routine versus Ritual: Stalk each shot developing a *routine* (variables you consider) and a *ritual* (mechanics you repeat). You can/should vary the distance of the hoop shot and also its angle, but, as you do, be sure to vary the swish-length accordingly – As the angle of the hoop shot increases, so should the swish-length.

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[27] Many instances of *looking up* are a result of a change in body angles, not head movement. We tell people to be rude: *butt out*!

Forward Rushes: You *can* place balls on the non-playing side of the hoop and attempt to get forward rushes, so called "Murray Control". However, we counsel against this early on because trying for a forward rush often leads to end of turn! It is far better to suffer the consequences of a *swish* – a longer than expect come-back shot – then to stuff the hoop! [28]

<p align="center">The 1/2" Rule</p>

As a theoretical matter, regardless of the angle or length of a hoop shot, aiming dead center between the stanchions is *technically* correct. But this is only *practical* advice in perfect conditions and for players who hit perfect shots. Since neither we nor the lawns we play on are perfect, we learn to follow one of two aiming techniques that cause us to deviate from center aim: (i) Aim toward the more distant stanchion, or (ii) Aim to miss the near stanchion.

These two techniques are basically equivalent, but no matter which one is used, many players find them hard to implement consistently. This is because Croquet forces us to evaluate how much of the distant wire should be taken, or what size gap is needed to miss the near stanchion, for *each and every hoop shot* knowing that each will have a different length and angle. *It would be nice to take the guesswork out of this process.*

Here is a simple way to proceed that automatically adjusts for you – simply aim the center of the Striker-Ball to a spot that is straight in front on the playing side of the hoop, and *approximately ½"* from the true center of the hoop, as shown by the black dots in the center of the yellow markers at h(1) and h(8) in Figure 1-3 and 1-4 below. If your ball is situated left of center, then this procedure will aim Striker slightly into the right stanchion, and vice versa. Also, the more angled your hoop shot is, then this same aim point will have you *take* more stanchion. ½", or the width of a hoop stanchion, works for us, longer or shorter may be better for you. Experiment and consider adjusting – *lengthening* – your swish distance if you adopt this hoop aiming procedure.

A good drill is to place four balls at varying distances from the hoop and attempt the hoop until all four can be made in a row. Figure 1-5 shows the balls set up for this drill, once again at h(1) with distances of 1, 2, 3, and 4 feet, *or longer distances* – say double those discussed. We intentionally alternate shots that are left and right of the hoop. We repeat this drill until we can run all four distances. *Success can take a while* but sticking with it leaves us with greater confidence for the turns to come.

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[28] When you are tempted to *run a hoop with control* be sure to start with very short, straight-on, hoop shoots. Only proceed to angled shots after you have studied the ½" rule described below.
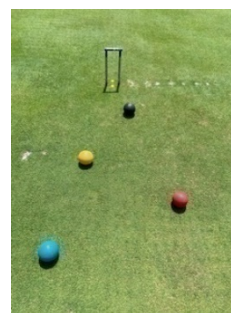
1-3   **1-4**   **1-5**

Finally, if you find yourself hoop-challenged, it can be useful, in a practice session, to carry around an extra ball during a break and hit it the desired swish-length before each real hoop attempt, trying to make the actual shot repeat immediately thereafter with the same feel. As mentioned above, if you are having problems with hoops, it is a useful exercise to close your eyes once your stalk is completed. This will help to determine whether your hoop making problems come from your eyes or from between your ears [29]!

Distance Control for Rushes

One distinguishing characteristic of good players is their amazing ability to rush balls desired distances to predetermined spots on the lawn. However, just *seeing a second ball* can cause less experienced players to make overly forceful swings, or ones where their body/mallet angles change during the swing such that the Striker-Ball partially jumps and does not transfer energy effectively to the rushed ball. Here is a drill for rushes that involves three balls: A single free ball, and two balls oriented in a *rush*. In Figure 1-6, we show this idea repeated four times at different rush distances: from a dolly-rush of two feet to a rush of approximately 10 feet.

You are free to vary the distances to suit your needs/skills. In Figure 1-6, We show straight rushes of different lengths, but that too can/should be varied to create cut rushes. Your goal is to hit the free ball and *then recreate* that shot, in distance, in direction, and in *feel* – force, balance, and grip pressure, in the actual rush. Players are often surprised by how little extra effort (force) is needed in a

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[29] Paddy suggests: *Putting a corner peg in the ground, maybe 7 yards past the hoop in a direct line of the hoop and the striker's ball and run the hoop by aiming at the corner peg instead of the hoop. It is a totally different feeling and helps to distract from the thought of running (or failing) the hoop.*

straight rush versus in the free shot. And they are often relieved to learn that there is a reliable (*and scientific!*) aiming procedure for angled rushes; please consult the Appendix for a discussion of the *½ ball rule*.

1-6

If you find yourself rush-challenged, then it can be useful, in a practice session, to carry around an extra ball during a break and hit it the desired rush distance before selected rush attempts, trying to make the actual shot repeat in feel immediately thereafter.

<u>Rushing Drill from c1</u>

In c.10 and AC, the mark-in boundaries are at 36", and the corners are squares with 36" sides, encompassing 1,296 sq inches. All of this is compressed in A6W where the mark-in boundaries are at 9", and the corners are 9" squares with only 9" sides – ¼ the length – encompassing only 81 sq inches – 1/16th of the area [30]. We suggest practicing line-rushes using the 9" mark-in rule that applies in A6W. After practicing at 9", play at 36" will seem easy! Try this drill at various distances to determine your comfort zone. Here are some suggested rushes [31]:

(i)   From c1 with both balls on the west boundary: rush a ball to c2, h(2), h(7), h(6), h(11), and h(8).

(ii)   From c1 with both balls on the south boundary: rush a ball to h(1), h(5), h(12), h(4), h(9), and c4.

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[30] The importance of judging whether or not a ball actually makes it into a corner play has led AC to make 3" high corner pegs optional. They are often seen in tournament play. *Strangely, such markings do not exist in A6W even though the tolerances are so much tighter.*

[31] We recommend doing the mirror image rushes from other corners to ensure comfort in both right and left directed rushes.

<u>Improving Shooting Accuracy to Corners</u>

... it may be worth while to point out that there is a wrong and a right way of shooting into a distant corner. A player who wishes to reach Corner I from the neighbourhood of Corner II or Hoop 2 should on no account aim at the corner flag, for a comparatively slight error on the right will cause him to miss the corner by perhaps several yards. It is not even safe to aim at the corner spot when one is shooting along a boundary. In the case supposed, it is better to aim say, five or six feets from the flag; any errror to the right will then probably result in a corner ball, while only a very bad shot to the left will miss the corner spot by more than a couple of yards.
(<u>Op. Cit.</u>, Locock, pages 75, 76)

We suggest that you attempt h(1) from three feet [*until you make it (!)*] and then shoot this ball to c1. Repeat making h(1) and then shoot to other corners, c2, c3, and c4. *Did you reach the corner? Really? Really-really?* As a secondary drill, place balls on the four corner spots. Again, make h(1) and set a rush for one of the corner balls, specifying, before you shoot, where the rush will point (east/west or north/south) relative to the corner ball.

Taking-Off to Oppo Balls

Take-Offs are, in fact, Croquet Shots that move both balls. We discuss them here because, at least for thin take-offs (*thick* take-offs are discussed in the Appendix), the mechanics and calculations needed for successful shots mimic single ball shots.

It is critical with any Take-Off to make sure that the balls are touching before you swing! And you should adjust your aim to allow for pull (which is also discussed in the Appendix). It is important to be able to *switch-hit* – to Take-Off from either side of a ball! This was a *sticking-point* for Keith Wylie in his teachings as was his desire to have Take-Offs aimed correctly:

We get set in our ways, prefering the strokes we do best and letting our less good strokes atrophy.
One of my bêtes noir is the player who always takes off from the same side and "cannot" take off from the other.
(<u>Op. Cit</u>., Wylie, page 112)

... you have just hit-in and are taking off to U and K <u>(where U is left of K)</u>. You want to roquet one toward the other so as to make it easier to get a good rush to your hoop, so aim your take-off to the left of U or to the right of K. Every now and then I am surprised to see experienced players making the error of taking-off towards a spot midway between two such balls.
(<u>Ibid</u>., page 115)

Wylie's concern is expressed in the context of AC where Striker can rush one Oppo out of bounds, mark-it in, and then approach the other with a short Croquet Shot. His concern is also relevant in A6W. But, in A6W you also want to try to lag close to the boundary on one side of the ball or the other, making it practical to rush the Oppo somewhat more *along the boundary* instead of *toward it*.

Our Take-Off drill has you place a ball in a corner at either 9" or 36". Then, from various distances, Take-Off to it. If the corner ball is on the 36" corner, then rush it out of bounds. If it is at 9", then attempt to roquet it while keeping both balls in bounds.

Finally, if you find yourself Take-Off challenged, it can be useful, in a practice session, to carry around an extra ball during a break and hit it the desired Take-Off distance before each Take-Off attempt, trying to make the actual shot repeat and feel the same immediately thereafter. Closing your eyes on the down swing provides interesting and useful feedback.

2.. RUNNING BREAKS

... your subconscious cannot tell the difference between what's imagined and what takes place in real life.
You can leverage this principle by using your imagination as a substitute for practicing.
And if you imagine something that's perfect rather than trying to (physically) practice the same thing,
you're more likely to make these perfect memories permanent.
(Reg Bamford, "A View from the top", <u>BECT</u>, page 5)

The premise of this book is that learning to play Croquet is all about learning to run breaks. This is a process that ultimately demands time be spent out on the lawn *doing it*. But required time *out there* can be reduced/enhanced by *practicing* in the comfort of your home on a Magnetic Croquet Board and/or by just closing your eyes and *imagining* the balls as they move around the lawn. With practice, you too will be able to run all manner of breaks and Peeling turns in these modes. We highly recommend that you set-up the figures shown in this book on the lawn, on your magnet board [32], and in your brain, and then manipulate the *balls* with your mallet, fingers, or subconscious. In this process, it is helpful (*and less stressful*!) to know [not guess at (!)] all distances involved. So, print out, study, and, when there is any doubt, refer to the Objective Distance Charts we provide in the Appendix.

Traditional Break Play

A 2-Ball break often precedes a 3-Ball break; Which often precedes a 4-Ball break; Which often wins the game!

Virtually every book written on Croquet [33] describes making multiple hoops in a single turn – *running a break*. Invariably, the building blocks are the same: (i) The 2-Ball Break – claimed to be easy to understand, but hard to execute; (ii) The 3-Ball Break – fairly easy to

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[32] Magnetic Boards are available at most croquet association stores.

[33] There are many discussions from across *various* oceans written a while ago (but still relevant to today) by Locock, Tollemache, Cotter, Ross, and Solomon. Two more recent examples are Chapters 4, 5, and 6 (*Classical Break Theory, Modern Break Theory,* and *Enhancing the Break)* in <u>Complete Croquet</u>, James Hawkins 2016, and Chapter 2 ("The Basics") in <u>Beyond Expert Croquet Tactics</u>, Keith Aiton, 2019. There are also presentations of these ideas from Americans: Osborn (pages 148-161), and Bob Kroeger and Teddy Prentis in their <u>Croquet Strategy Books</u>.

understand, but fairly difficult to execute; and (iii) The 4-Ball Break – easy to execute (*supposedly!*), but hard to understand. We summarize past works and then describe additional ways to think about, build, stress, run, and repair breaks.

Play With Just One Ball

You have just come on the lawn to start a turn. Your ball happens to be in perfect position to make your Current-Hoop, but no other ball is nearby. How far can you progress? The answer (from GC!) is just one hoop if you are for an even-numbered hoop. With odd-numbered hoops *and luck*, progress can be extended to two hoops but no further as there is no way to turn a corner.

Making a hoop (or two) as your entire turn can be useful at times, but it is *not* running a break which, by definition, has the potential of making multiple hoops, and perhaps 12 to form an *all-around* break. To run a break requires involving 2, 3 or 4 balls.

The 2-Ball Break

Now there are two balls involved – the Striker-Ball (call it u) and a second ball (r). We start the process with u in position to make his hoop, shown here at h(1) with r as the Reception-Ball situated on the non-playing side of the hoop, <u>Figure 2-1</u> [34]. To continue, (i.e., *to run a break*!), u must make his hoop and then rush r from Reception at the initial hoop to Pioneer [35] at the next hoop. Then u croquets r to Reception while going to position at that hoop. This process is repeated at each hoop in the break.

There are two basic ways to proceed: (i) With a forward rush, followed by a short Croquet Shot, or (ii) Without a forward rush – just a roquet – followed by a long Croquet Shot. <u>Figures 2-1</u> to <u>2-6</u> show the two possibilities.

In both cases, only three shots are used to progress between hoops – the hoop shot, the rush/roquet, and the Croquet Shot. A 2-Ball break is *circularly difficult*: How hard you run a hoop and where you place the Reception-Ball dictate whether or not you get a forward rush. Then, how skillful you are with the follow-on Croquet Shot (be it long or short) dictates where Striker and the Reception-Ball end up and therefore how hard you need to run the hoop!

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[34] A more traditional presentation would show the start of a break with u *ball-in-hand* at h(1). We prefer starting with u in position to make the hoop, because, when we get to 3 and 4-ball breaks, we are not forced to have the last Pioneer-Ball become the next Reception-Ball. We have adopted this format here and in all of our books because it allows for Load & Holds (L&Hs), an often-forgotten art, and an extremely useful tool.

[35] Additionally, we find the common usage of the terms Object-Ball or Pilot-Ball confusing and prefer to refer to balls by Reception, Pivot, or Pioneer.

Start **u in position at h(1)** **r as Reception**	**With a Forward Rush** **u makes h(1)** **stays south of r**	**u rushes r** **forward to h(2)**	**Without a Forward Rush** **u makes h(1) but** **goes north of r**	**u roquets r** **no forward rush**	**Common End** **Croquet Shot** **u to pos., r to rec**
2-1	2-2	2-3	2-4	2-5	2-6
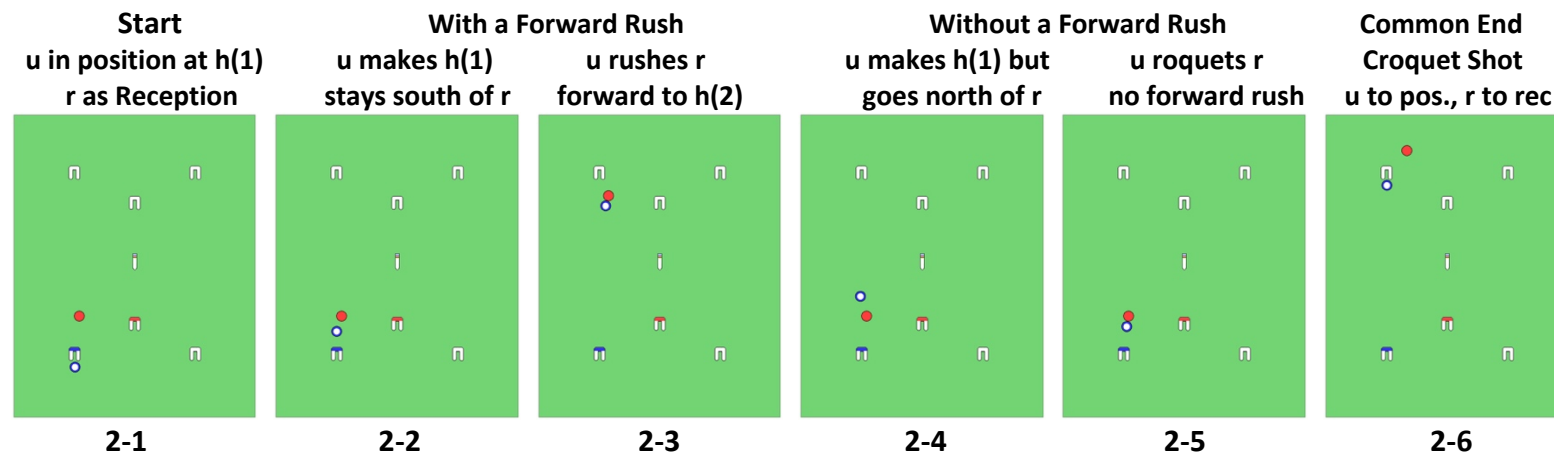
Hoop shots for even-numbered hoops can be run *out-of-bounds without incurring end-of-turn* (in c.10 and AC, but not in A6W), while odd-numbered hoops can be run toward the next hoop. These observations suggest placing the 2nd ball in 2-Ball breaks relatively near to even-numbered hoops and the boundary, while pioneers for odd-numbered hoops are better placed 1/3 to 1/2 way toward the next hoop [36].

Here are two videos on 2-ball breaks: Bob Kroeger exhibiting a 2-ball break (This video *is without sound!*) and Paddy Chapman running a 2-ball break.

The 3-Ball Break

Now three balls are involved – Striker, u, along with r and k. The 3rd ball (k) allows Striker to *re*-address – *adjust* – the ball at his Current-Hoop while simultaneously beginning the process at his Next-Hoop. We demonstrate this by having the 3rd ball, k, be in Pioneer-Position at Striker's Next-Hoop, h(2), when Striker, u, is in position to make his Current-Hoop, h(1), and r is waiting as the Reception-Ball on the non-playing side of h(1) as shown in Figures 2-7 and 2-13 that start the next two panels presented below.

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[36] Paddy writes: *I think there are two schools of thought here. I'm in the "other" one. I tend to favour (if possible) approaching the hoop from very close while sacrificing distance on the reception ball. It means that I'm more likely to get a dolly position at the hoop, and in turn I don't have to use as much power in running the hoop - ultimately striker's ball covers less ground, meaning more control overall, and hopefully a better rush to the next hoop.*

3-Ball breaks may, <u>Figure 2-8</u>, or may not, <u>Figure 2-14</u>, have a useful rush on the Reception-Ball after the hoop is made. The Croquet Shot on the Reception-Ball (<u>Figures 2-9</u> and <u>2-15</u>) that sends it to h(3) determines whether or not Striker gets a 2nd useful rush. Thus, Striker may get zero (shown in the first panel) one (not shown), or two rushes (shown in the second panel) during play to a particular hoop in a 3-Ball break. If the Pioneer-Ball at h(2), k, is well placed, then the 2nd rush is of less consequence than the first. If k is errant, then the 2nd rush assumes greater importance depending on how far k is from the hoop.

3-Ball Break with Two Useful Rushes

u in pos, r reception k is pioneer at h(2)	u makes h(1) has forward rush on r	u rushes r north	u croquets r to h(3) and goes to k	u rushes k toward h(2)	u croquets k to rec and goes to position

2-7	2-8	2-9	2-10	2-11	2-12

3-Ball Break with No Useful Rushes

u in pos, r reception k is pioneer at h(2)	u makes h(1) no forward rush on r	u just roquets r	u croquets r to h(3) and goes to k	u just roquets k	u croquets k to rec and goes to position

2-13	2-14	2-15	2-16	2-17	2-18

As dictated by circumstances and Striker's skill (!), most 3-ball breaks end up having a mixture of useful rushes and not. In each case, there are only 5 shots available to make the next hoop.

Here are two videos we recommend on 3-Ball Breaks: Bernard Neal, Demonstrating A 3-Ball Break, 1981 and Bob Kroeger executing a 3-ball break [37].

The 4-Ball Break

... when once a good player has made a four-ball break,
his opponent's chance of winning the game is practically gone.
(Op. Cit., Locock, page 13)

Now all four balls are involved. Striker, u, along with r as the Reception-Ball, k as the Pioneer-Ball, and now y, the 4th ball, as the *Pivot-Ball.* A lot of questions surround what to do with that *damned* 4th ball! Promoters of the two major approaches, *Classical* and *Modern,* both contend that the goal is to facilitate a break that can be run without the need for long, wide-angled, split shots or long rushes. Then they debate the placement of the Pivot-Ball! We briefly discuss each point of view and then turn to three lesser-known ways to run 4-Ball breaks – with *pivot-swaps*, *load-and-holds*, and, finally, by *going ball-to-ball*. The first two can shorten distances and facilitate recovery from problems while maintaining recognizable roles for the balls (Reception, Pivot and Pioneer), while the third gives up all such pretense and just tries to hold onto the break!

The Classical Approach: Here the Pivot-Ball is maintained near the peg and breaks are run (*basically!*) as a combination of *straight half-rolls* and *take-offs*. Don Gugan gave this procedure a memorable name – the *Star 4-ball Break* – based on the image the Striker-Ball traces out as he goes to and from the peg, and thence to and from his hoops [38].

Using all four balls allows seven shots to make each hoop as shown in the next panel of figures, with shots numbered in red. Figure 2-19 shows u in position at h(1). #1: u makes h(1) and either gets a forward rush or not, *shown here as not getting it*, Figure 2-20. Then #2: u roquets r, Figure 2-21, and #3: croquets r to the Pioneer position at h(3) as u goes to y, the Pivot-Ball, at the Peg, Figure 2-22. The idea of the Classical approach is to leave the pivot ball at the peg and therefore #4: u simply roquets y, Figure 2-23.

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[37] Once again, Kroeger's video leave it to you to self-narrate...

[38] Croquet, A Course for Beginners, Bristol Croquet Club, 2011, page 33.

#5: u takes off from y, going to k at h(2), <u>Figure 2-24</u>. Given the position of k, no rush was necessary so **#6:** u simply roquets k, <u>Figure 2-25</u>; and then **#7:** u takes croquet, sending k to Reception at h(2) as u goes to position at h(2), ready to make h(2), <u>Figure 2-26</u>.

Start u in position	u makes h(1) no forward rush	u roquets r	r to h(3) u to y	roquets y	takes-off to k	roquets k	croquets k u to position

2-19	2-20 **#1**	2-21 **#2**	2-22 **#3**	2-23 **#4**	2-24 **#5**	2-25 **#6**	2-26 **#7**
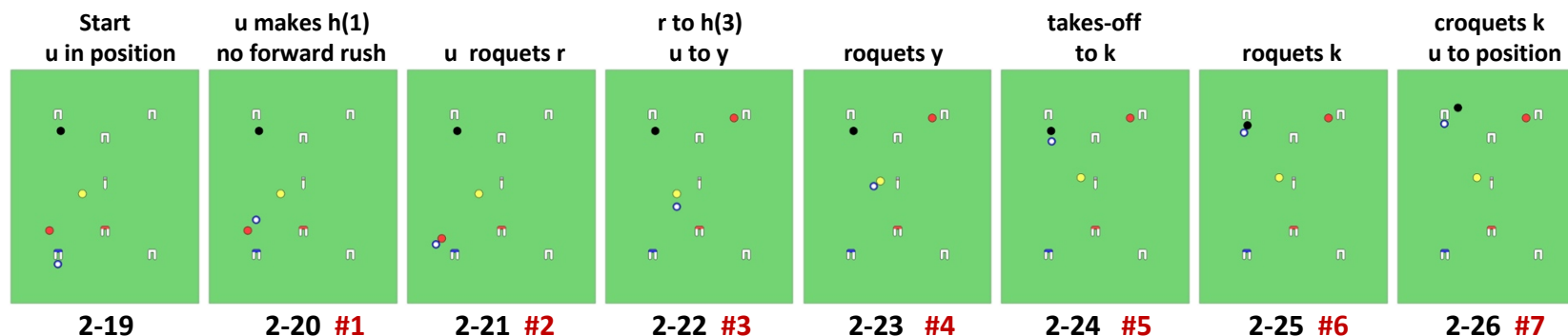
<u>The Modern Approach</u>**:** Hawkins summarizes the difference between the *Classical* and *Modern* Approaches:

> *... (it) seems like a small one, but it has a huge effect. In the classical technique, the pivot ball … remains near the peg and the*
> *striker's ball … covers the thirteen-yard distance from the middle of the lawn to each hoop.*
> *In the modern game, the pivot ball moves so that (sic. the striker's ball) does not have to.*
> (<u>Complete Croquet</u>, Hawkins, Crowood Press, 2016, page 49)

In the Classical Approach, the Pivot-Ball is left close to the peg and Striker relies on half-rolls to get to the peg and then long Take-Offs to get to the Pioneer at the next hoop. In the Modern Approach, the Pivot-Ball is intentionally moved – *ideally* it rotates around the peg but at a distance (often 5-7 yards or more) from it, allowing Striker to shift his focus to short rushes and drive shots. In the Modern Approach, there is, *ideally*, a continuous dance of short rushes of the Pivot-Ball and short Croquet Shots by Striker.

The Modern Approach is a pleasure to watch in the hands of a good player. But it takes skill, and many beginners find it frustrating, both in concept and practice. In fact, without FIXs and SIMs, we believe inexperienced players break down almost as often trying to move the Pivot-Ball, *to the desired spot*, as they do trying to make a hoop! *Some conclude that it is easier not to use the 4th ball!* [39]

---

[39] Paddy suggests: *… a practice routine for new players who are trying to learn this. Every time they make their hoop and roquet the reception ball, before playing their next Croquet Shot, they go and adjust the pivot ball to where they think it should be perfect, i.e., the easiest place for them to access it. That'll soon teach them of the benefits.*

Which method is better? we side with Locock when he quotes from an August 7, 1907 (!) article in the C. A. Gazette entitled,

Why People do not Improve:

Above all, beware of the centre-ball fallacy.
The centre-ball is not a fixture, but a moveable object
to be placed in whatever position will make the break easiest.
Op. Cit., Locock, page 42.

Two good videos are: 4 Ball Modern Break by Bob Kroeger and Nigel Aspinall Demonstrating a 4 Ball Break In Florida In 1981.

Additional Ways to Run Breaks [40]

Pivot Swaps: In our book on COAC, we show that, starting in Figure 2-27, [with u in position to make h(1), r as Reception at h(1), k as Pivot and y as Pioneer at h(2)], there are 6 different ways (what we call *Procedures*) u can use to organize the balls on his way to making h(2). These are shown in Figures 2-28 to Figure 2-33 with our names for them from COAC listed above each Figure.

Start	TAC	STANDARD	EXPEDITE	REPEAT	LIMITED	MYSTERY
2-27	2-28	2-29	2-30	2-31	2-32	2-33

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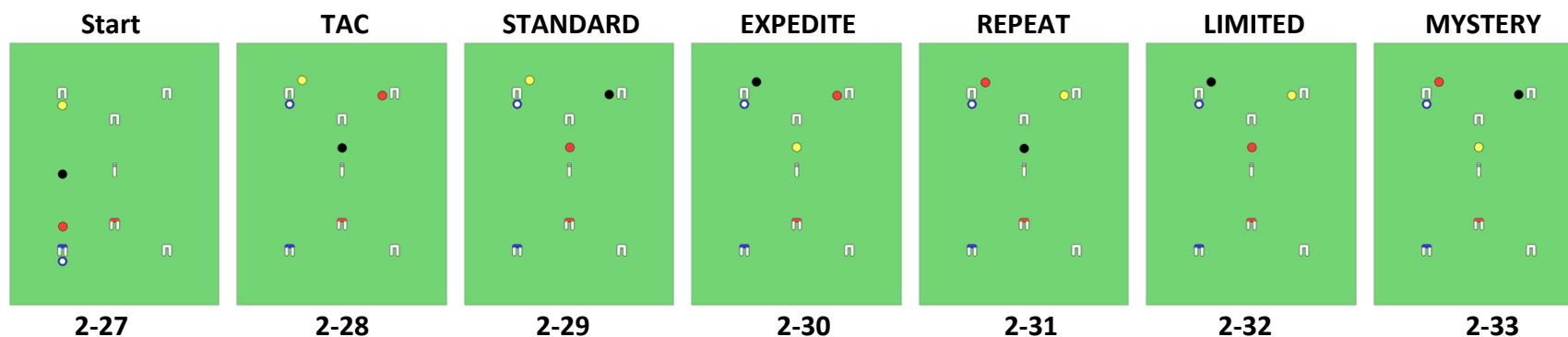
[40] Kroeger and Prentis discuss some of these same ideas. Op. Cit., page 12.

The one you should recognize immediately is shown in Figure 2-28 and is named TAC (for *Traditional AC*). The Reception-Ball, r, from h(1) is sent to be Pioneer at h(3), the Pivot-Ball from h(1), k, remains the Pivot-Ball but now for h(2), and the Pioneer-Ball, y, at h(2) becomes the Reception-Ball at h(2). *Based on where the Pivot-Ball is placed – TAC can follow either the Classical or the Modern approaches.* In COAC, the first ball Striker roquets after making a hoop determines the Color-Order (CO) of the other balls he can use [41]. While not required, in Figure 2-28, u will most likely choose to roquet y, establishing his CO as (y, r, k) [42] which then applies until he makes h(3).

The next procedure, Figure 2-29, will also be familiar, at least to advanced/experienced players of AC or A6W. Here the balls go through a cycle [43]: Reception to Pivot, Pivot to Pioneer, and Pioneer to Reception. Important for this discussion is that the ball that is Pivot changes at each hoop. *In the lingo*, there is a *Pivot-Swap* at each hoop.

Hawkins (page 57) identifies Pivot-Swaps as useful tools for fixing problems. For example, suppose from Figure 2-27 your effort to send r to h(3) falls short. The situation can be redeemed with a Pivot-Swap, by making a second attempt to send a Pioneer (following the adage, *one bad ball deserves another!*) [44].

In addition to fixing mistakes, using a Pivot-Swap is the STANDARD way to proceed in COAC, hence the name. It progresses balls through their prospective roles in a simple and predictable manner that is *extremely useful* for Peeling in COAC [45]. COAC aside, in AC or A6W, proceeding with Pivot-Swaps often rewards Striker with shorter pioneer-establishing Croquet Shots than does TAC.

Load and Holds: Getting from Figure 2-27 to each of Figures 2-30 to 2-33 is doable but each requires a Load & Hold (L&H). *This is when the last ball Striker uses to make his Current-Hoop is different than the first ball he roquets after scoring the hoop.*

---

[41] u will likely roquet r, setting CO as (r, k, y). But he could choose to do otherwise: If he roquets k first then CO is (k, y, r) and if he roquets y first it is (y, r, k).

[42] After getting to h(2) with TAC, it is quite difficult to make h(3) using all 4-balls because the Functional-Order of the balls (FO) is out of sync with their CO. COAC has ways to carry on, (e.g., Striker can run one hoop using only 3-Balls, using the Procedure named *3-FIX*, because it restores the sync of CO and FO).

[43] That is, making three hoops in a row using a pivot-swap at each hoop will return the balls to their original roles (Functional Orders) and their original CO...

[44] Kroeger and Prentis attribute this statement to Reid Fleming, Op. Cit., page 48. Another version is Two bad pioneers are better than one! (Paddy Chapman).

[45] STANDARD maintains CO – if u roquets y then the CO he establishes until making h(3) is (y, r, k) and the functional order and CO stay in sync.

This bit of magic is known, but underutilized, in both AC and A6W circles. Consider Figure 2-34 where r is for h(1). One way to establish a break is to have r rush y to Reception at h(1), Figure 2-35, and then take-off to u in c1, Figure 2-36. r roquets u and sets up to take croquet, Figure 2-37. Finally, r croquets u to Pioneer at h(2), *loading* that Pioneer, while *holding* position at h(1). r is set-up to continue his break, Figure 2-38. *The last ball used to make h(1) was u, but the first to start to h(2) is y, so the Croquet Shot in this example is a L&H [46].* In COAC, each of the four remaining procedures, Figures 2-30 to 2-33, provide a valid, and sometimes useful, way to continue a break, but each requires a L&H.
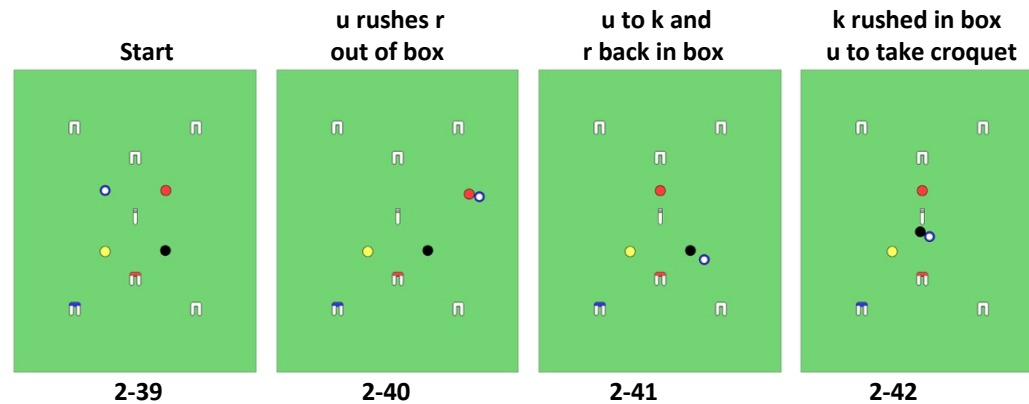
start	r rushes y	r takes off to u	r roquets u	the L&H!
2-34	2-35	2-36	2-37	2-38
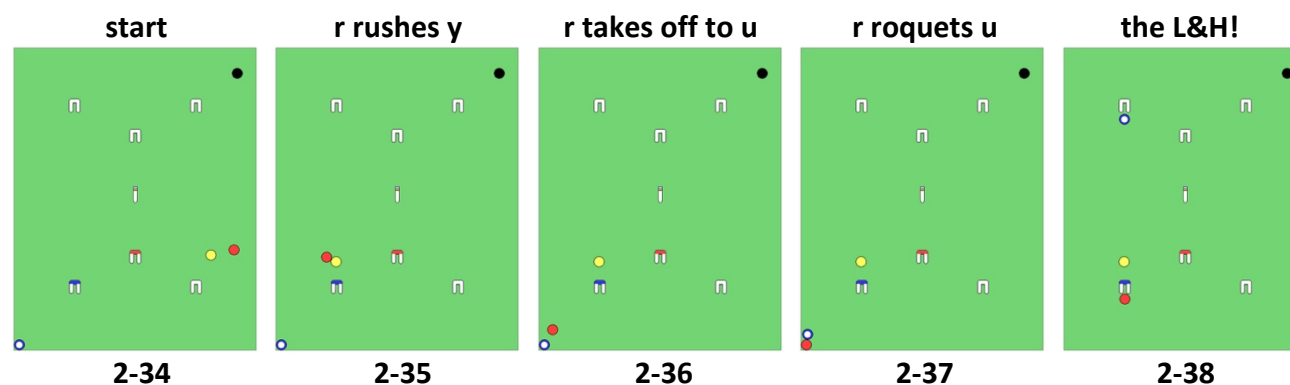
Ball-to-Ball: Methods of running breaks presented so far seek to keep the balls in recognizable roles – Reception, Pivot or Pioneer – as they proceed in a break. But nothing in the rules requires this to be true! A drill we devised, that was the precursor to our COAC game, illustrates this point: Consider Figure 2-39 as the starting point for a 4-Ball break. Notice that, by design, all the balls start within a 7-yard box (The *Box*) centered on the peg. Suppose we stipulate that u is Striker and is for h(1), and that, *for this drill*:

1.. u *must* use all three of the other balls to make each hoop.
2.. u can rush the 1st or 2nd balls he uses outside the Box but must croquet them back into the box as he goes to the next ball.
3.. The 3rd ball can be rushed to the hoop and remain outside the Box as the Reception-Ball as Striker goes to position.
4.. After making the hoop, Striker must return the Reception-Ball to the Box and use the other two balls to make the next hoop.

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[46] It is worth noting that there are certainly advantages and disadvantages to this method, i.e. if r doesn't gain position at h(1), then he has left y somewhat exposed in the middle of the court. However, risking one big Croquet Shot for a break is often worth the risk/reward.

Start	u rushes r out of box	u to k and r back in box	k rushed in box u to take croquet

2-39	**2-40**	**2-41**	**2-42**

It is possible to run a break that always keeps two of the balls in the box. Clearly, the difficulty of this drill depends on the size of the Box. *Bigger is easier*... Also, it is fun, but not necessary, to maintain CO. Without CO the drill lends support to the adage that: *2-Balls together equal a Pioneer* and that this concept can be used to run any break, especially in the build or repair stages.

k left in box as u to y	u rushes y to h(1)	y to reception u to position	u makes h(1) has rush on y

2-43	**2-44**	**2-45**	**2-46**
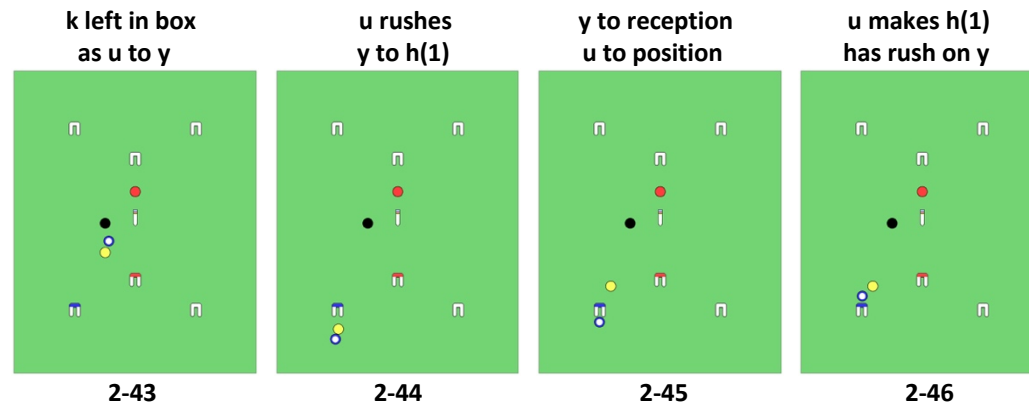
Try this drill! It is a great way to practice all aspects of break play – rushes, approaches, and hoop shots. It seems effortless until a rush fails which causes a croquet shot to fail, which stresses a hoop shot. This establishes the benefit of well-placed pioneers in normal break play.

Building Breaks: Puzzles From 1910

Locock's book has three wonderful chapters devoted solely to 4-Ball breaks! He has something to contribute to the debate between the Classical and the Modern approaches and a lot to say about break play in general:

How often does our partner ask us: 'Send Black to the centre, I suppose, and try to get a rush on Red to the hoop?' To which I reply 'Get a rush on Red to your hoop, and let Black go where it likes' ...Take care of the next point in order and the remainder of the break will take care of itself. That is the real secret of break-making before the break is established. Let the first hoop be easy, and the rest will follow; because any easy approach to a hoop means subsequent command over rushes, and consequently command of the break. If, on the other hand, when the break is difficult, you try for too much --- e.g., the stereotyped plan of sending a ball to the next hoop but one, and another to the magic 'centre', you will probably not make a point at all. Most games are lost this way.
(Ibid., page 42)

Here are five Break-Establishing puzzles and solutions that Locock shares (pages 40-43), where he says that the last four were taken from a Tactical Competition in the Croquet Association Gazette. We present them here as presented by Locock, modernized for clarity, where "L #" stands for number Locock used in his book. These puzzles are worth the time spent analyzing and running them, even though styles of play have changed over time and modern *experts* may quibble with some of Locock's solutions.

LOCOCK PUZZLES

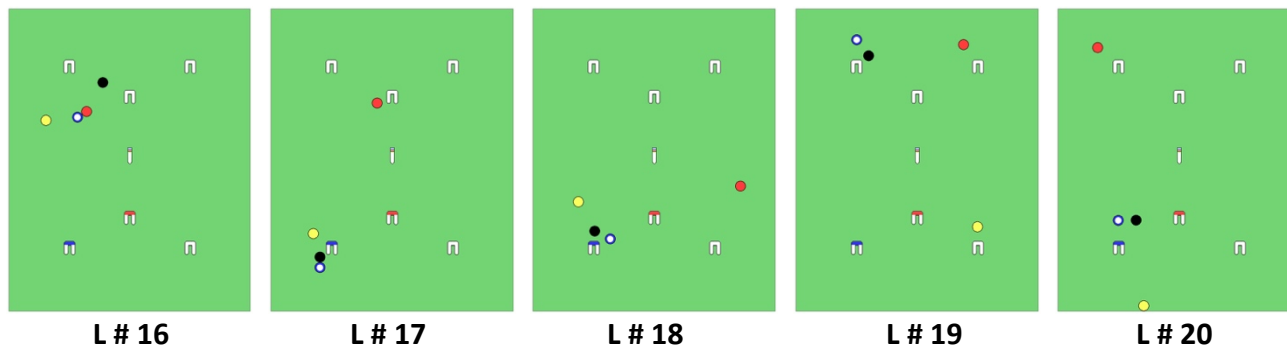| L # 16 | L # 17 | L # 18 | L # 19 | L # 20 |

<u>Figure L#16</u>: u is for h(2) and is in contact with r and about to take croquet. u should send r to h(3) stopping north and east of k. Then u should rush k to the boundary south and west of y, followed by croqueting k north-east while gaining a rush on y to h(2).

<u>Figure L#17</u>: u is for h(1) and is in contact with k. r is not *favourably placed at h(2)* so a rush on r to h(2) from east and south of h(6) is desirable and y *wants bringing into the game*. u approaches h(1) croqueting k level with and just west of h(1). u makes h(1) and then u rushes k to the boundary south of y, croquets it toward the peg, gaining a rush on y toward h(3) reaching the rush line on r to h(2), *whence he takes-off to r and rushes it to h(2). It is not necessary to split y to h(3), since it will be easy to arrange subsequently to rush k into the rush-line through y to h(3).*

<u>Figure L#18</u>: *Here u who is for h(3), gets a four-ball break as follows*: he rushes k to the west boundary level with y. u croquets k toward h(4) gaining a rush on y to r. He rushes y to the east boundary south of r. *Thence he takes off thickly on the right along the line to r, rushes r to h(3).*

<u>Figure L#19</u>: u is for h(3), r is poorly placed at h(3): *u will get the easiest approach to r, <u>not</u> by rushing or splitting k to the centre, but by taking off from where it lies. After making h(3), he will be able to recover k by rushing r to the boundary north of h(2), croquet r toward the centre, and obtaining a rush on k in the same direction.*

<u>Figure L#20</u>: u has just run h(1). *The split stroke sending k to h(3) and u past r is very difficult, and, even if it comes off fairly well, might necessitate another awkward split after h(2) is made. A take-off behind r will clearly be far easier than the split, but the third hoop must also be in some way prepared for.* u rushes k a bit north and east of y and then Takes-Off to r. h(2) is made and u gains a rush on r to h(4) or to c1. If the former then u Takes-Off to y, croquets y into the lawn while gaining a rush on k to h(3). If the latter then u croquets r toward h(4) going to y, croquets y into the lawn gaining a rush on k to h(3).

Keith Wylie was one of the keenest observers of break-play of all times. Although written for AC, his Article 3: *Establishing a Break: Style and Technique*, pages 73-128, is relevant to *all* Croquet games. Wylie begins:

Many of the leading players have different break-building styles and I cannot say that such-and-such way of building a break is "right" or "wrong". All the same, it will be found that the best styles can be seen as being composed of three identifiable components which I shall call "aggressive croquet", "precision croquet" and "canny croquet". Few players succeed in totally suppressing a fourth (unwanted) component, "Monte Carlo croquet". Any successful break-building style must draw on the first three components in

proper proportions. In the course of one game you will at different times need to be bold, or stolid, or reserved and will at all times need to avoid caprice and bad temper. My four stylistic components are like the four humours, respectively bloods, phlegm, melancholy and choler. A successful style resembles a well-balanced temperament.

Wyle follows this introduction with 50 pages of wonderful examples that we recommend you read, study, and practice on the lawn, on your Magnetic Board, and in your mind – *multiple times*!

Conclusion

There is no *right way* to run a break. There are, however, *effective* ways – ones that keep your break going and plan for the future. They are often a blend of strategies. You may never play COAC, but awareness of its *Procedures* may help you find creative solutions to problems on the lawn regardless of the rules you are following. You will likely run into situations where a Pivot-Swap or a L&H would be useful; knowing how to proceed with these strategies and having practiced them will afford you greater freedom. Finally, we *guarantee* that situations *will* arise where you are forced to go Ball-to-Ball to continue your break!

Before moving on to c.10 itself, we want to briefly discuss the notion of *discretion over valor*. In <u>Croquet Secrets</u>, [47] John Riches suggests that there are times where it can be better (*in a risk/reward sense*) to reset the balls providing a 3-ball break – *that becomes available if Oppos miss* – than it is to try all sorts of contortions (*difficult shots*) that can end up making one hoop but still leaves you without a break. This *Next Break Strategy,* as he calls it, has particular value in AC where the next break can be set for either ball. It is less valuable in c.10 where rotation only allows the break to be set for Partner and it has added risk in A6W where COD is often incurred setting the break.

Many of the break-running strategies discussed above are observable in the following videos (in the context of A6W): <u>Matthew Essick, 2021 A6W Finals</u> and <u>Bennetts v Van Tassell/Scalpone A6W Nationals 2021</u>.

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[47] <u>Croquet Secrets, The collected writings of John Riches</u>, Edited by Wayne Davies, page 291-352, Xlibris Corporation, 2008.

3.. c.10: THE FOUNDATION

This chapter *re-introduces* Croquet as it was played in 1910, *c.10.* On the one hand, it is AC with sequence/rotation of the Striker-Balls and before lifts, (i.e., it is AC before the EBR!). On the other hand, it is A6W before COD (and absent other *details* that define A6W!). Whichever way you choose to view it, c.10 is a good game, and is especially well suited as a tool for learning to start, run, and finish breaks. The usefulness of c.10, your speed of progressing, is *enhanced when it is played in conjunction with FIXs and SIMs*.

Allotment of FIXs

Your first activity is to run three different 6-hoop breaks using regimes we have discussed and ones you will ultimately combine to play any game of Croquet. Of course these are 2, 3, and 4-Balls breaks. Set up the balls at h(1) as shown in <u>Figures 3-1</u>, <u>3-2</u>, and <u>3-3</u>. Then *run a break* using as many FIXs as needed to progress from h(1) through h(6), with or without SIMs as you choose. For most people, the number of FIXs needed *decreases* as the number of balls available increases, illustrating that the supposed *ease of understanding* of a 2-Ball or a 3-Ball break is more than offset by the increased difficulty in execution, and that the supposed *complication in understanding* of a 4-Ball break is more than offset by its ease of execution. 4-ball breaks are the goal; therefore your initial allotment of FIXs (*your handicap*) for c.10 starts equal to the number of FIXs you needed in the 4-Ball Test outlined above. You will want to adapt – *decrease(!)* – this amount as you improve.

2-Ball	3-Ball	4-Ball	Starting Positions	magnet board

| 3-1 | 3-2 | 3-3 | 3-4 | |
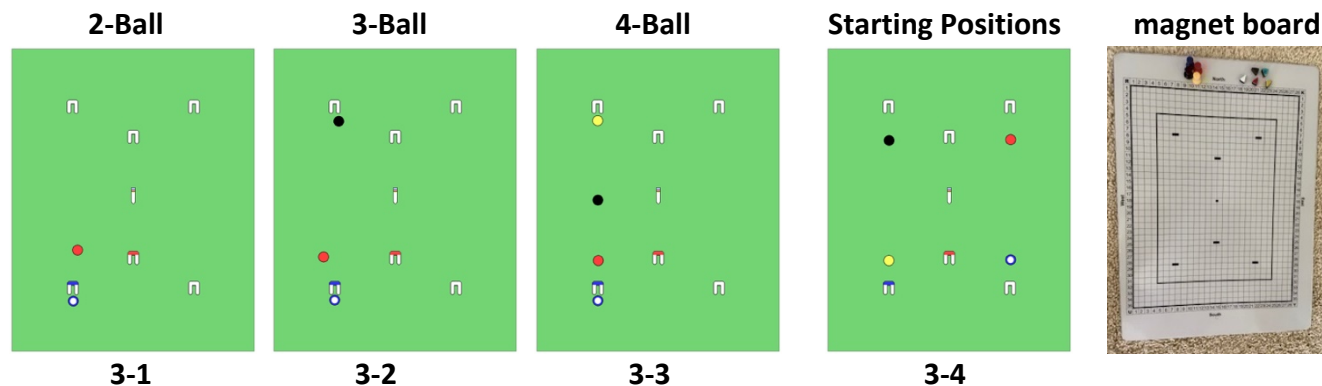
The 6-Wicket Challenge

So profitable is the four-ball break, that when feasible it should take precedence of every other mode of play …
([Op. Cit.](), Locock, page 12)

A way to become familiar with 4-Ball breaks is with our *6-Wicket Challenge* [48]. You run a 6-Wicket break with five additional rules:
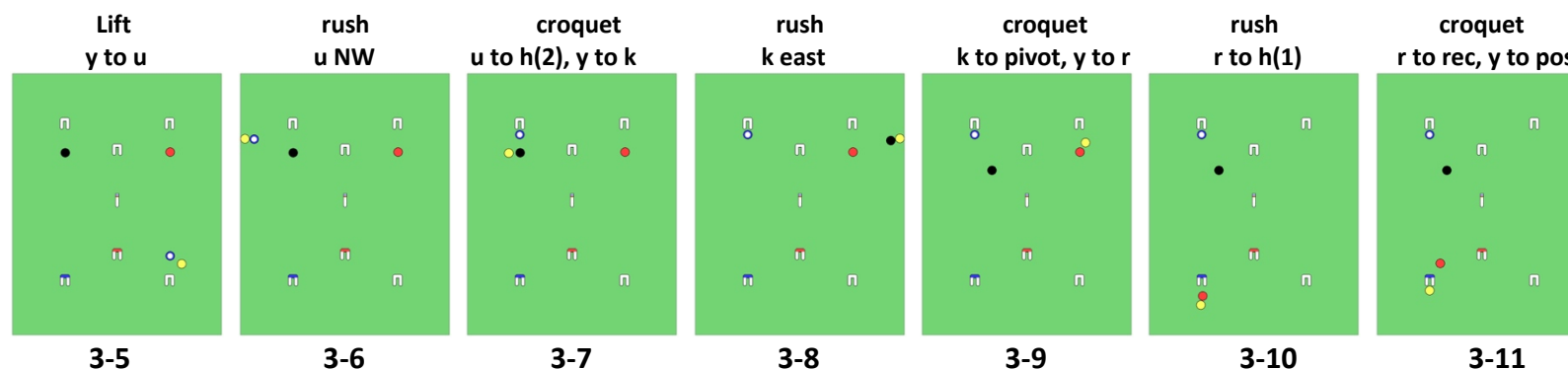
1. Ignore (for now) *openings* by starting each turn with the balls positioned approximately 3.5 yards in front of the corner hoops, as shown in <u>Figure 3-4</u>. The balls start in a Box (a *square*) centered on the peg, with each side being 14 yards long.

2. Each challenge starts with a *lift-to-position* – which is the placement of the Striker-Ball anywhere on the lawn, usually near to, but not touching, another ball to provide a *dolly-rush*. *This makes getting started a lot easier*!

3. Balls rushed out of bounds are marked-in 4-yards. The unnumbered image above shows Howard's magnet board. It shows a 4-yard mark-in border he added, as well as the *magnetic* tacks he uses as balls and the *magnetic wedges* he made and uses as clips.

4. Striker **must** use the other three balls – he has to create and run a 4-ball break – at each hoop!

5. Use FIXs as needed and SIMs *for all croquet shots* [49].

<u>Figure 3-4</u> illustrates why running a 4-ball break can be bewildering! In our discussion of COAC, we described how the four potential Striker-Balls each have six pathways they can follow – Striker can lift-to-position to any of the other *three* balls, and from there, he can go to either of the remaining two balls, and finally, he needs to approach his hoop using the last ball. Lots of choices! *Choosing the best and most efficient path amongst these six pathways is the essence of Croquet.*

---

[48] If you ever watch advanced players warm-up, you will see that they often begin by pouring 4 balls onto the lawn, picking one as Striker, and then developing a 4-ball break from where the balls lie. This is the backdrop of the 6-Wicket Challenge.

[49] Please do not resist using SIMs, at least not at this stage. Such *Macho behavior* will only slow your progress… How many FIXs did you use for failed croquet shots that could have been prevented with SIMs?

Figures 3-5 through 3-11 show the shot-by-shot progression from Figure 3-4 through one pathway from the start until Striker is to set-up for h(1). Because of its perceived difficulty, the chosen pathway would not be our first choice, but, none-the-less, it can be used effectively. Here y is Striker and is lifted to u to begin the turn. The rest of the shots follow as described above the figures.

Lift y to u	rush u NW	croquet u to h(2), y to k	rush k east	croquet k to pivot, y to r	rush r to h(1)	croquet r to rec, y to pos
3-5	**3-6**	**3-7**	**3-8**	**3-9**	**3-10**	**3-11**

Playing the Challenge: We want you to attempt 6-wicket challenges *multiple* times. Each time start from Figure 3-4 but varying: (i) the ball you choose as Striker, (ii) the 1st ball Striker goes to with his lift-to-position, and (iii) Striker's initial hoop. We recommend competing with friends and discussing strategy *as* each person plays (*How about…? Why did you do that? Did you consider...?*).

Increasing Realism: We want you to move toward increased realism as you become familiar with running 6-Wicket Challenges. Start by eliminating the 4-yard mark-in. Next, change the starting *lift-to-position* to a *lift-to-contact*, then to a *lift-to-baulk*, and then to no lift at all.

Finally, although we wince as we write this, you *can* run a challenge not using all four balls at all hoops all of the time, but *you must have a good reason for doing this* -- one that will survive, what we hope will be the withering criticism of your friends!

Two Strategies that Capitalize on Rotation

Running a break has focused so far on advancing your ball, the current Striker Ball. But there are two balls on each team, and both need *to get around*. Therefore, when running a break, you should be thinking not only of your own progress, but also that of your Partner (*and you should always be aware of the progress of your Oppos*!). We introduce two strategies that, when successful, benefit your Partner, and thwart your Oppos, thus helping your team. Importantly, these are useful to all games that involve Rotation (i.e., c.10, A6W, and CA7). They are: *Getting Spent for Partner*, and *Croquet-Outs* [50].
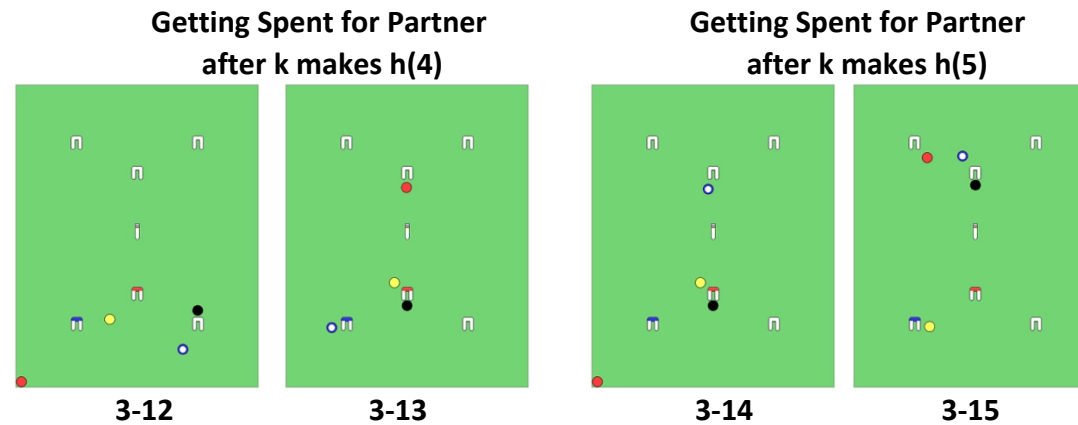
Getting Spent for Partner

In Figure 3-12, k is running a 3-Ball break and is positioned to make h(4) with u as Reception, y as Pioneer at h(5), and r as the *misplaced* Pivot-Ball, *hiding-out (!)* in c1. k wants to continue his break, perhaps to the peg, and, in the process, set a leave for his Partner, u. Hopefully y, the *Danger-Ball* (the ball that plays next), will miss his hit-in attempt or finesse, and then k can *watch from the bench* as u takes over and runs a finishing break. From this description, k has two reasons to want to incorporate (*get*) r:

    i.   It is easier to run a 4-Ball break than a 3-Ball break! So, the earlier k can *realistically* gain access to r the better, and

    ii.   Rotation tells us that k's Partner u will need access to r to start with a 3-Ball break. r is k's *Spent Ball*, the ball that did whatever he did (in this case, shot into c1!) before k started his turn. r will not play again until after u plays. Therefore, k can *get Spent for Partner*, with the result shown in Figure 3-13.

Progressing from Figure 3-12 to Figure 3-13 involves k: making h(4), rushing u toward h(8), Taking-Off to r, roqueting r, croqueting r to Pioneer at h(6) while going to y, roqueting y, and, finally, croqueting y to Reception at h(5) with k going to position at the hoop.

We want you to set up the balls as shown in Figure 3-12 and then practice getting to Figure 3-13. There is lots to work on! Notice the importance of the rush after h(4) and how there is a tradeoff between how far u is sent before the Take-Off to r: Too short and the Take-Off can become difficult; Too long and u can be left stranded close to the boundary, and even block r's path to h(6). Also, check-out y's position – west and south of h(5) – which facilitates k's ability to get to y at h(5) after sending r to h(6). *This looks simple, and can be simple, but only if you make it simple*!

---

[50] Peeling Partner at his hoop is another way to help Partner. We discuss Peeling later in this chapter.

Getting Spent for Partner
after k makes h(4)

Getting Spent for Partner
after k makes h(5)

3-12   **3-13**   **3-14**   **3-15**

When you have mastered this process after h(4), try it again starting at h(5), as shown in <u>Figure 3-14</u>. Here the desired result is shown in <u>Figure 3-15</u>. *[In reality, The shift from <u>Figure 3-12</u> to <u>3-14</u> could be the result of an aborted attempt after h(4)...].* For practice, you can finish k's break. As always, use as few FIXs as possible. *Other possibilities for getting the 4th ball are discussed later.*

Croquet-Outs

To give your partner an easy three ball break is a very much quicker way of winning a game than to miss a hoop and give your opponents the innings. A too <u>forward</u> game is, in fact, the most backward of all... (<u>Op. Cit.</u>, Locock, page 57)

k is once again running a 3-ball break in <u>Figure 3-16</u>. This time, r has finessed to c2. k failed to get a rush on y after making h(4) and chose to roquet y and then take off to u at h(5). k does not like his prospects (this consideration makes more sense in the context of COD discussed later). k chooses to end his break after making h(5) and turn the proceedings over to his Partner u, where u is for h(2). The desired result is shown in <u>Figure 3-17</u>.

Going from <u>Figure 3-16</u> to <u>3-17</u>: k makes h(5) and gains a rush on u to the north [approximately level with h(6)] and then, in a Croquet Shot, k sends u out of bounds besides r, as k goes to Pioneer position at h(2). *This is a Croquet-Out.* Notice that u is left close to r and k is *in the neighborhood* of u's hoop, h(2) [51].

---

[51] *Ideally, k ends wired from y, with y's only shot being at one of r or u. u is marked in 9" and will be level with r which is in c2.*

Croquet-Out After k makes h(5), u for h(2)		Croquet-Out After k makes h(6), u for h(2)		Rush-to the Attack
3-16	3-17	3-18	3-19	3-20
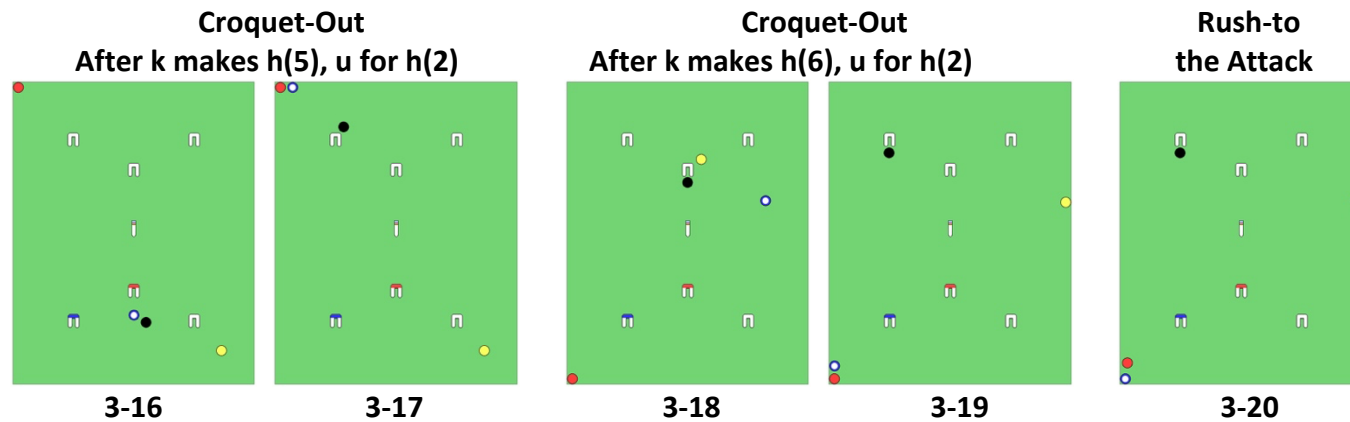
If y misses, or finesses, then u can start a break (initially with 3-balls) by sending r to h(3) and going to k at h(2).

We want you to try this. Be aware that rushing u toward h(2) is desirable – it makes the Croquet-Out easier – but this is not required. What is required is that the Croquet-Out be hit such that u *truly goes out of bounds*. Anything short of that can make u's subsequent roquet of r needlessly difficult [52]. If the shot looks like a ½, pretend it is a 1/3 or 1/4 centered on the distance the croquet ball goes.

When you have mastered this after h(5), try it after h(6) starting in <u>Figure 3-18</u>, where r is back in c1. *Notice that the desired result, as shown in <u>Figure 3-19</u> [53], only works if u can send r to h(3) from c1 as u goes to k at h(2).*

If this shot is not in u's repertoire, then k might want to rethink his strategy and end his turn as shown in <u>Figure 3-20</u>, using a *challenging* rush-to the attack, This *is analogous* to Locock's L#20 puzzle *presented above.*

If you have time, take y's shot. If you hit, then try to start and run a break for y; if you miss, then run u's break!

---

[52] There is the temptation, discussed over a century ago by Locock, to use the Croquet Shot to send u *toward* r and not truly out of bounds thus preserving Striker's continuation shot. But this is often asking for too much! If u does not end close enough to r, then the entire enterprise can fail (*if u can't get going*) no matter where k goes on his continuation shot! *Far better is to send u decisively out of bounds. This is doubly true in A6W where Striker ends dead on Partner*!

[53] Here we assume k makes h(6) and gains a rush on y to the east…

Openings and Leaves

Openings: Under the 1910 rules that Locock and Tollemache used, balls were immediately *in the game* and entered in Rotation from the A-Baulk. h(1) could be scored with a successful 6-yard hoop shot, as is still the case in AC today, although this was/is rarely done.

We could have adopted these rules for c.10. However, *our goal is to have the next game you play be A6W*, and later perhaps CA7. So we compromised! Yes, balls are immediately in the game but, the Start-in Area is taken from A6W – it is 3' south of h(1) with its length extended to 3' from 9" to allow access to any point on the lawn [54].

The opening turns in c.10, can involve considerable creativity, just as they can in A6W and AC! We provide only a few examples and leave the rest for you to discover. *Gaining the innings and/or running a break should be uppermost in your mind*.

Next comes the all-important question as to the correct length of the tice. ... Many years ago I came to the conclusion that the proper length, in good company, was about six yards. ... The standard of play has improved of late years, and the exact length must depend on what inducement (sic, the next ball needs) to shoot at the tice or not to shoot.
(Ibid, pages 183, 184)

The opening play of u: u starts *only* three feet south of h(1). Should u attempt the hoop? The answer is a definite *maybe!* If u makes it, then a point is scored, and a continuation shot is earned. But wherever u goes with his continuation shot, the same position could have been reached by ignoring the hoop and simply shooting there to begin with.

Figure 3-21 shows u in two possible places. Both are within r, y, and k's critical distance, which would also be the case if u stuffed h(1)! u to c1 puts u approximately 5 yards from the Start-in Line. *This is too short*! r should try to hit and move u knowing that if he misses, r can use a FIX, take a 2-foot rush, and then continue his turn! Figure 3-21 also shows u shooting to a tice position on the west boundary that u chooses to be 8-12 yards from h(1), depending on Oppo's skill. This is a good choice as the tice distance is beyond 7 yards. If r misses, then r *can* retry the shot using a FIX, but he *cannot* move r closer to u.

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[54] Locock notes that in 1910 *the wiring rules were in flux* (Ibid., page v) – If wired by Oppo, then Striker was granted a lift to either baulk, *but Oppo chose which one*! In AC today Striker chooses his own baulk. We could have adopted this as the wiring rule for c.10 but have instead chosen the A6W rule that gives contact.

Figure 3-22 shows two other possible opening positions, c2 and c4, that are beyond r/y's critical distance, there are many others! By shooting to a distant point, u turns the proceedings over to r. This is not necessarily a bad thing; it is just psychologically different.

The opening play of r: Making h(1) and using u to run a 2-ball break is *not* usually a good strategy! r failing at h(1) is a gift to k – k hits r, k *Gets Spent for Partner* and, perhaps, k attempts a 3-Ball Break. Furthermore, r making h(1) and then trying to 2-ball with u would likely leave u with r, the ball u wants if/when r stuffs a hoop, or it would let k join u if r is forced to shoot away.

Rationally, r should not make h(1)! [55] Instead, if u is nearby, within r's *Critical Distance* [56], then r can shoot at u. However, if r misses u, Figure 3-23, this gives u the ball he wants. Also, r's position can leave a double target for k. With these fears in mind, r could choose to shoot away, perhaps to c4, leaving the tice for k.

plays by u within the CD	plays by u beyond the CD	u sets tice r misses	u sets tice r hits tice	r sets tice k misses	r sets tice k hits	y hits
3-21	**3-22**	**3-23**	**3-24**	**3-25**	**3-26**	**3-27**
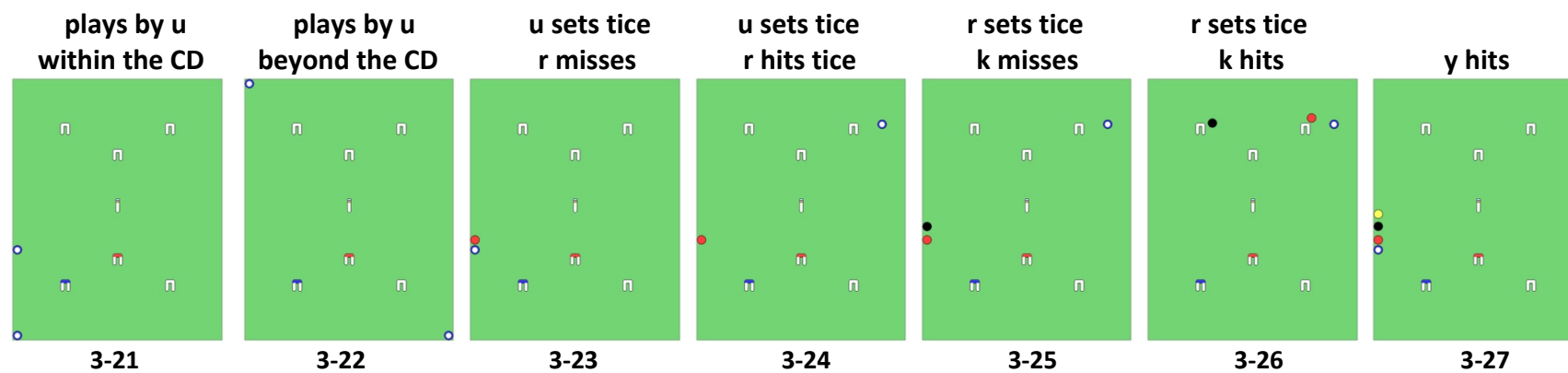
If r takes the tice and hits u, then r can turn the tables by sending u to a distant location, toward h(3) is one possibility. The question then becomes *where should r go*? The temptation is also to send r a long way away from h(1). But this is not a good idea because it lets k shoot at u or lag to u, leaving y without a good shot. u will likely get the innings and could have the first break. Instead, r should go to the sideline tice position himself, Figure 3-24. Now, if k shoots and misses, then r gets k, the ball r wants, Figure 3-25, and there would be no interference by y, in fact, y can make h(1), or at least try to, and then stay near h(1) as r's pioneer.

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[55] We explained this to A6W players who have tried c.10. Yet we observe a compulsion to attempt h(1) with r and k and even y! Old habits die hard.

[56] See the Appendix for data on Critical Distances.

The opening play of k [57]: Figure 3-26 shows what can happen if u sets a tice, r misses, and then k hits and moves all balls beyond y's critical distance. In the alternative, if u does not set the tice, but r does, then k can shoot at r or join u [58].

The opening play of y: The fourth ball to enter, y, may be left with feast or famine! Figure 3-27 shows a potential feast. To get here, u set a tice, and then r and k missed. y may have a triple target! If y hits then, with some thoughtful play, y should be able to build a break. If y misses, then u will have the innings. y might also be faced with a famine, Figure 3-26. Against a good player of u, or a u with remaining FIXs (!), y could shoot from this position, taking his chances. Notice that y will not be within 7 yards of any ball and can use a FIX but cannot improve his position. Or, y could shoot to make the hoop gaining a shorter hit-in opportunity, perhaps one within 7 yards that could be improved with a FIX if it fails. These possibilities should convince k to locate in c3 instead of at h(2).

Finally, y may be left with something between feast and famine – for example, a single tice ball or the possibility of joining Partner and awaiting developments.

We suggest that you play out these openings and others that you think might work…

Leaves: Eventually one team will gain the innings, and, with FIXs and SIMs, should have the chance of running a break, perhaps to the peg. If, along the way, this team fails, and chooses not to extend their turn with a FIX, then Oppos will have a chance to play. This is an *unintended* leave which, other than a final desperation shot (scatter, etc.) does not provide much room for creativity...

Think of your wiring scheme in good time ...
(Ibid., page 95)

We turn now to what should be done at the end of a successful turn – the setting of an *intentional* leave. While the location of the Striker's ending hoop can change the details, the question to ask is basically the same whether you are playing a 14 or 26 point game – *how can we leave the balls so that the Danger-Ball, the Oppo-Ball that plays next, is likely to miss, and Partner can take over and run his break with ease*? *Getting this right requires malice of forethought*!

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[57] In Advanced c.10, if u opens by making h(1), then k may want to take the risk and attempt it as well to facilitate u's next peeling turn by having u and k be for the same hoop. However, this might give Oppo the Spent-Ball!

[58] Instead of going to h(2), k could join u and r near h(3) thereby protecting against y shooting hard through h(1) and then roqueting k!

In Figures 3-28 to 3-33 we assume that k is for h(1) and u has just finished a break to the peg. These figures show three different types of leave, set by u, and organized by difficulty (from easiest to hardest for Oppo), with the desired future Striker (k) being at his Current-Hoop or at his Pioneer-Hoop.

A desirable leave must consider the position of Partner's Clip, and how good a shot the Danger-Ball is. The better he is, the more necessary it is to limit him to long shots. However, the distance Striker can arrange depends upon when in his break Striker begins the leave setting process, which, in turn, depends upon when Striker secures control of all four balls while running his break ...

2-Balls at Pioneer 1 at Current	2-Balls at Current 1 at Pioneer	Cross-wired at Current rush to Pioneer	Cross-wired at Pioneer rush to Current	3-Balls all at Pioneer	3-Balls all at Current

3-28	3-29	3-30	3-31	3-32	3-33
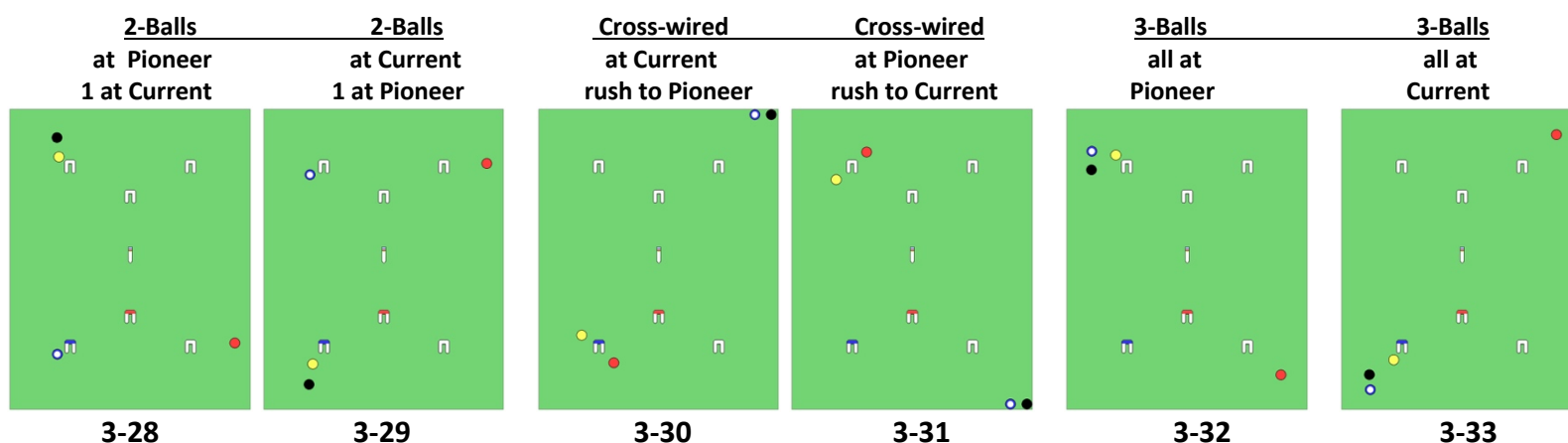
1.. The easiest types of leave for Striker to set has Partner and another ball (Striker or Spent) at Partner's Current, or at the Pioneer hoop and the unused ball at the uncovered hoop. These two possibilities are shown in Figure 3-28 and 3-29. The disadvantage is that Danger has to be distanced from two locations (Partner's Current and Pioneer Hoops) while maintaining a shot. Often this will yield a shot of no more than 15 or 16 yards; but the shot can be longer if the Danger-ball is wired from some of the action.

2.. A Striker can cross-wire Opponents at Partner's Current or Pioneer-Hoop and give Partner a rush on either Striker or Spent to the other involved hoop, Figures 3-30 and 3-31. The good news here is that Partner should have an easy start; the bad news is that the cross-wire can fail leaving the Danger-Ball with a short roquet. A successful cross-wire can leave a long shot, over 30 yards. Cross-wiring leaves can be optimized so that the Danger-Ball's shot is lengthened further, e.g. a variation on Figure 3-30 might see yellow placed north-east of h(1) with red close to c1.

3.. Finally, Partner, Spent and Striker can all end up around Partner's Current or Pioneer hoop, <u>Figures 3-32</u> and <u>3-33</u>. This leave works especially well when one of Partner's hoops is a corner hoop. Here the shot can very long (over 40 yards!). The disadvantage, especially when used at Partner's Pioneer-Hoop, is that a long rush to the Current-Hoop may be required to get started.

Try setting these leaves, watching carefully for how much preparation (how many hoops) is needed to optimize them... Try shooting against them. And try to run a break if Oppo misses or hits in....

14 and 26-Point Games

<u>The 14-Point Game</u>: We recommend that c.10 be played initially as a 14 point game. We think doubles is the best format. In this case, your allotment of FIXs is the number that you were initially allocated, perhaps modified downward to reflect experience garnered from the 6-Wicket Challenge and your other practice sessions. If you are playing singles, then double this amount, as the FIXs are needed to cover both balls and can apply to either. Note carefully that this is the first time you can actually run out of FIXs! Our recommendation is that you spend them as needed to get the 1st ball around and then let nature take its course...

<u>Time Limit</u>: We recommend you play 45 minute games. When the clock runs out the ball playing is in his last turn. The other three balls will each get their last turn, as in A6W, unless a team finishes to win. *Some may protest that the 1910 version of c.10 did not have a time limit and therefore question why our version of c.10 has one. Please remember the goal is ultimately to have you play A6W, where there is a time limit and where it is often a significant strategic factor! So practicing with a time limit has purpose.*

<u>The 26-point game</u>: The concepts are the same. But endurance becomes an important new variable [59].

<u>FIXs</u>: If you are playing doubles, then each player's initial allotment of FIXs should be doubled to reflect the fact that the game will encompass twice as many wickets. Similarly, If you are playing singles, then quadruple the initial amount. Once again, this amount needs to cover, and can apply to, both balls.

<u>Time Limit</u>: We recommend a game-length of no more than 90 minutes! Again, when the clock runs out, the ball playing is in his last turn. The other three balls will each get a turn unless a ball finishes to win.

You are now playing c.10! Have fun running breaks. Get your friends involved! Enjoy!

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[59] Creating a repeatable swing that hold up over time and under pressure is always a valid goal...

Making c.10 More Challenging

With dedication and practice, you will become proficient at c.10, perhaps returning us to the conundrum of 1910 – *the game is too easy*! It is from here that you can go to A6W and its COD, as we do in the next chapter, or to AC and its EBR rule, as we and others have done in other books. But before moving on from our now *new-old* friend c.10, we want to propose adding a Wicket Limit (*WL*) and an inducement to Peel to its rules.

A Wicket Limit: A WL caps the number of wickets Striker can make *for himself* during a turn. Peels do not count against this limit. Furthermore, once a Peg-Ball (or as it is sometimes called *a Rover-Ball)*, Striker can peg-out one or more balls – and not have it count against his WL. A WL can be any number between 0-11 and instantaneously making a game more interactive, forcing teams to set more leaves, and giving Oppos more chances to hit-in. As discussed below, our preference is for 6-WL without a Peeling requirement and then a more advanced version *with a 5-WL and a Peeling requirement*. [60]

Peeling: Peeling is an important aspect of AC with its *Triple* and *Sextuple Peels* that limit Oppo's chances of gaining the innings. Peeling is also important in A6W. Peeling Partner at Partner's hoop will clear Partner's deadness; Peeling an Oppo ball at h(7) can generate a clearing of deadness for either Striker or his Partner.

In 1910, Peeling during an *important* Croquet game was considered, by some, to be controversial:

The attempt is sometimes made in the second break to "Peel" your first ball through its remaining hoops during the course of your second break; so as to avoid giving your adversary another shot. Personally, **I never can see any object in this, except perhaps to amuse the gallery**. *If you are good enough to execute a Triple Peel, by far the surest method of winning a game is to lay the Break as I have described in previous chapters and go as far as the Winning Peg with the first ball. You will then only have a simple Break to go out with the second ball. As I have previously stated, there is not one chance in a hundred of a PROPERLY LAID Break (sic Leave) being hit. The odds on your bringing off a Triple Peel are most assuredly not a hundred to one.*

Op. Cit., Tollemache, page 110)

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[60] The idea of a WL is not new. There is a well know 3-WL version of A6W that maintains a dedicated following supported by David Bent and Derek Wassink.

We agree with Tollemache. Therefore, We sought a way to make Peeling *relevant* instead of just for show. Our solution is to institute a rule that *penalizes* Striker if he makes one or more wickets during his turn but does not also Peel Partner at least once [61]. We consider this the *Advanced version* of c.10. Before laying out the specifics, We provide a Primer on Peeling.

A Primer on Peeling

A comprehensive analysis of Peeling is available in our book New Roles For Peeling in Croquet. What we cover here is intentionally limited but includes many situations you will face. The analysis applies to Peeling any ball, but here the focus is on advancing Partner. We assume that Striker is k and Peelee/Partner is u. k's Current-Hoop and u's Peeling-Hoop can be any on the lawn and are intentionally varied in these notes to highlight some of the technical aspects of Peeling.

There are many ways to proceed with a Peel. After all, as Striker, at any time you can rush Partner to his hoop and attempt the Peel. It may even succeed (!), but will your break continue? We seek a *Procedure* – a set of instructions – for Peeling that maximizes *efficiency* – the likelihood of getting the Peel done – and also *safety* – the likelihood of returning safely to your break. *As with all other aspects of Croquet, We recommend practicing Peeling on the lawn, on your magnetic board, and in your mind.*

HOOP, HOOP, PEEL (2HP)

In a 4-ball break? Have two hoops to *spare*? Want to complete one of the three types of Peels – Transit, Back, or Straight? [62] Then, know it or not, you will likely follow a *procedure* (a set of steps) We call HOOP, HOOP, PEEL (*2HP*). Here we use the notation R=Reception, V=Pivot, P=Pioneer, and E=Escape and start by describing how 2HP is used for Transit-Peels. Then we alter it for Back-Peels – *seeking to increase the safety of the break, while accepting a decrease in the likelihood of completing the Peel*. Finally, we alter it once again for Straight-Peels – *seeking to increase the likelihood of a successful Peel, while accepting a decrease in the safety of the break* [63].

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[61] To be clear, there is no penalty if Striker hits-in, resets the balls, but does not make a wicket.

[62] Another way to phrase this question is: You are set-up to make h(1). Just then, *and not before – without prior warning* – you are told to complete a peel as quickly as possible at a particular (then specified) hoop while threatening your break as little as possible. How would you proceed? The answer is 2HP.

[63] Not discussed here, but analyzed extensively in our other book, is the Procedure HP (following each hoop with a Peel), and ways to Peel multiple balls (2HP or HP), as well as unusual ways to Peel with unusual Procedures like HHPP, Color-Order Triples, double sextuples, etc.

Using an Escape-Ball in a Transit-Peel [64]

Our notation for Transit-Peel is W-h(i) – W stands for on the way to. Peelee is the 2nd ball used after the 2nd hoop is made in 2HP.

Figure 3-34: k is set up to make h(1), the Peeling hoop is h(12). k makes h(1) – The First HOOP – and then sends u to the Peeling-Hoop, h(12). Striker also sends an Oppo-Ball (r) to be the Escape-Ball for h(3) from h(12). Then k uses y to approach h(2), Figure 3-35.

	Peel at h(12)			Peel at h(5)	
Start	**Escape-Ball**	**completed Peel**		**Pioneer**	**completed Peel**

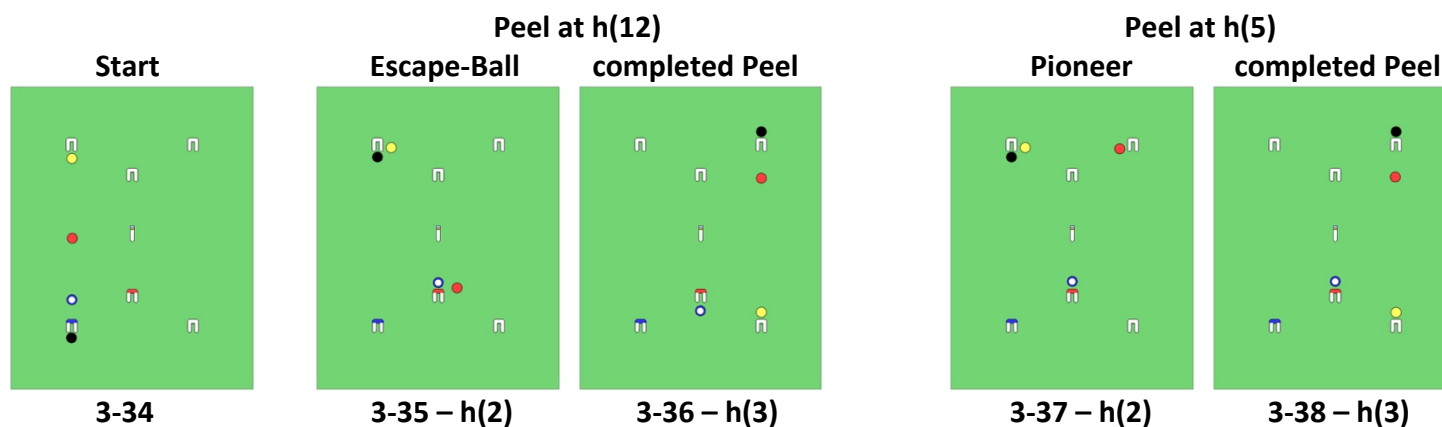|				
3-34	**3-35 – h(2)**	**3-36 – h(3)**	**3-37 – h(2)**	**3-38 – h(3)**

Figure 3-35: k makes h(2) – The Second HOOP – and then sends y to be the normal Pioneer at h(4) as k goes to u. Striker adjusts u, attempts the Peel – The PEEL – and escapes with r to h(3), Figure 3-36. The direction of the h(12)-Peel was *away* from the break, away from h(3), which created the need for an Escape-Ball.

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[64] This notation is used in all our books.

Employing a Roll-Peel in a Transit-Peel

Starting again from Figures 3-34, the goal this time is to Peel u at h(5). Here the direction of the Peel is *toward* h(3). k can proceed with an Escape-Ball as discussed above for the h(12) Peel, but there is another option, a Roll-Peel. Given how successful Roll-Peels are – especially in advanced play (like running Sextuples) – *most players no longer call them Death-Rolls*!

Figure 3-34: u is sent to Peel position and r is sent to P(3) as a normal Pioneer, instead of as an Escape-Ball, Figure 3-37. Now, to get to Figure 3-38, k makes h(2), sends y from R(2) to P(4), still going to u. k adjusts u, and Roll-Peels u going to r at h(3).

Roll-Peels are increasingly popular among better players and are *occasionally* conducted as *hybrids*, with the Escape/Pioneer Ball intentionally placed *remote* to the Peeling-Hoop and *remote* to the next Hoop in the break, not in the classical position for either. Here the goal is maximum flexibility for the Peel. This is obtained at a cost of increased potential for not continuing the break!

From Transit to Back-Peels

Our notation for a Back-Peel is A-h(i) where A refers to After and Peelee is the 1st ball used after making the 2nd hoop in 2HP.

In Figure 3-39, k is for h(2), his First-HOOP, and u is to be Peeled at h(10). The important thing to notice is that *k's Second-HOOP in the 2HP process is h(3) – the same physical hoop as the Peeling-Hoop, h(10)*. In this *special* case, k has two way to proceed:

Start	As a Transit-Peel		As a Back-Peel	

| 3-39 – h(2) | 3-40 – h(3) | 3-41 – h(4) | 3-42 – h(3) | 3-43 – h(4) |
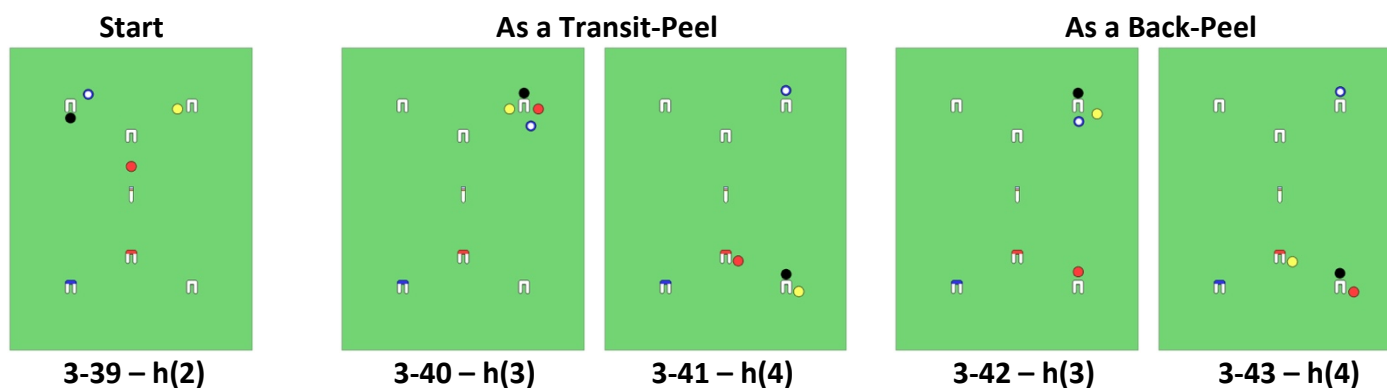
1. **As a Transit-Peel:** k makes his Current-HOOP, h(2), going to u. Then k sends u and r to the Peeling Hoop h(10) and goes and sets up at h(3), the same physical hoop, with y, Figure 3-40. k makes his Next-HOOP, h(3), going to r. k sends r from R(3) to P(5) going to u. k adjusts u and then Peels u going to y. This is followed by rushing (*escaping with*) y to h(4). k sends y to R(4) as k goes to position at h(4), Figure 3-41.

   Proceeding as a Transit-Peel results in all four balls briefly being together at the Peeling hoop. It affords an adjustment on u before the Peel but requires a rush, an escape, back to the break, to h(4).

2. **As a Back-Peel:** From Figure 3-39: k makes his Current-HOOP, h(2), going to u. Then k sends u to the Peeling-Hoop, h(10), r to h(4) as a Normal Pioneer and sets up with y at h(3), Figure 3-42. k makes h(3) and roquets u. Then k Peels u going to y. k sends y to h(5) as a Normal Pioneer and sets up with r at h(4), Figure 3-43.

   When Striker, k, Peels u this way, he gives up the ability to adjust u before attempting the Peel but gets a true pioneer at h(4), rather than an Escape-Ball to be rushed to h(4). If the Peel fails or cannot be done, then u is left near h(10) to be Peeled later.

Straight-Peels

The final *2HP offering* is the Straight-Peel. *Here Striker and Peelee will be for the same hoop when the Peel is attempted.* Figure 3-44, k is for h(4) and seeks to Peel u at h(6). *Our notation here is S-h(i) where S refers to Straight, and Peelee is the 3rd ball used after making the 2nd hoop in 2HP.* Once again, Striker has two ways to proceed:

1. **As a Transit-Peel:** k makes h(4), his Current-HOOP. k sends u from R(4) to Pivot, toward Peeling position at h(6). k sends r from V(4) to h(6) as an Escape-Ball, as k goes to y. k sends y from P(5) to R(5) as k goes to position at h(5), Figure 3-45. k makes h(5), the Next-HOOP and sends y to P(7) as k goes to u in his role as V(5,6). k adjusts u and then Peels u on his way to r. k rushes r back to P(6) and sets up to make h(6), Figure 3-46. *This method is rarely used. Its possible benefit is that if the Peel fails and u blocks k's path to the hoop, then r can be used to bombard u out of the way or into the jaws, clearing the way for k or allowing k to attempt a jump or half-jump.*

2. **As a Straight-Peel:** k makes h(4). k sends u from R(4) toward Peel position at h(6). Then k sends r from V(4) to V(5) as k goes to y. k sends y from P(5) to R(5) as k goes to position at h(5), Figure 3-47. k makes h(5), the Next-HOOP. k sends y to P(7) as k goes to r. k uses r to obtain a rush on u. k rushes u to Peel position and then Peels u, having k follow in the same stroke – an

Irish-Peel or having k set up to make h(6) on his continuation shot, <u>Figure 3-48</u> [65]. *This is the standard way to proceed. k uses both Oppo-Balls to gain a rush on Peelee to good position at the Peeling-Hoop* [66].

Start	h(6) as a Transit-Peel		h(6) as a Straight-Peel	

3-44 – h(4)	3-45 – h(5)	3-46 – h(6)	3-47 – h(5)	3-48 – h(6)
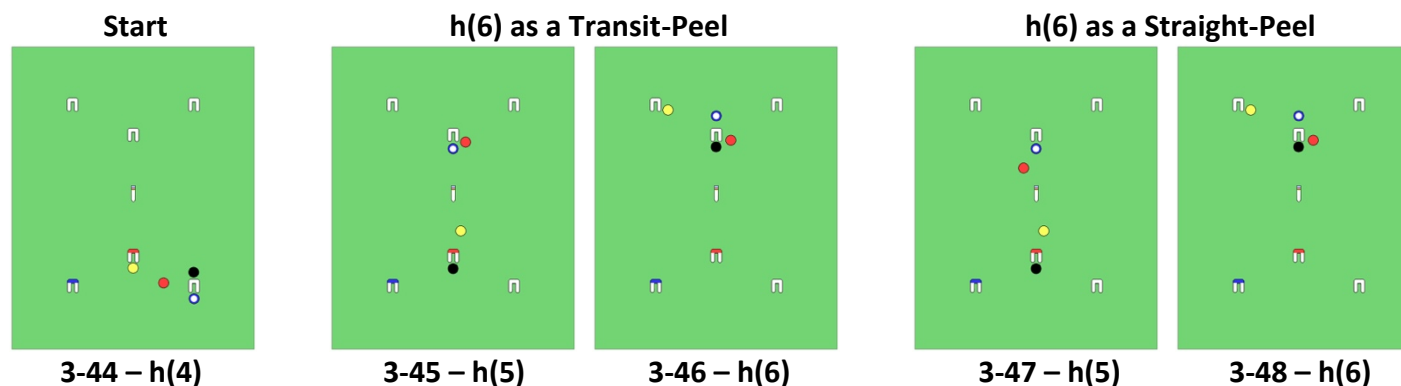
Things to Remember About 2HP: Each cycle is self-contained. Repeated, independent 2HP cycles are possible, either to attempt multiple Peels or to repeat Peels that fail. Here is a thumb-nail sketch of the process:

HOOP: 2HP involves leaving the security of a 4-Ball break to try a Peel. Striker makes a Hoop and then sends Peelee to the Peeling-Hoop, and perhaps sends an Oppo-Ball as well, depending on whether or not an Escape-Ball or Roll-Peel is contemplated as transportation back to the break.

HOOP: A second Hoop is made and then Striker returns to the Peeling-Hoop.

PEEL: Striker goes first to the Peelee and roquets it, adjusting its position if necessary. The Peel is attempted as a Croquet Shot and the Striker returns to his break, using the Escape-Ball or a Roll-Peel as transportation.

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[65] In all Straight-Peels there is always the possibility Peelee sticks in the hoop which can cause end of turn, especially in light of COD in A6W!

[66] In executing a Straight-Peel, you need to line up both balls to just miss the near stanchion. The tolerance here is less than that suggested by the ½" rule. In fact, we think of this as our 1/8" – or less – rule. Even with this adjustment, there is another aspect that is equally important: Whenever possible, The peel attempt should be hit using a *dead-straight* croquet shot – any amount of split added by the line of the swing can prevent the Striker-ball from following Peelee through the hoop and result in end of turn.

Advanced c.10

We start by limiting each turn to a 6-WL. It now takes a minimum of 4 turns instead of just two to finish and involves setting at least 3 leaves instead of just one, giving Oppos a minimum of 3 chances to hit in – *to gain the innings*.

For more advanced players, we reduce the WL from 6 to 5 and add a Peeling Requirement *that only begins after all balls have entered the game*. It states that: If Striker makes one or more points during any turn, then he must also Peel his Partner (advance Partner's clip) at least once during that turn or suffer a *Penalty for Failure to Peel Partner*. The penalty is moving Striker's clip *back one wicket* at the end of his turn. Note that with both clips starting on h(1), a team can still finish in four turns – with each turn involving a Peel – *the c.10 notion of a Quadruple-Peel*! [67]

Here is an example involving a 5-WL. It illustrates the *six normal attempts* that are available to complete the Peel: They are before making the 1st Wicket of a turn, and then after making each of the five possible wickets that constitute a complete turn [68]. In the example, u finished his turn by setting a 3-Ball Break for k, hoping r will shoot and miss or finesse. u is for h(5) and k is for h(2). We *recommend that you set this example up on your lawn (actual, magnetic, or mental) and give it a try.*

u has set a leave for k distancing (*destroying*) r and placing y at h(2). *What is unusual is that k and u are arranged near u's Peeling-Hoop, h(5), while the Spent-Ball is at k's Pioneer-Hoop. This can lead to an immediate Roll-Peel attempt.*

Figure 3-49: It is r to play. r could finesse, possibly to c1 or c4, making k attempt a 3-Ball Peel, but instead, we have r take the short shot at his Partner y, he misses, and go out of bounds on the west boundary, Figure 3-50.

Figure 3-50: k rushes u to Peel position at h(5) and Roll-Peels u – *attempt #1* – while going to r, Figure 3-51.

Had r finessed, then k could still have attempt the Roll-Peel but this time going to y. If u does not get caught in the jaws, then k could make h(2) with y and proceed ball-to-ball to h(3) with k using just 3-Balls (k, y, and u), and k using y to get to u…

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[67] The WL and the Penalty can be used to handicap play. For instance, a weaker player can play without the WL, or with it but without the Penalty. And the handicapping can apply differently to different members of an individual team.

[68] Note that Striker can also try a final *bombard* attempt – this works especially well Peeling a jawed ball after the last wicket in the WL has been made…

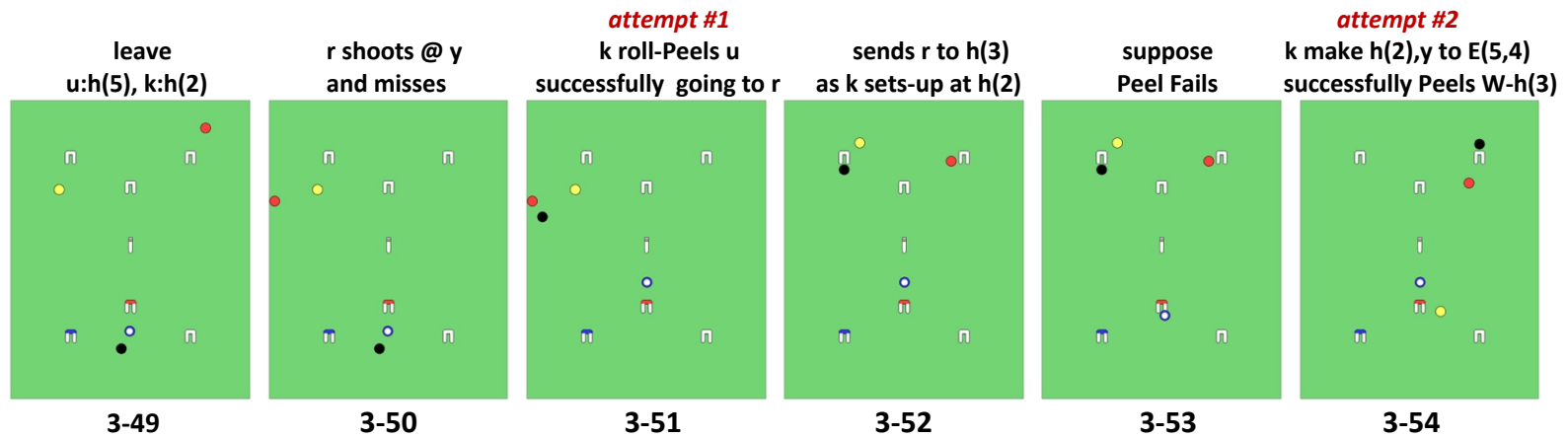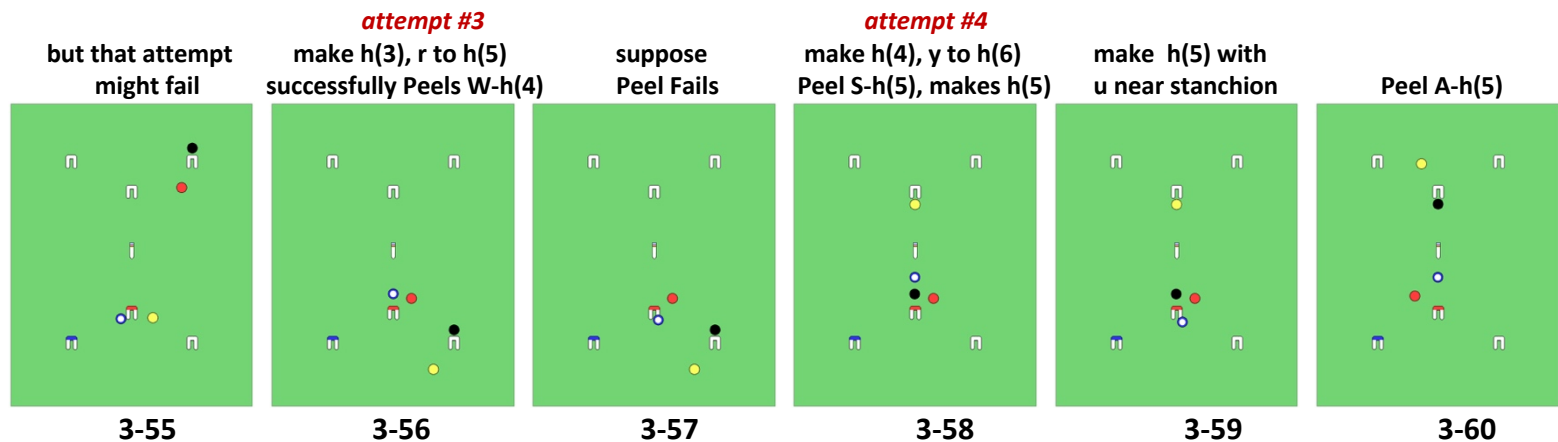| leave u:h(5), k:h(2)	r shoots @ y and misses	*attempt #1* k roll-Peels u successfully going to r	sends r to h(3) as k sets-up at h(2)	suppose Peel Fails	*attempt #2* k make h(2),y to E(5,4) successfully Peels W-h(3)
3-49	3-50	3-51	3-52	3-53	3-54

Figure 3-51: k roquets r and sends it to h(3) going to y and sets-up to make h(2), Figure 3-52. A successful Roll-Peel is a delightful way to start a turn! But it may fail, Figure 3-53. k makes h(2). Then k sends y as an Escape-Ball for h(4) from h(5) *[for a later Peel Attempt, W-h(4)!]* as k goes to u. k adjusts u and Roll-Peels – *attempt #2* – u going to r at h(3), Figure 3-54.

k was able to re-try this Peel immediately because this was a Roll-Peel that let k use an already existing Pioneer at h(3) rather than having to re-send an Escape-Ball to the Peeling-Hoop.

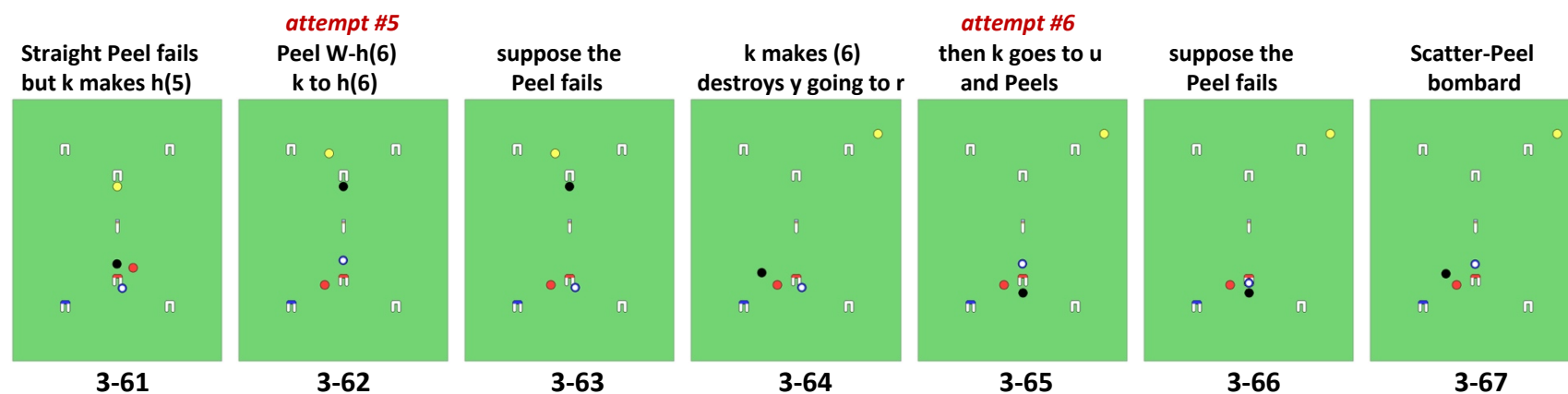| but that attempt might fail	*attempt #3* make h(3), r to h(5) successfully Peels W-h(4)	suppose Peel Fails	*attempt #4* make h(4), y to h(6) Peel S-h(5), makes h(5)	make h(5) with u near stanchion	Peel A-h(5)
3-55	3-56	3-57	3-58	3-59	3-60

Once again, the Peel might fail, as shown in Figure 3-55. *Now the position of y helps*. Figure 3-55: k makes h(3), sends r to h(5) as a Pioneer-Ball, goes to u, and Peels u W-h(4) – *attempt #3* – escaping to h(4) with y, Figure 3-56. Again the Peel might fail, Figure 3-57.

Figure 3-57: k makes h(4) and sends y to h(6). *Then k Peels u S-h(5) – attempt #4 – by going first to r and then to u,* Figure 3-58. The Straight-Peel could fail, (e.g., get stuck in the jaws precluding Striker's access), ending the turn. As noted, a bombard could complete the Peel but would still be end of turn unless Striker was able to pull off a difficult half-jump.

Figure 3-59 shows a conservative alternative. From Figure 3-57, k sets up to *do it as a Back-Peel, A-h(5),* putting u close to the stanchion [69]. Figure 3-59: k makes h(5), rushes u to Peel-Position and Peels u, A-h(5), and makes his way to h(6), Figure 3-60. But even this conservative approach can fail, Figure 3-61.

If the Straight-Peel is tried and fails, but Striker is able to make the hoop and continue, Figure 3-61, then the Peel can be tried again W-h(6) – *attempt #5* – Figure 3-62. But this could fail, Figure 3-63. Now k makes h(6), his 5th and last wicket, sends y away (*destroys y*) as part of his leave and goes to r, Figure 3-64 [70]. k rushes r toward u, and then u to Peel position, for the final attempt – *attempt #6* – Figure 3-65.

	attempt #5			*attempt #6*		
Straight Peel fails but k makes h(5)	**Peel W-h(6) k to h(6)**	**suppose the Peel fails**	**k makes (6) destroys y going to r**	**then k goes to u and Peels**	**suppose the Peel fails**	**Scatter-Peel bombard**

3-61	**3-62**	**3-63**	**3-64**	**3-65**	**3-66**	**3-67**

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[69] It should be noted that giving up the Straight-Peel attempt for the Back-Peel will reduce the number of possible Peel attempts by one.

[70] As in setting any leave, k's goal is to separate the Danger-Ball y, leaving it a long and difficult shot. Here k's actions are limited by the need to finish the Peel!

As in each of the other attempts, this 6th attempt might fail. If k manages to stay south of h(5) during the Peel attempt, then k still has the chance for a bombard, a Scatter-Peel, which can be very effective if u is jawsed – *which might have been the intentional goal of the 6th Peel attempt to begin with, <u>Figure 3-67</u>* [71].

This Scatter-Shot deserves careful attention! It must be done with sufficient accuracy and force to complete the Peel *and* make it so that u will be able to play if y misses or finesses. Having u stuck in the jaws to start his turn is not a good result! Nor is having k complete the Peel but itself stick in the jaws.

<u>Figure 3-67</u> shows a satisfactory result – u is through, and k and r are available to u if y misses. However, y may have a large target (double or triple!) and u's start won't be easy, especially if y finesses, as u will be for h(6) without a ball at h(6) or h(7)…

There is the constant question, when should you Peel? The simple answer is as early as is practically possible because the earlier the Peel is done the more time you can spend on setting the leave. The ultimate leave has Striker in the jaws of his next hoop with Partner is in position to perform the rush peel and the Spent at Partner's first hoop. If the Danger ball misses, then Partner has a start that begins with the necessary peel, making for a serene turn that might also end with this Striker jawsed.

<div align="center">

Rover Play and Pegged-Out End Games [72]

</div>

Although lacking COD, and therefore lacking A6W's concept of *last-deadness*, Locock and Tollemache had theories in 1910 that remain valid today with regards to Rover Play when all four balls remain on the lawn, and when fewer than four balls remain on the lawn – Pegged-out End games. we will summarize their findings and then explore what happens in the context of Advanced c.10 as your available wickets run out and a needed Peel still looms…

<u>With 4 Balls on the Lawn</u>: In c.10, as in AC, a ball that makes h(12) becomes a *Rover-Ball* and as such gains a new power – it can peg-out other balls [73]. It is, however, otherwise limited in what it can do. In particular, it cannot make additional hoops and therefore will

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[71] Our understanding of jawsing and then scatter-peeling was heightened by our experience with our game *Peels Only* where it plays a prominent role.

[72] The best reference for these strategies in AC is *Pegged Out End Games* by Pete Trimmer in <u>BECT</u>, pages 113-146
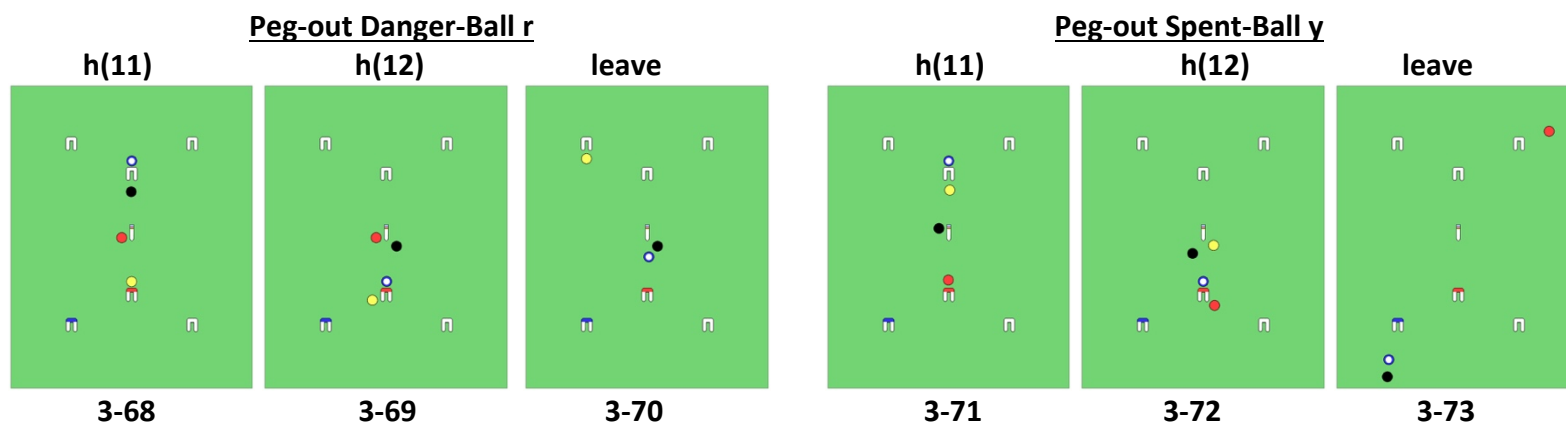
[73] There was a brief time in the history of Croquet where any ball could be pegged out by any other as long as the ball being pegged-out was for the peg! Prichard, <u>Op. Cit.</u>, page 175. *Ben notes that it is still true in Claremont Croquet, which is played in Maine, as a 9-wicket.*

have a maximum of seven shots per turn – roqueting and croqueting each of the other three balls and then shooting to somewhere. *The Major role of a Rover-Ball is to reset the balls – set a leave – for Partner*.

Earlier in this chapter we described various leaves and the leave-setting process. Nothing changes when Striker is the Rover-Ball, except that the time frame for implementation is condensed and there is the ever-present possibility of pegging out.

<u>With 3 Balls on the lawn</u>: Rotation divides pegged-out endgames into two categories: when Striker (call it u), pegs out his Danger-Ball, r, and when Striker pegs-out his Spent-Ball, y. In both cases, two balls (u and k) remain and battle it out with one Oppo-Ball (r or y). Importantly, *the 2-Ball team will have two turns to each single turn of the 1-Ball Team*, a feature of 2-on-1 Endgames in c.10 that carries over into A6W and CA7 but was abandoned in AC when the EBR was adopted.

We will now look at how *rotation* impacts setting leaves after pegging-out an Oppo-Ball, and, in addition, we will look at what play looks like during the ensuing 2-on-1 battle. *We recommend that you set-up and try these situations.*

Peg-out Danger-Ball r			Peg-out Spent-Ball y		
h(11)	h(12)	leave	h(11)	h(12)	leave

| 3-68 | 3-69 | 3-70 | 3-71 | 3-72 | 3-73 |

Pegging-out a ball is similar to Peeling a ball at a hoop and follows its own 2HP procedure, where this time we use "P" to stand for Peg-out. Consider the above panel: The left three figures are for when r (the Danger-Ball) is pegged-out, and the right three figures are for when y (the Spent-Ball) is pegged-out. In each case, k is for h(1) and u starts the process set-up to make his 1st HOOP, h(11), [Figures 3-68 and 3-71], he makes h(11). u then sends two balls to the peg – the to-be-pegged-out ball and an Escape-Ball – and sets-

up to make his 2nd HOOP, h(12), [Figures 3-69 and 3-72]. Then u returns to the peg, pegs out the appropriate ball and uses the Escape-Ball to finish his leave [74] [Figures 3-70 and 3-73].

After the Peg-out

With the Danger-Ball (r) Pegged-Out: The order of play of the remaining 3 balls will be u, k, y. The first time this happens is immediately after u pegs out r and sets the leave for k. Here Rotation implies that k will play immediately after u. If k can run a 3-Ball Break to the peg, then u/k can win the game without giving y another turn! Note that this leave does not have to be *too* precise – just good enough to help k start his break, Figure 3-70. While running his break, if k is likely to break-down, and he is with the Oppo ball y, and Partner u is separated from y, then k can go to u, hope y misses, and then have u get the Spent-Ball y for k (*again!*) and have k restart his break. Note however that, if y hits-in, then r/y can win the game if y runs a 3-Ball break to the peg.

With the Spent-Ball (y) Pegged-Out: With y pegged-out, the order of play will be u, r, k. u cannot get r for k because r plays before k. The best u can do is to set a 2-Ball Break for k. Once again, the first time this happens is when u sets the initial leave immediately after the peg-out. Here the position of the balls is *very* important because r has the immediate chance to capitalize on any deficiencies. Ideally u can accomplish three things with his leave, Peg-out y, separate u and k from r, and help k set-up at his hoop. One possibility is shown in Figure 3-73. If k is likely to break-down, then, once again, k can go to u. This time, proximity of Oppo is ok as u plays next.

The WL and Peeling Penalty after a Peg-Out

Although not discussed earlier, pegging-out a ball has implications for Advanced c.10. In particular, the rules have the WL and Peeling requirement continuing to apply to the team doing the pegging-out (usually the 2-Ball team) but they are discontinued for the other team (often the 1-Ball team). This gives the 2-ball team a chance at 3-Ball Peels, or else their WL effectively becomes four instead of five! It also gives the 1-Ball team a fighting chance.

Finally, If a Rover-Ball pegs out Oppo and himself, the rules provide that Striker's team maintains its WL, but that Oppos no longer have a WL. And neither team has a requirement to Peel.

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[74] *This has the flavor and feel of a 2HP Transit-Peel. When pegging out Danger, Striker can either send Spent to h(2) and then go to either Partner or Danger. Going to Partner first makes it easier to peg-out Danger but going to Danger first makes Partner's start a bit easier.*

4.. A6W: ON THE LAWNS IN THE USA

__In 1868__ Mr. Whitmore published <u>Croquet Tactics</u> ...These tactics were not excessively bold, his leading principles being – "Keep your own balls together", "Scatter your enemies," ... Between 1870 and the present time the principal difference... of croquet appears to be the throwing over of the extreme caution advocated by Mr. Whitmore ... Finessing is as rare nowadays among the leading players that many consecutive games might be watched without seeing a good player retire in a corner. The principal reason given is that wherever you go, the opponent can fetch you into his game if he wishes to, and therefore you may as well shoot ...
(<u>Op. Cit.,</u> Locock, __1910__, pages ix, xxvi and xxvii)

..., and Those Who Don't

By 1910, anyone playing Croquet with basic skills should have been able to roquet Partner, take-off to Spent, send Spent to Partner's wicket and return to Partner, having set-up Partner with a break. Yes, it was *only* a 3-Ball Break, but it could be run for a while, and perhaps expanded to include all 4-Balls. However, by 1920, the English had gone from c.10 to AC, and the Americans had gone from c.10 to A6W. In both instances, weaker players, those who could not confidently run breaks, were left behind and reverted to *finessing*, and other forms of defensive play.

AC adopted the EBR which meant that Striker could no longer *Get-Spent-for-Partner* as there was no longer a Spent-Ball to get! [75] The result was (and is!) that starting a break in AC is often significantly more challenging than it was (and is!) in c.10. It regularly requires going ball-to-ball, a skill that many high-handicappers do not have. Therefore, it was (and is!) natural for them to develop strategies that reduce this risk – strategies that are not always viewed *empathically* by better players...

Unfortunately, the game has to put up with a considerable number of people who believe that "safety first" is a praiseworthy principle; that the fewer risks that are taken the better. Such 'players' are known as Aunt Emma players ... Aunt Emma does not try to pick up a break: indeed, it is doubtful whether she would even recognize one. Her policy is to make one hoop at a time off her partner ball, and then to lay up, leaving opponent's balls as far apart as possible. This excruciatingly dull way of playing often paralyses the opponent into ineffectiveness, and results in victory by anaesthesia.
(David Miller & Rupert Thorpe, <u>Croquet and How to Play It</u>,
Faber and Faber, 1966, pages 89, 90)

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[75] It also means that players brought up on AC alone (i.e., Paddy) do not learn about Rotation, unless *(until!)* they are roped into a game of GC or A6W!

Bisques are promoted as the *obvious* cure for Aunt Emma play. But bisque-promoters ignore the fact that bisques are usually played *net* with the result that a match between two high-handicappers is played virtually level! The saving grace is a time limit which brings the proceedings to an end, but not before the players have *valiantly struggled* at the first few hoops, never running a break!

A simple solution would be to have Bisques played gross, otherwise known as Full-Bisque play.
Arguably, it would be even better for AC to adopt FIXs and SIMs.

Meanwhile, in the US, A6W kept Rotation. There *is* a Spent-Ball to get, and part of the drama of intermediate and advanced play centers on getting Spent-for-Partner. But A6W added its own complications – 9" instead of 36" boundaries and the *inability* to rush balls out of bounds. Together these strictures make taking-off to Oppos to get Spent more dangerous. But, *the real kicker*, is that A6W added COD. Even if getting Spent for Partner works, how is the now (often) *3-Ball-dead* member of your team to get clean? In the high-handicap flights they don't (!) and so they don't go and get Spent. Instead,

If you are in the mood for a really pleasant game, it is fun simply to agree that your principal purpose will be to advance your two balls, and not to wreak injury on the opponents – until the end of the game. It must be understood that in the final analysis, when you are both nearing the end, you may have to play "against" your opponent rather than simply "for" yourself.
This is because "somebody" has to take the initiative to win.
(Croquet, The Gentle but Wicket Game,
Christopher R. Reaske, Dutton, 1968, page 102, 103.

This is the PB-2S writ large [76]! Those who employ it often play regularly and do so with sincerity and intensity. It seems clear that they are doing the best they can with the resources they have! When asked, some say they enjoy and are satisfied with the status quo, *but many say they would like to run breaks but do not know how, and that they are overwhelmed by fear of COD.*

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[76] There is a *tacit* agreement *not* to interfere with the Play of Oppos by getting Spent-for-Partner or otherwise, and *not* to run multiple-hoop breaks as there is a conscious desire *not* to get more than one hoop ahead of Partner. Under these *rules,* players of one team (u/k) join in the corner near their hoop. One ball of the pair (k) sets an on-court dolly-rush for his Partner (u). In due course, u ventures forth and tries to rush k to their joint wicket. u makes some form of Croquet Shot hoping to gain position. The wicket is attempted; If u makes it, then *great* – he will shoot to the next wicket or stay there for use by k! If the wicket shot fails, then k is out there and can use u to make the wicket for himself, leaving u in position, or better still, *and to the absolute delight of beginners*, k can peel u *and* then make wicket for himself. In either case, team u/k focuses *their* entire attention on *their* wicket, while r/y does the same at theirs.

Two Changes to Promote More Aggressive Play

Here are two proposals that encourage more aggressive play by high handicappers while maintaining the spirit of COD [77]:

1. **Modified Cleanings**: Add extra cleanings at h(4) and h(10) to the one at h(7) and have *all* cleanings apply to *both* balls.

Many A6W games end with the winner having a score of 12 (or less) and the loser a still lesser number. A bit of sleuthing reveals that this often happens when one team got lots of deadness early in the game while the other team advanced both of its balls to h(7) but intentionally stopped short of making it. They do this to avoid giving Oppos a cleaning, hoping to let time run out.

With the proposed extra cleanings, a team would have to stop both balls before they make h(4) – for a winning score of 6 to some lesser number -- to avoid giving even one cleaning to Oppos. In most games players would be forced to make h(4) which grants a cleaning – and, as proposed, this cleaning *would apply to both Oppo balls*. Knowing that a cleaning is coming at h(4) would become relevant to weaker players, just as it is for stronger players *waiting* for the cleaning after h(7).

2. **Modified Carry-over Deadness**: Have COD *only carry-over* to the *last* ball Striker becomes dead on before his turn fails. (*This suggestion is not to be confused with the Last-Deadness rule associated with Rover Play in A6W!*). Under this rule, you would *never* start a turn with deadness on more than one ball!

For example, suppose your turn starts with no deadness and you try to rush Partner from a corner to your hoop but you just *graze (roquet)* partner rather than *rushing* him to the hoop. Following the PB 2-Step, you might take-off and try to make your hoop. If you fail, then you will end dead on Partner – *not a happy situation*!

Under the new rule, if Oppos are together on court, or they are together on a nearby boundary, then *you have a better and **safer** play*! You can take-off from Partner to Oppos instead of to your hoop, roquet the Danger-Ball, get behind the Spent-Ball with the intention of rushing him to Partner, and perhaps even rushing Spent back to your hoop, making it, and continuing. If you fail, then even though you used all three balls, the deadness-board would only show you as single-ball dead, on Spent. Furthermore, Oppos would be separated, and your Partner would have the ball he wants...

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[77] The game can be made easier by using a smaller court while maintaining the distinguishing 4 x 5 dimensions. For example, all lengths reduce by 1/3 has the nice aspect of not only simplifying the game, but also allowing four full size courts (arranged in a rectangle) to be re-configured to allow for nine 2/3 size courts… Even reducing lengths by ½ yields useful courts sizes that allow four ½ size courts per full size court. *Remember, you still have to make the wickets!*

These two changes were tried and enthusiastically received at the NCC in Palm Beach. They let players progress further into games with less fear of failure. It was rewarding to see more *action* on the lawn as the players realize how they could take more risk without the overriding fear of being Partner or 3-Ball dead, or at least not being in that position for as long [78].

These changes are useful but they are *band-aids* that do not address the underlying issue – an *inability* to run breaks [79]. For players serious about A6W, we suggest that they temporarily put A6W aside and take up c.10. Then a return to A6W will be possible with players in a much better position to run breaks, recover from deadness, and experience more of A6W [80].

The incidence of break running in A6W would be greatly increased if the USCA adopted FIXs and SIMs! [81]

Those Who Run Breaks,

In 1920 the EBR became part of Croquet in the UK. It changed many things but not aggressive play (!) [82]. It is still the case that:

The first class player will rarely give up a break while any chance of continuing it remains.
(Op. Cit., Locock, page 56)

But suppose for the moment that in 1920 COD had been adopted instead of EBR. Would players still be as aggressive? Or, to ask this question another way, what would accomplished players like Locock and Tollemache, need to learn to transition from c.10 to A6W?

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[78] We suggested the obvious next step – playing without COD – but that was considered *a step too far*!

[79] Consider what it would be like if a game of A6W was played without a time limit and winning required proceeding through all of the hoops and pegging out both balls. This could take a *very long time – many hours!* Our guess is that A6W would cease to have much of a following!

[80] Sadly the A6W establishment has gone the other way. Schools, articles, and references all pay lip-service to running breaks, but then focus most of their energy on non-break running strategies that meet the immediate skill level of the readership/participants.

[81] While you are shaking your head *no* and saying, *never going to happen*, please ask the question, *Why not?* If promoting and growing A6W is a goal, then *What do we have to lose?* For the purists, the championship flight could be played without FIXs or SIMs. But even that is not our preferred course of action.

[82] If anything, the EBR made for more aggressive play! Starting a break is more difficult, therefore greater risk can be justified to maintain it.

We believe that the over-arching need is a *change in attitude* – from c.10 asking – *can I do it*? – where the answer will usually be *yes*, to A6W asking – *should I do it*? – where the answer is considerably more nuanced and could well be *no*. The rest of this section compares the decision-making process of c.10 and A6W.

Decision Making: c.10 versus A6W

Striker comes onto the lawn knowing: (i) The Clip-Positions, and hence the score of the game; (ii) How much time remains on the clock; and (iii) Which ball in the rotation is to play next. In c.10, Striker (and his teammate, if he has one) should use this basic information to design, follow, *and modify as needed(!)* a plan that, in a *risk/reward sense*, gives his team the best opportunity to win the game either on this turn (if it is late in the game) or on a subsequent turn. *But in A6W, Striker must also factor in COD*. This section has four parts that can help you in this process:

1.. We begin with a description of COD and the deadness board.

2.. We turn to the *Vernacular of A6W* that is an outgrowth of COD as presented by Kroeger and Prentis and then describe additions proposed by Ben Rothman.

3.. We describe four unique time periods in an A6W game that sharply distinguish it from c.10 and AC.

4.. Finally, we illustrate how, from the same starting point, different plays are needed when moving from c.10 to A6W. In the main, we do this by *borrowing Puzzlers* from Stettner's Book of Puzzlers.

1.. COD: Carry-Over Deadness

7.1 Deadness: When the striker earns the Croquet Shot, the striker becomes "dead" on the roqueted ball and may not roquet it again until the striker ball scores its next wicket or is cleared of deadness under rule 7.3 (1-back) or 9.2 (blocking).
(The Official Rules of the United States Croquet Association, revised 2013)

While only referred to as *deadness* in the rules, we use rule 7.1 as the definition of COD.

It is easy to imagine how, after a long session of playing Croquet – perhaps *augmented by alcohol*, players might have different remembrances of the state of COD! Historically there were lots of arguments. These were diminished (*but not eliminated!*) with the introduction of the Deadness Board – *a truly great invention* (!), sadly without an identified inventor (*see footnote 8, page 2 above*).
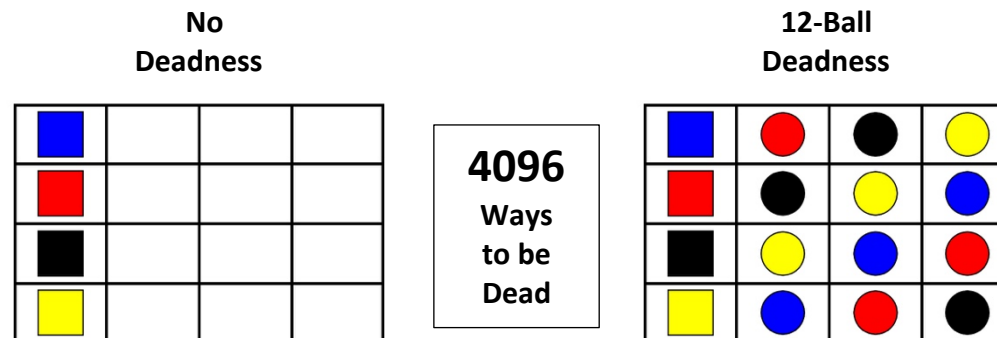
A Deadness Board assigns each ball a row (from top to bottom in rotational-order, u, r, k, and y) and identifies each column with a relationship of the two balls that intersect – Danger (next ball to play), Partner, and Spent (previously played ball). Each ball can be *dead* or *alive* (i.e., its deadness can be turned *on* or *off* – as in a binary switch) on each of the other three balls. Thus, each ball has 8 individual configurations of deadness; Each team has 8x8=64 configurations of team-deadness, *and each turn involves 64x64=4096 possible configurations of COD across teams*!

How should this multiplicity of deadness possibilities be dealt with? Here is a starting point: Consider a strategy you would use in c.10 and then adjust it, *usually reining it in*, by balancing where you would like to end the turn in c.10 with the added limitations of COD. We will now explore these *limitations* in the context of the Vernacular of A6W.

2.. The Vernacular of A6W

We undertook this chapter in part because of the limited availability of writings on A6W. Beyond the books by Osborn, that focus on his perception of the glamor of Croquet and his unapologetic bias for A6W over AC, the only information we have found is in a book by Bob Kroeger and Teddy Prentis (hence forth – B&T). They discuss the implications of COD from three perspectives (beginning, intermediate and advanced) and, present a *Vernacular for A6W*. In what follows, we quote liberally from their advanced book introducing the *lingo of A6W,* and letting *B&T* lay out the analysis in their own words – with occasional interruptions (explanatory figures) from us, followed by modern updates by Ben Rothman. [83]

A6W

In any part of a game, the player is facing one of three situations. 1. There is no break so the player must set a break opportunity up, either by attacking or giving partner a rush. 2. The player has a break and therefore should try to run it. 3. The player has meaningful deadness with one or both of his balls and needs to get clean.

Attack Theory

There are three goals any attack must achieve. 1. Set up partner with a three ball break, 2. Make the danger ball ineffective, and 3. Get clean either on that turn or by the next turn if partner does not do a Peel. Needless to say that if the striker or partner has any significant deadness, the ability to execute a successful attack becomes severely limited. The better choice of plays would be to get clean and then set up an attack.

There are two main formulas used in designing any attack - **a take-off to the attack** *or* **a rush to the attack***. Every attack is based on one of these formulas or a modification of one of these formulas:*

In a take-off to the attack [84]*, the striker roquets the partner ball and takes-off to the danger ball in order to facilitate getting a rush on the spent ball to the striker's wicket. Upon doing so, the striker can then score the wicket, get clean and then setup partner by*

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[83] All quotations were drawn from the version of the book for advanced players in their collection, <u>Croquet Strategy Books.</u>

[84] B&T liked to described this as: *Taking the Mountain (the Spent-Ball) to Muhammad* (Partner).

sending the spent ball to partner's wicket and then joining partner or just the opposite - sending the spent ball to partner and then go to partner's wicket in order to set a three ball break for partner. This makes the danger ball ineffective by leaving it where it is. Of course it may not be necessary or convenient to play off of the danger ball in order to get a rush to the spent ball. Should the striker fail to get or execute a good rush to the wicket, at that point the striker should send the spent ball to partner and then go to the striker's wicket to get clean. At advanced levels of play, it is acceptable to go to the partner's wicket if it's not the striker's wicket in order to set up the break but beware that the striker is now very dead and needs to be Peeled or left in position by the end of the break if there is any significant time remaining in the game.

<u>The reason the take-off to the attack is the least preferred attack is due to the initial take-off which is quite often a long distance and very often to the opponents on a boundary. The consequence of failing a take-off to the attack is ending up out of bounds near the opponents in addition to being partner dead. This error will most often result in the opponent to play next setting a three ball break for his/her partner. Let's move to the preferred attack - the rush to the attack.</u>

The formula for the rush to the attack [85] *is a reverse of the take-off to the attack. The striker begins by rushing partner (usually from a boundary) towards the opponent balls (also usually on a boundary). With the rush landing well, the striker croquets the partner ball to the spent ball (sometimes the striker does a short take-off to the spent ball if the partner is within easy hitting distance of the spent ball) while the striker goes to the spent ball as well. After roqueting the spent ball gently, the striker attempts to get a rush on the danger ball (assuming conditions allow) to the striker's wicket to get clean. If successful to this point the striker will send the danger ball away and go to partner's wicket leaving it a three ball break. Quite often getting a rush on the danger ball isn't possible so the remedy here is to send the danger ball away as the striker gets position at his/her wicket in that Croquet Shot. If position wasn't achieved, the striker would shoot to position. If this is the partner's wicket as well, the partner will have a potential three ball break (assuming the danger ball doesn't disrupt things) and a chance to Peel the striker through the wicket. If it's not partner's wicket, the striker will choose to either go to partner's wicket or end its turn in position to get clean next turn.*

In either case, the take-off to the attack or the rush to the attack, the danger ball ends up a long distance away from any ball it can hit and the partner has access to the spent ball (or partner ball depending on how the leave was made) and a likely three ball break.

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[85] This was described as: *Bringing Muhammad to the Mountain*. See Chapter 5, our description of Intermediate and Advanced play in A6W, for a detailed example of the rush to the attack.

Deadness Theory

One of the most complex aspects of the American game is dealing with deadness, particularly significant deadness. By that I mean deadness on partner. After all, if a ball is alive on partner, it is relatively simple enough to have that partner set up a good rush to the wicket and provide a good scoring opportunity. The problems occur when a ball is dead on partner. In the attack theory section, each attack was designed not only to set up partner but to also get the attacking ball clean of deadness either by scoring the wicket itself or by being peeled by partner. In the intermediate player book, I recommended abandoning a break in order to get partner clean. In advanced play, it is common practice to run a break while partner is dead, but it should be stressed that any failure in running that break results in both balls ending up with serious deadness. In terms of our play evaluation, deadness lessens the offensive capability of the dead ball side and lowers the risk the opposing side faces. Any deadness severely limits the ability to execute a successful attack. It is always preferable to get clean first and then attack. Likewise, setting up leaves for partner after a break can be greatly restricted if the partner has deadness. Nothing is more relaxing than having the opponent six ball dead - you are playing with virtually no risk and any play seems to work. Quite often each side has some significant deadness and therefore rotation (order of play) becomes extremely important if I recognize that each side is trying to get clean before the other.

Two Ways to Get Clean: Peel or Leave in Position

It is interesting to note that although advanced play should focus on attacks to set up breaks and running breaks - that even some of the best players will turn defensive in order to keep the opposing side dead. Yet one of the best ways to get clean is by enticing the opponent to get dead. Essentially there are two methods of getting a ball clean. Either the partner peels the dead ball or leaves it in position to make the wicket or the dead ball takes position while the partner ball 'chases' the opponents. … It is important to recognize that if both balls of a side are dead, the first method is not possible and the second is very limited. With that in mind, as soon as one of the balls on a side gets significantly dead, that side should be choosing plays designed to get that dead ball clean, not get the other one dead. As long as one ball on your side is clean, the opponent is playing at some risk and your side still has offensive capability. At the very top level of American Rules play it is very rare that both balls of a side end up with serious deadness. Those top players avoid this by immediately employing deadness theory once one of their balls gets meaningfully dead. The first goal should be to get the dead ball clean.

The 1-Back Clearance

Quite often a side can get a ball clean by the opponents scoring the one-back wicket however you cannot always rely on this. They may choose not to score that wicket. This is not to say that a player should stop a break if the opponent has deadness in order not to make the one-back wicket. Whenever an opponent has a ball going for the one-back wicket, your side has the distinct advantage of knowing that you will get a clearance as soon as that opponent makes that one wicket. Clearly it is an advantage to have made one-back when neither opponent ball has. In that situation, the opponent owes you two clearances while you only owe them one.

Naturally, end game strategy (when time is running out) may change the need to score one-back but in the normal part of the game, it is generally preferable to proceed through one-back as soon as possible. An exception might be when both opponent balls are significantly dead and neither one of your balls has a good break - in that case, neither ball should score one-back until it can set up partner ball with a break. Ideally the alive side should get both balls to one-back and then attack to set up a break since the dead side is not a threat until the alive side makes one-back. This leads to the conclusion that with the opponents going for one-back, it might be wise for the dead ball to go to position in order to force the opponents to score one-back or let the dead ball get clean on its own.

When Can You End in Position

A good concept to memorize - you can end your turn in position if the spent ball is a far distance from your ball and is dead on its partner (or the spent ball is with your partner and your partner is alive on it) and the danger ball is ineffective (either through distance or deadness). Again, there are no promises the danger ball will miss hitting the long shot, but odds are in your favor. You can win many games applying this concept.

Chase Theory

One of the best ways to get clean when either or both balls of the side are dead on partner, or the live ball is not going for the same wicket as the dead ball is called "chase theory". It relies on guarding the wicket the opponent ball must make in order to get clean once the opponent takes your dead ball out of position.
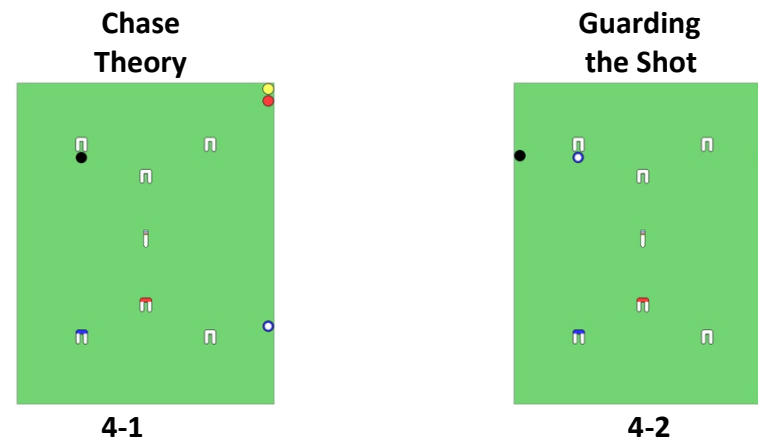
**Chase
Theory**

**Guarding
the Shot**

4-1

4-2

Figure 4-1 shows Chase Theory in action. Here u is for h(3), r - h(4), k - h(2) and y – h(4). u has just shot out on the east boundary near to h(4) where r will need to go if he wants to move k from h(2) and then get clean. r does not have a useful rush to k or to h(4), his hoop. If r chooses to remove k from position, he is unlikely to make his hoop and would prefer to end the turn in position so that the deadness advantage remains in r/y's favor. By going out of bounds near h(4), u threatens to remove r from position.

Guarding the Shot

Here is another common situation. Black and blue … are going for the same wicket (#2) and blue is dead on black. Red and yellow are separated and far from black and blue. Black is ball in hand on blue and is attempting to roll both balls into position. Black does this successfully … (then) black scores #2 and … shoots to a spot on the boundary where yellow (the danger ball) would land if it misses blue. This play is called "guarding the shot" and is meant to discourage the danger ball from trying to hit the partner ball. If yellow does shoot and miss, it makes itself available to black. This in theory could give black a three ball break. It is critical to make guarding the shot part of your game.

Figure 4-2 shows the Guarding the Shot example described by B&T above.

Deadness Rotation

Let us imagine that black is dead on blue, and yellow is dead on red … Blue and black are going for the same wicket and red and yellow are also going for the same wicket but not necessarily blue and blacks' wicket. Each side has the same deadness, but one side has the advantage of rotation. In this example, red and yellow have the rotational advantage since red can rush yellow to position for their wicket and leave it there knowing that black, being dead on blue, can only take a long shot at yellow in order to stop it and red can locate on the boundary in order to guard that shot. Blue on the other hand, can rush black to position but cannot leave it there without the risk of red roqueting yellow and then utilizing black

Figures 4-3 shows a sample deadness board that can be used to illustrate Deadness Rotation. Here the teams have the exact same deadness (one ball is dead on Partner, and the other ball is clean. We will assume that all balls are for h(2). From this description, the situation looks equal – however, we will see that u/k has a distinct advantage over r/y.

We further assume that y and u are both able to rush their Partner to h(2). But if y rushes r to h(2) and leaves it on court, u inherits a 3-Ball break. This is not true if u plays. To avoid this fate, y would have to successfully make his hoop and leave r in a position where u cannot use it. This would mean a successful scatter out-of-bounds or continuing the 2-Ball break and hoping to scatter later. Because this poses a large risk, r/y choose not to take the rush and instead form a wide join in c3 and let u/k set up an easy rush to h(2), Figure 4-4. As u continues his turn and remains ahead of y, it is less risky for y to score a hoop and leave r a hoop or two behind the u/k line of play.

Board   **Balls**

4-3   4-4
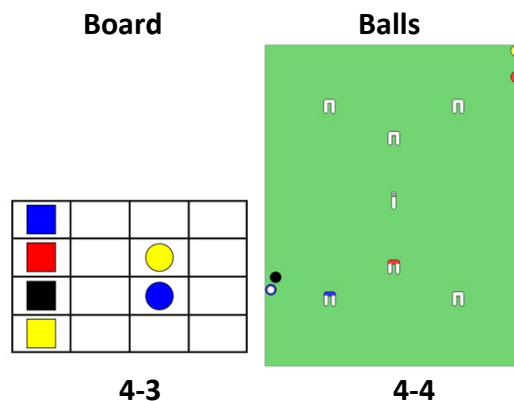
Swapping Deadness

... In this event, blue would be best to back peel black if possible, which would then advance both balls one wicket and change the deadness from black being dead on blue to blue being dead on black. Once done, the blue and black side would then have the advantage of deadness rotation. Whatever the situation, it is important to be aware of the deadness rotation. If the opponent has a ball with any deadness, that ball is restricted offensively and the ball that plays immediately before it is playing at less risk. To give an example: if blue is dead on black and they are joined on a boundary position, yellow (who plays before the dead ball, blue) is playing at far less risk than red. In general the ball playing at the least risk should do the attacks and the rushes to wickets. Equally, if the objective is to take an opponent's dead ball out of position, the proper ball to do that is the ball that plays just after that dead ball since the dead ball is the spent ball and could be very useful to partner and the opponent's live ball is next to play and can only take a long shot since joining up with the dead ball is not an option. In that case, the attacking ball only needs to end up in position for its wicket.

Balls	Board Before	Board After

4-5	4-6	4-7
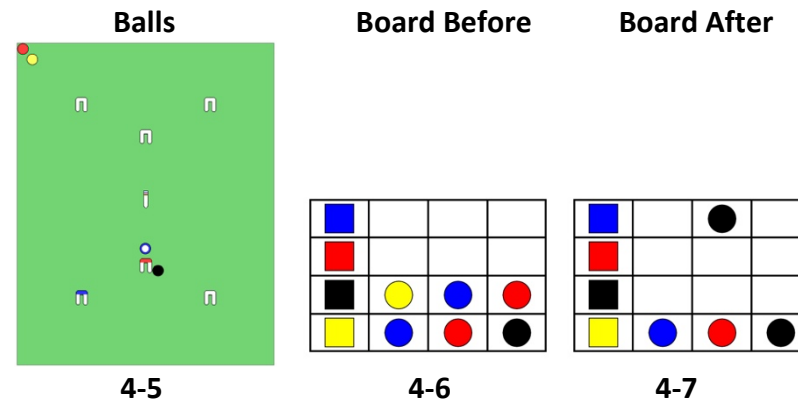
In <u>Figure 4-5</u>, u has just scored h(12) and became a Rover-Ball while k is 3-Ball Dead and for h(5). As in the B&T explanation, it would be a good idea for u to try to Back-Peel k, even though it would leave u dead on Partner. Here are three reasons:

1. <u>Scoring Ability</u>: Now that u is a Rover-Ball, it can only possibly score one more point for itself by pegging out. k can still make (8) hoops and thus it is likely to benefit the team the most if k is alive rather than u.

2. <u>3 to 1 conversion</u>: All else being equal, trading 3-ball deadness, <u>Figure 4-6</u>, for just partner deadness, <u>Figure 4-7</u>, gives team u/k the opportunity to threaten the opponents or even start a break if given the Spent Ball.

3. <u>Deadness Rotation</u>: With y 3-ball dead, <u>Figure 4-7</u>, it is in u/k's favor to have k scoring hoops rather than u. k would be playing with a relatively powerless danger ball, y, while u is playing with the threat of the live danger ball every shot.

Clip Rotation

Much like Deadness Rotation, it can be clear which team has an advantage based on clip location and rotation. For example, suppose that u and r are for h(3) while k and y are for h(2). Thus, the game is tied 3-3, but we will see that r/y have the Clip Rotation advantage.

If both teams are joined up on a boundary setting a rush to their hoop, there can be a standoff to see who goes first. Usually, the ball that scores its hoop, leaves Partner on the lawn when they go back to a boundary. The risk is that the Danger Ball might run a 2-Ball break and use the Partner Ball that Striker left on court to get a 3-Ball break. If u plays to h(3) and leaves k on lawn, r could use it. If r plays to h(3) and leaves y on lawn, k could use it after making h(2). If k plays to h(2) and leaves u on the lawn, y could use it. The only *safe* play is for y to play to h(2) and leave r on lawn, because u is already past h(2), so access to r would not be very useful.

To reach the conclusions discussed above, we went through the entire order of play. This can be difficult to do within 45 seconds allowed for a turn, or when time is running out toward the end of a game. Here is another way to proceed that uses a visualization technique *involving trains* that we call, *Caboose Theory*:

Let's imagine the ball that is the farthest ahead and plays first, in this case u*, and designate it the engine of the train*. We see who plays after u, **and I say who**, because we must judge the player to see *how long of a train car* they represent. For more advanced players, the train cars must be longer to represent the threat of a longer 2-Ball break. Striker must judge if the Danger Ball will 2-ball it all the way to Striker's hoop. The number of hoops the ball is likely to make represents the length of the train you must visualize starting at the ball's current hoop. While u may plan on making h(3) and maybe rushing up to h(4) and h(5) on a good turn, let's imagine u leaves k behind after only 1 or 2 hoops. *See the blue line from h(3) to h(4) in* <u>Figure 4-8</u>. The other clips are similarly represented by a line from current hoop to Pioneer in <u>Figure 4-8</u>. The "Caboose" in this situation is y because it is the farthest behind and last to play. In <u>Figure 4-8</u>, there is no blue train car behind y that would benefit from y leaving r at h(2). The "Caboose" is free to play to its hoop and leave Partner on lawn, because it does not help the Danger ball who is farther ahead on the train.
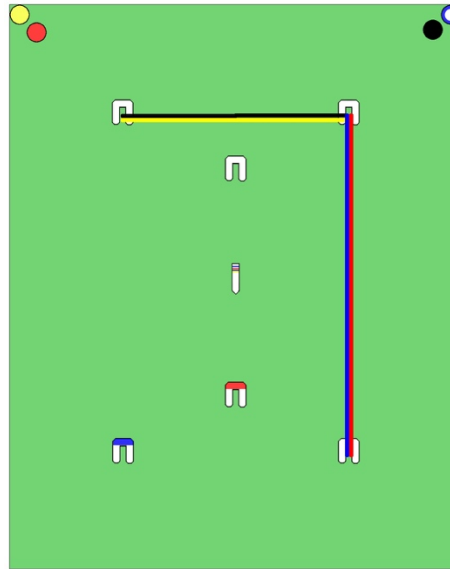
4-8

There can be multiple trains with multiple Cabooses *but watch out for trains that come around and connect on their second lap!* In advanced play, non-cabooses should look to attack rather than rush to the hoop, while a ball that is a Caboose can rush to the hoop first, before committing to an attack.

Modern Advances

As court conditions and equipment get more reliable, players evolve their tactics to be more aggressive. Many of these modern plays are for players who expect to dig out the 4th ball, get a peel done, and set a Groom of Doom if given a 3-Ball break – *all as described in detail in the next chapter*. This allows them to take large risks to get that first break, as it often leads to a clean 2 turn finish. These seemingly *reckless (to the uninitiated!)* types of attacks are more common early in the game, leaving time to get clean and recover if everything falls apart or if Oppo hits in.

Chernobyl Opening

As top players (of u/k) became more inclined to attack Oppos (r/y) as soon as they came into the game, responses evolved to be more defensive. r/y would join as far from h(2) as possible, in c4, but u/k would still *rush to the attack* despite the high odds of the attacking ball ending the turn 3-ball-dead. r/y would separate into c3 and c4, but this allowed u/k to rush to h(2) and possibly *roquet-out or* for the attack, leaving the attacking ball with even less deadness. Eventually it became standard for r/y to keep y out of the game entirely. If u/k move away from c1, it is safe to put y in the jaws of h(1) and prepare to come through soft or hard. If y goes more than halfway through h(1), then it can even play to the sidelines or as far as c2 or c3 on the hoop shot. This position allows y to explode into the game and attack without getting your partner dead. This position is known as *Chernobyl*. Some players have evolved to keep both r and y out of the game, but that has less chance of exploding into the game as a single ball.

Attacking for the Striker-Ball

Both the *rush-to* the attack and *take-off* to the attack can become immediate offense for an advanced player. When Oppo is joined together, even if it is on a boundary or near a corner, the two balls together represent an opportunity for a rush to Striker's hoop. If the attacking ball can roquet the ball that is farther from their hoop first, then they can do a small split or take-off to get an easy rush on the other ball towards their hoop. After scoring their current hoop, Striker will have one or more balls on the court (it helps if the attack was near their Pioneer hoop) with which to build a break. For example, If Oppos are joined in c3 when Striker (u) is for h(2), Figure 4-9, then there is a golden opportunity to rush to h(3), leaving Partner as a Pioneer, Figure 4-10, and take-off to the attack in c3, Figure 4-11, to get a rush to h(2), Figure 4-12, and begin a break, Figure 4-13.

| 4-9 | 4-10 | 4-11 | 4-12 | 4-13 |
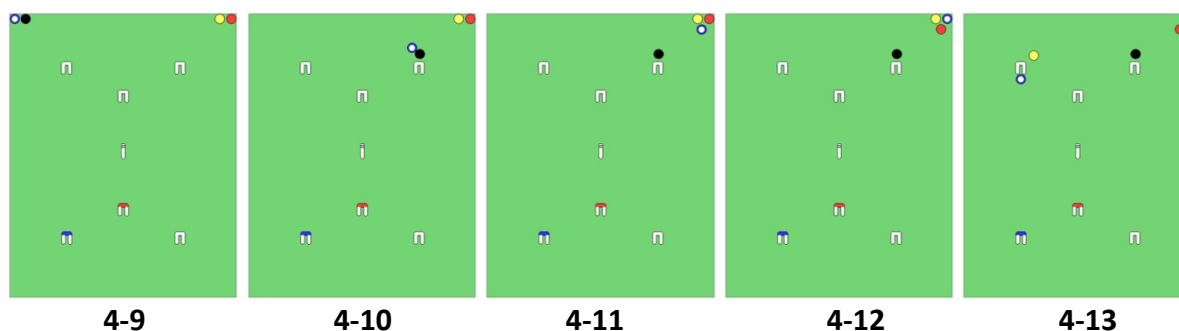
2-Ball Break to the Attack

If Oppos play defensively, then the best course of action rather than attacking may be for Striker to set a rush for Partner to Partner's hoop. Some opponents will see this as a flaw in tactics and choose to join close, set a rush, or even come on the lawn if they assume Striker does not plan on attacking. This often occurs in the opening of the game when u/k sets a rush to h(2) when Oppo has *Chernobyl-ed* or separated.


| 4-14 | 4-15 | 4-16 | 4-17 | 4-18 |
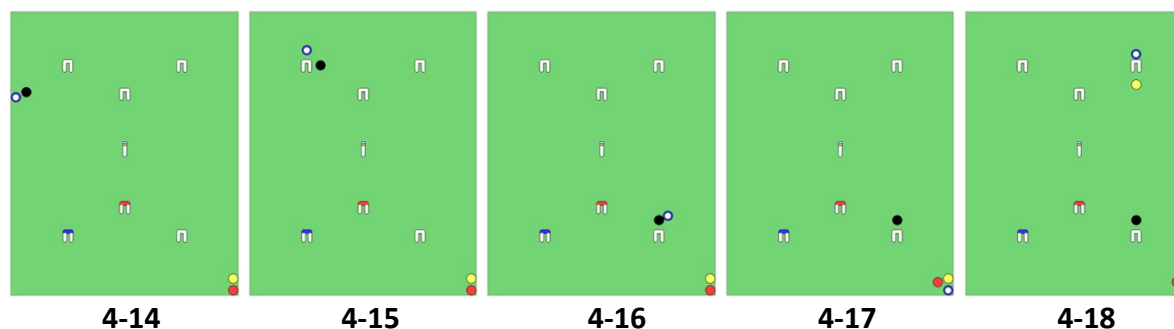
Oppo then enters the game to join in c4, Figure 4-14 or even to set a rush to u/k for the attack. This gives u/k the opportunity, while risky, to score h(2) and attempt to get a rush to the attack after the hoop, Figure 4-15. In an ideal situation, assuming y just came into the game, u could score h(2), rush k to Pioneer position at h(4), Figure 4-16, and take-off to r in c4. After a gentle roquet on r, u could get a rush on y back to h(3), Figure 4-17, and begin a 3-Ball Break, Figure 4-18, possibly adding the 4th ball before making h(5). This scenario is easier when Oppo is joined on court, or if Striker runs the 2-Ball break until Oppos are close to the current hoop. For instance, if u gets a rush to h(3) instead of h(4), he could score h(3) before getting a rush down between h(4) and h(5) for the attack. In this case, the attack into c4 would generate a short rush to h(4), 9 yards away, and have a higher chance of starting a break.

Wide Join

To discourage an attack by Striker, the Oppos can choose to join on the boundary 4-7 yards apart. This *wide join* often reduces the chance that the attacking ball gets an easy rush to their hoop, no matter which hoop it is. The trick for Oppos (here r/y) is to still be close enough for Partner to make a roquet and keep the ball in-bounds in case u/k chooses to just run a 2-ball break and leaves a ball on court or stuffs a hoop. It helps to anticipate what rush the attacking ball would like and choose a boundary that makes that

difficult. For example, If Partner, r, is in c4 and u might want a rush to h(3), then y can join 4-7 yards away on the south boundary. Even a wide join on the east boundary, figure 4-19, may facilitate u getting a rush to h(3), as in the previous example.


4-19   **4-20**
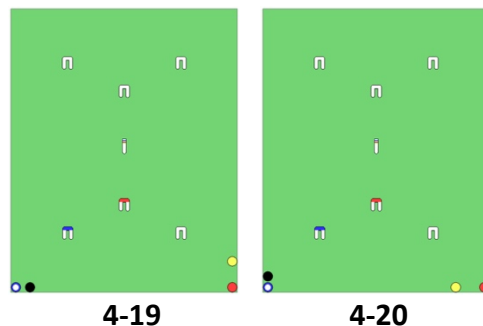
Take-Off to a Wide Join

One risk of the wide join is that it makes an *elongated target* for a take-off to the attack. Let's assume u has a rush on k to h(2) from c1 and y took the advice from our last paragraph and joined four yards West of r on the south Boundary, Figure 4-20. u is unlikely to get a 3-ball break started for himself even if u gets a great rush out of h(2) or h(3) because Oppos are too far apart. An attack this turn would most likely be for the benefit of k to have a break next turn. If u attempts to 2-ball any hoops, u risks giving r an easy break so long as r can roquet Partner. u could switch plans and decide to attack r/y directly with a take-off to the attack. Having y West of r not only shortens the take-off for u, but it gives u a large area to stop in. u could stop 4 yards short of y, in the 4 yards between r and y, or all the way at c4, giving u more than an 8 yards (an elongated) area in which to stop the take-off. r/y must choose wisely and decide which attack it wants to prevent and which attack it wants to encourage and join Partner with purpose.

Roquet-Out

A quirky rule in A6W not only ends the turn if the roqueted ball goes out of bounds, but that team also incurs no deadness on the failed roquet. This can be used to send Partner to the Spent Ball in an attack while incurring no deadness. For example, suppose u/k are both for h(2), u has a rush on k to h(2) from c2 and r/y are separated, with y middle of the west boundary and r in the middle of the east boundary, Figure 4-21. u can rush to h(2), make the hoop and in doing so setup to have a rush on k to y after scoring the hoop. A good stop-shot style rush can send k out of bounds near y while leaving u near h(2), Figure 4-22. This would leave k with a 3-Ball break and u would have no deadness, because the rush went out of bounds.

Roquet-Out   **Croquet-Out**

4-21   **4-22**   **4-23**   **4-24**
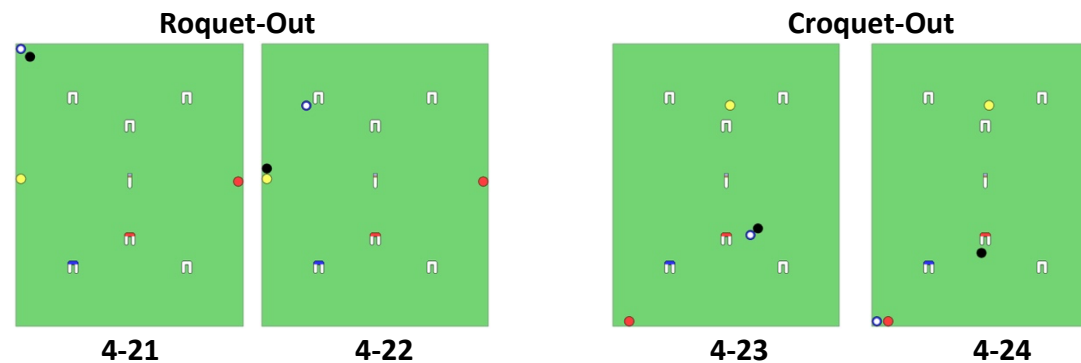
Croquet-Out

Whether there was a roquet-out opportunity or not, a croquet-out can be used when the Oppos are separated. One advantage of this attack is that Striker does not have to roquet a boundary or corner ball from in court; Partner will get to roquet it from nearby on the boundary. Often this croquet-out leaves the attacking ball dead on Partner, but alive on Spent. This *sliver of liveness* allows Partner to run the break without major concern for the peel or leaving the attacking ball in position at their hoop. Partner can run the break and possibly setup the attacking ball without even digging out the 4th Ball. Imagine u ends his turn getting y for k before scoring h(4) and then r shoots just (2-3 yards) east of c1. k takes over and runs his 3-ball break. After scoring h(12), Figure 4-23, k can croquet u out to c1, leaving u a rush on r to h(4) while staying on lawn near h(5) as a Pioneer, Figure 4-24. u/k eliminated difficult boundary roquets by using this croquet-out and simultaneously eliminated the need to pick up the 4th ball.

7-yard Separation Leave

If it is near the end of a game and one team needs a break to catch up, the other team may avoid joining to frustrate attacking for the Striker-Ball. A savvy team will separate into inconvenient corners to make croquet-out plays more difficult. A croquet-out to c4 when Partner is for h(2) would be quite difficult to build a 3-ball break (needing a Hogan Roll). In this scenario, u may want to deploy a croquet-out, but instead of leaving u at h(2), u could try to stop 7-yards on court, Figure 4-25, giving k a drive shot to load the Pioneer to h(3) while getting a rush on Partner to h(2), Figure 4-26. While this could work early in the game (as shown in the next section), it is more reasonable late in game, when there is little time to reset for a more traditional attack and leave.

7-yard Separation

Attacking the PB-2S: The Two-Take-Off Attack

| 4-25 | 4-26 | 4-27 | 4-28 | 4-29 |
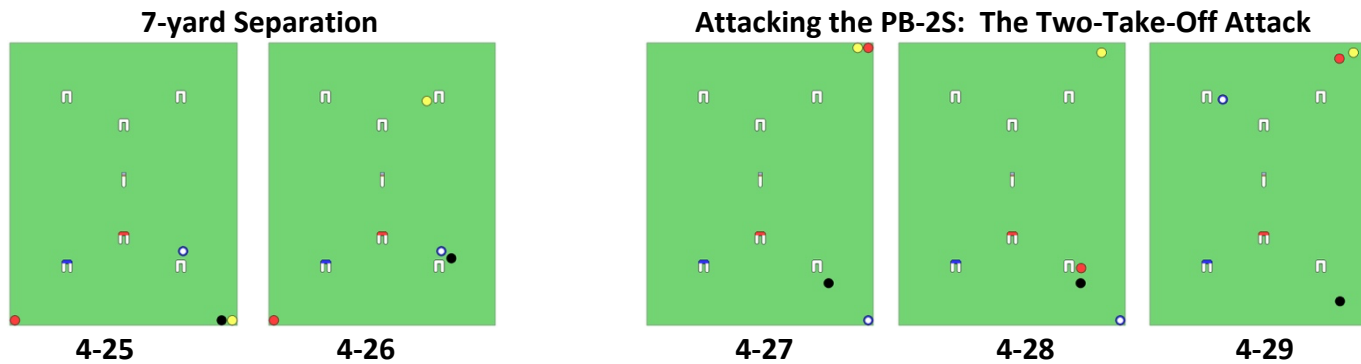
Attacking the PB-2S

If Oppo is relying on the classic Palm Beach 2-Step to score points, then there is a strategy that allows an aggressive player to drag the Spent-Ball out of a corner. Let's assume u is playing the PB-2S at h(4) when r/y are joined in c3 with no useful rush and y is for h(2). u rushes to h(4) and scores the hoop but does not get a rush to h(5). u goes out of bounds in c4, Figure 4-27, waiting for an easy rush to h(5) to continue the PB-2S [86]. r can use the fact that k is on the lawn, slightly South of h(4) to get to u, which is the real prize because it is the Spent-Ball. r hits y and takes off toward k, hoping to stop a bit Northwest of k, Figure 4-28, which is relatively easy so long as r does not go past k. r hits k toward c4, takes-off to u and is able to bring u back to y or to y's hoop, Figure 4-29. This common result of the PB-2S, Danger-Ball on lawn with Spent hiding in a nearby corner, allows for a two take-off attack. Since this take-off is to a ball on lawn, *it is only as risky as a rush to the attack without having to have a rush*.

3.. Four Unique Times in an A6W Game

In addition to COD itself, A6W has special rules that apply at four unique times during a game: (i) Before a ball enters the game when the *Out-Game* can be played; (ii) When a ball makes or is Peeled through 1-back and one Oppo ball can be cleared of its deadness; (iii) After a ball has made the Rover Hoop and is for the peg, when it is subject to COD and a new concept – *Last-Deadness*; and (iv) The Last 15 minutes of the game, when the clock can be stopped for double banking, etc. and tactics change. We will briefly discuss each of these.

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[86] See the Attack in Figure 4-43.

i.. The Start of an A6W Game

Prichard provides a succinct history of the start of Croquet (AC) Games:

Till 1905	One foot in front of the first hoop.
1906	Centre of south boundary
1907	A baulk
1924	Either baulk
	(Op. Cit., Prichard page 210)

Throughout the history of Croquet before 1910, and later with AC, balls were *in the game* after their first shot, and could be roqueted and then croqueted whether or not they initially chose to make h(1). A6W is different. Balls are placed on a 9" line 3' south of h(1). If, by accident or intent, h(1) is not made, then that ball, and others in the same condition, are consigned to playing the *Out-Game* until they are successfully through h(1), while the balls that have made h(1) are *in the game* and proceed accordingly.

In the next chapter we provide details of perhaps the most recognized A6W opening assuming that all four balls make h(1) on their first try [87]. Here we provide information on the *dreaded* or *diabolically clever*, depending on your perspective, Out-Game [88].

The Out-Game

Balls in and out of the game share one *common* rotation. A ball can only make a single shot each turn while playing the Out-Game; there is no taking of Croquet. Most common plays are GC-like: Shooting to make h(1); Taking position; Blocking another ball from h(1) or driving a ball (Oppo) away from or towards (Partner) h(1). It is also possible for a ball out of the game to bring another ball that is out of the game into the game by Rush-Peeling it (or attempting to drag-jump it) through h(1).

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[87] B&T provide an interesting historical perspective on A6W openings, Op. Cit., pages 1-10.

[88] Beginners often find it *embarrassing* to miss their initial shot – *Sorry Partner* – while experienced players may do so intentionally, earning a scowl of recrimination from Oppos – *He Played the Out-Game!* This intentionality causes so much consternation that Rule 17.1, the only existing Experimental Rule in the A6W Rule Book, provides for elimination of the Out-Game. However, it seems to have been in *experimentation* for many years without being implemented. We *confess to being in favor of the Out-Game!* We have found two useful references at Croquet World Online: *The ins and outs of the in-ball-out-ball game,* by Mik Mihas, posted July 10, 1998; and *Why can't we keep the American Opening and why do we have to keep messing with it,* by Garth Eliasen, posted November 12, 2006.

A ball in-the-game cannot hit a ball out-of-the-game unless the roquet is an aftermath of a successful wicket attempt. Otherwise, it is end of turn. Striker can avoid this issue by requesting that one or more balls that are out-of-the-game be *marked and lifted* for a particular shot. Striker can deal with this situation anew on *each* shot, marking and lifting, and unmarking and replacing at will. Likewise, balls out-of-the-game cannot hit balls that are in-the-game. If this happens, then the balls are replaced. Once again, Striker can avoid this issue by requesting that one or more balls in-the-game be marked and lifted before the ball-not-in-the-game plays. In each case, the lifting, marking, and replacing is at the discretion of Striker, not the owner of the ball being lifted.

Things get *interesting* when we consider interactions that are allowed between balls in the two *parallel* universes: those in and out of the game. Here are three examples:

.... **Keeping y out**		.... **Bringing y in**			.... **Two Balls in at once**	
4-30	4-31	4-32	4-33	4-34	4-35	4-36
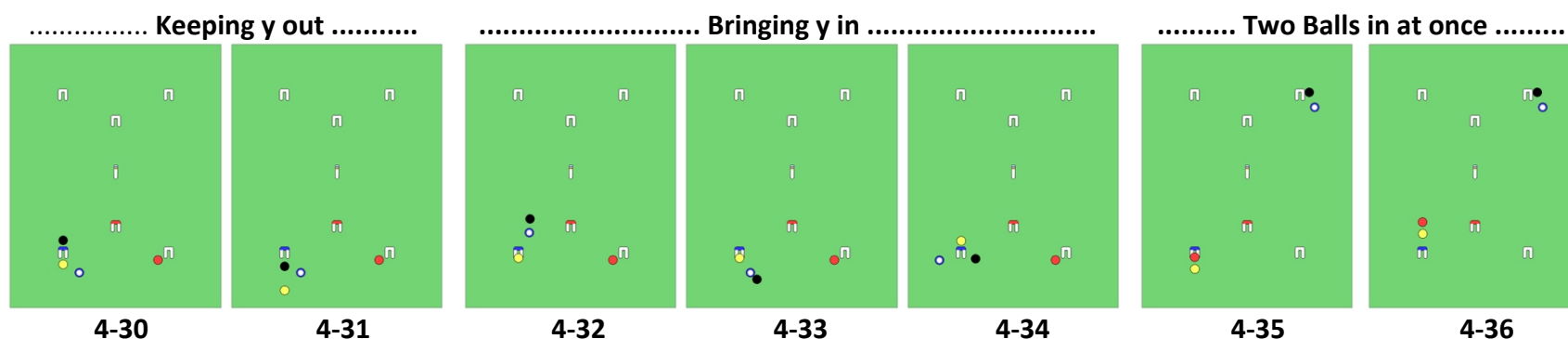
Consider Figure 4-30. k is running a 3-Ball Break. He *has had* u and r and is in position at h(8). y, which is not-in-the-game, is in *Chernobyl position* at h(1) – near or in the jaws of h(1) and in position to make the hoop. k can have y lifted before his wicket attempt but instead chooses to leave it. Figure 4-31 shows k making h(8) and *as part of coming through the wicket*, hitting, and rushing y towards the west boundary. The result is that y has a much longer shot to make h(1) to enter the game, and k can continue his 3-Ball break (as long as y remains in bounds and k can get to u!) with more confidence that k will be able later to end his break, giving r to u – now with less, and maybe no, fear of y coming in to disrupt matters.

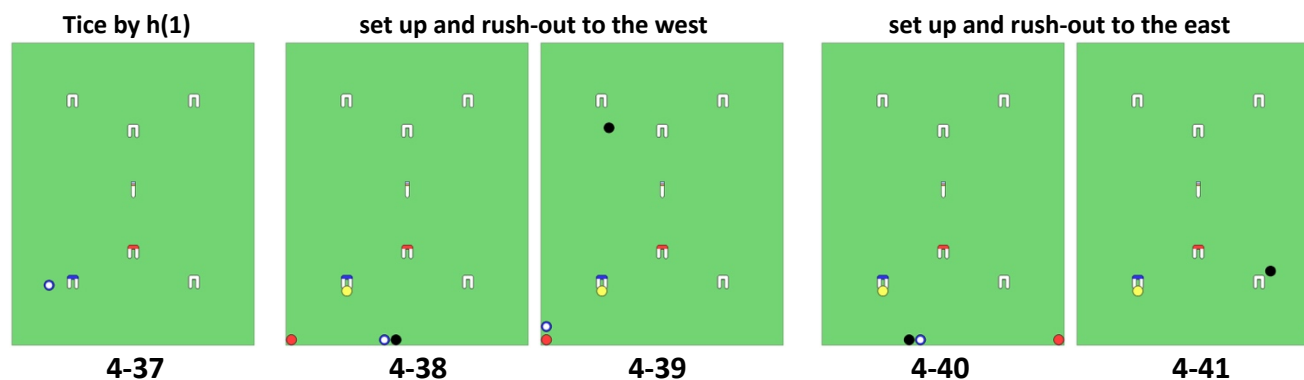In Figure 4-32, k has made h(7), rushed and croqueted r to h(9), and now has a *dolly-rush* on u toward h(8). y is out-of-the-game and in the jaws of h(1). k decides to try to bombard y into the game: k rushes u south of h(1), Figure 4-33, then k bombards y into-the-game with u in his Croquet Shot, Figure 4-34. k now has y available as his pioneer for h(8) and has the makings of a 4-Ball break.

Not shown is the possibility that u fails (or chooses not) to rush k to bombard position in Figure 4-33. y can still be brought into the game with a bombard of k on y but now after u makes h(8): After the rush fails u croquets k to bombard position as u goes to position at h(8). Then an important addition: *u has y marked and lifted from the jaws*; u makes h(8) and roquets k; *u has y replaced in the jaws*; u proceeds with the bombard and subsequent use of y.

In Figure 4-35, u and k are in-the-game and k has just failed at h(3) while attempting a 2-Ball break. It is y to play. Both y and r are out-of-the-game. r is in the jaws of h(1) and y is just a bit (12"- 18") behind r. If y hits a jump shot it is probably too close to hop completely over r, but a *drag jump / half jump* could bring both into the game, ideally leaving y with a rush on r to h(2), Figure 4-36, and instantly obtaining a 4-Ball break. If y does not have a rush to establish a break for himself, then y can take off to u/k. u can be destroyed or left near c3 and then y can rush k to h(2) to get clean or send k to r and go to h(2) to set a 3-ball break.

u/k have some interesting defenses, facilitated by the fact that they can *pick and choose* to have zero, one or both of the out-of-the-game balls, marked and lifted. In particular, if k's break continued instead of failing, then after making h(4) he might have been able to rush u to h(1), have y lifted, *but not r(!)*, bombard r into the game and then use it to make h(5). Now k has r, the ball u wants, etc.

Here are other unusual openings that call for decisions about coming-in or staying-out to start the game:

Tice by h(1)	set up and rush-out to the west	set up and rush-out to the east

| 4-37 | 4-38 | 4-39 | 4-40 | 4-41 |

Figure 4-37: u enters and shoots to a few feet west of h(1). If r comes in, then he will needs to think carefully about what to do. Roqueting u most likely means deadness on u with only limited prospects for making h(2) and getting clean. Taking off to h(2) leaves u for k; Rolling to h(2) and then failing, would leave u with the ball he wants, r. If u has access to r, then k can come in and shoot to h(3), hoping that y will not be successful coming in and hitting u or r at h(2). If u does not have access to r, then k can come in and go

to u at h(2). If r ignores u and shoots to anywhere on the lawn, *especially bad would be to the north boundary toward h(2)*, then k can come in, roquet u and croquet u out to r. Once again, u has a 3-ball break if y cannot get in and disrupt matters.

r's best bet from Figure 4-37 is to stay out! Then u becomes k's problem. k most likely gains nothing but Partner-Deadness by roqueting u. However, k can come in and go to c1, not moving u. It will be y to play. y also gains nothing by roqueting u as u is y's Danger-Ball. If y comes in and goes to c4, then u can shoot to k and r will have the choice of *Chernobyl-ing* or coming in and joining y. Figure 4-38: This position is the result of 6 turns to open a game: (i) u makes h(1) and shoots to the midsouth boundary, (ii) r makes h(1) and takes c1, (iii) k makes h(1) and shoots very close to u, (iv) y Chernobyls, (v) u shoots out directly behind k and marks in a *paper-width* to the west of k, and (vi) r passes.

It is k to play. Using the equivalent of a thick Take-Off, k rushes u out of bounds north of r as k goes to h(2). Under the rules of A6W, because u went out k's turn ends *but k accumulates no deadness*, Figure 4-39. y plays next. Here are three possible plays: (i) y can pass and see if u can do the roll shot from c1 sending r as a pioneer to h(3) while going to k at h(2). (ii) y can enter and try to hit u or r (without roqueting either out of bounds). If successful, then y can try to run a 3-ball break. But missing to the south boundary will let u use r and y to get started. (iii) y can enter by running h(1), hopefully close to k, and then shoot at k. But missing to the north boundary will give u the makings of a 4-Ball Break.

In a similar vein, Figure 4-41 can be reached from Figure 4-40. It is k to play. k rushes u out on the east boundary near to r while k stays in bounds going somewhat north of h(4). k's turn ends, once again with no deadness. y can come in but is unlikely to hit k (the closest ball) and will most likely stay out and settle for improving his Chernobyl position. Then it will be u to play. u can roquet r, and then attempt to send r toward h(3), or toward the peg, while gaining a rush on k to h(2) and have the makings of a 3-Ball Break [89]!

The Initial Conundrum

Statistically speaking, it is hard to rationalize the play of the first team to seize the initiative in many A6W games! In Figure 4-42, u entered and took c1, r followed to c3, k gave u a northern rush, and y gave r a western rush. It is u to play.

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[89] We thank David Bent and Derrick Wassink for bringing this opening to our attention. Apparently, they have put it into effect successfully with Derrick playing k and David playing u.

4-42	4-43	4-44	4-45	4-46
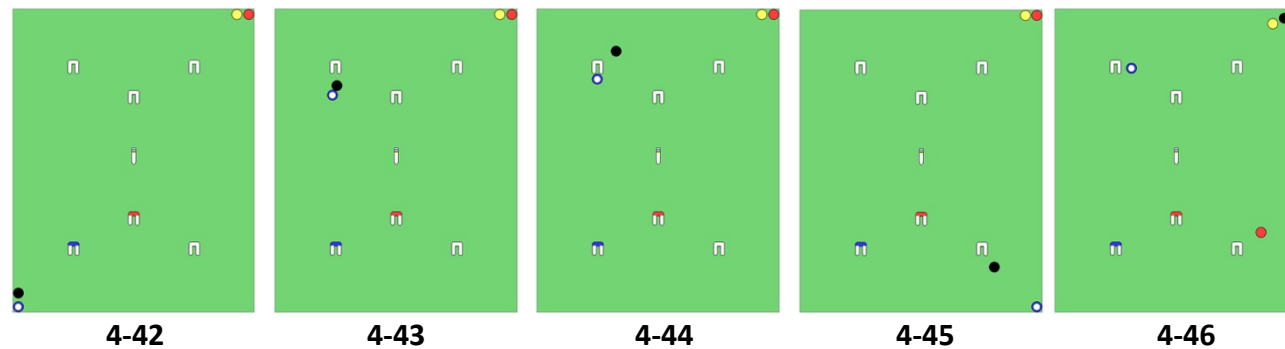
Consider what happens If u *takes the bait and* rushes k toward h(2), Figure 4-43. A very aggressive follow-on play is for u to croquet k to the east, Figure 4-44, make the hoop, and continue in a 2-Ball break, making h(3) and h(4) before getting off the lawn, perhaps as shown in Figure 4-45 [90]. Here u has advanced to h(5) and ends his turn with no COD. Alternatively, after making h(2), u could rush k *to the attack* and get y for k. If all goes perfectly, then u can end with just deadness on r [having made h(3)], perhaps as shown in Figure 4-46, but it is more likely that u ends in the same position but 3-ball dead having not found position at h(3) with his L&H on r. But k has a 3-Ball break if r misses. It is possible (*and perhaps likely!*) that u does not get a good rush on k. Then the attack could still take place, but now it would need to involve a long roll or a take-off to the attack.

4-47	4-48	4-49	4-50

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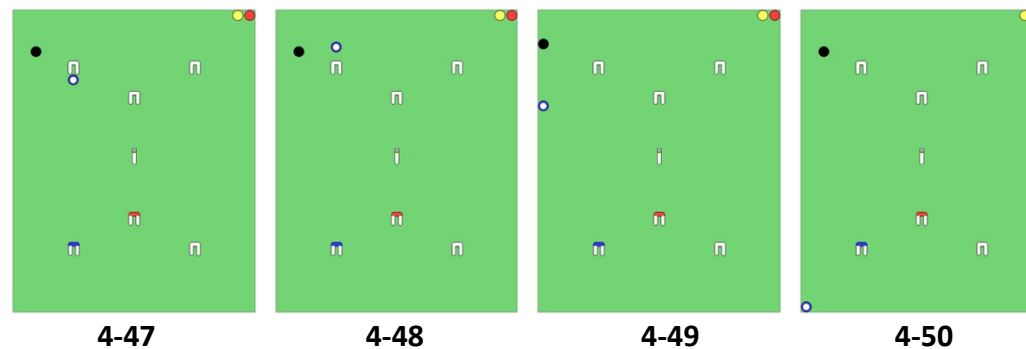
[90] This is a terrific opportunity for r to use a Two Take-Off Attack to dig the Spent-Ball out of c4 for Partner as discussed earlier.

u may get *cold feet* after the rush and decide to try and bail-out with no deadness. In this case he may want to send k to the west on the Croquet Shot, Figure 4-47, and then make the hoop, Figure 4-48. Now, cleared of Partner-Deadness, u has two choices: (i) he could try to scatter k and himself out of bounds creating a wide join, Figure 4-49, or (ii) he could abandon k and simply flee, Figure 4-50. In the former case r should be able to get u for y, and in the later r has a simple 3-Ball Break. *Neither result is good*! You may protest that this all happened because r/y went to c3 and *clearly (!) u should not have taken the bait*. But we contend that much the same result could apply from the starts shown in Figures 4-51 – 4-54 and leave it for you work out the details.

| 4-51 | 4-52 | 4-53 | 4-54 | 4-55 | 4-56 |
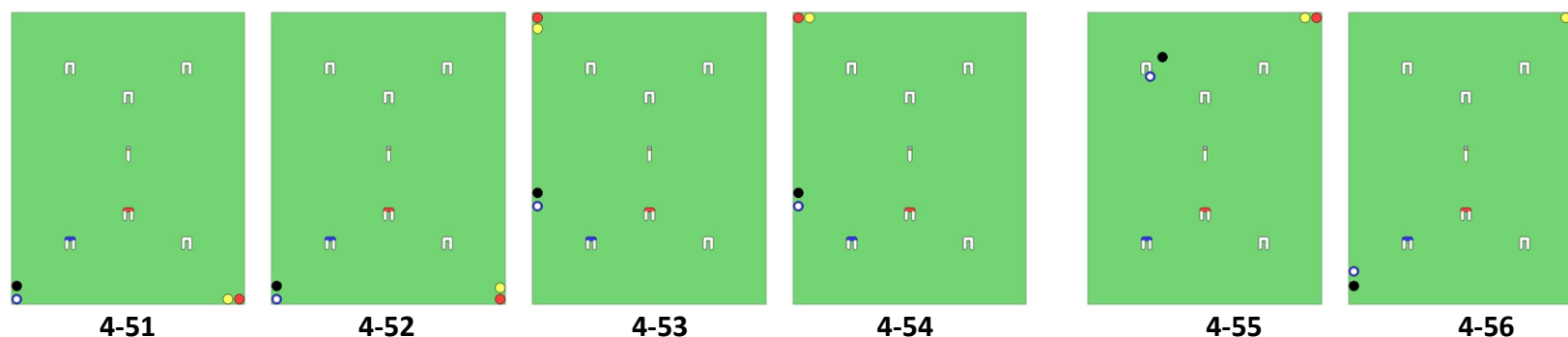
Finally, a *nightmare scenario* is shown in Figure 4-55. We restart from the positions in Figure 4-47; this time u *stuffs* h(2) ending dead on Partner which gives r a 4-Ball break. Low probability you say… *perhaps*… but realizing it can happen might suggest having u adopt a defensive posture, swap positions with k, and turn the issue over to r/y, Figure 4-56.

<u>ii.. Cleanings that arise by making h(7)</u>

Another unique feature of A6W is that a ball that makes h(7) – *1-Back* – or is put through 1-back with a Peel by any other ball, gives Oppos the right to clear one, *either one but only one,* of its balls of all deadness. This decision must be taken and announced (and acknowledged!) before either Oppo ball takes its next shot [91]. This 1-Back clearing (*cleaning*) has an incomplete history but appears to be a concession to the extreme bind that a ball can find itself in if it goes 3-Ball Dead early in an A6W game. Stettner provides two 1-Back examples, both related to *last-turn* (a topic we consider separately below).

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[91] Although *supposedly a gentlemen's game*, in A6W it is up to the taker of the cleaning to remember that he has one or he loses it! It is amusing to see all the machinations players go through hoping to remember – like untying a shoe, putting their hat on their mallet, their watch on their shaft, unscrewing the shaft of their mallet, etc.

In <u>Puzzler 14 Advanced</u>, the game has entered last-turn. y was *1st - last* but ended his turn stuffing h(7), squandering a 3-ball break with r as reception and u as pioneer for h(8). That makes the score 13 to 11 in favor of r/y.

14 Advanced   **11 Advanced**
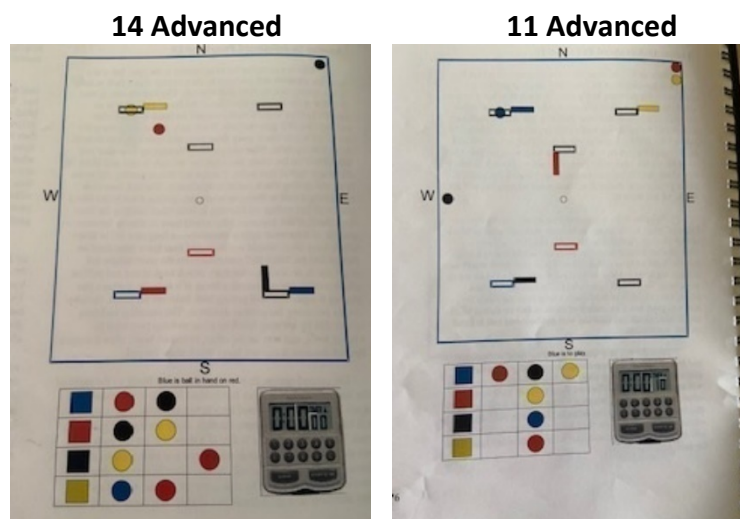
u was originally alive on r and y. In the figure, u has roqueted and is ball-in-hand on r. u's plan is to Take-Off from r, gain a southern rush on y, and then Rush-Peel y through h(7). This will help Oppos, r/y, by increasing their lead to 14 to 11 and clearing y of deadness (*which might be very useful to y if there is a need for another last turn*). But, from the u/k perspective, it also give one of u or k a cleaning and a chance to run a break to win.

Cleaning u is possible. In this case u will be able immediately to use r and y again [92] (!) and could try to continue his break. This approach would make tremendous sense if u was for h(6), h(7), h(10) or h(11) because he would have a ready-made break and could still shoot out to k if he fails or decides to end his turn. Here u would Rush-Peel y but not hard, keeping y north of the peg. *Far better, however, is for u/k to clear k of his deadness!* In this case, u can Rush-Peel y hard, then croquet it to k's wicket, h(4), and shoot out just to the south of k on the east boundary, giving k a forward rush and an easy 3-ball Break for the win if r does not hit in.

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[92] Counterintuitively, this use of the cleaning gives u new life on balls it has used already this turn!

Puzzler 11 Advanced poses a different problem. There are 10 seconds left; play has been stopped by a time-out taken by u/k. The score is 14 to 13 in favor of r/y. u could tie the game by making h(7) thereby running out the clock becoming the 1st ball in last turn (*1st – Last*) and could even continue his break. But u is unlikely to score another hoop to secure the win. Scoring h(7) would give r/y a cleaning that logically would be given to y. Then r would give y a rush to 4-back for y to make the go-ahead point and secure the win. To win, u wants to stay in position as the last ball to play in regulation and force r to be the 1st-last ball without a clearing. u could start the clock and try to tap the ball gently or pass with just a second or two left, so r/y cannot call a timeout. r cannot help y and could take a desperate shot at k. Assuming r misses, k can give u two balls on court between h(7) and h(8) to work with, possibly even wiring y from k with r. If r does not shoot at k, k can still go to reception at h(7) or pioneer at h(8) for u to win as the last ball.

iii.. The Rights and Responsibilities of a Rover-Ball [93]

In c.10, and in A6W, a ball that makes h(12), the Rover Wicket, becomes a *Rover-Ball,* and can roquet each of the other balls only once a turn but cannot score additional points, save by pegging out. In the last chapter on c.10, we showed that because of Rotation, pegging out gives Oppos the advantage of having two balls to one on the lawn, and in addition, the advantage of playing *two turns to one, which leads* to interesting 2-on-1 end-games that differ depending on which ball in rotation is pegged out. Here we briefly summarize *Last-Deadness* which accrues to a Rover-Ball only in A6W. Once again, we have found neither the history of, nor a rationale, for this rule. That said, it would appear that *last-deadness* was A6W's attempt to further disadvantage a Rover-Ball. Here are the relevant parts of the rules relating to Rover Deadness in A6W:

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[93] *In the 1870 Conference Laws a rover ball hitting the winning peg from any cause was out of the game; this meant that no ball could make a rover without running the risk of being pegged out (a fatal event in the sequence game) by an opponent who had made no hoops at all. In 1872 it was enacted that a rover could only be pegged out by its partner (whether a rover or not) but a year later the obvious solution was reached that a rover could only be pegged out by another rover. ... In 1932, four years after the introduction of the lift after 4-back, it was brought in that a player who had pegged out a ball forfeited his lifts (except of course when wired).* (Op. Cit., Prichard pages 175 and 176)

a) A rover may roquet each ball, on which it is alive, only once per turn

b) A rover ball that is dead on at least two (2) balls clears itself or is cleared of its deadness by:
   1) Shooting through any wicket in either direction (earning a continuation shot), or
   2) Being roqueted, croqueted, or cannoned through any wicket in any direction …

c) A rover remains temporarily dead (last dead) on the last ball roqueted prior to clearing deadness.
   When the rover ball roquets another ball, on which it is alive, the last deadness is removed.

Last-deadness makes A6W more challenging. You should remember that the goal is always to end a turn last-dead on Spent, or if that is not possible, then last-dead on Danger, but never, [*well, only if there is no other option* (!)] to end last-dead on Partner.

<u>iv.. The Last 15 Minutes: The End Game</u>

13.10 Match Time
The timekeeper should announce when fifteen minutes remain in the game,
and again when one minute remains.

This rule gives players a warning to adapt tactics based on the current situation and time remaining [94]. Usually the player with a lead gets more defensive, avoiding giving any clearances and separating in corners, while the player who is behind gets aggressive and eventually desperate. This is the most exciting time in a match between good players, because the trailing player will pull out all the stops and employ tactics that are usually foolishly aggressive, but possibly the only way to win with limited time remaining.

We end this section by noting that, although having a 75 or 90-minute time limit is deeply ingrained, one very interesting way to experience A6W is to play it to the end – until one team has 26 points – with no time limit!

---

[94] There is an art of clock management, especially for the team that is behind. This is often when the Tournament Director allows for Double Banking time outs. Stopping the clock while balls are placed in bounds, or double banking, allows for extra time to plan and even line up the next shot. Some games even come down to which ball is the last ball in last turns, so use those time outs wisely in order to snatch victory from the jaws of defeat.

4.. Other Examples of New Ways of Thinking When Playing A6W

Stettner opens his iconic book with a *seemingly simple* situation – <u>Puzzler #1</u> [95]. The goal is for k to set a 3-ball break for u.

Puzzler #1	c.10 Solution	A6W Solution

In c.10, a reasonably sophisticated player would have k roquet r, croquet r toward h(2) – preferably wired from y, and then shoot out to give u a rush on k toward c2, shown here as the c.10 Solution. k could also rush r to pioneer at h(3), take-off to u, roquet u and then give u a rush to h(2). The former approach sets a leave giving y virtually the longest shot possible and allows an immediate pick up of y if he shoots at the balls around h(2), *and misses*. Note that the roquet of u could, and most likely would, involve rushing u out of bounds, which is legal in c.10, but not in A6W.

These c.10 solutions to <u>Puzzler #1</u> will not work in A6W because u is dead on k. Therefore, k must send r to u, keeping it in bounds and also giving u a rush to h(2), and then shoot to pioneer at h(3) – the A6W Solution. No matter what, k will end dead on r.

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[95] *Puzzler* is Stetter's choice of words and, according to the Oxford Dictionary can be *a difficult question or problem, or a person who solves puzzles as a pastime*. Stettner's book has a total of 50 Puzzlers – a beginners section numbered 1-25 and then an Advanced section also numbered 1-25. In what follows, We use Stettner's Puzzler numbers with an "-A" added where appropriate to denote Advanced.

Thus, in A6W, COD and 9" boundaries, *without the ability to rush balls out of bounds and continue after the ball is marked-in 36"*, means that it is not always possible to follow the simplest and most elegant Break-setting path.

Puzzler #2 involves similar action to the one above – u wants to set a 3-Ball break for k.

Puzzler #2	c.10 Solution	A6W Solution
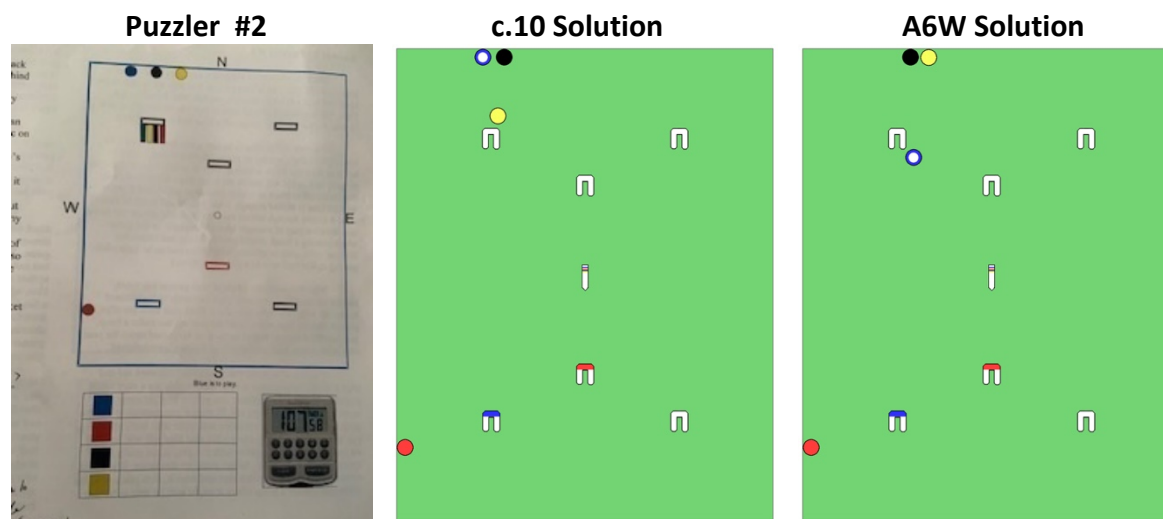
In c.10, there are many ways to proceed. Here is one: u could rush k out of bounds, send it back in to a wired position on r while gaining a rush on y, rush/croquet y to a wired position from r at h(2) and then have u shoot out next to k, leaving r only a shot on u. This could also work in A6W but would leave u dead on k and y. Instead, Stettner's advice is to have u *simply* shoot to pioneer position at h(2). r plays next. If r misses or finesses, then k will roquet y, send it part-way *(and maybe the entire way depending on the stop-shot making skills of Striker)* to h(3) while gaining a rush on u to h(2).This play works and does not have u accumulate Partner deadness, but it gives k a more stressful start if there is not a good Pioneer at h(3)...

Croquet before 1910 did not have a time limit. However, we have instituted one for c.10 believing it has value as players seek to transition to A6W. When time runs out, the ball that is playing is in its *last turn*. Then, as in A6W, each of the other balls has a *last* turn. Within this notion of last turn, two of Stettner's Puzzlers (#6 and 25-A) provide useful insights.

In Puzzler #6, u is playing his last turn. r/y still has a chance to win if r can give y a rush allowing y to then play and score. However, u has a play that usually wins the game that relies on an understanding of Rotation – u roquets k and then, in a Croquet-Out, u sends k to y. r plays next and his desire to shoot to y is thwarted by having k play before y. In A6W, it is likely that r will shoot at y and k and if he hits (*unlikely because it is a long shot*) and both balls stay in bounds (*very unlikely because of the 9" margin and the inability to rush balls out*), then r can use the ball he hits to gain a rush on the other ball (*all within the 9" margin!*) and try for his hoop. Or r can go get u for y (*difficult because u will be a distant line ball*) while destroying k. In c.10 r will simply shoot!

Puzzler #6	common solution	Puzzler 25-A
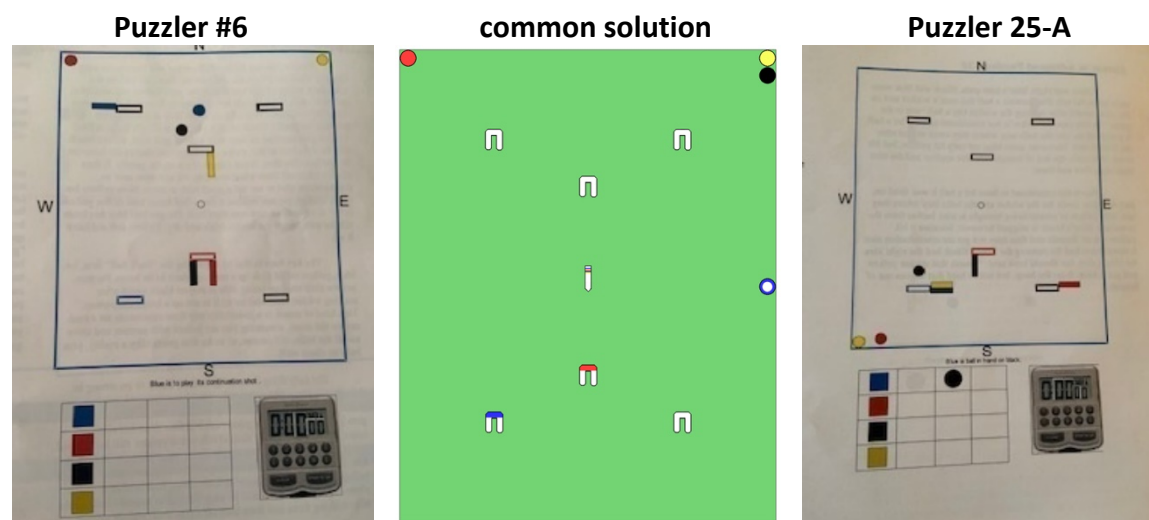
Puzzler 25-A applies to both games. u is in last-turn and could *attack before* making h(8) possibly running a 3 or 4-ball break with u for the lead. Or u could *attack after* making h(8). Here u turns the hopes of the u/k team over to k by *getting Spent for Partner* – putting k near y, destroying r, and then going to h(5), k's hoop. What u should not do – *if he has come this far in our book* – is make h(8) and then attempt to 2-ball with u for the win.

In Puzzler #11 it is u to play. In c.10, u does not have much opportunity to build a break for himself, but he can roquet k and then croquet k out of bounds to y while attempting to hold at around h(2), ideally wired from r, but at least end at a considerable distance from r, as shown in the figure highlighting the c.10 solution. r would play next having only long shots. Presuming r misses, k would play and could play or *SIMulate* a Hogan-Roll – sending y to h(3) and going to u at h(2), now with a 3-Ball Break.
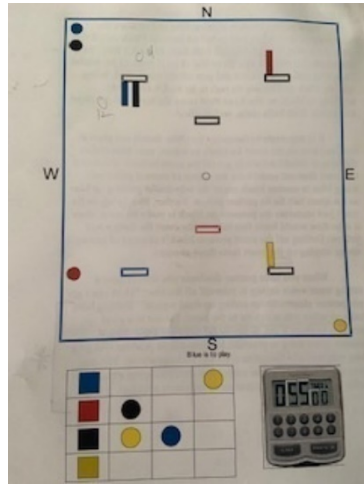
Puzzler #11	c.10 Solution	A6W Solution
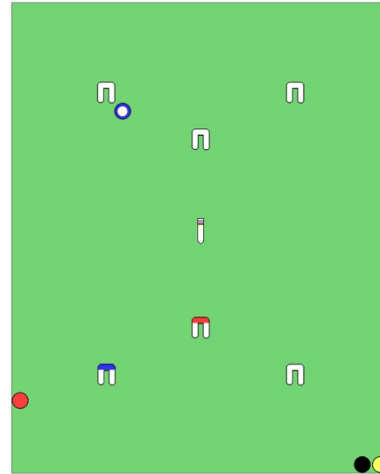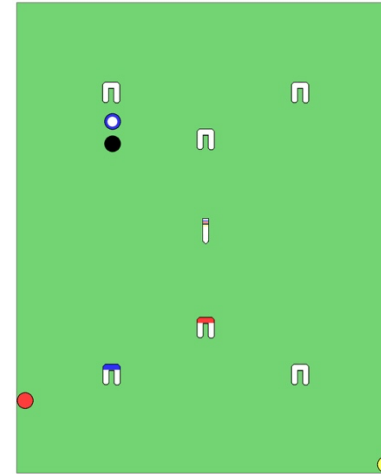
In A6W, u would be focused on the deadness (y and u) of his Partner k. The only way u can help k is to put him in position and then get clean himself. That is the recommend play here – u rushes k toward h(2) and then croquets u and k to a position such that u can go through and get off the lawn, leaving k to make the hoop. Note this play is facilitated by r being dead on k. This means that r cannot shoot at k and that k has rotation over y such that k can make his hoop and get off the lawn before y plays.

In Puzzler #13, u has just failed to get position at h(4). In c.10 u could give k an on-court rush on u back to h(4) [96]. Then r would play. If r hits y it could try the roll to h(3) for a 4-ball break or a take-off to opponents for a 3-ball break . If r misses, then k can rush u to position and take-off to r and y, make h(3) himself and have a 3-ball break.

In A6W y is dead on r. u can go back to position at h(4). As long as r misses a very long roquet, or finesses, then k and y will play, after which u will be able to redeem himself [97].

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[96] Paddy Chapman suggested this solution.

[97] Note that k's deadness and the 9" mark-in of r and y would make it very difficult for k to follow the c.10 solution even if k had no deadness.

Puzzler #13	c.10 Solution	A6W Solution
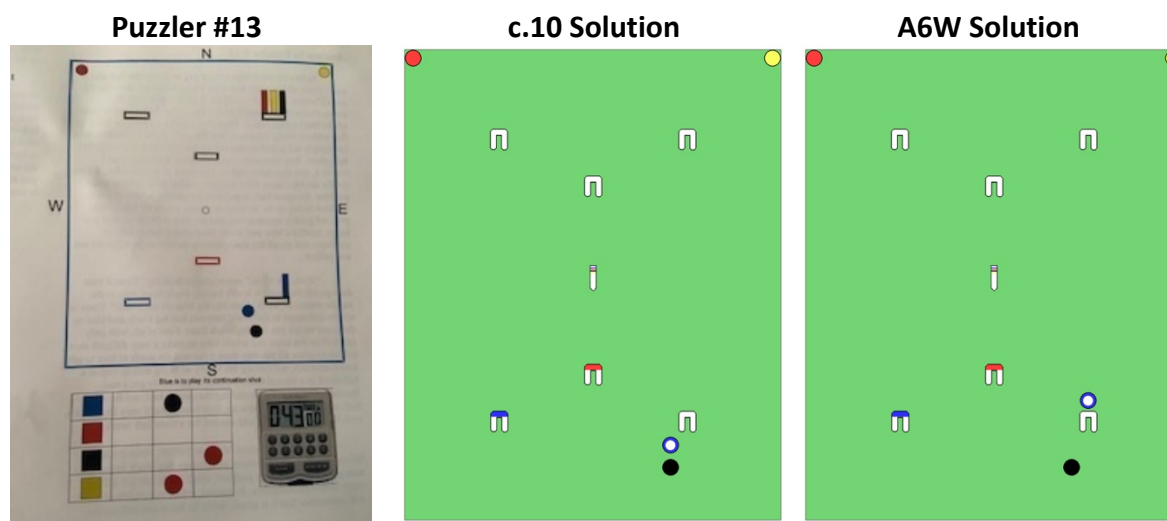
Two Final Examples from Play at the NCC

The first is taken from one of the *popular* Tuesday/Thursday/Saturday A6W Morning Sessions [98]. There are 2 minutes left. The clips are: [u-h(7), r-h(2), k-h(3) and y-h(7)] indicating that team u/k is ahead of 8 to 7. It is u to play with deadness shown in Figure 4-57 and balls shown in Figure 4-58.

u/k's fear is that r (*who is shooting very well!*) will rush Partner to h(2), make it to tie the game, and then rush y to u and k, leaving y near u and have r make the go-ahead point off of k. k's 3-Ball deadness would make this process easier for r.

One possible play would be for u to roquet k, take off to r/y, separate them and then get off the lawn, with u and k now both 3-ball dead. In fact, u took a different approach: u rushed k to position at h(3) and took off to h(7), *liked what he saw*, took the hoop shot, but stuffed it, ending in the jaws of h(7), Figure 4-59. With r to play next, and r's deadness on u, this meant that u had *inadvertently succeeded in blocking r's access to h(2)*. It would appear that r is stymied. *But r had a plan*:

| 4-57 | 4-58 | 4-59 | 4-60 | 4-61 | 4-62 |
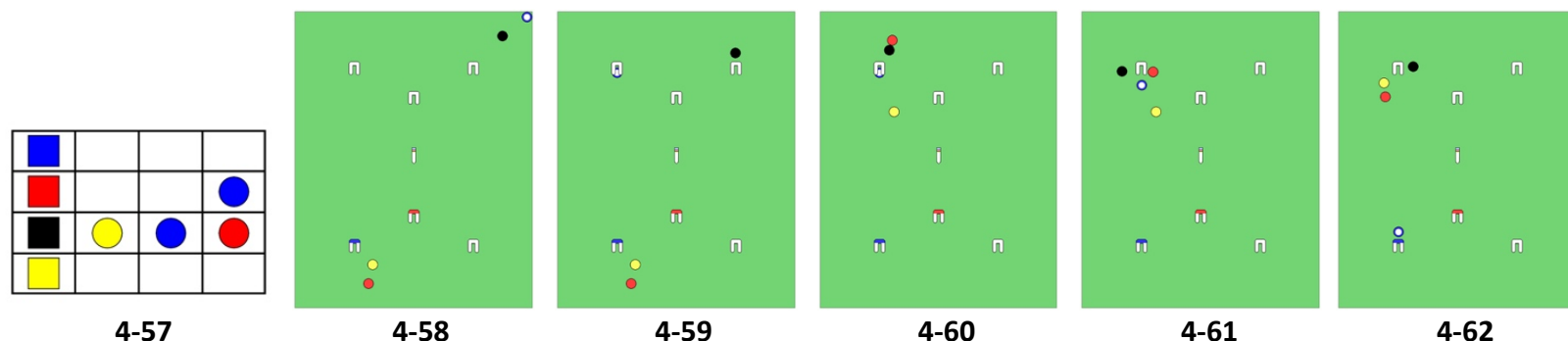
r rushed y toward h(7), took off from y, got a western rush on k, rushed k toward h(7), reaching Figure 4-60. Then r bombarded k into u! This scored a point for u/k but gave r/y an *immediate* cleaning that they chose to take for r, and did so *before r took his next shot(!)*, Figure 4-61. Not only was r cleaned of all deadness, but he now has access this turn to all three balls again, even though he had already used y and k!

The score was now 9 to 7 in favor of u/k. With three balls to choose from, all situated around h(2), r should easily make h(2) advancing the score to 9 to 8. r could try to be the hero and make h(3) and h(4) for the win, but, remembering that k was 3-Ball Dead, r chose to set up a break for y using u and r, while simply ignoring k, Figure 4-62. y is set-up to make h(7) and then h(8) for the win, which is what happened.

Doug's Last Turn

Our last example relates to an astounding *last-turn* run by Doug Grimsley against Randy Cardo In the semi-final singles match of the 2022 Steuber Classic at the NCC. Even though he ultimately lost, it is instructional to watch what Doug did, and our analysis of what he could have done, which was kindly added to the video by Russ Dilley.

5.. A6W: INTERMEDIATE AND ADVANCED TACTICS

We firmly believe that all who play/watch A6W can, and should, be aware of the game's intermediate and advanced tactics – just as they are when they play/watch other sports. Therefore, we present a representative full game and then go on to describe drills related to the more intricate segments of play that are designed to help players survive mishaps and *get there*.

Six Parts to an A6W Game

We have identified six segments of play that are often part of intermediate or advanced game – (i) The Opening, (ii) The Attack, (iii) Getting the 4th Ball, (iv) Peeling Partner to clear his deadness, (v) Setting a leave, and, assuming Oppos fail to hit in, (vi) Finishing.

Sadly, many A6W players are unfamiliar with these as their games virtually never progress far enough to involve all of them; those who are familiar with them rarely use them; and, from our observation, most who use them usually have memorized only one path forward and do not know what to do if things go wrong. Hopefully none of this will be the case after studying this chapter.

i.. The Opening

In the example below, we show a traditional advanced opening that has the 4 balls enter and go to the positions shown in Figures 5-1 to 5-4: u/k are in c1, and u has a rush k on to the east. r and y are in c4 and r has a rush on y to the west.

u enters goes to c1	r enters goes to c4	k enters goes to u	y enters goes to r
5-1	5-2	5-3	5-4
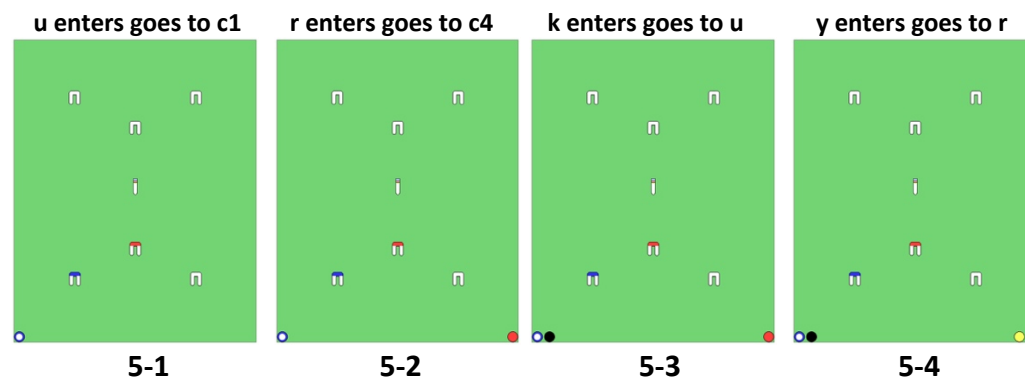
ii.. The Attack

Now what? The position in <u>Figure 5-4</u> is often described in *military terms* – Team u/k *cocks its gun* at r/y ... and then u *attacks*!

Here we have u employ a *rush-to-the-attack* to set a 3-ball break for his partner k. In this attack u wants to: (i) Put k near to y – *get Spent for Partner*, (ii) Remove r from the scene – *Destroys r*, and (iii) Go to k's next wicket – Lag to Partner's Wicket. r plays next and if r is unable to hit-in, then k will take over with control of y and the availability of u.

All of this was known a century ago when Locock and Tollemache did the same thing, except that they spoke in terms of *hoops* instead of *wickets*. What separates A6W play today from AC play of yesteryear is COD. Unless u makes h(2) at the end of this attack, he will end his turn 3-Ball-Dead.

Here are all 7 steps (the individual strokes) involved in this Attack.

<u>Figure 5-4</u>: u rushes k (approximately 25 yards) just north of y, <u>Figure 5-5</u>.

<u>Figure 5-5</u>: u croquets k toward y (often with a mini full-roll) while u goes to y, <u>Figure 5-6</u>. *This is a delicate shot because r and y are typically closes to each other, close to c4 and close to the southern boundary as they are marked in only 9". Before mounting this attack, u/k should consider the condition of c4 – does it run off? – as corners often do, does it have any grass? – many corners don't, etc. Inspecting all corners should be part of your pre-game routine...*

<u>Figure 5-6</u>: u roquets y. *Carefully note the order of balls used by u – y before r! Spent before Danger! Get it wrong at your peril.*

<u>Figure 5-7</u>: u croquets y to k, while setting-up k with a rush on y to the west [perhaps aimed just north of h(1)], <u>Figure 5-8</u>. *Giving k this rush is extremely valuable and greatly increases the success rate of k's subsequent 3-ball break. But don't overdo it at the expense of not being able to roquet r, the next step. In some instances (say r and y were in c2 instead of c4) u may try to get a rush on r while staying in bounds – within the 9". u could sacrifice k's rush on y hoping to get clean, usually by rushing r to h(2) and attempting the hoop ... a lot of work for what we think is little gain (from c4). Better to go 3-Ball dead and count on being Peeled....*

<u>Figure 5-8</u>: u roquets r, <u>Figure 5-9</u>. *Easy does it! Do not rush r out. But not too easy, so that you miss r. The condition of the corner is a determining factor.*

Figure 5-9: u *destroys* r – croqueting it far away, in this case toward h(3), Figure 5-10.

u rushes k to y dead on k	croquets k going to y	roquets y dead on y	croquets y going to r	roquets r dead on r	croquets r	continues to h(2)
5-5	5-6	5-7	5-8	5-9	5-10	5-11
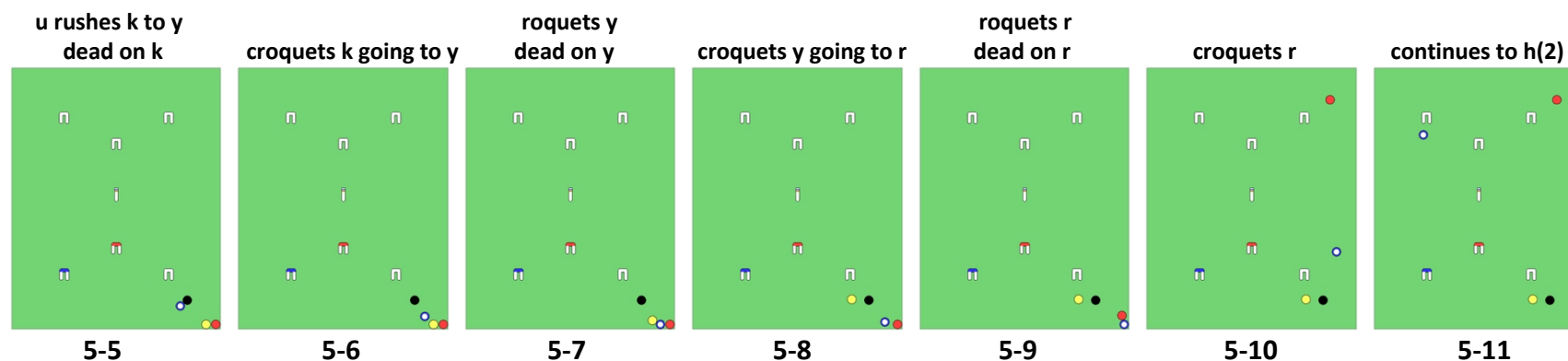
Figure 5-10: u shoots to h(2), Figure 5-11. *u can attempt to lag to a wired spot from r using h(2), h(3) or h(6) to block what will be both the shortest shot for r and the only target not near a boundary. The closer to h(2) the better, making it more likely that k can immediately Peel u.*

iii.. Getting the 4ᵗʰ Ball

We ended u's turn in Figure 5-11. u was successful in getting y for k – *getting Spent for Partner*. k even has a useful rush on y.

It is r to play. u/k are in a precarious position because u is 3-Ball Dead. It is extremely valuable to r/y if r hits-in, but low probability – *r has a long shot and k and y are close to the boundary* – and therefore, in general, r finesses to c1, as shown in Figure 5-12. It is k to play. k would like to run an 11-hoop break and set a virtually unhittable leave that allows u to finish if y misses. But, since u is 3-Ball Dead, before u can take advantage, u has to make h(2) – which can happen if k leaves u in front of h(2) – or k has to Peel u at h(2). And, while this Peel can take place early on in k's break, with just three balls, it is standard to pick up the 4ᵗʰ ball, r, from c1 to help with the Peel. The traditional way of doing this is shown in the next panel of figures where k picks up r from c1 after making h(4) [99].

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[99] In what follows, we proceed either shot-by-shot, or wicket-by-wicket, depending upon what is needed for clarity…

Figure 5-12: Ideally k has a dolly-rush on y which he takes, sending y between h(1) and h(2), perhaps level with the peg. Then k sends y to be the Pioneer at h(3) in a Croquet Shot that also sends k to u. Next, k sets up at h(2), Figure 5-13. *This rush and Croquet Shot are standard. Even if k does not have a rush on y, he can still go to u while sending y to h(3), but with a much more difficult Croquet Shot.*

r to c1	k sets-up at h(2)	k sets-up at h(3)	k sets-up at h(4)	k makes h(4)

5-12   **5-13**   **5-14**   **5-15**   **5-16**
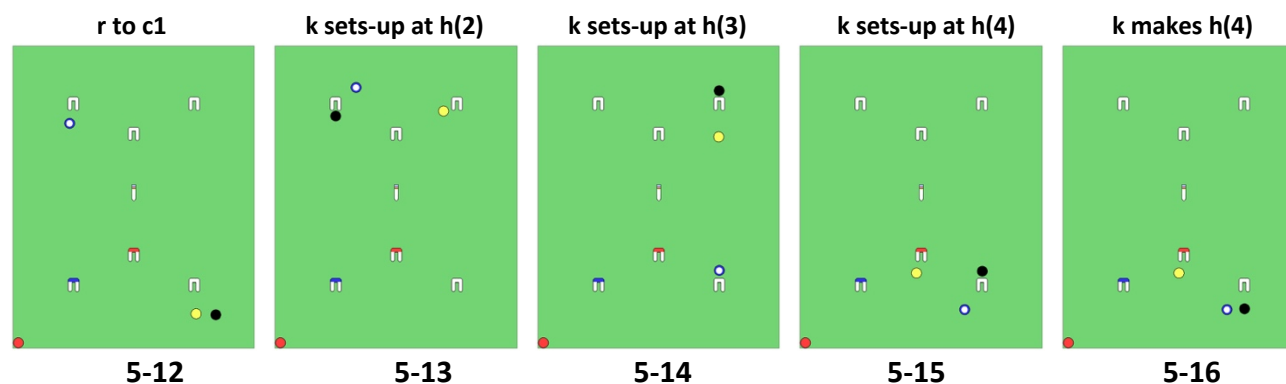
Figure 5-13: k makes h(2) and then sends u to be the Pioneer at h(4) while going to y, k sets-up to make h(3), Figure 5-14. *This is a standard "3-Ball set-shot", as this is called by practitioners of A6W (see our notes on set-shots in the appendix for details).*

Figure 5-14: k makes h(3) and sends y to be the Pioneer at h(5) while going to u, k sets-up to make h(4) with u, Figure 5-15. *This is another 3-Ball set-shot with a twist – here the goal is to place y to the west and south of h(5) while going to u and send u to the south west of h(4) – to facilitate a rush to r in c1. A tight pioneer at h(4), from Figure 5-13, is very valuable to this process.*

Figure 5-15: k makes h(4) and gains a rush on u to the west, Figure 5-16. *Not surprisingly, this rush does not always materialize! What to do if a rush is not achieved is discussed in the drills presented at the end of this chapter.*

Figure 5-16: k rushes u toward h(8) and sets-up to take off to c1, Figure 5-17. *The closer this rush takes u to r, the easier it is to pick up r, but the more difficult it will be to reincorporate u into the break. Most players get comfortable rushing u to h(8) leaving approximately a 10 yard take-off to r. It is important to know what works for you. k needs to be mindful that u is not left in the way of the coming croquet stroke with r; too far west blocks r to h(6), too far east blocks k to y. k can adjust u a little with the take-off.*

Figure 5-17: k takes off to r, Figure 5-18. *Closer is better but going out of bounds is not an option!*

Figure 5-18: k roquets r and sets-up to croquet r to h(6), Figure 5-19. *Once again, knowing the condition of the corner is critical.*

k rushes u to h(8)	Takes-Off to r	roquets r	r to h(6) going to y
5-17	**5-18**	**5-19**	**5-20**
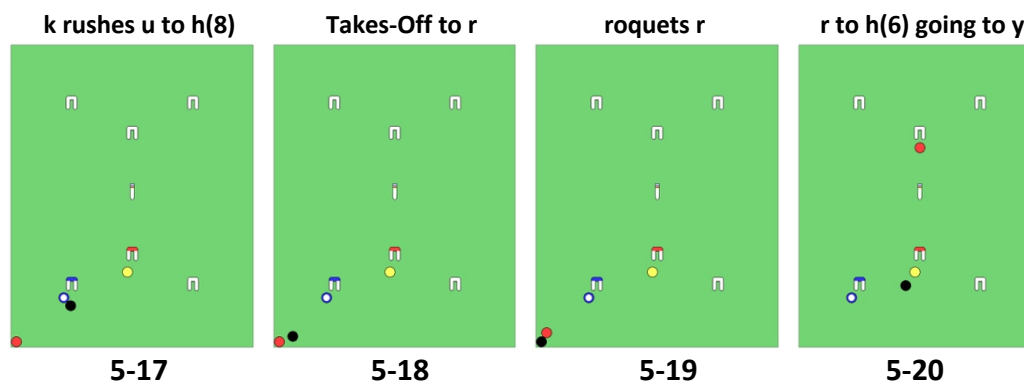
Figure 5-19: k croquets r to be Pioneer at h(6) while gaining a rush on y to h(5), Figure 5-20. *You should now see why y was sent to the west and south of h(5). It makes this Croquet Shot easier and avoids accidental wiring.*

Mission Accomplished: k has picked up r and incorporated it into his break, at the expense of having a poorly placed pivot ball (u).

iv.. Peeling Partner

While definitely not the only possible time, (see the drill at the end of this chapter for other options) a convenient time to Peel your now 3-Ball Dead Partner at his wicket, h(2), is as a Back-Peel after k makes h(7). *If this is your goal, then there is no time to spare…*

Figure 5-20: k rushes y to h(5), Figure 5-21. *This is a simple rush if y was properly placed at h(5) after h(3) but it can be challenging if y is to the north and/or east of h(5).*

Figure 5-21: k croquets y to Reception at h(5) as he sets-up to make h(5), Figure 5-22. *It is helpful if k gains a rush to the south on y after making h(5). This can be assured by placing y approximately level with the wicket.*

Figure 5-22: k makes h(5) and gains a rush on y to the south, Figure 5-23. *Just as planned!*

Figure 5-23: k rushes y as far south as is possible (*keeping y in bounds*!), and sets-up to croquet y to the north, Figure 5-24. *The farther south y is sent, the easier it will be to croquet y north and gain a rush on u. Note that the placement of u in the rush after h(4) is a major influence. The farther north u can be put, the better, as long as Striker can still get to r...*

rush y to h(5)	sets-up at h(5)	makes h(5)	k rushes y south	y to h(7) going to u	rushes u north	u to h(2) going to r
5-21	**5-22**	**5-23**	**5-24**	**5-25**	**5-26**	**5-27**
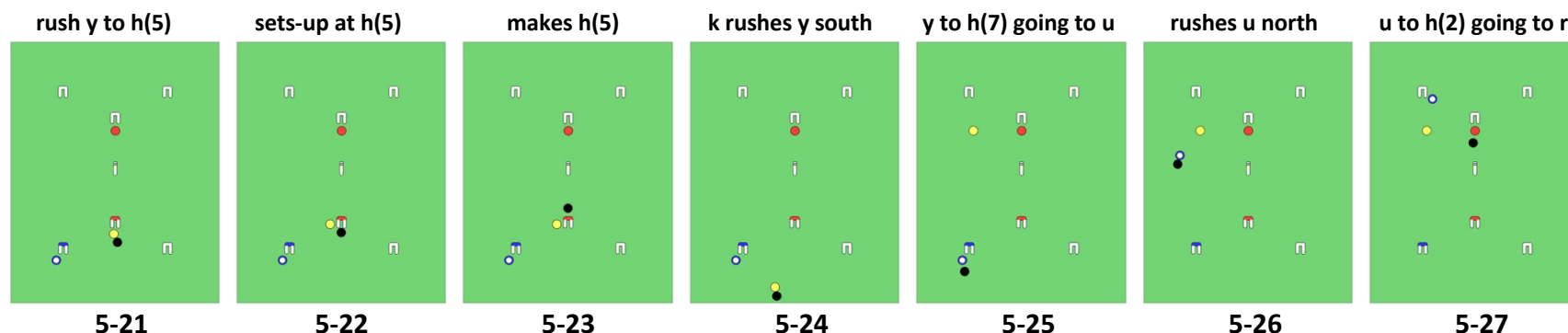
Figure 5-24: k croquets y toward Pivot position while maintaining a rush on u to the north, Figure 5-25. *In general (i.e., in most Transit-Peels), it is more important to get y (the escape-ball) to its proper position at a Peeling hoop, here, h(7), than it is to gain a rush on u, the Peelee. But, in the case of a Back-Peel, k will be able to adjust both balls again before making the hoop. If k goes north of u, then a roll shot can send u to h(7) as k goes to r.*

Figure 5-25: k rushes u north, Figure 5-26. *Nice work if you can get it! But a long roll can achieve the same result.*

Figure 5-26: k croquets u to h(7) going to r at h(6). Figure 5-27.

Figure 5-27: k rushes r to h(6) and sets-up to take croquet, Figure 5-28.

Figure 5-28: k croquets r north going to position at h(6), Figure 5-29.

Figure 5-29: k makes h(6), Figure 5-30.

k rushes r to h(6)	k to position at h(6)	k makes h(6)	k roquets r	r to h(8) going to y	rushes y	y to EB going to u
5-28	5-29	5-30	5-31	5-32	5-33	5-34
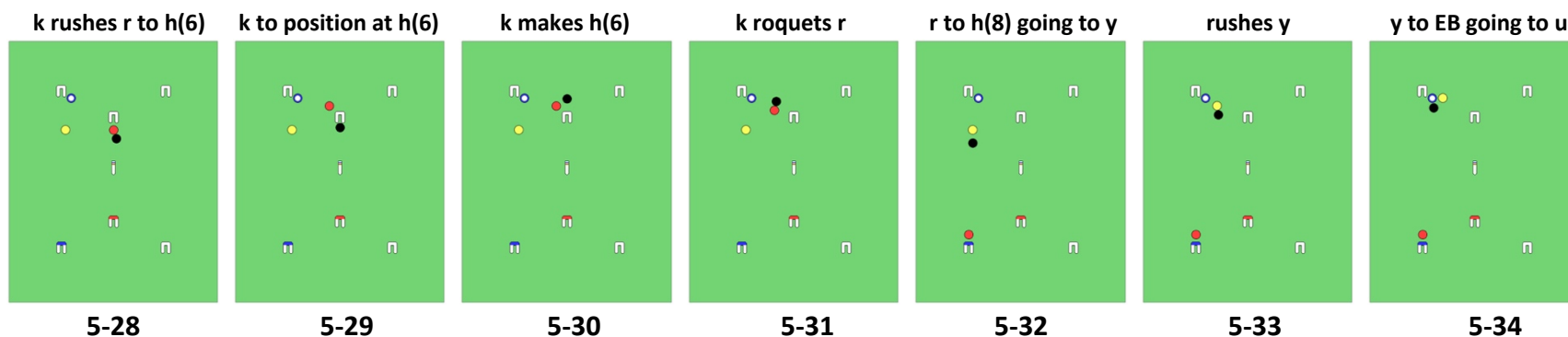
Figure 5-30: k roquets r, Figure 5-31.

Figure 5-31: k croquets r to Pioneer at h(8) gaining a rush on y to the north, Figure 5-32. *This shot was facilitated by the earlier placement of y south of h(2). If k did not have enough room to send r to h(8) while maintaining proximity to u or y, then at this point, r could be swapped to become the Escape-Ball, with y becoming the h(8) pioneer.*

Figure 5-32: k rushes y north, Figure 5-33.

Figure 5-33: k croquets y to Escape-Ball position while setting up to rush u to h(7), Figure 5-34. *This is a critical shot...*

Figure 5-34: k rushes u to h(7), Figure 5-35. *Ideally, just north and east of h(7).*

Figure 5-35: k croquets u to Peel position at h(2) while going to position at h(7), Figure 5-36. *Don't overhit it!*

Figure 5-36: k makes h(7), Figure 5-37. *Don't baby it and stuff the wicket!*

Figure 5-37: k taps u, Figure 5-38. *Gently (!) to keep u in Peel position.*

Figure 5-38: k Peels u going to y, Figure 5-39. *The payoff! The Peel is what counts; getting a rush on an escape ball after a Back-Peel is nice, but not necessary. And if the Peel only jawses, then it can be easily completed later or left for u to start in the jaws.*

k rushes u	u to h(2), k to h(7)	k makes h(7)	k taps u	k Peels u going to y	k rushes y	y to h(9) going to r
5-35	5-36	5-37	5-38	5-39	5-40	5-41
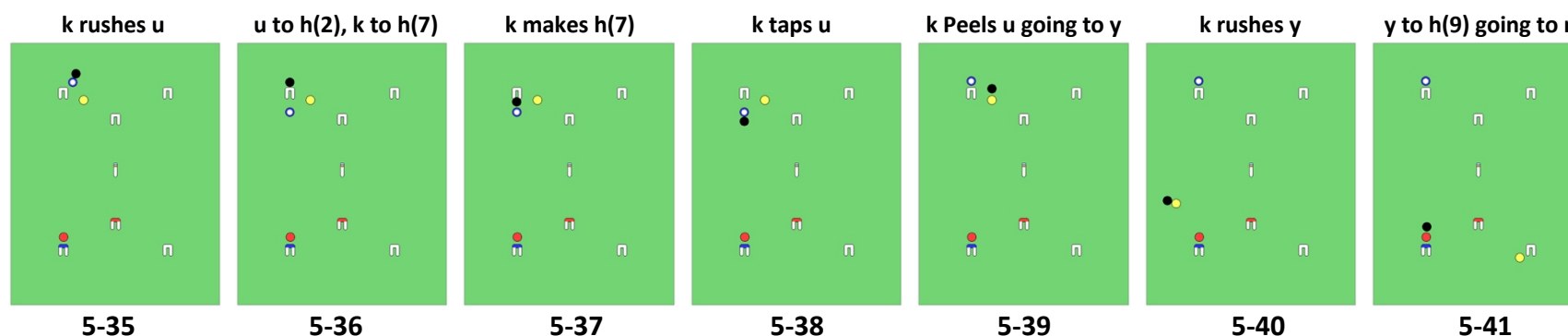
Figure 5-39: k rushes y to the south in the direction of k's break, <u>Figure 5-40</u>.

Figure 5-40: k croquets y to Pioneer position at h(9) while going to r, <u>Figure 5-41</u>.

v.. Setting a Leave [100]

After completing the Peel, with the exception of a misplaced Pivot-Ball [u – the former Peelee which is sitting north of h(2)], k is now in control and running a 4-ball break. This is the time to scope out the leave. Here k will set the *Groom of Doom*. The process for setting the leave described here can create this most *Draconian* of leaves, but it calls for playing the final hoops using only three balls, when using all four (discussed in the drill at the end of this chapter) may provide a better risk/reward tradeoff.

Figure 5-41: k rushes r and then croquets it to Reception at h(8), <u>Figure 5-42</u>. *Note the positioning of r to the west and just slightly south. This will set-up for a rush north to u.*

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[100] It is now standard practice to *go to the peg* before setting a leave. Kroeger and Prentis discuss going to the peg, but they also provide examples of stopping before the peg, at h(12), h(11) or at h(10) with the later calling for a Triple-Peel under A6W rules to finish, <u>Op. Cit.</u>, 56. While possible, We think Tollemache was correct when he said (*of this strategy back in 1914*) that it is far better to go to the peg and set a better leave than trying for the TP, and that his observations are *double true* for A6W because of COD.

Figure 5-42: k makes h(8), rushes r north, croquets it to Pioneer at h(10), going to u. k rushes u east, takes off to y and then croquets y to Reception at h(9) as k sets-up in front of the wicket, Figure 5-43. *There is a lot going on here and there many ways to do it, but in the end, u has been reincorporated into the break.*

sets-up at h(8)	sets-up at h(9)	sets-up at h(10)	sets-up at h(11)

| 5-42 | 5-43 | 5-44 | 5-45 |

Figure 5-43: k makes h(9) and then sets-up to make h(10). Figure 5-44. *Conveniently r, the Spent-Ball was the Pioneer-Ball at h(10). This is helpful but not strictly necessary.*

Figure 5-44: k makes h(10), leaves r behind, sends y, the Danger-Ball, to be the Pioneer at h(12), and goes to u at h(11), Figure 5-45. *This is an easy way to do it. But it is equally doable if r and u switched roles. It gets more challenging if y is the Pioneer at h(11). These possibilities are discussed in the drill at the end of this chapter.*

Figure 5-45: k makes h(11), sends u south of r, taps r and takes-off to gain a rush on y, rushes y to h(12) and croquets it to position while setting up at h(12), Figure 5-46. *y close to h(12) on the west allows the largest distance of y from the other balls to be achieved when the leave has been set.*

Figure 5-46: k makes h(12) and gains a rush on y to the south and west, Figure 5-47.

<u>Figure 5-47</u>: k rushes y south and west and sets-up to Take-Off back to u and r, <u>Figure 5-48</u> [101]. *Trying to wire y from h(3) is useful.*

Sets up at h(12)	make h(12)	rush y to SW	take off to u	send u north wired from y goes to r	wire r from y, k to position at h(10)	make (10) to clean ends not wired
5-46	5-47	5-48	5-49	5-50	5-51	5-52
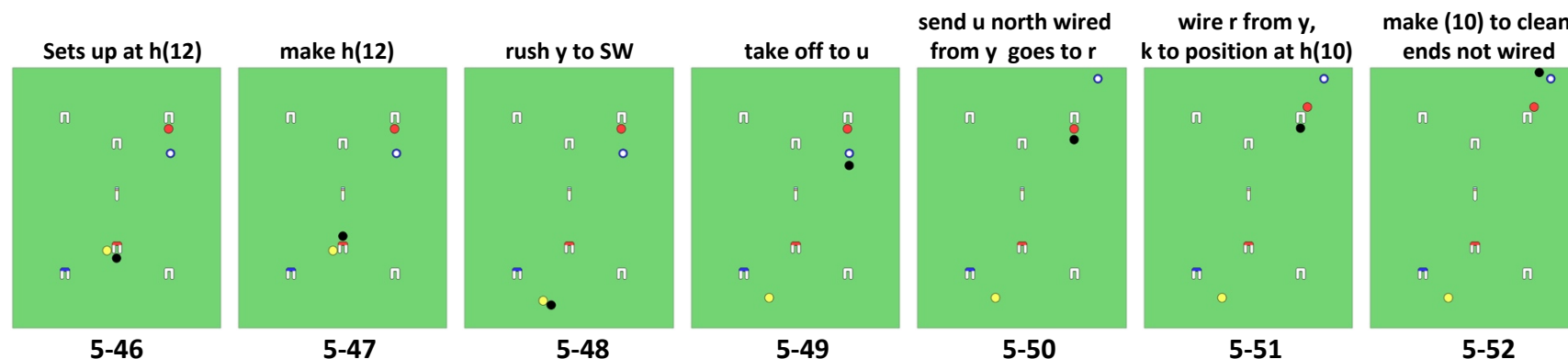
<u>Figure 5-48</u>: k takes off from y, going to u, <u>Figure 5-49</u>. *This is one last chance to adjust the position of y. But of supreme importance is for k to go Partner (u), and not to Spent (r).*

<u>Figure 5-49</u>: k rushes u and then croquets u toward the north boundary, as k goes to r, <u>Figure 5-50</u>. *The closer u is to the boundary the better, but don't risk sending it out of bounds. Additionally, it is desirable to wire u from y.*

<u>Figure 5-50</u>: k rushes r and then croquets it to a position that is wired from y as k goes to position at h(10), <u>Figure 5-51</u>. *Ideally, r is wired from y and slightly to the north and west.*

<u>Figure 5-51</u>: k makes h(10) and shoots toward u (possibly on the boundary if u is close), <u>Figure 5-52</u>. *k ends "last-dead" on Spent. y must be afforded a shot on a ball it is not dead on. This can be accomplished when k positions u or r, and finally with k's final position. Waiting and letting k be the only open ball is dangerous because k may stuff his hoop leaving no shots for Oppo who would then gleefully take contact!*

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[101] An alternative that does not involve this long take-off is discussed later. Additionally, Paddy points out that *rushing y south is important, but Striker should not risk rushing it out of bounds. There is not much to be gained by rushing it super close to the south boundary - it's more about how close to the north boundary you get the other balls.*

vi.. Finishing

Against good players, y will typically forgo finessing and shoot into the *Groom of Doom*. If he hits, then y should be able to start a break, go to the peg, and set a leave for r, all without the need for elaborate efforts to pick up the 4th ball – they are all together and available (!) – or to Peel Partner – Partner is clean! y could peg-out k in the process, but u follows y in rotation and the 2-on-1 end-game (r/y vs u with y the Rover-Ball) is a long slog, and therefore, y will probably choose not to peg-out k.

More to the point, the shot by y can be close to 40 yards in length and, therefore, hitting and staying in bounds is very rare – hence the name *Groom of Doom*! y shooting and missing turns the proceedings over to u. If u (and k) are close to the northern boundary, then it makes sense to pick up y as the 4th ball and finish with a relaxing 4-Ball break. But if u and k are an uncomfortable distance from y (or the boundary is unfriendly) then u may want to proceed with just three balls. This is also the case if y finesses, say to c1.

Last-deadness, in this case k being last-dead on r, can be awkward if u fails during his break. If r/y takes control – either r directly running a break, or r getting u for y, then r/y can turn the game around to their favor.

If u has a questionable hoop shot while running his break, then what u should do is a function of which ball is reception – r or k – and how distant is the pioneer/Danger-Ball. If u's Partner k is Reception, then u may want to give k a rush on u to the hoop or be willing to shoot softly so a miss stays in the jaws. If r misses, then k can Peel u going to r/y if the Peel happens to be in the proper direction, or, more likely, k can roquet u to position, and take off to Oppos, presuming r joined y instead of shooting, and get r for u, giving u another chance at his break if y misses...

Running a 3-Ball finishing break should be routine; *but it is much more interesting for spectators when there is a break down...*

Supporting Drills

So far in this chapter we have divided an A6W game into six segments and presented well-worn paths for each of them. Here, for three of the more complicated segments – Picking up the 4th ball, Peeling Partner to clear him of deadness, and setting the Groom of Doom – we present alternatives that may be possible (*or necessary*) if things go better (*or worse*) than planned. we do this with drills that are designed to have you become familiar with your options by playing through various scenarios.

Picking up the 4TH ball

Before h(2)	After h(2)	After h(3)	After h(4)	After h(5)	After h(6)
5-53	5-54	5-55	5-56	5-57	5-58

After h(7)	After h(8)	After h(9)	After h(10)	After h(11)	After h(12)
5-59	5-60	5-61	5-62	5-63	5-64
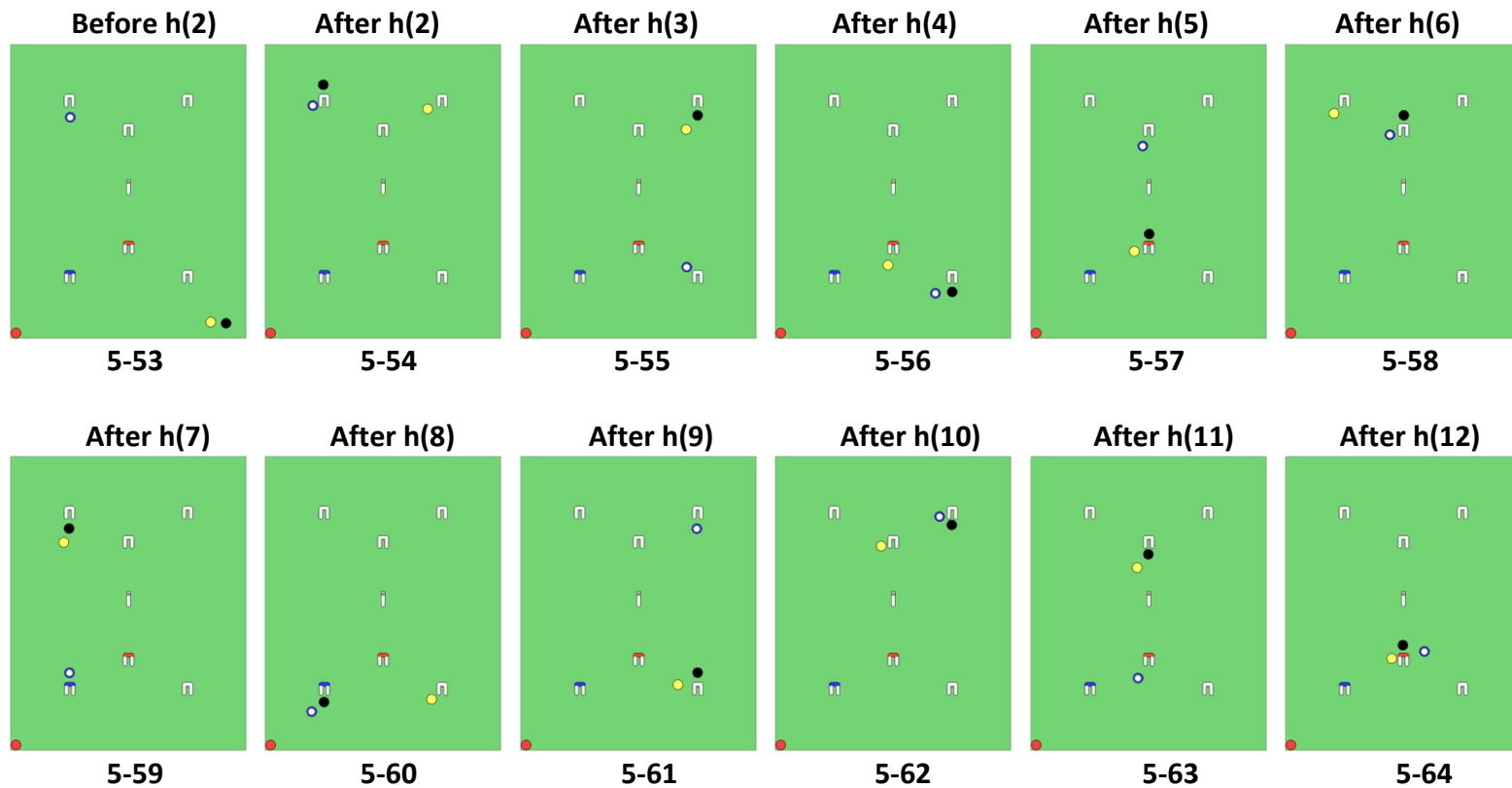
After one ball of a team sets a 3-Ball break for the other at the start of a game and Oppos miss/finesse, having the other ball of the team get Spent for Partner usually involves digging Spent out of a corner, where he is marked in only 9". Traditionally, the chosen time to pick up the 4th ball, often from c1, is after Striker makes h(4). This was described in detail as part of the representative game. When this play proves difficult/impossible, players often try to pick-up Spent after h(5) – another well-worn path. What players may not know, is that Spent can be picked up both earlier and later in the break. We have identified 12 opportunities (!) for getting Spent, with starting points as shown in the panels of figures presented above. In fact, starting from Figure 5-53, k can proceed immediately to get r, Figures 5-65 – 5-71 – *hopefully the figures are self-explanatory* [102].

The Details of Picking Up the 4th ball Before Making h(2): The Earliest Opportunity

k rushes y west	takes off to r	r to h(3) going to u	makes h(2)	leaves u going to y	rushes y to h(4)	goes to r at h(3)
5-65	**5-66**	**5-67**	**5-68**	**5-69**	**5-70**	**5-71**
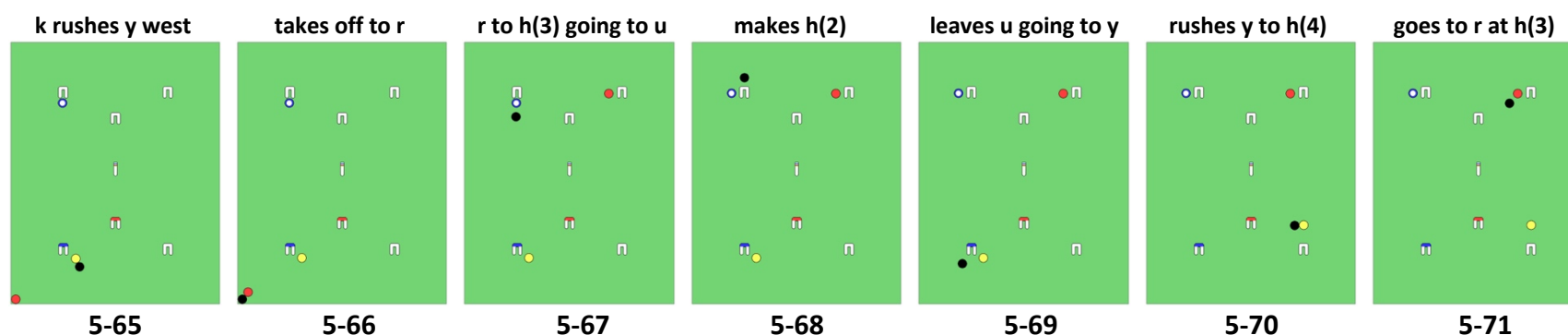
Note that if u was careful when he sets the original rush for k, u can virtually guarantee that k has a simple-straight-rush to the area around h(1). This may or may not be the case after k makes h(4) or h(5). There is counterbalance however, the ideal shot for k from c1 is to croquet r to h(3) while going to u at h(2). This Hogan-Roll-Type shot is one most people never try! But that is pity as it is not as difficult as it appears, and, more importantly, we would support it being accomplished using a SIM! *It is interesting to speculate how r's play might change if this Croquet Shot becomes common practice. Might r shoot instead of finessing? Might he go to c2 and c3 as opposed to c1?*

The drill starts from Figure 5-53; playing k, you attempt to pick-up r on-the-way to h(2) and then place r back to c1 and assume the position shown in Figure 5-54, and attempt to pick up r again, etc., progressing through the 12 possibilities.

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[102] Perhaps unclear is why u is left at h(2). This is not necessary, but it facilitates an early peel attempt on 3-ball dead u – as early as on the way to h(5).

Peeling Partner

This drill takes you through several Peeling possibilities at h(2). You attempt one and then *pretend* that the Peel failed, *by returning the peelee, u, to somewhere around h(2)*, so the Peel can be tried again*, and again,* in the same break, only *later* [103]. All are worth being aware of and trying, but clearly some are more reasonable than others and those should be the focus in actual play.

Usually Striker will not pick up the 4th ball before making h(2). In this case, while it is possible to Peel Partner at h(2), we do not recommend it because the peel will be done with just 3 balls. The straight-Peel may look tempting – it gets u clean and continues the break, but a failure is disastrous and a needless risk under the deadness conditions at hand. The *safer* back-peel ls likely to be break-ending even if an escape ball get Striker to h(3). In AC, Striker could gamble and try to use Peelee to get to h(4), but not in A6W! Here we begin by assuming Striker picks up the 4th ball in the traditional way, after h(4). This allows him to set-up his first Peel attempt with all four balls after h(7) and follow with five others.

Starting Points for Peel Attempts at h(2) [104]

after h(7)	W-h(9)	W-h(10)	W-h(11)	W-h(12)	after h(12)
5-72	5-73	5-74	5-75	5-76	5-77

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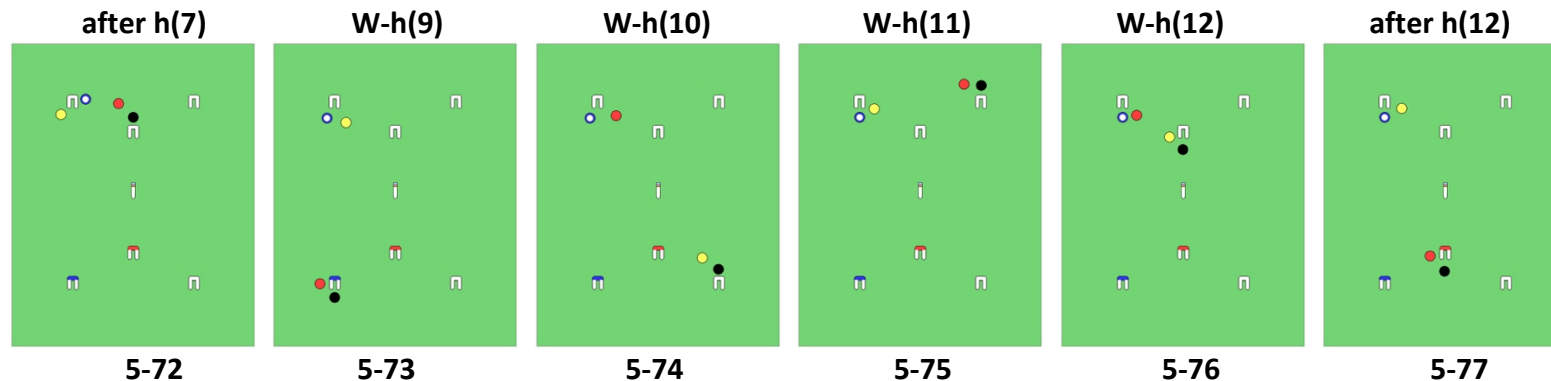
[103] Our book, New Roles for Peeling in Croquet, begins with a chapter entitled *Notes on Peeling* which takes you through all manner and timing of peels involving 3 or 4 balls. We then present our *Wily Peeling Drills*. They were designed to familiarize players with elements of the Triple-Peel as described by Keith Wylie. They involve repeated attempts of the 4-Back, Penult, and Rover Peels as they would occur later and later in a break. The drill presented here, peeling Partner at h(2), is modelled after those drills. (Jeff Soo told us that he has been doing something similar for years as part of his practice routine for A6W. We are happy to share royalties and bragging rights with Jeff).

[104] Not shown but possible, is peeling h(2) A-h(11) with u as R(11) and a good rush to peeling position. This is like peeling h(10) A-h(6) or h(12) A-h(9).

The drill starts in Figure 5-72 and attempts the Back-Peel A-h(7). This was fully described in the book. What is different here is that, while we are hoping you complete the Peel, we have you plan for the next attempt – by sending an Escape-Ball [105] for the next attempt before attempting the Peel at hand. The ball that plays this role will alternate between r and y as can be seen in the figures above. We will assume that you have progressed to Figure 5-76, having attempted the Peels A-h(7), W-h(9), W-h(10), and W-h(11). Note that we consider the Peel successful even if it *only* jawses.

You are now ready to attempt the Peel of u at h(2) W-h(12) – u is still around h(2) *eagerly* waiting to be Peeled, and y is waiting there as well, as the Escape-Ball to Rover, Figure 5-78. We provide details of this attempt and the follow-on attempt after Striker makes h(12) because they are rarely seen and present some unique and interesting challenges *vis a vis* the turn-ending leave.

The Details of Peeling Partner W-h(12) and After h(12)

Figures 5-78 to 5-84 show the series of shots that constitute the W-h(12) attempt with k having just scored h(11). *Note that by sending y to h(2) in Figure 5-79, Striker is setting up for the next attempt – after making h(12).*

| Start | rush y East | y to h(7) going to u | rush u to Peel pos | Peel u, k to r | k escapes to h(12) | sets-up to make h(12) |
| 5-78 | 5-79 | 5-80 | 5-81 | 5-82 | 5-83 | 5-84 |
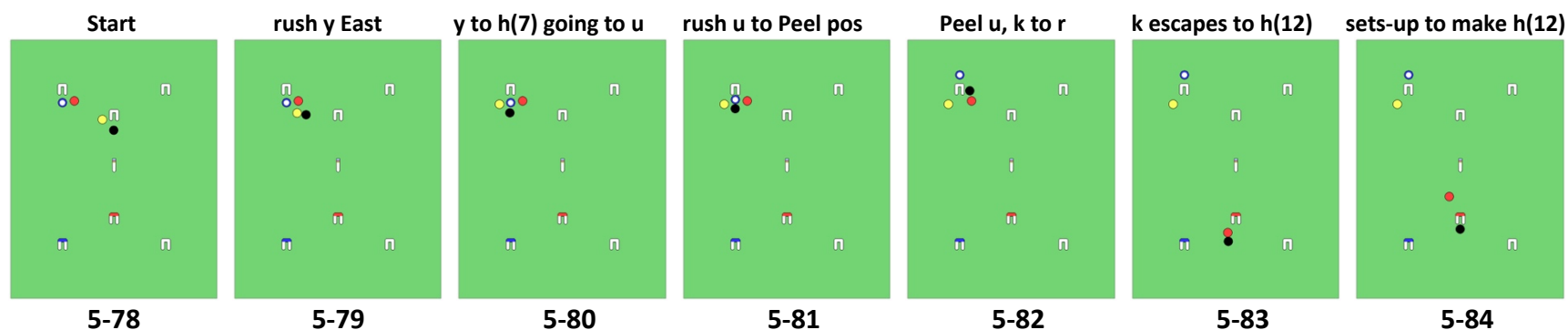
Completing the Peel W-h(12), and not earlier, complicates Striker's job of setting a leave because all balls must be immediately positioned for the leave without the benefit of an additional hoop. If the Peel succeeds, then the easiest thing for Striker to do is to make h(12), send r to h(3), u's next hoop, going to y. Then k should try to wire y from r while approaching h(2). k should make h(2) to

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[105] An Escape-Ball is needed each time because h(2) is an outward peel.

clean opponent deadness and hit u. k can roll u and k out of bounds near c3, leaving y a shot at two line-balls while u has an easy build for the win. Partner deadness is the cost for the protection against y hitting in.

We now consider what Striker (k) should do if the Peel W-h(12) fails. In this final case we start from a position like that shown in Figure 5-85. k has just made Rover and is for the peg. u is still waiting to be Peeled (or not!) at h(2). Fortuitously and intentionally, y is also around h(2), as an Escape-Ball. k will rush r and then croquet him to the non-playing side of h(2) *making r available to u after a successful Peel*. In the Croquet Shot, Striker has a choice of going to y or u. We show k going to u in Figure 5-86. In this sequence the Peel succeeded, the cleaning took place at a distant hoop, and k shot to u's next hoop. k ends last-dead on y and not r [106].

Start	k sends r to h(7) k goes to u	k Peels u and goes to y	k rushes y to c4 and cleans at h(8)	k shoots to h(3)
5-85	**5-86**	**5-87**	**5-88**	**5-89**
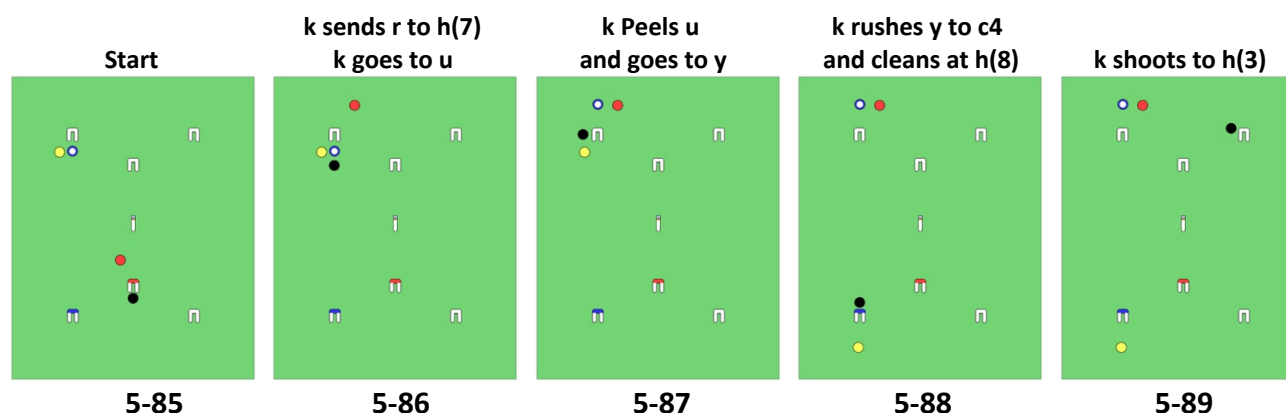
Going to u first only makes sense if u is already in Peel position at h(2). If not, then going to y first will allow an adjustment on u that might not be possible coming from r, particularly if k doesn't make rover with a forward rush. But then the question is how to separate y from the other balls and still adjust u and Peel him!

It is important to remember that, in Figure 5-85, u is 3-ball Dead! If this final Peel attempt fails, and u is not left in position or jawsed, then there is nothing k can do to help get u started. As an alternative to attempting the Peel, k could focus on putting u in position at h(2) and hope that y misses. Here distancing y from the other balls is vital, even at the cost of not cleaning k.

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[106] Ben argues that being last dead on Danger may be better than Spent. k only hits Danger first if it has been fed, like a croquet-out or attack. If u and k are joined and k is last dead on Spent, *Spent may shoot between them to temporarily neuter k. Neither case is likely, but r/y cannot neuter k if it is last dead on y.*

Setting the Leave

You have made 9 wickets [h(2) – h(10)], and, *along the way*, picked up the 4th ball – the Spent-Ball – and Peeled Partner, to clear his 3-Ball Deadness -- *Well done!*. You now want to make Penult and Rover, set a leave, preferably the *Groom of Doom*, and get off the lawn. After you sit down, your hope is that Oppos in the name of the Danger-Ball, miss or finesse, and Partner takes over and finishes. How should you organize the leave?

There are two basic ways to proceed: The first is the *double Take-Off* [to and from Partner] method, which was discussed above. It created a truly Draconian leave but did so by running a 3-Ball Break for h(11) and h(12). We now turn to the *Rush-Partner 4-Ball* method and then provide a practice drill.

The Rush-Partner, 4-Ball Method

sets-up at h(8)	sets-up at h(9)	sets-up at h(10)	sets-up at h(11)

5-42	**5-90**	**5-91**	**5-92**

We repeat Figures 5-42. Here u has just been Peeled at h(2) A-h(7), k escaped with y, established a pioneer at h(9), and set up to make h(8) with r. k makes h(8) and then sends r to pioneer at (10) going to u. u is brought back into play as k goes to y and then sets-up at h(9), Figure 5-90. *Now k proceeds differently.*

Figure 5-90: k makes h(9), sends y to P(11) and u to V(10) and goes to r. r is sent to R(10) as k sets-up at h(10), Figure 5-91.

Figure 5-91: k makes h(10) and sends r to Reception at h(11), u to Pioneer at h(12), and sets up to make h(11) leaving y to the east so it can be used as the 2nd ball after k makes h(11), Figure 5-92. *Technically, this is a L&H (Striker has used a procedure from COAC!).*

<u>Figure 5-92</u>: k makes h(11) going to r. k rushes and croquets r near to h(10) gaining a rush on y. k rushes and croquets y slightly north and west of h(12) going to u. k sets up at h(12) having positioned u such that k can go first to y, <u>Figure 5-93</u>. This is a*nother L&H.*

sets-up at h(12)	k makes h(12) sends y, gains rush on u	k rushes/croquets u gets rush on r	k positions r, cleans and shoots out
5-93	**5-94**	**5-95**	**5-96**
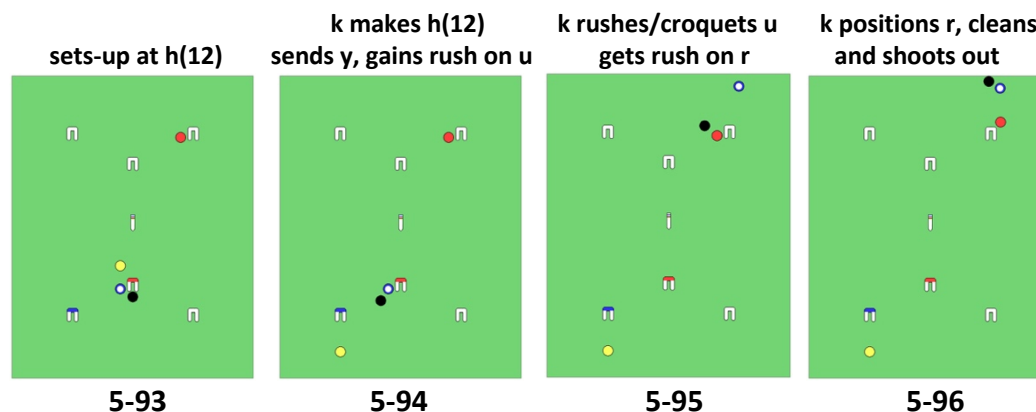
<u>Figure 5-93</u>: k makes h(12) and croquets y southwest, or, alternatively, k can run the hoop past y and rush y directly southwest. In either case, k will need to gain a rush on u towards r, <u>Figure 5-94</u>.

<u>Figure 5-94</u>: k rushes and then croquets u to its final resting spot – wired from y, while gaining a rush on r to h(10). <u>Figure 5-95</u>.

<u>Figure 5-95</u>: k rushes and croquets r to its final resting spot – wired from y – while going to position at h(10). k makes h(10) – cleans deadness but maintains last-deadness on r, and shoots out near u, leaving y a long shot on k, <u>Figure 5-96</u>.

This second way of setting the Groom of Doom is considered better by advanced players as it eliminates *two cross-country* Take-Offs. It comes with its own difficulties – k needs rushes on y from h(11) and on u after h(12). It is also unlikely that u will end up as close to the boundary as it might in the *double Take-off* Method, but the difference should be slight [107].

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[107] Ben points out that u/k can maximize the distance of y's shot if k is willing to accept Partner deadness. This is accomplished by having k roll both u and k out of bounds on the north boundary... k would either accept 3-ball deadness by going to u last, or he might not adjust Spent and end dead only on u and y.

Groom of Doom Drill

As discussed earlier, with k as Striker, each of the three balls, y=Danger (D), u=Partner (P), and r=Spent (S) can assume any of the three possible roles at h(10) – [Reception, Pivot or Pioneer]. Once a role is chosen for the 1st ball, the 2nd ball can take on either of the two remaining roles, and then the 3rd gets the one that is left. This leads to 6 different orientations of the balls as shown in the figures below where Figure 5-91 shows the ordering used in the example game presented above, and Figures 5-97 to 5-101 show the other five possibilities. In each case we assume u is for h(3) and has no COD.

S-P-D (r, y, u)	D-S-P (y, r, u)	D-P-S (y, u, r)	S-D-P (r, u, y)	P-D-S (u, y, r)	P-S-D (u, r, y)	Groom of Doom
5-91	5-97	5-98	5-99	5-100	5-101	5-102
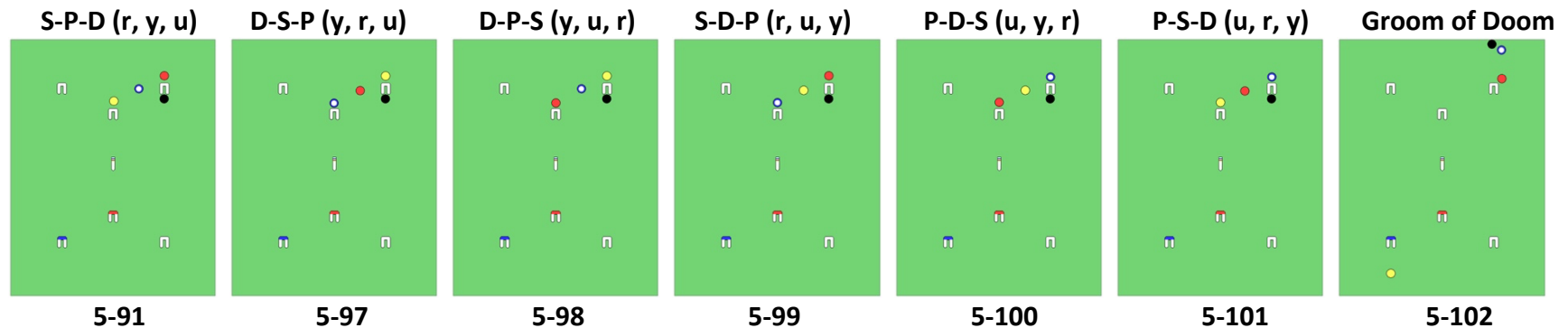
Your mission—*the drill* – is to start from *all* of the different orderings at h(10) and reach the Groom of Doom Leave shown in Figure 5-102. By doing so you will take the mystery out of setting the leave. You will find it easier to complete your task from some of the starting points than from others. Therefore, if you can gain control of all four balls before reaching h(10), *and it is convenient*, then you should consider reordering the balls in the way you are most comfortable with. Here are other things to consider:

    1.. Which of the methods discussed above – the *double Take-Off* method, or the *Rush-Partner 4-Ball* method – works best?
    2.. Is it better to maximize the distance by putting Danger near c1, or to maximize the odds of a wire, using h(12) and h(3).
    3.. How would you modify the leave if u is for a different wicket?
    4.. How would u having COD (3-ball or just Partner deadness) change the leave? [108]

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[108] If u is 3-ball dead, then u must be left in position at his wicket. If u is dead on Partner but not Spent, then u can be left with Spent. However, in both cases, k should be sent to be the future Pioneer, which will alter where you can send the Danger-Ball!

6.. CA7 – THE NEXT STEP

Introduction

Perhaps the biggest concern expressed by good players of A6W, *and knowledgeable spectators alike*, is that the major work in an A6W game is done during the first break and therefore the finishing turn is often anticlimactic. That is, assuming k goes to the peg and ends *last-dead* on Spent, there are really only two remaining questions:

i.   Will the Danger-Ball, y, hit-in at over 25 yards? *Rarely[!]* is the answer, and

ii.   Can my Partner, u, run a 3-Ball break and finish? *Usually[!]* should be the answer.

Additionally, the team that gains the innings first (assumed here to be u/k) usually chews up a lot of time on the clock, making it exceedingly difficult for Oppos (r/y) to recover even if they do magically hit-in.

Furthermore, suppose the 2nd ball u does not do as well as planned. If u senses he might fail – miss a wicket or a roquet, he can abandon his break, go to k, and let k use his power as a Rover-Ball to restart u's break or to run out the clock.

Compare this result to AC where the team that gets the first innings usually has a fairly easy time "running 9" but can't give Oppos a shot of more than 22 yards and the actual shot will often be less than 15 yards. Oppo has a real chance of hitting in! But suppose he doesn't. Then Partner takes over and, will often attempt a triple-Peel, with all of its attendant risks. Except for very top players, the actual success rate – *as opposed to the perceived success rate* – of Triple Peels is less than 50/50. And there is rarely an impactful time limit in an AC game. So, if Oppo hits-in or gets-in, they are afforded an opportunity to work their way back into the game. AC games remain competitive throughout.

What Should be Done? There have been various proposals to deal with the issues that A6W faces. *Switch After-10* – allowing Oppo to play either ball after Striker makes h(10) – is one possibility. While not without conceptual appeal, in fact, this rule change is easily evaded. So, here we turn to a new game we call *Contact After 7*. It adds richness and intrigue to A6W by providing multiple paths to victory with the possibility of, but no requirement for, Structured-Peeling.

Rules

The rules of American Six Wicket (A6W) apply with the following modifications:

Opening**:** (i) As in AC, balls are always in the Game; there is no out-game. (ii) The Starting Area is still 3' south of h(1) but the length of the imaginary in-line is extended to 3' from 9". (iii) There is a *Bamford Opening* – after u plays its *first* shot, r/y can accept the play of u as their own by switching colors to become u/k [109].

Contact After h(7)**:** As in A6W, a ball making h(7), including by being Peeled, grants Oppos a clearing of deadness for *either* of their balls. In addition, *making h(7) as Striker* grants an optional lift-to-contact to the *next* Oppo ball that actually plays. Thus, if u makes h(7), then only r can use the lift. However, if r is pegged out before it can play, then the option transfers to y. This option does not attach if u is Peeled through h(7) by k or by an Oppo ball.

Pegging Out**:** As in AC and A6W, a ball for the peg can only be pegged-out by another ball for the peg. However, if a ball for the peg (u) is pegged out by an Oppo ball (r or y) then, on its next turn (*and only its next turn*), the remaining team-ball (k) *can* advance its clip to h(10). Using the advancement does not modify deadness for any ball nor grant any ball a lift-to-contact [110].

Clock: A standard clock can be used – we recommend a 2-hour limit. That said, *our preference is to not have a game clock or a shot clock*! The charm of this game is being forced to finish with both teams grappling with the *joys and sorrows* of h(7).

Alternatively, a chess clock can be used with each side receiving one hour, or whatever amount of time is agreed upon by the players or is set by the tournament director. This eliminates all debates about slow play and eliminates the need for timeouts. The clock starts *after* the Bamford Opening is complete. Time switches from one team to the other when a turn is ended (i.e., after marking in all balls). A team completes the turn it is running when their time runs out, and then, consistent with the last-turn rules of A6W, Oppo plays, followed by one last-turn for the team out of time. Oppos continues to play until they too run out of time or get ahead or peg-out to win. Passing a turn is allowed.

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[109] Reg Bamford has suggested this type of opening for AC as a way to neutralize the benefit of going first. We use it here and in our 2-Shot GC-game.

[110] We do not have enough data *yet(!)* (games played) to determine if the optional advancement to h(10) will equalize the prospects of the two teams during a 2-on-1 game. *We fear not* and therefore would propose a further step – the additional right of the 1-ball team to peg out the ball for the peg of the 2-ball team at any time, whether the 1-ball team is for the peg or not.

Notes

The opening of a CA7 game differs from A6W. Balls are immediately in the game; there is no Out-Game. One team eventually gains the innings and runs a break. As discussed in Chapter 5, among good players, getting the innings first in A6W often means winning. If Oppos fail to hit in, then one break to the peg (together with a *Groom of Doom*) is immediately followed by another – a finishing turn. CA7 thwarts this strategy with the *Contact After 7 Rule*: Making h(7) during a break, as opposed to being Peeled at it, grants Oppos an optional lift-to-contact – and hence the innings – to the next Oppo-Ball that plays.
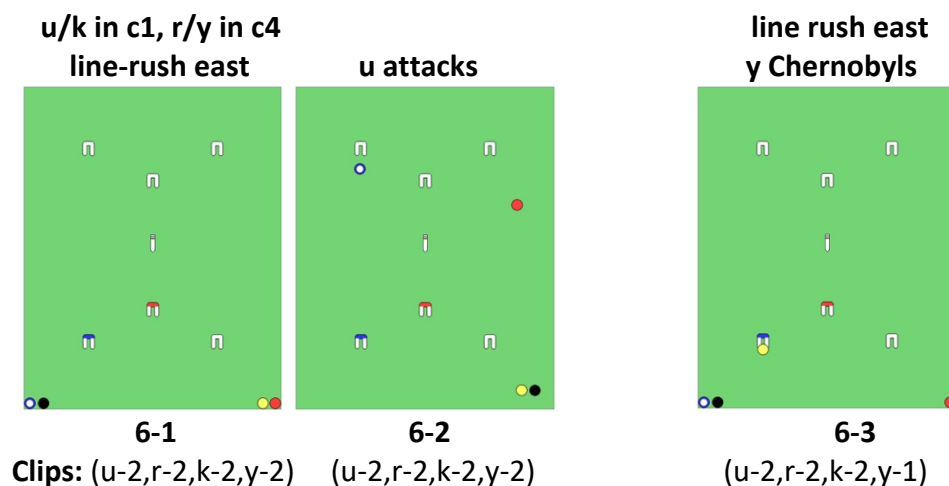
The first ball (call it k) that runs a break often sets the tone in a CA7 game. If k stops before making h(7), then he is probably angling for a *4-Break Finish* wherein: (1) k runs a break stopping at h(7), y shoots and misses; (2) u Peels k at h(7) and then u runs a break stopping at h(7) (or earlier), r shoots and misses; (3) k Peels u at h(7), or not, and k runs a break to the peg. y shoots and misses; and (4) u goes to the peg, and pegs-out both balls for the win. *The challenge of this strategy is that r/y get three chances to hit-in.*

The alternative is a 2-Break Finish. Here k runs his 1st break *making* h(7), *intentionally* letting y start with contact. k can choose to end his turn at any hoop, but the logical choices are the Peg, h(12), h(11) or h(10). A thoughtful leave set by k can make it difficult for the next Oppo, y, to run a break forcing y to set a leave for r, his Partner rather than progressing himself. u will play next. If u fails to hit-in or get-going, then it will be r to play. r should be able to start a break and will have the option of stopping before h(7), beginning his own 4-Break process. If he follows this course, then r must face the fact that u/k will have three opportunities to hit in.

r's alternative is to run his break to the peg and peg-out k creating a 2-on-1 endgame. *Rotation* results in y playing immediately after r. In fact, y can finish the game before u gets another chance to play! This possibility may cause k to stop his break before the peg! If so, then r will face an impediment to pegging out k – r first needs to advance k to the peg with Peels. A sufficient number of Peels will make r think twice about trying to peg-out k and may encourage r to stop before h(7), giving u a greater chance of getting back in. However, if u does get in and wants to finish in a single turn, then he too will be forced to make h(7) and he too will need to complete the remaining Peels on k. Any failure after h(7) will give contact to r, and control of the game, to r/y.

2-on-1 endgames can be long a drawn-out affairs in A6W, with the 2-ball team usually having a significant advantage, especially if the 1-ball team is still for an early hoop. CA7 addresses this imbalance by giving the Partner of the pegged-out ball a 1-time option to advance his clip to h(10). This often becomes a battle of [Peg and h(1)] against [Box and h(10)] – a shorter and more dynamic 2-on-1 Endgame that can go either way. If this does not prove to be enough of an equalizer, then the rules propose letting the 1-ball team have the further option of pegging out Oppo before the 1-ball team reaches the peg, thereby creating a 1-on-1 battle.

The Opening Turns in A6W: All clips start on h(1). Balls are not *in-the-game* until they make h(1). Balls enter from an imaginary *line* that is 9" long and 3' south of h(1). Failure to make, h(1) leads to a period where some, or all, of the balls play an *Out-Game*. As discussed earlier in this book, the Out-Game has its proponents. It also has an interesting subtle benefit – it decreases the advantage u/k has by going first. We will examine two classic A6W openings and explain how they influenced our choice of rules for CA7.

| **u/k in c1, r/y in c4** | | **line rush east** |
| **line-rush east** | **u attacks** | **y Chernobyls** |

| **6-1** | **6-2** | **6-3** |
| **Clips:** (u-2,r-2,k-2,y-2) | (u-2,r-2,k-2,y-2) | (u-2,r-2,k-2,y-1) |

(i)　　u Attacks and Goes 3-Ball Dead: u makes h(1) and goes to c1, r makes h(1) and goes to c4, k makes h(1) and goes just east of u, y makes h(1) and goes just west of r, Figure 6-1. By choice, there was no Out-Game. u/k has the innings, but to gain a break, the u/k team often has u go 3-ball-dead: u rushes k to y, u takes off to y, u gives k a rush on y toward h(2) going to r, u destroys r toward h(1) or h(3) and, ideally, u goes to position wired from r at h(2), Figure 6-2. r can shoot but often finesses to c1 and then sits down *to see if k can do it*. This opening is standard [111].

(ii)　　y stays out: r/y may not want to give u the first attack. In this case, after k goes to the east of u, giving u a line-rush on k to c4, y can play the Out-Game – not make h(1) and instead *Chernobyl*, go to a position that makes entry into the game at h(1) easy for y on y's next turn.

The ability to stay-out during the opening is an equalizer for r/y in A6W.

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[111] That said, it may not be deemed as fair to both sides. For example, Ben prefers to be u/k!

The Opening Turns in CA7: Clips start on h(1) with all balls *in-the-game*. In this new environment, balls may or may not want to make h(1). We accommodate this possibility by modifying the entry line. It is still 3' south of h(1) but it is longer – 3' instead of 9". This allows a ball to shoot to anywhere on the lawn without being blocked by h(1). Eliminating the Out-Game speeds up the opening but creates other issues. Suppose u enters, making h(1) or not, [*hence the notation (u-1,2)*], and then shoots to a short distance from the start-in area, Figure 6-4. It is r to play. What should r do? (i) He can ignore u, or (ii) r can hit and move u.

(i)   If r ignores u: r enters the game, making h(1) or not, and then r goes somewhere (probably to a corner), Figure 6-5. It is k to play. k enters by making h(1) or not, roquets u (getting Partner-Dead) and then k croquets-out u to r, with k seeking to end up at a distance from h(1) that is greater than y's CD, shown here as ending near the peg, Figure 6-6. It is y to play with less than ideal (less than 50/50) prospects. u has a possible, but challenging start if y misses.

u near h(1)	r ignores u	k croquets-out	r roquets u, sets tice

6-4	6-5	6-6	6-7
(u-1,2)	(u-1,2,r-1,2)	(u-1,2,r-1,2,k 1,2)	(u-1,2,r-2)
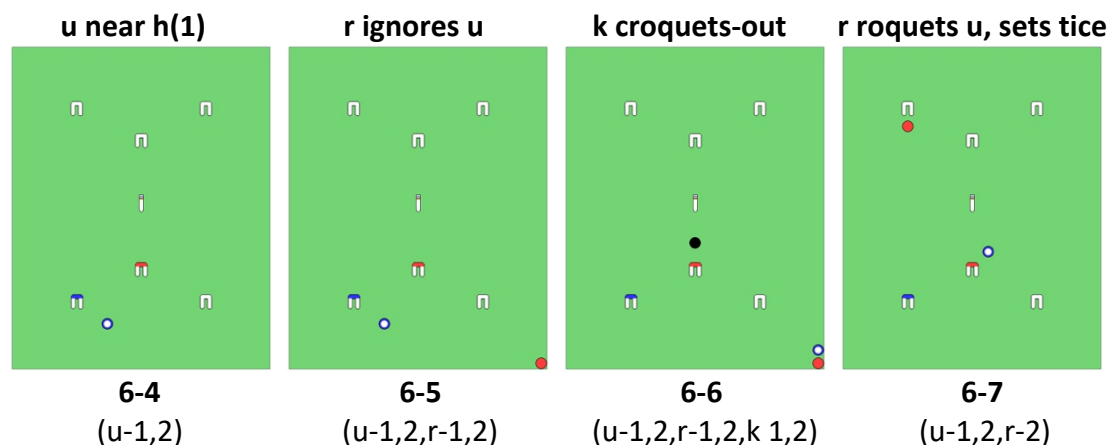
(ii)   If r hits and moves u: After u plays, r enters the game planning to move u. r can do this after making h(1) and then r can attempt to run a 2-ball break [112]. But r could fail at h(1) which would give k a possible 3-ball break for himself or the ability to give r to u, letting u have a 3-ball break, if y fails to hit in.

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[112] This was the approach Matthew Essick, as r, took in game 3 in the accompanying videos. He carried on making hoops including h(7) and h(8) but failed at h(9). Because r made h(7), when r broke down, k was able to start his turn with a lift-to-contact, which gave Danny Huneycutt an easy start to a 3-ball break. Sadly, he too broke down… which then led to a very interesting game.

It is usually better for r *not* to make h(1) and not to *run* a 2-ball break. Then roqueting u (*and getting dead on u*!) should be routine and would allow r to end his turn, perhaps as shown in <u>Figure 6-7</u>: Here r leaves u in a 50/50 tice position for k to shoot at (and then for y to shoot at if k misses!). But finding this 50/50 position is complicated by the possibility that k can attempt h(1) seeking to shorten his next shot at both u and r. r can anticipate this possibility by lengthening the tice. But this would let u/k have the advantage and encourage k to lag to u.

This discussion suggests that going first in CA7 can be an advantage either giving u/k a croquet-out possibility or giving r/y some initial deadness. Confronting this issue led us to adopt a *Bamford Opening*: Here play stops after u makes his first shot. Then r/y has the option to switch to being u/k by accepting the play of u as their own [113]. Now the benefits that accrue to u/k in the absence of the Bamford Start will still accrue to u/k, but this time they can be claimed by the team that had been scheduled to play r/y!

With a Bamford Opening

u to c1	standard	u to c4	r to c3	u to tice	r guards the shot

6-8	6-1	6-9	6-10	6-11	6-12
(u-1)	(u-1,r-1,k-1,y-1)	(u-1)	(u-1,r-1)	(u-1)	(u-1,r-1)
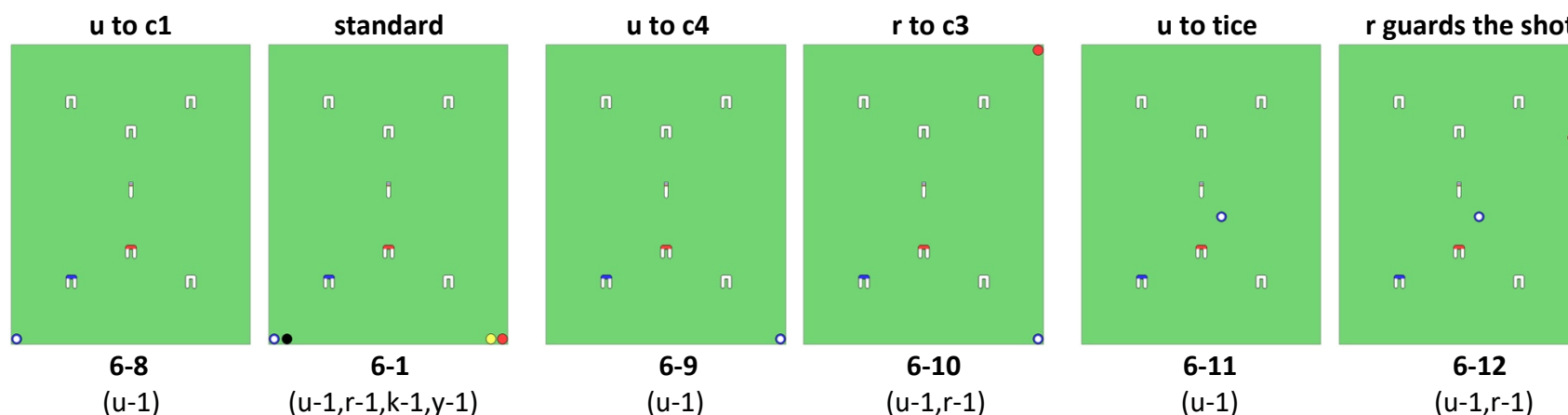
The Bamford Opening can/should change the original play of u. There are many possibilities. We describe three that we think approach the desired criteria of neutrality:

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[113] Play is stopped even if u has made h(1). The team that ends up as u/k will then play the 2nd shot of u.

(i)　　**u goes to c1**, Figure 6-8. This can evolve into the *standard* opening, Figure 6-1, but with all balls for h(1) [114].

(ii)　　**u goes to c4,** Figure 6-9. This can be followed by r to c3, Figure 6-10. If k follows to the north of u and y to the south of r, then u/k will have the innings (one team or the other will get it!), but without great prospects as all balls are for h(1).

(iii)　　Finally, here is our current favorite. u shoots to a 50/50 tice distance from the start-in area, Figure 6-11. What should r do? r can shoot toward u, *intentionally missing* thereby going to the east boundary, Figure 6-12 – *guarding the shot* of the next ball, k. This puts k in the uncomfortable position of wanting to shoot at u but needing to shoot gently to stay near u if he misses, etc. [115]. k could try to score h(1) to change the angle of the shot and possibly avoid missing to r but failing at h(1) would give y control of k, the Spent-Ball, and a chance at a 3-Ball break. We don't think either team has a clear advantage – if so, then this is a neutral opening [116]!

BREAK PLAY IN A6W

Starting from the Standard Opening shown in Figure 6-1, if u/k can gain the innings, Figure 6-13, then the u/k team can win the game by running two breaks that are separated by a desperate shot by Oppos.

(i)　　The 1st Break: k runs a break to the peg that is shown completed in Figure 6-14. The break includes [117]:

(a)　Picking up the 4th ball r, usually from c1,

(b)　Peeling Partner, u, at h(2) to clean u of deadness, and

(c)　Setting a leave (often the Groom of Doom), Figure 6-14.

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[114] If u makes h(1) and ultimately goes three ball dead to set a break for k, and as part of k's break he wants to clean u, then k will need to Peel u at h(2) instead of h(1). This will cause the Peel to occur later in the break and can be more difficult.

[115] This is like the challenge faced by the 3rd ball in AC if the 2nd ball plays a Duffer's tice.

[116] u making h(1) lets r/y set the tone of the game.

[117] Actions required to complete the plays described in (a), (b) and (c) below were discussed in Chapter 5.

(ii)   The 2nd Break: From Figure 6-14, if y shoots and misses at the balls in c3 or finesses, then u takes over. u can run a break to the peg (often using just 3-balls if y corners, and all 4-balls if y shoots), and then peg out both u and k for the win.

Opening	Gaining the Innings	End of 1st Break
6-1: u to play	**6-13**	**6-14**
(u-2,r-2,k-2,y-2)	(u-2 r-2,k-2,y-2)	(u-3,r-2,k-p,y-2)
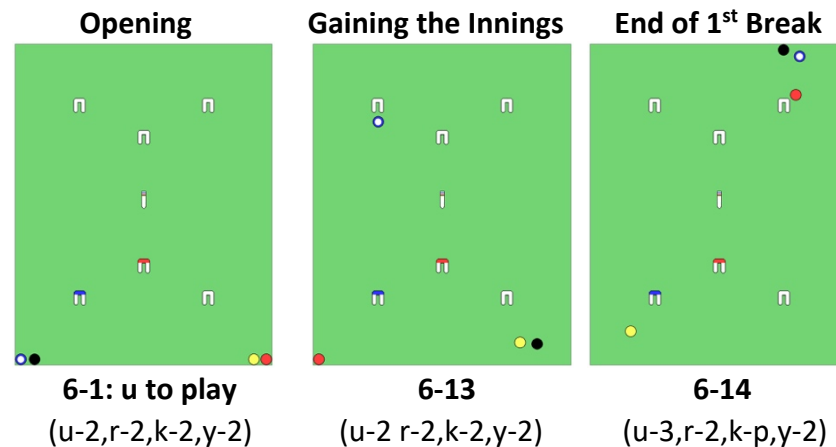
BREAK PLAY IN CA7

CA7 also begins with players jockeying for the innings. We are assuming that u starts by shooting to c1, Figure 6-8 and that this again evolves into Figure 6-1 – the standard A6W opening – *with the modification that all balls are for h(1)* and therefore u ends his attack with his clip on h(1) and not h(2), which leads r to finesse to c3 and not c1, Figure 6-15. This opening can be followed by one of two very different courses of action by u/k: (i) a 4-Break Finish that does not give Opponents a contact-lift but gives them *three chances* to hit-in, or (ii) a 2-break finish that involves intentionally giving Oppos a lift-to-contact.

THE 4-BREAK FINISH

(i)   k runs the 1st Break stopping at h(7). It Includes:

(a) *Picking up the 4th ball*, r, from c3 after h(2) or after h(3). *Later is possible but makes this 4-Break Finish more difficult.*

(b) *Peeling Partner*, u, at h(1). This cleans u's deadness and advances u's clip to h(2). This Peel can be done early as a Straight-Peel, S-h(1). It is most frequently done W-h(5). *It can also be done W-h(6) or later, after h(7).* Finally, u can just be left with his deadness but in position at h(1).

.

(c) *Setting a leave*, k's turn ends with y *destroyed*, u north of h(7) with r nearby [118], and k in the jaws of h(7), <u>Figure 6-16</u>. **Then y gets a shot**.

(ii)   <u>u runs the 2nd Break</u>, stopping at h(7). It includes:

(a) *Rush-Peeling* k at h(7), thereby advancing k's clip to h(8). This clears k of deadness and gives Oppos, r/y, a cleaning of deadness, but *not* a lift-to-contact.

(b) *Picking up the 4th ball,* y can be picked up immediately by u if y shoots, or after h(4) or h(5) if y finesses to c1 or c4.

(c) *Setting a leave*, u ends in the jaws of h(7). k is positioned north of u. y is P(8), and r is at a distance, <u>Figure 6-17</u>. **Then r gets a shot.**

Opening	**r finesses to c3**	**End of 1st Break**	**End of 2nd Break**	**End of 3rd Break**
6-1: u to play	**6-15: k to play**	**6-16: y to play**	**6-17: r to play**	**6-18: y to play**
(u-1,r-1,k-1,y-1)	(u-1,r-1,k-1,y-1)	(u-2,r-1,k-7,y-1)	(u-7,r-1,k-8,y-1)	(u-8,r-1,k-p,y-1)

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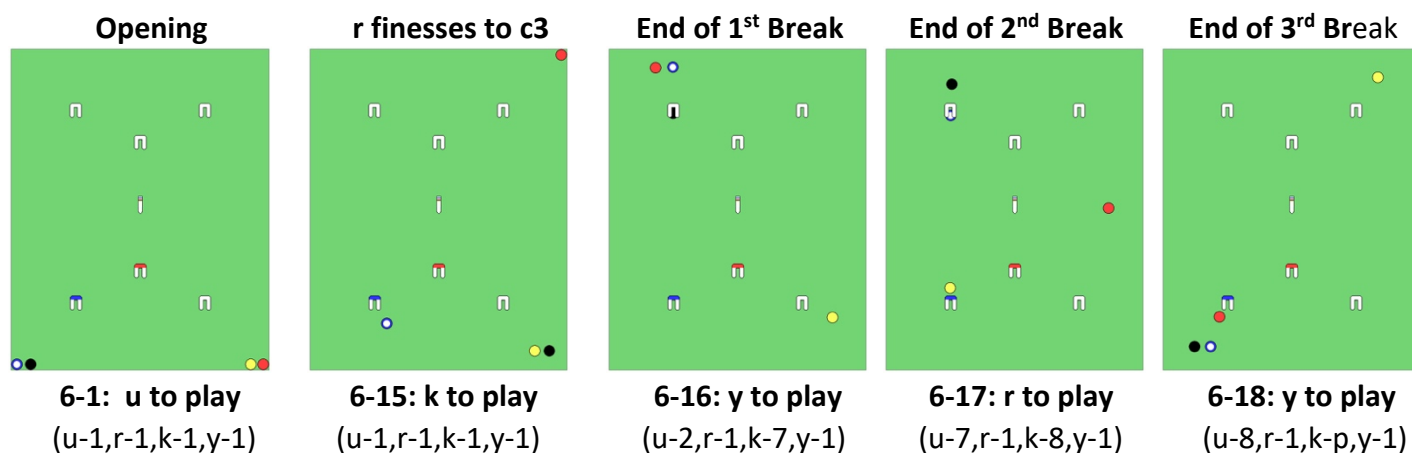
[118] If k peels u late or left u in position at h(1), r would be near h(1) with u and k would be near h(7) with y away on the east side of the lawn.

(iii)   <u>k runs the 3rd Break</u> to the peg. It includes:

      (a) *Rush-Peeling* u at h(7), This clears u of deadness and advances u's clip to h(8). It also gives r/y a cleaning of deadness but not a lift-to-contact. k continues his break:

      (b) *Picking up the 4th ball*, r.

      (c) *Setting a Groom-of-Doom leave* for u at h(8) where k is last-dead on r. <u>Figure 6-18</u>.
      Then y gets a shot.

(iv)   <u>u runs the 4th Break</u> to the peg, pegging out both balls for the win.

Simplifications: We have just described the *belt and suspenders* approach to break-play in CA7. It can be simplified in two ways if Striker is willing to assume residual risk during the 4th break. (i) <u>Do not jaws to end the 2nd Break</u>: Having u, the 2nd ball, jaws at the end of the 2nd break and then be Rush-Peeled to start the 3rd Break is not necessary. u can start the 4th break for any hoop, and make h(7), *as long as u finishes*. Not needing to Peel u simplifies play for k at the risk of giving contact if u breaks down during the 4th break. (ii) <u>Do not pick up the 4th ball during the 4th Break</u>: u does not need to pick up the 4th ball as he runs the 4th Break. But, choosing not to do so, increases the risk that u fails to finish.

<p align="center">Mischief at h(7)</p>

Suppose k runs a 1st break expecting to end his turn by entering the jaws at h(7). If this happens, then the 4-Break Finish can proceed as just described. But there are two other outcomes that need to be considered – *k fails to jaws at h(7), and k just dribbles through*!

      k fails to jaws: Suppose k's last shot does not put him into the jaws, <u>Figure 6-19</u> [119]. If y shoots and misses, then u will take over knowing he cannot rush-peel k at h(7). u's options will depend on whether y shoots or finesses.

<u>Avoid Giving u a 4-ball Back-Peel</u>: It is y to play. If k is in the jaws of h(7), then y would be advised to shoot. But, with k not in the jaws, y shooting and missing, as shown in <u>Figure 6-20</u>, is very costly – it immediately gives u the 4th ball (y) which will facilitate the Peel of k at h(7) as a back-Peel, A-h(2), <u>Figures 6-21</u> and <u>6-22</u>, and the successful completion of the 2nd Break, of four, by u.

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[119] k may look at his last shot and decide that the risk of dribbling through h(7) is too great and choose to end his turn 3-ball dead rather than risk it.

k ends 3-ball dead and not jawsed	y shoots but misses	u sets-up to Peel k at h(7) A-h(2)	u Peels k and continues his break	y finesses going to c4
6-19 y to play (u-2,r-1,k-7,y-1)	**6-20 u to play** (u-2,r-1,k-7,y-1)	**6-21 u playing** (u-2,r-1,k-7,y-1)	**6-22 u playing** (u-3,r-1,k-8,y-1)	**6-23 u to play** (u-2,r-1,k-7,y-1)
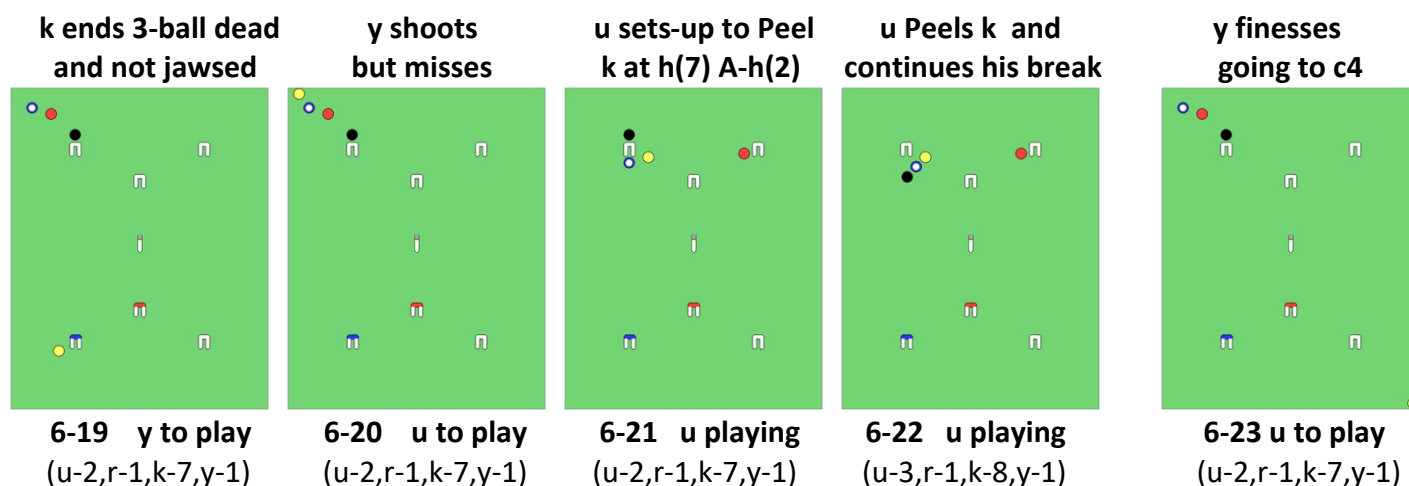
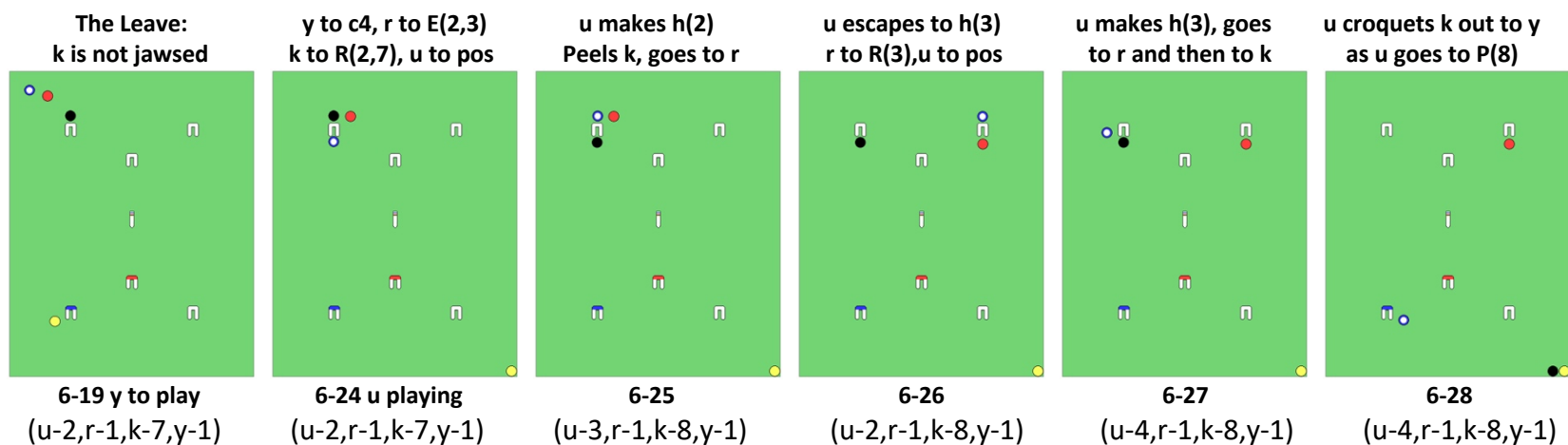Sensing trouble for u, y may want to adopt a wait-and-see attitude. Finessing into c4 is one possibility, Figure 6-23. We consider first how u can proceed if he decides to completes the Peel of k at h(7) A-h(7) using only 3 balls and then look at other options.

Figure 6-19 then Figure 6-23: u takes over after y finesses to c4. u sends r to E(3,7) going to k. u sends k to Peel position, R(2,7), as u goes to position at h(2), Figure 6-24. u makes h(2), roquets k, Peels k at h(7) A-h(2) going to r, Figure 6-25. u escapes to h(3) with r, u sends r to R(3) and goes to position at h(3), Figure 6-26.

Figure 6-26: u makes h(3). After that, u could try one of two *ball-to-ball strategies* – (i) *rush* r to h(4), make it, use r to get to y, send y to k, and then go to k's hoop, h(8), with u dead on r and y; or (ii) *rush* r to k, rush k to h(4), make the hoop, get y for k, and then go to h(8) with u dead on k and y. *We do not relish these rushes and will therefore propose a different way to proceed using a Croquet-out.*

The Croquet-Out

This time from Figure 6-26 u makes h(3), roquets r and takes off to k. While a rush on k toward c4 as shown in Figure 6-27 might be nice, if one is not available then roqueting k is sufficient. Then u can croquet k out to y while going h(8), hopefully wired from r, Figure 6-28, with u ending for h(4) and dead on r and k.

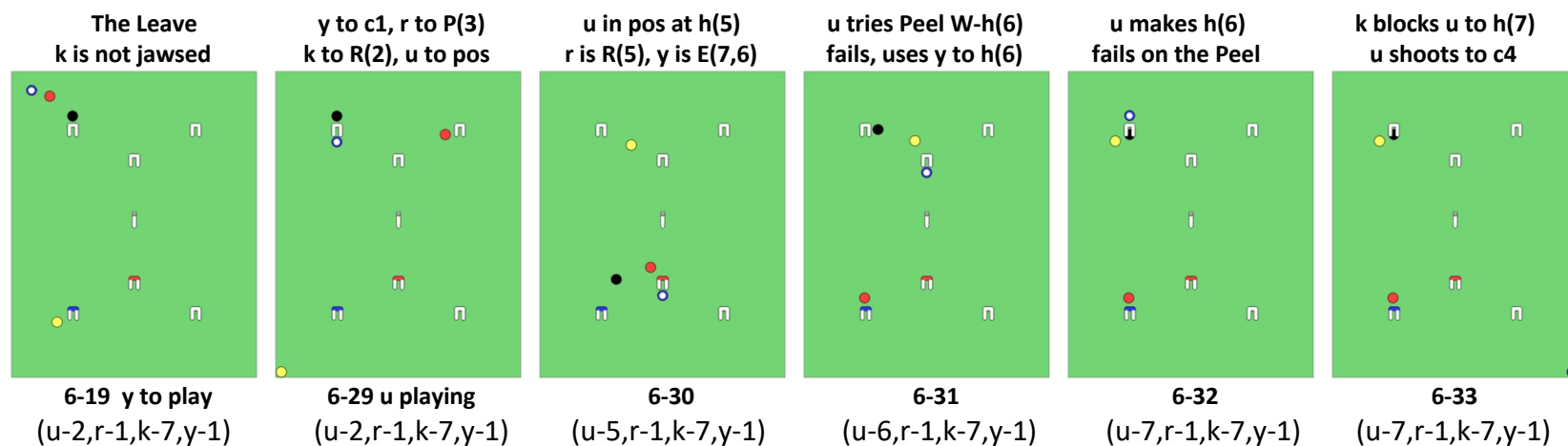| The Leave: k is not jawsed	y to c4, r to E(2,3) k to R(2,7), u to pos	u makes h(2) Peels k, goes to r	u escapes to h(3) r to R(3),u to pos	u makes h(3), goes to r and then to k	u croquets k out to y as u goes to P(8)
6-19 y to play (u-2,r-1,k-7,y-1)	**6-24 u playing** (u-2,r-1,k-7,y-1)	**6-25** (u-3,r-1,k-8,y-1)	**6-26** (u-2,r-1,k-8,y-1)	**6-27** (u-4,r-1,k-8,y-1)	**6-28** (u-4,r-1,k-8,y-1)

r plays next. If r misses or finesses then k will play and should be able to run a break to the peg while picking up r at an opportune time, perhaps even early enough to Peel u at h(4) along the way. If not, then k should end his turn with u in position at h(4).

Getting the Peel done later in the 2nd Break: This time from Figure 6-19, we show y finessing into c1, which is probably the most difficult corner for u/k. u decides to run his break, pick up the 4th ball, and to save Peeling k at h(7) until later in his break, as discussed in Chapter 5 above for play in A6W. We will follow this along here because CA7 creates some interesting challenges.

Figure 6-19: u sends r to h(3) going to k and uses k to set-up to make h(2), Figure 6-29. u makes h(2) with k, h(3) with r, and then h(4) with k. After h(4), u rushes k toward h(8), picks up y in c1, sends y to be the pioneer at h(6), and uses r to achieve position at h(5), Figure 6-30. After making h(5), u sends r toward h(8) going to k. u rushes k to h(7) and attempts the h(7) Peel of k W-h(6), and then makes his way to h(6) using y, Figure 6-31.

Getting the Peel done later in the 2nd Break

A successful Peel would be glorious, but unlikely, so we show it failing. u makes h(6), uses y to get to k, and then attempts the Peel of k at h(7). If the Peel of k succeeds (not shown) then k will be in position to run the 3rd Break of four. But if this Peel attempt also fails, then u will be at a very interesting decision point, Figure 6-32: k is three ball dead and u is dead on Partner (k) and Spent (y).

The Leave k is not jawsed	y to c1, r to P(3) k to R(2), u to pos	u in pos at h(5) r is R(5), y is E(7,6)	u tries Peel W-h(6) fails, uses y to h(6)	u makes h(6) fails on the Peel	k blocks u to h(7) u shoots to c4

6-19 y to play (u-2,r-1,k-7,y-1)	6-29 u playing (u-2,r-1,k-7,y-1)	6-30 (u-5,r-1,k-7,y-1)	6-31 (u-6,r-1,k-7,y-1)	6-32 (u-7,r-1,k-7,y-1)	6-33 (u-7,r-1,k-7,y-1)

What should u do? There are two basic choices:

1. <u>u can make h(7)</u>: Then u might be able to continue his break. How far u goes would follow the discussion presented above. But – *eventually r will start his turn with contact.*

2. <u>u can get off the Lawn</u>: u may choose not to make h(7), or the decision can be imposed on u by circumstances. For example, If u is blocked from h(7) by k, then, without a successful jump shot, u will not be able to make h(7) and will be forced to shoot away, perhaps to c4, <u>Figure 6-33</u>. r will play next, without a lift-to-contact or even a cleaning. k's position at h(7) should greatly influence the play of r.

   a. <u>If k is not in position at h(7)</u>: k is 3-ball dead and not a threat to get clean by making h(7). r can shoot to y. k will flee but then y will play. y can send r to k with a croquet-out as y goes to h(1), setting up r with a 3-ball break.

   b. <u>If k is in position at h(7)</u>**:** r should flee. k can make h(7) and will have access to y, but not much else, and k will be giving contact to y by making h(7)! k's other choice is to flee. *Neither option is attractive*.

k dribbles through: Attempting to jaws always brings to mind the horror of just dribbling through! It may be possible to partially recover if k, now clean and for h(8), can turn around and hit u or r and continue his break. While perhaps overly cautious,

a dribble-through could be protected against by having u and r south of h(7), just in case… If this strategy is not adopted, then shooting back through h(7) may yield a lucky roquet. *Otherwise, prepare for y to start his turn with contact and 2 balls at h(2)!*

THE 2-BREAK FINISH

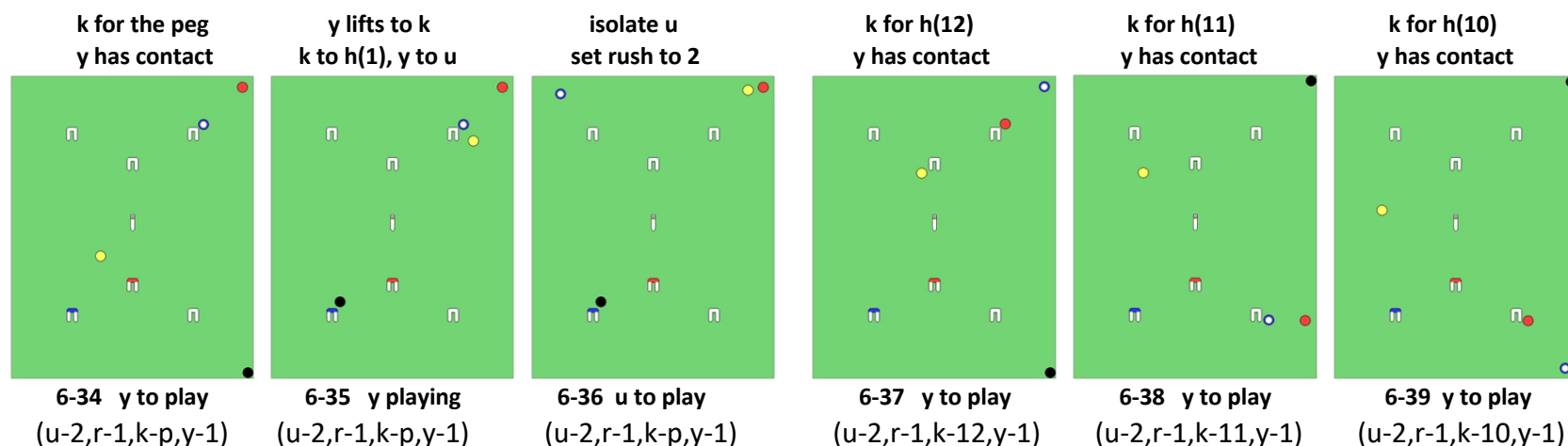The alternative to the 4-Break Finish is the 2-Break Finish:

(i)   k runs the 1st Break: It includes making h(7) and stopping at the peg, or earlier [h(10), h(11), h(12)].Along the way, k:

(a) *Picks up the 4th ball.*
(b) Peels Partner, u, at h(1) at some point to clean u of deadness.
(c) *Sets a contact-leave.* r/y get a cleaning of deadness, and
     y gets a lift-to-contact.

(ii)   u runs the 2nd Break: If u gets in again (!), then he can finish.

Questions When Giving Contact: The description of the 2-Break Finish left 3 interrelated questions unanswered:

1.. How far should Striker (k) progress in his break beyond h(7)? When u/k has k run to the peg, they are hoping that u will get in at some point and finish. If k stops before the peg, then u will need to Peel k to the peg as part of his break. The farther k continues, the fewer Peels u will have to do, and therefore the easier it will be for u. By the same token, the farther k progresses, the easier it will be for r/y to use their lift-to-contact to run a break to the peg that also advances k to the peg with Peels and then pegs k out. With k out of the game, there will be a 2-on-1 end game with r/y as the 2-ball team. If r runs the Peeling turn and pegs out k, then rotation means that y will play immediately after r. In this case, *y could finish without giving u another chance to play*, this despite the lingering lift-to-contact and advancement to h(10) that u would accrue if he ever does get in.

No Peels are needed by either team if k makes his own way to the peg. One, two or three Peels are required if k stops at h(12), h(11) or h(10), etc. k's decision concerning where to stop highlights the potential importance of Peeling turns in CA7. While common in AC, Single, Double and Triple Peels run under A6W rules are infrequent. Clearly, they are more difficult than in AC because of the

9" boundary and the inability to rush balls or shoot hoop out of bounds. [120]

k for the peg **y has contact**	**y lifts to k** **k to h(1), y to u**	**isolate u** **set rush to 2**	**k for h(12)** **y has contact**	**k for h(11)** **y has contact**	**k for h(10)** **y has contact**

6-34 y to play (u-2,r-1,k-p,y-1)	**6-35 y playing** (u-2,r-1,k-p,y-1)	**6-36 u to play** (u-2,r-1,k-p,y-1)	**6-37 y to play** (u-2,r-1,k-12,y-1)	**6-38 y to play** (u-2,r-1,k-11,y-1)	**6-39 y to play** (u-2,r-1,k-10,y-1)

2.. What leave should Striker set when giving contact? Consider Figure 6-34. Here k finishes his turn for the peg and with no deadness. The balls are left such that neither r nor u are easily rushed to h(1). It is y to play with a lift-to-contact.

There is no obvious/easy way for y to start his own a break [*Rolling k to h(1) as y goes to position at h(1) is one possibility but it is fraught with risk…*]. And, for r to get going, y must put k in a useful spot, and then separate r from u. Figure 6-35 shows the first step in this process: y takes contact on k in c4 and then croquets k to h(1) going to u. This is a challenging roll shot! Then y roquets u, isolates u by sending it near c2, then gives r a western-rush, Figure 6-36 [121].

Figure 6-34 *is a powerful leave against contact*. We showed it when k ends at the peg. But it also works if k's break ends earlier. For example, Figures 6-37, 6-38 and 6-39 show leaves that k can set if he intentionally stops at h(12), h(11), or h(10).

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[120] If y were to immediately pick up a break, then y could get one peel on k while only progressing to h(7) with a nice leave. This would set up a possible kiwi TPO in CA7, with r picking up the 4-Ball and completing the peels and pegging out k in order to turn over the innings and a 3-Ball break to y to finish.
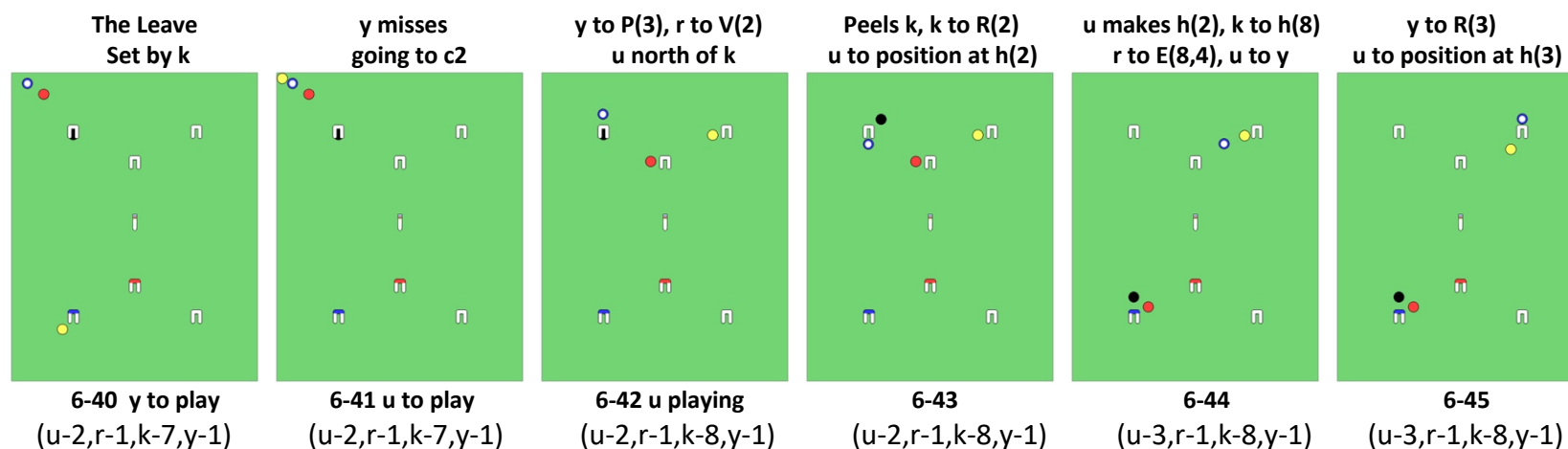
[121] There are alternatives, none of them are great. y could take contact on r, then croquet r out to k while going to h(1), or similarly, y could take contact on u, take-off getting north of r, rush r to the south and then do the croquet-out.

3.. What deadness should Striker (k) assume? Carryover deadness is never good but completing a powerful contact-leave is far more important than avoiding deadness. Therefore, by all means reposition u and r if necessary, at the cost of deadness.

Running a SxP: The *purest* of all 2-Turn finishes is running a Sextuple, Standard or Delayed. The rules of CA7 make running a sextuple challenging. Here is an example of how a Standard SxP could be run; we leave the Delayed to others:

Figure 6-40: Here it is assumed that from Figure 6-1 u went 3-ball dead to set a 3-ball break for k. r missed/finessed. k took over has just completed a 1st break, picking up r and peeling partner at h(1) to clear u's deadness. y has been separated, u has r, and k has jawsed h(7). y shoots and misses, giving u the 4th ball, Figure 6-41.

u takes over. u roquets y, sends y from c2 to P(3) going to r. u sends r from V(1) to V(2) and goes north of k, Figure 6-42. u Rush-Peels k, then sends k to R(2) as u goes to position at h(2), Figure 6-43. u makes h(2) and goes to k. u sends k as Peelee to h(8) and r to h(8) as E(4,8), as u goes to y, Figure 6-44. u sends y to R(3) as u goes to position at h(3), Figure 6-45. u is in position at h(3), the Peel at h(7) is done, and the Peel at h(8) is available W-h(4). This is a well-known position from an AC SxP where the h(7) Peel is done, and Striker is looking to complete the h(8) Peel A-h(4) and continue from there. In the brief history of CA7, only one SxP has been tried. In game #2 of the videos discussed below, Huneycutt started one but failed by missing a short roquet. As in AC, we think (hope) this *Mt. Everest* will be scaled in due course.

The Leave Set by k	y misses going to c2	y to P(3), r to V(2) u north of k	Peels k, k to R(2) u to position at h(2)	u makes h(2), k to h(8) r to E(8,4), u to y	y to R(3) u to position at h(3)

| 6-40 y to play (u-2,r-1,k-7,y-1) | 6-41 u to play (u-2,r-1,k-7,y-1) | 6-42 u playing (u-2,r-1,k-8,y-1) | 6-43 (u-2,r-1,k-8,y-1) | 6-44 (u-3,r-1,k-8,y-1) | 6-45 (u-3,r-1,k-8,y-1) |

2-on-1 Endgames

The 2-Ball-Team has a clear advantage in 2-on-1 Endgames in both A6W and CA7. The advantage is particularly noticeable if the 1-Ball-Team plays *after* the back-ball of the 2-Ball-Team. With excellent play, the 2-Ball Team should be unstoppable. But it involves a lot of work! For example – Suppose r/y become the 2-Ball-Team after r Peels k to the peg and the pegs k out. r can end his turn by getting u for y and setting y up with a 3-ball break. y will play before u and can finish. But if y fails, then u will get in and have his turn to finish with a 3-ball break that may start with u for an early hoop. Some players would love a chance to end the game with one break, while others would look for any justification for dropping a ball and finishing the turn without deadness. But it is also advantageous to be the 2-Ball-team when r pegs out u. Here y will have no Danger-Ball, Partner can always run away after a failed hoop so Oppo is limited to a 2-Ball break after a long hit in. This endgame can be very long with no 3-Ball breaks.

In CA7, we try to balance the opportunities of the two teams with the following rule: *If one of my balls is pegged-out by an Oppo-ball, then, on my next turn, I can move the clip of my remaining ball from whichever hoop it is on to h(10). This is a one-time option and does not modify deadness for any ball or grant any ball a lift-to-contact or a cleaning*. If the 1-Ball-Team does get in, then its task is shortened considerably, giving it a meaningful chance of winning. If this proves not to be enough of an equalizer then, as mentioned in the rules, it may be desirable *to give the 1-Ball team the added ability to peg-out Oppos peg-Ball early – that is, before the 1-Ball makes it to Rover*.

Two Breaks or Four?

To make an informed decision, we need to know the probability that Oppos will hit-in on any one of their three opportunities if a 4-Break Finish is pursued. Here we assume that each attempt is independent and approximately 24 yards long. We consider the prospects of Opponents with CDs of 9, 12, or 15 yards. Under these assumptions, data from Fulford [122] allows the calculations of the probability of hitting-in *on any one of the tries*: (9 yards, 20%, 49%), (12, 26.4, 61) and (15, 32.7,69.5). The first number in a triplet is the CD, the second is the % hit-in, and the third is the calculated percent hit-in over three attempts. On average, adopting a 4-Break strategy, and not having it disrupted by Opponents hitting-in, will be a 50/50-ish proposition against weaker players (CDs under 10), but it should be a losing proposition on average against reasonably skilled and advanced players, those with (CDs > 10). Of course, a team that hits-in will then face the same decisions!

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[122] Fulford, Nottingham list, January 1, 2020.

Videos

Timing of CA7 Games

Using a round-robin doubles format, Sherif Abdelwahab, Matthew Essick, Danny Huneycutt, and Steve Morgan, played three games of CA7, and then participated in a CA7 *Master Class*. Fully narrated videos can be found on YouTube**.** The games ran 1:34, 1:29, and 1:02 (hours: minutes) respectively. They were played with a chess clock with one hour for each team. This allowed CA7 to be played without: (i) a total time limit, (ii) a 45 seconds shot limit, or (iii) time outs. The games showed that, at least for advanced players, a combined time limit of 2 hours was adequate [124].

What to Watch For

Of particular interest to us was seeing how this group of elite players reacted to unfamiliar situations caused by the rules that define CA7 – in particular, the omnipresent pressure created by the Contact After 7 rule itself. Their creativity in choosing strategies and talent in executing them came through. They *routinely* made plays that many players don't think of, let alone *routinely*! But they also made uncharacteristic mistakes – frequently (*for them*!) missing hoops, as we all tend to do in unfamiliar situation.

Between the three games and the Master Class, there was a bit of *everything*!

In game #1, there was a tremendous amount of carry-over deadness – reaching 11-balls! As each ball make it through h(4) players slowed down to assess the situation. They admitted later that their *usual break-playing flow* was interrupted by considering how far to continue their break. That is, whether or not to make h(7). We think that not making h(7) but being peeled at it caused too much consternation and that, in future games, carrying on and granting a lift-to contact when the Peel will not obviously work out will become popular. After all, both teams have to address this issue!

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[123] Matthew likes to run triples in A6W, to *tighten his skills for AC.*

[124] Our preference is to follow the example of AC and not have a clock or have a 3 hour limit if one is absolutely deemed necessary.

In game 2, Danny attempted a sextuple, completing the initial two Peels before h(4) – an advanced schedule even for the best players of AC, but failed on a short rush to h(5). We doubt that Danny would have pursued the sextuple in a serious competition, but it was exciting to watch.
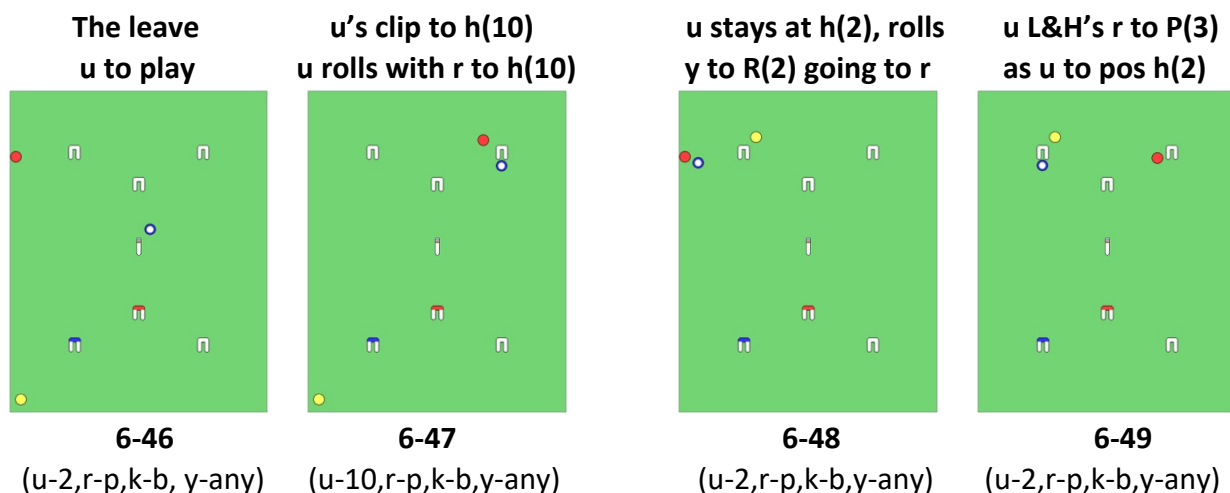
In Game 3, Matthew chose to run a 2-ball break, with the 2nd ball, that had him make 8-hoops, failing at h(9). We were unsure why (besides the fact that he *could*!) Matthew choose to made h(7). Doing so gave Danny, playing the 3rd ball, contact to start a 3-ball break. Uncharacteristically, Danny failed at h(1)!

<u>Examples of Giving Contact and a 2-on-1 Endgame</u>

The players chose not to give contact in any of the three CA7 games that they played. That left unanswered two questions:

(i)   Is making h(7) and progressing beyond a viable strategy, and if so, how far should Striker progress? And

(ii)   Should a team seek to play a 2-on-1 Endgame given that the 1-ball team can advance to h(10)?

To shed light on these questions, the players kindly agreed to hold a *Master-Class -- MC*.

The leave **u to play**	**u's clip to h(10)** **u rolls with r to h(10)**	**u stays at h(2), rolls** **y to R(2) going to r**	**u L&H's r to P(3)** **as u to pos h(2)**
6-46	**6-47**	**6-48**	**6-49**
(u-2,r-p,k-b, y-any)	(u-10,r-p,k-b,y-any)	(u-2,r-p,k-b,y-any)	(u-2,r-p,k-b,y-any)

In Figure 6-46, k has been pegged out, u is the Striker. u is for h(2) and can start his turn with a lift-to-contact; r is a borderline-ball residing level with h(2) and is for the peg; y can be for any hoop and is near c1. Sherif took the turn. MC (0:59:35). We all expected him to advance u's clip to h(10), take contact from r, roll with r to h(10) and attempt a 2-ball finish, shown in progress at h(10), Figure 6-47.

Instead, Sherif decide not to advance u's clip. He took contact on y, and then, with one of the finest roll shots we have ever seen, Sherif sent y to R(2) going to r, Figure 6-48. This was followed by a L&H that sent r to P(3) while u went to position at h(2), Figure 6-49. u was now in a position to run a break to the peg and win. Sherif again proved that there is more than one way to skin a cat! But, sadly, Sherif stuffed h(4)!

<div align="center">Conclusion</div>

CA7 was enjoyed by the players and the spectators! It is a much more intereactive game than A6W, its parent. *The Contact After 7 rule provides just enough instability to keep everyone's attention.*

½ Ball Rule	Universal aiming technique for cut rushes
½ Inch Rule	Universal aiming technique for making hoops/wickets
2HP	Hoop, Hoop, Peel – the most common Peeling Procedure
AC	Association Croquet
Advanced c.10	c.10 with a 5 WL and a Peeling requirement
Alman, Bob	Founder, Croquet World Online
Attack Theory	From B&T – Two ways to attack, either take-off or rush-to
Aunt Emma	A player who chooses not to run breaks
A6W	American 6 Wicket
Back-Peel	Peelee is the Reception-Ball. Notation A-h().
Ball-to-Ball	allows a hoop to be made before the break achieves a classic structure
Bamford, Reg	The most decorated World Champion, 2x GC and 5x AC
BECT	The book, <u>Beyond Expert Croquet Tactics</u>
Break	Running a break is making more than one or two hoops in a turn
B&T	Bob and Ted (as in Bob Kroeger and Teddy Prentiss)
c	Corner as in c1, c2, c3, and c4, clockwise from southwest
c.10	Croquet as played circa 1910
CA7	Our game, Contact After 7
Chase Theory	Chasing opponent to limit their ability to remove partner from hoop position
Chernobyl	Jawsing a ball in hoop 1 in order to threaten an attack upon entering the game

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[125] We want to thank Steve Mednick for suggesting that we add this Glossary.

Cleaning	Removing Dead when an Oppo Ball scores h(7) – one Back
COAC	Color Order AC: our advanced AC game
COD	Carry Over Deadness, the backbone of A6W
Critical Distance	Distance at which your roquet success is 50%
Croquet-Out	Sending a ball out of bounds in a croquet shot in order to join Partner with Spent and start a break
Danger-Ball	The ball that plays next
Deadness	The state of each ball that limits which balls they can roquet
Deadness Board	A way of keeping track of deadness
Deadness Theory	Incorporating deadness into tactics to maximize the benefits and minimize the risks
Dolly Rush	A rush where Striker is close to and un-angled from the rushee
Draw	Non-straight movement of either ball in a croquet-shot
EBR	Either Ball Rule, the backbone of AC
Escape-Ball	Ball used after a Peel Attempt to escape to the next Hoop.
FIXs	The foundation of our system of Bisques
Fulford, Robert	Words cannot describe… Best tactician in Croquet History, 5 times AC World Champion
GC	Golf Croquet
Guarding the Shot	Shoot to end a turn such that Oppo shooting and missing comes to you
Hoop	The things we go through in Croquet identified herein as h(i)
HP	Hoop, Peel – a faster way to peel than 2HP
Innings	Control of the game, belonging to the team that is live, joined, and able to dictate strategy
Last Deadness	Special Deadness for a Rover-Ball in A6W
Load and Hold	When 1st ball used after a hoop is made is different than last ball used to gain position

Locock, C. D.	Author of the 1910 classic book <u>Modern Croquet Tactics</u>
Negative Pull	Counter Intuitive movement of a croquet ball often during a long peel
Objective Distances	Dimensions of a Croquet court and distance between hoops
Oppo Ball	Opponent Ball
Osborn, Jack	Author of the books <u>Winning Croquet</u> and <u>Croquet: the Sport</u>
Out Game	Play in A6W by a ball of balls that have not made h(1)
Partner-Ball	The Partner of the Striker-Ball
PB-2S	Palm Beach 2-Step – common style of play in A6W that does not run breaks
Peeling	Putting a ball other than Striker through a hoop
Peg	The single pole in the center of a modern Croquet court
Pioneer Ball	Ball used to position Striker in break
Pivot Ball	2nd ball used in a 4-ball Break
Pivot Swap	Changing the Pivot Ball
Pull	Movement by a ball during a croquet shot usually toward the other ball in the shot
Reception Ball	1st ball used after making a hoop
Roll-Peel	Peeling with a roll-shot to a Standard Pioneer
Roquet	Striker hitting another ball to earn more shots
Roquet-Out	Sending a ball out of bounds in a rush-shot in order to join Partner with Spent and start a break
Rotation	A rule that calls for balls to be played in order: blue, red, black, yellow
Rush	Striker roqueting another ball and sending it in a particular direction or point on the lawn
Selman, Martin	Inventor of the Selman Method for Split Croquet shots
Set Shot	A commonly occurring split shot in break play

Side	**Intentionally hitting the Striker-Ball off center**
SIM	**Two single-ball shot used simulate a croquet-shot**
Spent-Ball	**The ball that played just before Striker**
Stettner, Larry	**Author of the groundbreaking book <u>Book of Puzzlers</u>.**
Striker-Ball	**The ball in play**
Swish Distance	**Desired distance on a hoop shot that does not hit either stanchion**
SIM	**two single ball shots used to SIMulate a standard Croquet shot**
Stake	**A6W name for a Peg**
Straight-Peel	**Peelee is the Pioneer-Ball and is peeled as Striker attempts the same hoop. Notation: S-h()**
Take-Off	**A Croquet Shot that does not involve a *second/multiple* hits**
Tice	**a ball placed to entice another to shoot at it**
Tollemache, Lord	**Author of the 1914 Book entitled <u>Croquet</u>**
Transit-Peel	**Peelee is the Pivot-Ball. Notation W-h()**
Trimmer, Pete	**Editor of the wonderful book <u>Beyond Expert Croquet Tactics</u>**
Wicket	**A6W name for a Hoop**
Wide Join	**Joining on the boundary 4-7y apart; close enough to hit, but tough for an attacker to get a rush**
WL	**Wicket Limit – 5 in our game of Advanced c.10**
Wylie, Keith	**Author of the iconic Book <u>Expert Croquet Tactics</u>**

APPENDIX: THOUGHTS ON THE SCIENCE OF CROQUET

Everything should be made as simple as possible, but no simpler.
Albert Einstein

Croquet is the only ball-and-stick sport where: (i) a Stick (the mallet) strikes one ball (the Striker-Ball) which causes it to hit another (the Croqueted-Ball). Then (ii) the Striker-Ball is brought (ball-in-hand) to and placed in contact with the Croqueted-Ball. Finally, (iii) the mallet is used again, to hit only the Striker-Ball with the objective of sending both balls to particular locations. As such:

Analysis of the game of croquet affords a fascinating exercise
in the application of the elementary laws of impact and motion.
Calladine and Heyman, 1962.

In this appendix we provide practical solutions to issues we face out on the lawn and, in doing so, probe six topics where our answers vary from being obvious to being controversial: [126]

1.. Objective and Critical Distances
2.. Collisions and Angles
3.. Croquet Shots
4.. Peeling, Pull, Side, and Negative Pull
5.. Take-Offs
6.. Croquet Training Aids

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[126] We admit that we are not qualified to provide completely rigorous answers to all of the questions we pose. This may be an advantage because awareness of our limitations caused us to probe and question under the watchful eye of a long-suffering friend and physicist, Rod Cross, Physics Department, University of Sydney, Sydney, NSW, Australia. *Rod doesn't play Croquet, but that too is probably an advantage!*

1.. Objective and Critical Distances

Many who play Croquet are unaware of the precise distances involved or how they perform at them. We believe that knowing objective distances informs the two questions we face each time we approach a croquet ball: (i) What shot should be hit, and (ii) Is it likely to be successful?

   Objective Distances: Distances can be measured by walking them off. But doing this each turn is tedious and time consuming. Distances can also be computed on a diagram of a Croquet court, with the aid of a protractor, a ruler, and a set of trigonometry tables. Here we have done that work for you by providing figures and tables of easily observed standard distances between known landmarks on the lawn. We *suggest that these be memorized*. Then they can be added together quickly during play to provide very good estimates of non-standard distances.
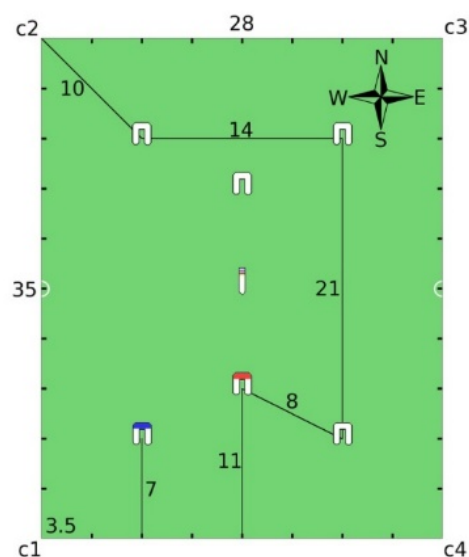
A-1
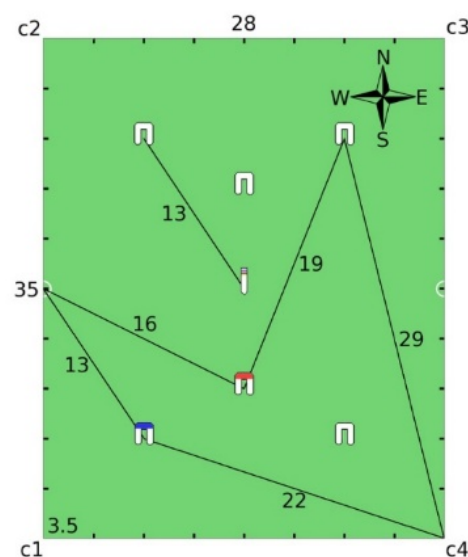
A-2

Useful distances are shown in Figures A-1 and A-2 above. The distances are presented in yards, rounded to whole integers – the way we remember them – along with one decimal point details (for the obsessed).[127]

Let's start with the big picture: The rule books say that the outer dimensions of a standard Croquet lawn are 84' x 105'. This is one way to remember it, but we find it easier to think in yards and then in *units* of 7 yards (21'). Done this way, a croquet court is 4 x 5 of these units, and the inner rectangle formed by the four corner wickets, the *box*, is 2 x 3. Seven yards is also the distance from the boundaries to the 4 outer hoops, and ½ of 7 yards, 3.5 yards, is the vertical distance from the outer hoops to the inner ones, [i.e., h(5) is 3.5 yards north of h(4), etc.

12 distances are shown in the two charts presented above. These, along with an assumption as the direction of *Croquet-North*, provide a basic vocabulary for any Croquet game.

	Distance From	Example Shown	Distance (in yards)
1	hash mark to hash mark	c1 to 1st hash mark	3.5
2	boundary to the nearest outer hoop	South boundary to h(1)	7.0
3	corners to the nearest corner hoop	c2 to h(2)	9.9
4	boundary to the nearest center hoop	South boundary to h(5)	10.5
5	corner to corner – east to west	c2 to c3	28.0
6	corner to corner – south to north	c1 to c2	35.0
7	corner to distant horizontal hoop	c4 to h(1)	22.1
8	corner to distant vertical hoop	c4 to h(3)	28.9
9	corner hoops to the peg	h(2) to the peg	12.6
10	center hoops to the farthest outer hoops	h(12) to h(3)	18.8
11	penalty spots to the nearest outer hoops	Western spot to h(8)	12.6
12	penalty spots to the center hoops	Western spot to h(5)	15.7

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[127] We used these same figures in our book Variations on Golf Croquet.

<u>Critical Distances</u>: Knowing the distance of a shot is one thing; Knowing your likelihood of success at it is quite another. Here the croquet world talks in terms of *Critical Distance* – CD – the distance at which you roquet a ball on average 50% of the time.

Quick Quiz: *You are for h(3) and are three ball dead. Your ball is situated on the boundary directly north of h(3). If you choose to shoot the hoop, what success rate should you expect?*

In the tables that follow, we summarize data from Robert Fulford (Nottingham List, Jan 1, 2020) where he relates Critical Distances to clearance percentages at different lengths.

CD	9	12	15	18
4 yards	87.1%	95.7	98.9	99.8
6	68.8	82.3	90.8	95.7
8	55.2	68.8	79.4	87.1
10	45.6	58.2	68.8	77.5
12	38.7	50.0	60.1	68.8
16	29.6	38.7	47.3	68.8
24	20.0	26.4	32.7	38.7

We suggest that the most important aspect of shot selection is being realistic!

2.. Collisions and Angles

Over the last 80 years, there have been three major contributions to our understanding of collisions in Croquet [128] :

C.R. Calladine and Jaques Heyman, <u>The Mechanics of the Game of Croquet</u>, *Engineering, 29 June 1962, pp 861-863,* (The *C&H* Model) came first and are the source of the quote that starts this Appendix. Their work is done in a model that assumes a coefficient of restitution of unity and no angular momentum. While simple, this model produces some useful insights.

Approximately 50 years later, Don Gugan 2009, <u>The Physics of Croquet Strokes: Analysis of the CA high-speed DVD</u>, <u>www.oxfordcroquet.com/tech</u>, expands the theoretical analysis of Calladine and Heyman, and more importantly, presents extensive supporting data obtained by analyzing Croquet Shots filmed at 8000 frames per second.

Then, Rod Cross, <u>The Physics of Croquet</u>, 2017 *Eur. J. Phys.* **38** 014001, carries the analysis further with both theory and data.

Each has its own nuances, but all would agree with the inferences discussed below, the most fundamental being that: *The entire sport of Croquet is built around double/multiple hits* which are technically illegal! C&H quote the laws of Croquet as they were written in 1962 (updated versions have not changed the conclusion):

... the striker makes a foul if he: 1. Push or pull his ball when in contact with another ball without first striking it audible and distinctly and 2. Push or pull his ball when not in contact with another ball, whether he first strike it audibly or not

And then conclude:

The object of the Law is clear. The striker is not allowed to hit his ball more than once, and gross pushing is disallowed. However, Association croquet is virtually unplayable unless a push croquet shot is permitted, and the Law attempts to give a semblance of respectability to what, in any other game, would be a patent foul.

With this *contradiction* as our starting point, we will now turn to some practical implications of the Mechanics of Croquet.

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[128] For ball games other than Croquet, there is the classic book by C. B. Daish, <u>The Physics of Ball Games</u>. The English University Press, 1972.

THE 90-DEGREE-RULE: <u>When two croquet balls collide in a rush or roquet, they will separate at (*virtually*) 90 degrees</u>.

The *90-Degree-Rule* was derived by (C&H). It applies to balls of equal size and weight, (i.e., for Coquet this means balls with diameters of 3-5/8", each weighing 1 lb.); it assumes a coefficient of restitution of unity, and it ignores angular momentum. The two parts of <u>Figure A-3</u> (below) are copied from the C&H paper and show the 90-Degree-Rule in action: In the part (a), one ball (*the Striker-Ball*) is moving at velocity v just as it is impacts another ball (*the Roqueted-Ball*) with the angle between the path of the first ball and the line connecting the centers of the two balls being equal to alpha degrees (where alpha can be between 0 and 90 degrees). Under these assumptions, C&H show in part (b) that the Striker-Ball continues on at velocity v*sin(alpha) while r will move away at v*cos (alpha) and that [alpha + beta] = 90 degree. This is the 90-Degree-Rule!
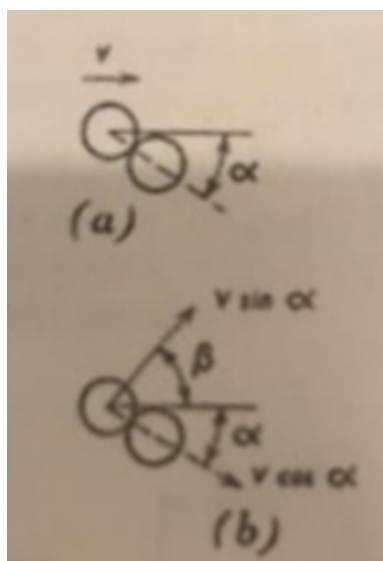
A-3

<u>**Alpha and the Percentage of Power going into each ball**</u>

The C&H model also provides useful information on the expected energy transfer to each ball during an impact. This gives guidance on the relative distances the two balls travel in rushes as a function of the angle alpha, as shown in the table below. It shows that

errors in impact angle cause non-linear deviations in distance, the most significant of which occurs at 45 degrees. This table helps explain why obtaining good cut rushes requires considerable skill and practice.

Alpha	% rushed ball	% striker	//	Alpha	% rushed ball	% strike
0	100	0	//	60	25	75
15	93	7	//	75	7	93
30	75	25	//	90	0	100
45	50	50	//			

Aiming a Cut Rush

The 90-Degree-Rule clarifies how Striker should aim a Cut-Rush. Consider Figure A-4 where the goal is to have r, the Striker-Ball, cut-rush u to the north-east along the line shown. For this to happen, r *must impact u at the southwestern point of this line*. Ask most newcomers where they should aim r and they will propose aiming to the desired impact point, Figure A-5. However, because u is a sphere and not just a point, r will impact u south and east of the desired point and the rush will not receive the desired cut, Figure A-6 *Players think that they did not shoot r along the desired line when in fact, as we show below, the mechanics of their swing was not the issue – they did not choose the correct aim point!*

A-4   A-5   A-6   A-7   A-8
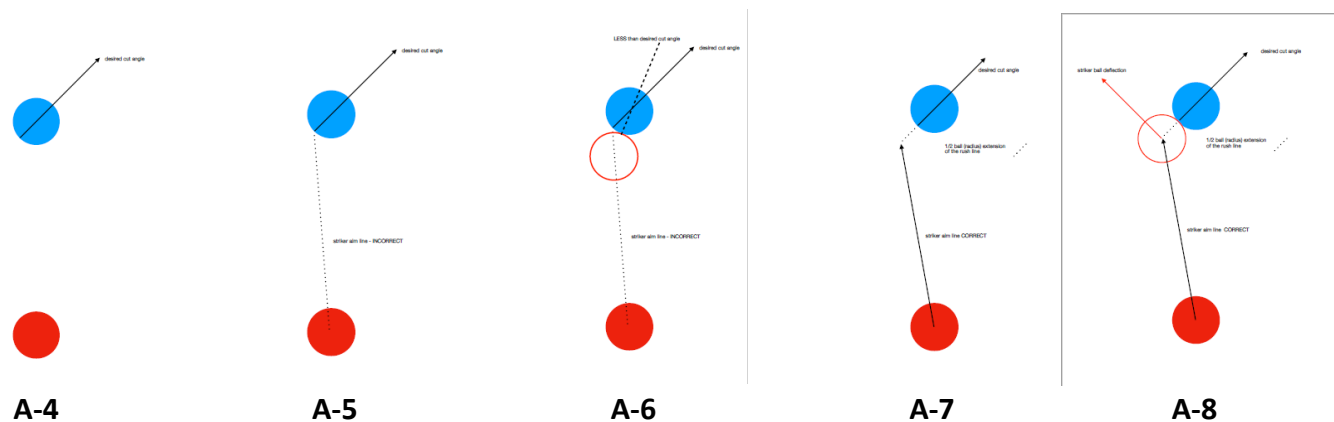
Now jump ahead one figure to <u>Figure A-8</u>. Here we placed r in contact with u at the desired impact point. To have r travel to this point requires aiming r at an extension of the desired line for u that is ½ a ball (1 and 13/16 inches) away from the target. *This is the ½ ball rule* [129] as shown in <u>Figure A-7</u> [130].

The Weight of the *Stick* Creates Double/Extended hits in Croquet Shots

<u>Figure A-8</u> above can be used to make another point: Instead of a collision, imagine r and u as balls in contact for a Croquet Shot with Striker using a 1 lb. mallet. In this special case (C&H) show that, once again, the two balls (r and u) will separate at 90 degrees. In fact, if we were all forced to use 1 lb. mallets (and did not apply any *push* to Croquet Shots, then all Croquet Shots would be 90-degree shots. *No other angles would be possible*! Clearly Croquet involves Croquet Shots of less than 90 degrees. (C&H) account for this by giving the stick a mass that is k times greater than the ball, with much of their analysis being done at k=3, a 3 lb. mallet, which remains a good approximation of the norm. (C&H) identify k as being the weight of the mallet augmented by weight supplied by Striker's arm and, more importantly, augmented by how much Striker pushes the ball.

While the mass of the mallet impacts single-ball shots in predictable ways, it is when C&H turn to Croquet Shots that things get interesting! For any k greater than one (and for k's *approximately=3* that we employ on the lawn) for Straight-Croquet Shots, (*C&H, in the context of their model*) prove that there is a double hit – the mallets hits the Striker-Ball which transfers virtually all of its energy to the object ball (the Croquet-Ball) which is sent on its merry way. But in the transfer the Striker-Ball virtually stops. Then, by virtue of its greater mass, the mallet hits the Striker-Ball again – the *notorious* double hit. That is, some of the energy that would have gone into the finish of the mallet, is diverted to a second hit of the Striker-Ball. Gugan writes about:

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[129] You can mark your mallet head with a line at the half-ball point (1 and 13/16") just as you might for the 9" A6W mark-in.

You might wonder why experienced players might believe they are aiming as in <u>Figure A-5</u> but appear to get the right result – the right amount of cut. This suggests that what they do and what they think they do are two different things. That is, their aim point at set-up is different than where they swing, indicating a mid-swing correction. We show this to people. And yet some feel uncomfortable with the new aim point *and can even miss the rush if their programmed swing adjustment kicks in*! It takes time to unlearn habits like this. Getting it right at the start saves time and might reduce yips…

[130] We want to thank Russ Dilley for helping with these figures.

(The) crucial millisecond or so around the time of impact: ... concluding that: two-ball Croquet Shots are double taps, sometimes developing into long extended contacts or multiple taps as the mallet follows closely behind the striker's ball. The first contact time is <u>always</u> close to a millisecond, with the second impact coming very closely afterwards, depending on the strength of the shot; this is especially true for the roll shots shown on the DVD... [131]

Further evidence of double/multiple taps can be seen in the Series C Videos produced by the CA: CA-series-c which shows the point of impact for various straight croquet shot from stop to full shots filmed at 8000 frames per second.

Defining a Take-Off

The possibility of double, or extended, hits affords an appropriate definition of a take-off that is particular to each person: it is a Croquet Shot that in *your* hands and with *your* mallet does not involve a double hit!

You might be wondering, *so what, who cares*? Well, there is an important difference between a Take-Off and a double-hit Croquet Shot that relates to the force required to send the two balls desired distances in desired directions: In a Take-Off, the force needed is, *basically,* the sum of the separate forces needed to send the balls off individually with single-ball shots. However, in a double-hit Croquet Shot, the force needed is, *basically*, the same as that required to send the single croquet ball to its destination, with the Striker-Ball gaining its distance from the second hit by the mallet.

These observations help to explain why many Croquet players *under-hit* thick Take-Offs and *over-hit* Croquet Shots.

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[131] Gugan goes on to say, vis a vis roll shots, ... *the control of the roll appears to be by fine adjustment of the follow through, no doubt purely instinctive, but hard to reconcile with the requirement that the mallet be not accelerated through the stroke...*The DVDs that Gugan analyzed were only of Straight-Croquet Shots, but the analyses provided by Calladine and Heyman, and Cross extend the analysis, at least theoretically, to split-shots.

3.. Croquet Shots

Croquet Shots can be divided into two categories – *straight* and *split*. In the former, the balls start together and are sent *straight* along a single line but usually different distances, while in the latter, they start together but are sent, *split*, along two different lines.
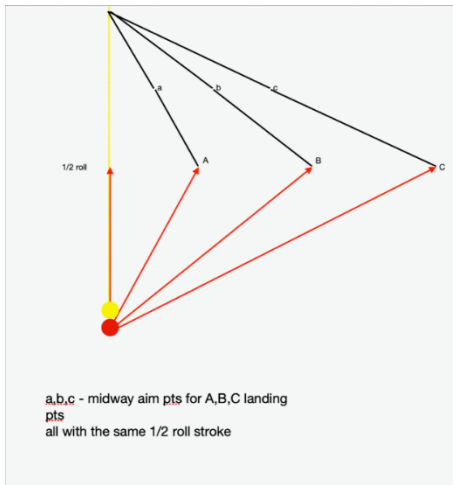
Straight Croquet Shots: Straight Croquet Shots are traditionally defined by the ratio of the distance Striker wants to send the Striker-Ball to the distance he wants to send the Croquet-Ball. With practice, most players can become relatively proficient (have repeatable shots) at standard ratios (¼, ½, ¾, and full) and at useful distances. There are many *videos* explaining how to do this. You will find that there are two underlying techniques – *hit* and *push* – and you will need to choose between them! *Both methods work and each has its proponents*. For the former we recommend the series of videos created by Chris Clarke. For the latter, we refer you to the videos created by Bob Kroeger.

Our contribution to the topic of Straight Croquet Shots can be seen in the initial few minutes of a video we made involving Steve Morgan and Matthew Essick on the mechanics of roll shots. It illustrates that the force needed to hit a Straight-Croquet Shot is *virtually* identical to that needed to hit a single ball to its desired location. This is consistent with the discussion of collisions – the Striker-Ball gets its distance from the second hit. This video also shows how you can get a good *feel* for the force needed to hit the 2-ball roll shot: Set-up in your roll stance (whichever one is of interest) and hit a single *back* ball (the desired distance of the front ball in the 2-ball shot. *This drill helps to conquer overhitting.*

Split Croquet Shots: In Split-Croquet Shots the balls start together but are sent, *split,* along two different lines. Now there are two considerations – the distances Striker wants the balls to travel and the desired angle of split. From this description it would seem that there are an infinite number of shots that need to be mastered and memorized. But we believe that most Split-Croquet Shots we encounter (*and are not necessarily familiar with!*) can be executed by rotating your body an appropriate amount (as defined below) and then hitting with the mechanics, but not the aim of a Straight-Croquet Shot that, by virtue of practice, you *own*. The procedure we recommend comes from Marty Selman, and hence our name for it, the *Selman Method.* Marty taught it to Bob Van Tassell who kindly taught it to us. We all believe this method to be extremely useful, but please remember, it is just an approximation.

The Selman Method: It involves three steps:

(i)   **Mid-Point Aiming**: Imagine a line connecting where you want the Striker and Croquet-Balls to end up. Mentally (or physically) *walk along that line* and identify the mid-point. This is where you will ultimately aim your mallet [132].

a,b,c - midway aim pts for A,B,C landing pts
all with the same 1/2 roll stroke

A-9

Consider Figure A-9, adjoining. It shows r about to take croquet on y, assuming both balls are near to h(1). If asked to hit a straight Croquet Shot sending y from h(1) to h(2) with Striker, r, stopping level with the peg you would surely call this is a straight ½ roll. The Selman System tells us that the points A, B, and C and every other point along the line perpendicular to the h(1)/h(2) line and through the peg can also be reached as a ½ roll if your mallet is aimed ½ way between the desired two ending points – aim points a, b, and c. This is shown in the 2nd half of the Video of Matthew Essick and Steve Morgan.

(ii)   **Determining Shot Type:** This is a 2-step process:

a.   Determine How Far the Croquet-Ball Should Travel. Often this distance can be approximated accurately using the distances you learned earlier. But, if in doubt walk it off! *Note, we do not need to measure how far we want the Striker-Ball to travel! This will happen automatically...*

---

[132] Russ Dilley made this figure. Theoretical *but impractical* refinements to mid-point aiming have been suggested. See Mid-Point Aiming by Nick Furse.

b. Determine the Distance to the Start of the *Perpendicular*: *Walk* (*either mentally or physically!*) along the line the Croquet-Ball will follow (the *Croquet Line*) – *ignoring pull* – until a point is reached where a perpendicular line can be drawn from that point to where the Striker-Ball is to go.

The result of dividing the distance from (b.) by the distance from (a.) is the ratio, or shot type (¼, ½, ¾, full, pass, etc.). It is legal to *lay your mallet on the ground and use the angle between the head and shaft to see the perpendicular (90 degree) line.*

(iii) **Hitting the Shot:** imagine hitting a Straight-Croquet Shot along the *Croquet Line* of the type determined above with the force needed to send the croquet ball to its target while the striker-Ball goes to the starting point of the perpendicular. Then rotate your body so the mallet aims to the Mid-Point and use the same mechanics to hit the desired split-shot! [133]

Approach Shots: There is a useful simplification (*attributable to Bob Van Tassell*) that works well if the distances travelled by two balls are not too great – as in a short, but angled, approach shot. The shot type is still determined with the perpendicular, but now the aim point *can be approximated* as ½ way along the perpendicular to the desired end point for the Striker-Ball, rather than ½ way between the end points for Striker and the Croqueted- Ball. Generally, this will cause a slight *error* having Striker travel a bit further than expected. But the difference is negligible and can give you a wider margin of error at the hoop shot.

Practicing Croquet Shots

Straight Croquet Shots: Our warm-up drills ended up with all of the balls at h(5). We recommend continuing by hitting Straight-Croquet Shots in the 14 yard area between h(5) and h(6), focusing on mastering whichever shots you are weak on from the set 1/4, 1/3, 1/2, 2/3, 3/4 and full roll shots. When this becomes routine, then expand the length of the shots to the 21 yard region [h(1) and h(2)]. Finally, for those looking for a work-out, expand the shots to incorporate the full north/south distances or as much as you can.
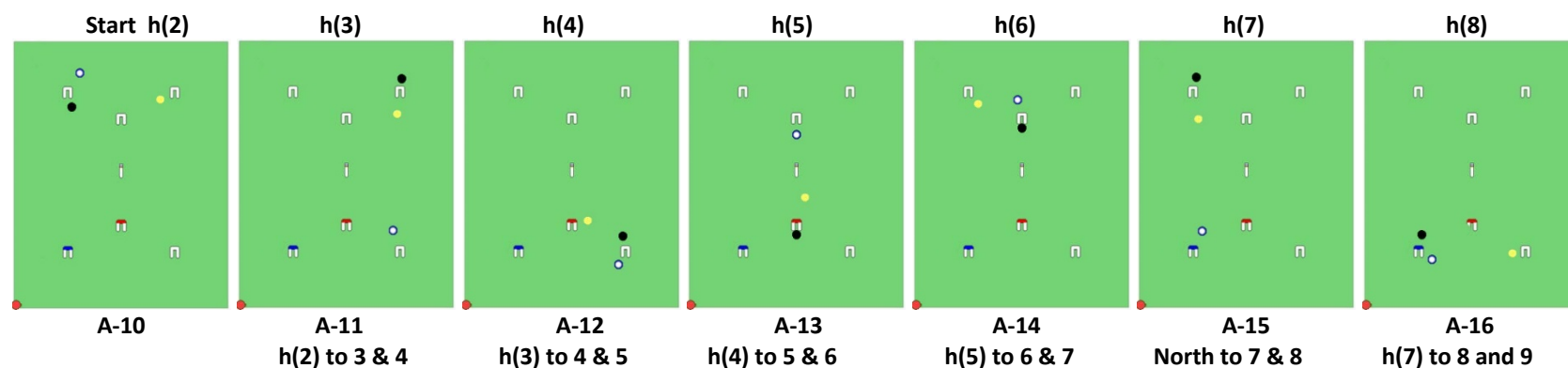
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[133] One interesting application (from AC) is when Striker has jawsed the 4-back peel A-h(3), made h(4), and rush-peeled to north of h(10). A successful pass roll sending Peelee to h(11) and striker to h(5) will facilitate the back-peel at h(11) . The angle and force needed for this shot (sometimes called the *Rothman Roll* because it is one of Ben's staples!) can be determined using the Selman Method as long it is executed as a croquet shot and not a take-off.
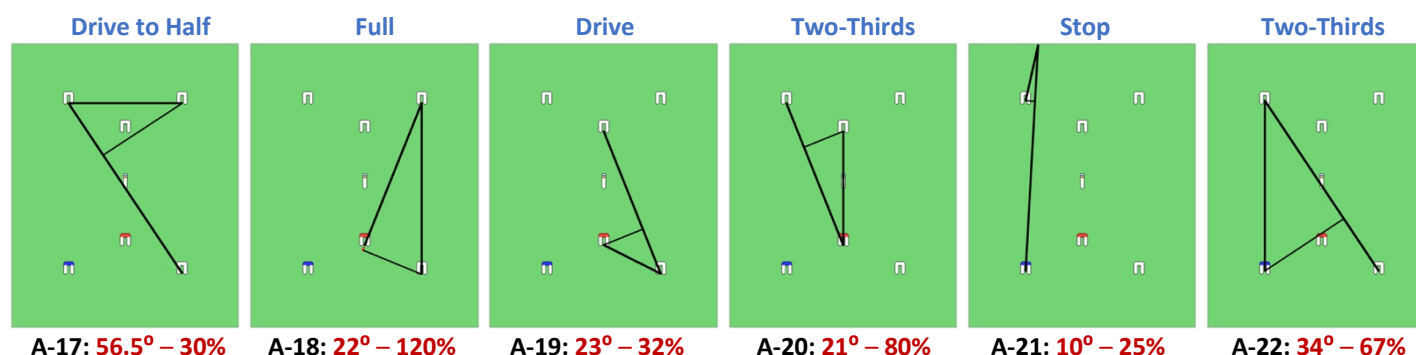
Split-Croquet Shots: The Selman Method can be tried between h(5) and h(6) and at longer distances as shown in the video. In a practice session, we recommend dragging two extra balls (2nd colors or stripes) around the lawn. This will allow you to play two shots each time you take Croquet: (i) Set the extra colors by the real balls and hit the calculated Straight-Croquet Shot along the actual croquet line and then (ii) Rotate your body and hit it again to create the Split-Croquet Shot. You will notice that these shots do not feel exactly the same. The difference reflects extra power being put into the croquet ball by virtue of the angle of the split.

<div align="center">

3-Ball Set Shots

Understanding the spatial relationships needed in the various croquet shots during the break is key to being successful …
The "set shots" for a three ball break … are critical to master if you are to be a successful break player.
(Op. Cit. B&T, page 26)

</div>

Figures A-10 to A-16 show k running a 3-Ball break from h(2) to h(8) using B&T's *3-Ball Set Shots*. The remaining wickets can be made using mirror images of the same shots. Thanks to B&T, whole generations of instructors and players have grown up memorizing, practicing, and using these. Here is a modernized analysis:

Start h(2)	h(3)	h(4)	h(5)	h(6)	h(7)	h(8)
A-10	A-11	A-12	A-13	A-14	A-15	A-16
	h(2) to 3 & 4	h(3) to 4 & 5	h(4) to 5 & 6	h(5) to 6 & 7	North to 7 & 8	h(7) to 8 and 9

Drive to Half	Full	Drive	Two-Thirds	Stop	Two-Thirds
A-17: $56.5^{\circ} - 30\%$	A-18: $22^{\circ} - 120\%$	A-19: $23^{\circ} - 32\%$	A-20: $21^{\circ} - 80\%$	A-21: $10^{\circ} - 25\%$	A-22: $34^{\circ} - 67\%$

Figures A-17 to A-22 use the Selman-Method to determine the *straight croquet shot equivalents* In each figure, there are three lines: one for the Striker-Ball, one for the Croquet-ball and a line perpendicular to the Croquet-ball's path connecting to the Striker-Ball's destination. Here we do the measurements – angles and distances – *from each hoop location*. This gives us *standard* shots, leaving the player to adjust based on the current and desired positions of the balls [134]. Above each figure (in blue) we show the B&T suggested shot, and below (in red) we show the angle and the calculated straight croquet shot equivalent ratio involved.

Mid-Angle Aiming

An alternative to Mid-Point Aiming is Mid-Angle Aiming. Here the received wisdom (especially in America!) is to divide the angle created by the desired paths of the two balls in half and aim your mallet Mid-Angle [135]. A simple example will establish the fallacy of this method especially for relatively wide-angle shots. Consider a series of croquet shots taken from the middle of the south boundary. In each case the croquet ball is *aimed* toward h(2) and the goal is to have the Striker-Ball proceed fully to h(1). What varies is how far toward h(2) we choose to send the croquet ball. Notice that, by construction, no matter how far the croquet ball is sent, the angle of the croquet shot remains constant. Give this a go. You will see that aiming Mid-Angle works best when the two balls travel the same distance (here approximately 10 yards). Otherwise, the results understate/overstate the needed angle when Striker is to travel 10 yards but the croquet ball is to travel a shorter/longer distance – when the angle is measured relative to a line perpendicular to the south boundary to h(6). These errors are diminished by reverting to Mid-Point Aiming.

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[134] B&T discuss two other plays from h(6): sending the h(6) reception ball directly north of h(6) or sending it toward h(3).

[135] Proponents are taught to join the palms of their hands, open their fingers to create the desired angle, and then close their hands to point mid-angle.

4.. Peeling, Pull, Side, and Negative Pull

... I propose to say nothing about the mechanics of pull. It is a difficult and controversial subject.
(Op. Cit., Wylie, page 10)

Rod Cross, in a 2017 private communication, provided an explanation of pull in Peeling using <u>Figure A-23</u>:
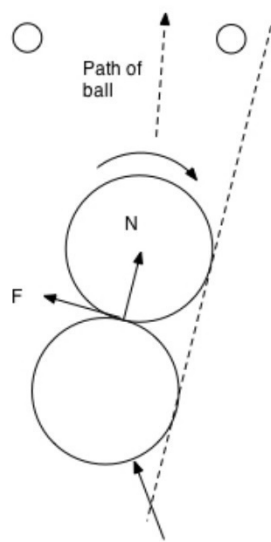
A-23

<u>What causes pull in a Croquet Shot/peel?</u> "*There are two forces on the croquet ball, labelled N and F in the figure below. N is the normal reaction force acting along the line between the ball centers. If that was the only force, the ball would travel in that direction and there would be no spin. But the back ball slides across the front ball and exerts a friction force F to the left, parallel to the two surfaces where they are touching. The friction force does two things. It causes the front ball to rotate clockwise, and it pushes the front ball to the left. So the path of the ball is not parallel to N. It is a bit to the left.*

<u>Does the rotation cause the ball to go to the right and it is then overwhelmed by the second force to the left?</u> *Rotation on its own would have very little effect in changing the path of the ball or in making it travel in a curved path. I can't say zero effect, because there IS a small effect in billiards and also in curling (on ice). The main effect is due to the friction force (F) which pushes the front ball at right angles to the large normal force (N). Since F is smaller than N, the ball moves slightly in the direction of F but mainly in the direction of N.*

<u>Aiming Peels</u>

For many accomplished players, *but not all* [136], Peeling is surrounded by a ritual – you take off your hat, lay your body and head on the ground, and look along the edge of the two balls to see how much pull your set-up is calling for. That is, you imagine a line

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[136] Robert Fulford observes/determines the amount of pull from the playing side of the peeling hoop while remaining standing!

formed by the edges of the balls and see how much of the balls, if hit straight along this line, would overlap one of the stanchions. This may be more or less pull than you want. If so, then you can adjust the Striker-Ball until you get the desired amount, *get up, dust off, replace your hat, and hit the shot*!

Here is another way to assess the amount of pull: Lay the shaft of your mallet along the edge of the balls on the playing side of the Peeling hoop. Then visualize the relationship between the extension of the line formed by your shaft and the *projection of the stanchion in question as a line onto the ground*. To do this, go to the non-playing side of the hoop and position yourself such that the two lines appear to be parallel. The distance between the two lines is a good estimate for how much pull has been set up for.

For example, in <u>Figures A-24</u> to <u>A-27</u> below u, is set-up to Peel k. We substituted a 6 ft length of pipe for a mallet to see how much pull we are setting up for. <u>Figures A-24</u> to <u>A-26</u> assume that we are planning a straight-Peel involving no pull. In <u>Figure A-24</u>, the camera is positioned such that (from the non-playing side) the projection of the left stanchion onto the ground is parallel, and in fact overlaps, with the pipe. This configuration suggests no pull will occur. In <u>Figures A-25</u> and <u>A-26</u>, the camera is *intentionally misplaced*. *To produce a reliable result would require the observer to move right or left until <u>Figure A-24</u> reappears.*

| A-24 | A-25 | A-26 | A-27 |

Finally, <u>Figure A-27</u>, We have moved the balls seeking about 3" of pull. That this is what we are setting up for is shown by the gap between the parallel lines represented by the pole and the stanchion.

On the Mystery of Negative Pull

This is perhaps a good time to mention the fact that very angled split-roll Peel attempts often travel near straight or even move in the opposite direction to the expected pull. If you are not familiar with this phenomenon you should practice some big split-roll Peels and hopefully you will observe it. (Robert Fulford, The Sextuple Peel, <u>BECT</u> page 81. 2019)

It may be possible to reduce pull or even generate Negative Pull by combining *Side* and *Bray Slice* – with a bit of *Face Rotation*.

The oldest reference to Side we find is from Tollemache. In <u>Figures A-28</u>, his Lordship provides a diagram for Side and exhorts us to use it when Peeling, while discussing the Penult Peel as his example:
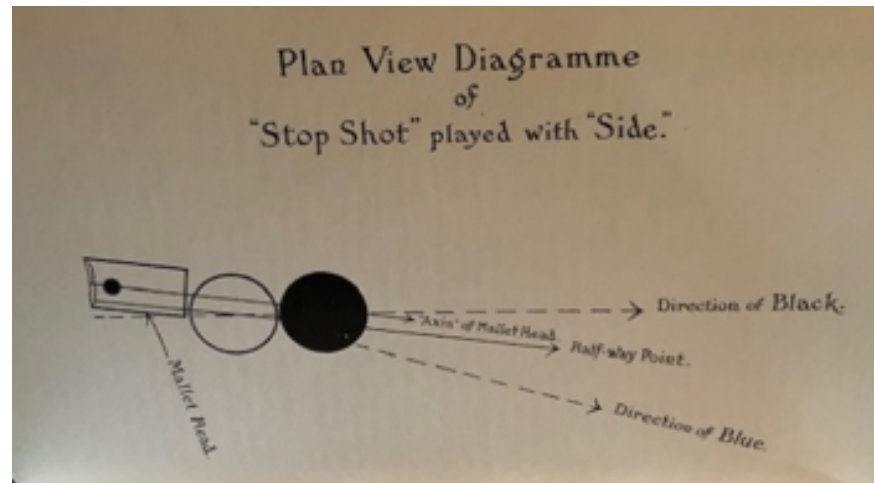
A-28

<u>Side</u>: ... First aim the mallet dead true, then move it about an inch or so to the side, but parallel to the old line. You will then find that you are aiming practically full on the "Object" ball. Your aim should be made as if you were actually going to hit the Object ball practically full with the face of the mallet.

Side in Peeling: ... If allowance is made for "pull" by aiming the Pilot [137] too much to the right or left, as the case may be, it is obviously an absolute fluke, if you happen to allow exactly the right amount; since it is impossible to tell how much you will "pull" for any given shot. If, on the other hand, you learn to do the shot correctly, you KNOW that the Pilot will go straight to the point aimed at. I always play this shot myself using side. I hit the desired spot on my own ball with the edge of the mallet nearest to the ball to be Peeled. If I am going to Two-back myself, I use the left edge of the mallet; if to Three-Back the right edge of the mallet.
(Op. Cit., Tollemache, Picture from Page 12, and Text from Page 113)

In our hands, Side reduces pull, but does not generate Negative Pull. To get there we tried two additions:

Bray Slice: A stroke attributed to Roger Bray (England Test Team 1969) where the mallet is swung at an angle to the line of the intended ball travel. The face remains pointing along that line and hits the ball with a glancing blow. The usual use it is to run a close angled hoop without double tapping because the mallet goes out of the way of the ball.

So here is the proposed method: (i) Set up for a Peel aiming if there were no pull; (ii) Make the Tollemache Side adjustment; (iii) Rotate the face of the mallet slightly clockwise/(counter-clockwise) depending on whether Side moved you left or right; and (iv) Swing the mallet on the swing line that existed *before rotating* the face – creating Bray Slice.

... I haven't experimented with the methods you are suggesting, though sounds like possibly you are swapping the ability to gauge pull for the ability to gauge the correct amount of side/sweep action.
[E-mail from Fulford, (11/14/2021)].

Rob's concerns are of course valid. This method may turn out to be nothing more than a curiosity that is more trouble than it is worth. That said, if it can generate Negative Pull, then at least it can further the understanding of this puzzling phenomenon.

To witness Negative Pull: Follow the method described above but set up for a full or pass-roll. And swing. You should observe Negative Pull. While you may want to try the 3-Back Peel going to 1-Back, it is not necessary to use that much force to prove the point. We can generate Negative Pull on the carpet in our studies aiming "Peelee" at a chair leg maybe 5-7 feet away and having it miss/pull in the "wrong" direction. This suggests that Negative Pull may be the result of *very angled split-roll Peel attempts* that inadvertently give rise to some combination of Side, Rotation, and Bray Slice.

---

[137] *Pilot Ball* is an old-fashioned term that was used to describe *the ball off of which a hoop is about to be made*. It does not have an entry in our *Croquet Jargon* reference, and we have chosen not to use it to avoid confusion with the three possible roles we assign to balls, Reception, Pivot and Pioneer.

5.. Take-Offs

Travel distances of the two balls in a Take-Off is controlled by *how hard* the shot is struck, and the mallet angle at impact. In section three above we suggested that the answer to *how hard* can be obtained by summing the two travel distances and *feeling* the force needed to produce enough backswing to hit a single ball that combined distance. Here we discuss *The Mallet Angle* –Our analysis is based on the empirical observation that it is *reasonable* to think in terms of the *ratios of distances* the two balls will travel in a take-off rather than the absolute distances*. Under this assumption, we provide a tool that is a surrogate for determining the desired ratio.* It involves a simple right triangle [138]:
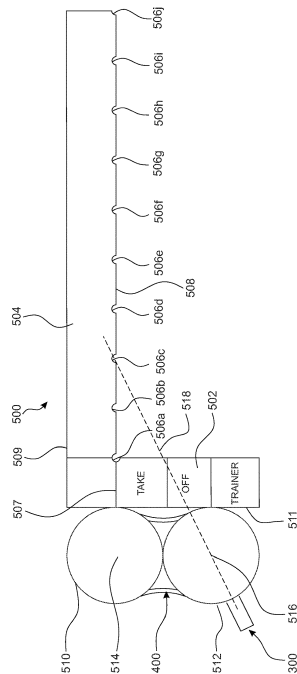
Figure 5

On the left we show a device *which could also be your mallet*. The two balls are touching and therefore the centers of the two balls are 2 - ½ Balls widths apart (i.e., two units of 1.8125" – the radius of a croquet ball). This distance (3.625" – the diameter of a croquet ball), always forms the base of our right triangle. The other leg of the 90 degree angle is formed by the device (your shaft) *assuming* it emanates from the center of the to-be-croqueted ball. In fact, the device, (your mallet head) rests on the top of the two balls forming a line that is parallel to the base of the relevant triangle.

Note carefully that we are not using a line through where the two balls touch(!) which is often used to set up for take-offs.

Now imagine hash-marks along your shaft, separated by ½-Ball units. Finally, the actual Take-off will be executed by aiming your mallet head along a line formed by two points, the center of the Striker-Ball and the chosen hash-mark.

---

[138] This drawing was taken from the patent discussed as the last item in this Appendix and assumes the Patents numbering and other info.

The table below presents in a useful set of take-off ratios. With practice you can adjust these to work for you and the balls you use. The figures below show how we have used use these ratios in actual play. In each case u is striker:

Notch #	alpha	Distance ratio
1	45.0	1 to 1
2	56.6	2 to 1
3	63.5	4 to 1
5	71.5	8 to 1
7	76.0	16 to 1
36"	<90	shake

1 to 1	4 to 1	3 to 1	2 to 3	3 to 2	2 to 3

A-29	A-30	A-31	A-32	A-33	A-34
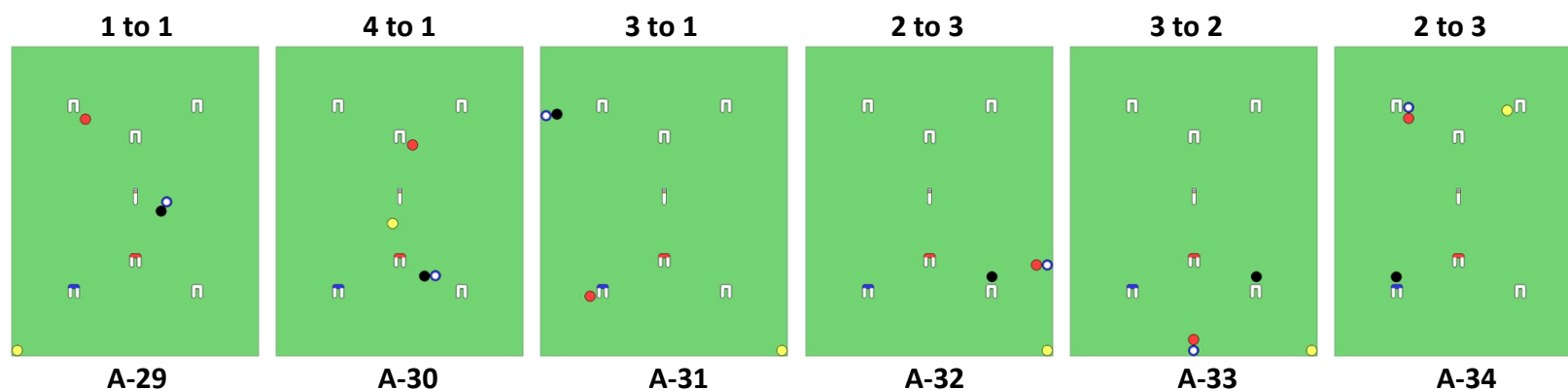
Figure A-29: *Continuing a 3-Ball Break* u for h(7) sending k to h(8) going to r at h(7)

Figure A-30: *Adjusting Peelee for a Straight Rover Peel* u for h(11) sending k to h(12) going to r at h(11)

Figure A-31: *Building the Break:* u for h(1) sending k to h(2) going to r at h(1)

Figure A-32: *Starting the delayed TP* u for h(4) sending r to h(5) going to y in c4

Figure A-33: *Starting the delayed TP* u for h(4) sending r to h(5) going to y in c4

Figure A-34: *Continuing a Sextuple* u for h(3) sending r to h(8) going to y at h(3)

6.. Croquet Training Aids

The shots you need in Croquet are a source of joy and frustration. Some days they work and some days they don't. Much time can be spent asking: (i) What was I doing when they worked? (ii) What did I change when they started to go wrong? And most *urgently*, (iii) what can I do to return to my successful ways? Sorry, we don't have a magic pill, but we have found a way to give you accurate feedback as you look for answers. We begin with a story – Many people who play Croquet previously played *regular* golf and know the struggles of learning to putt. These were summed up in an article quoting David Pelz, Golf's *Short Game Guru*. It was written for hedge fund investors, but it perfectly encapsulates most peoples' journeys learning Croquet...

... learning to putt well is difficult... learning from your mistakes requires immediate, accurate and reliable feedback. Golfers don't always get this and hence develop habits and behaviours that often make them less likely rather than more likely to sink their putts. He quotes a story from one of his students. Scientists were studying how pigeons learn to feed themselves from pellet dispensers. In one cage of pigeons, several pellet dispensers released one pellet every time a pigeon stepped on a release lever. Within two days every pigeon in the cage had learned how to feed itself: hit the lever and get a pellet.

In a second cage of pigeons there was the same number of pellet dispensers. However, these dispensers worked differently. Sometimes they released a pellet when the lever was touched. However, sometimes when the lever was touched nothing would happen and sometimes, they released pellets randomly. In time, some of the pigeons thought when they chirped a pellet was released, some pigeons thought it was when they lifted their wing, while others thought it was when they turned around in a circle. In two months none of the pigeons had learned to feed themselves and it was amusing to watch their strange behaviour, hoping to get a pellet. The Universe of Hedge Funds – The 1Minute Column, 7 August 2006.

A few years ago I set out to develop a set of Croquet Training Aids that would *provide instant feedback and would allow precise repetition of shots* that would make Pelz proud. Working with David Bent, the result is the attached patent. Sadly, covid and other considerations prevented us from proceeding to commercialization. We would like to license this patent (and will provide shop drawings, and prototypes) *at no cost* to anyone (or organization) who is willing commit the time and resources needed to make-up a meaningful number of sets of the Training Aids and engage in a sincere campaign to get them in the hands of interested individuals and clubs. Please contact me if you are interested – howard@sosin.net.

You can have access to the full patent on our shared google drive.

(12) **United States Patent**　　(10) **Patent No.:**　US 10,471,321 B2
Sosin et al.　　　　　　　　　　 (45) **Date of Patent:**　　Nov. 12, 2019

(54) **AIDS FOR CROQUET: PRACTICE TRAINING AIDS AND "ON-MALLET" PLAYING AIDS**

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(72) Inventors: **Howard Brian Sosin**, Palm Beach, FL (US); **David Thomas Bent**, Port St. Lucie, FL (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 272 days.

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(51) **Int. Cl.**
　A63B 67/00　　(2006.01)
　A63B 69/00　　(2006.01)
　A63B 59/60　　(2015.01)
　A63B 102/36　　(2015.01)
　A63B 71/06　　(2006.01)

(52) **U.S. Cl.**
　CPC *A63B 69/00* (2013.01); *A63B 59/60* (2015.10); *A63B 2071/0694* (2013.01); *A63B 2102/36* (2015.10); *A63B 2208/0204* (2013.01)

(58) **Field of Classification Search**
　CPC . A63B 69/00; A63B 59/60; A63B 2071/0694; A63B 2208/0204; A63B 2102/36
　USPC 473/150, 257, 260, 261, 265, 410, 420
　See application file for complete search history.

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(57)　　　　**ABSTRACT**

The technology provides practice aids for developing croquet skills and on-mallet playing aids for improving croquet play. The practice aids are used while practicing croquet and offer benefits such as immediate feedback and practice shot repeatability. The practice aids may include a swing trainer, a single ball shot trainer, a croquet shot maker, a cannon shot maker, a mallet alignment tool, a take-off trainer, a hoop maker, and a wiring trainer. The on-mallet playing aids are used while practicing and during croquet games since the rules of croquet allow a player to mark a mallet. The on-mallet playing aids offer benefits such as improved in-game shot setup and improved shot precision. The on-mallet playing aids may include a single ball shot playing facilitator, a take-off playing facilitator, and a croquet-shot playing facilitator. The practice aids and the on-mallet playing aids may offer different ways of achieving a same result.

6 Claims, 13 Drawing Sheets
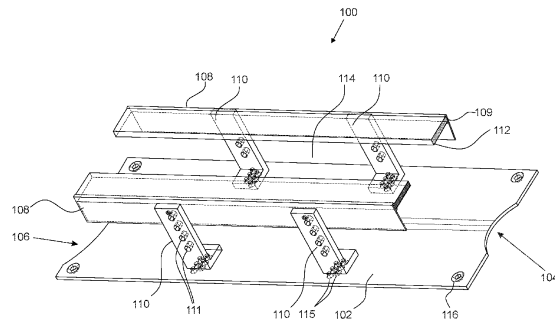
There are 8 main training aids described in the patent.

1. Swing Trainer
2. Single Ball Shot Trainer
3. Mallet Alignment Tool
4. Croquet Shot Maker
5. Cannon Shot Maker
6. Take-Off Trainer
7. Hoop Maker
8. Wiring Trainer

[Click here for full patent.](#)