

EXTRA INNINGS

designed by Jack Kavanagh

*with special appreciation
to the late Dr. Preston Davis, Jr.
who took time from his own
valuable work to assist a friend
with his project.*

*And to my father, John E. Kavanagh,
who has been the kind of a Dad
every son should have.*

MASTER CHART (Extra Base Hit Rating)

1:1:1 .0046	2:1:1 .1713	3:1:1 .3380	4:1:1 .5046	5:1:1 .6713	6:1:1 .8380
1:1:2 .0093	2:1:2 .1759	3:1:2 .3426	4:1:2 .5093	5:1:2 .6759	6:1:2 .8426
1:1:3 .0139	2:1:3 .1806	3:1:3 .3472	4:1:3 .5139	5:1:3 .6806	6:1:3 .8472
1:1:4 .0185	2:1:4 .1852	3:1:4 .3519	4:1:4 .5185	5:1:4 .6852	6:1:4 .8519
1:1:5 .0231	2:1:5 .1898	3:1:5 .3565	4:1:5 .5231	5:1:5 .6898	6:1:5 .8565
1:1:6 .0278	2:1:6 .1944	3:1:6 .3611	4:1:6 .5278	5:1:6 .6944	6:1:6 .8611
1:2:1 .0324	2:2:1 .1991	3:2:1 .3657	4:2:1 .5324	5:2:1 .6991	6:2:1 .8657
1:2:2 .0370	2:2:2 .2037	3:2:2 .3704	4:2:2 .5370	5:2:2 .7037	6:2:2 .8704
1:2:3 .0417	2:2:3 .2083	3:2:3 .3750	4:2:3 .5417	5:2:3 .7083	6:2:3 .8750
1:2:4 .0463	2:2:4 .2130	3:2:4 .3796	4:2:4 .5463	5:2:4 .7130	6:2:4 .8796
1:2:5 .0509	2:2:5 .2176	3:2:5 .3843	4:2:5 .5509	5:2:5 .7176	6:2:5 .8843
1:2:6 .0556	2:2:6 .2222	3:2:6 .3889	4:2:6 .5556	5:2:6 .7222	6:2:6 .8889
1:3:1 .0602	2:3:1 .2269	3:3:1 .3935	4:3:1 .5602	5:3:1 .7269	6:3:1 .8935
1:3:2 .0648	2:3:2 .2315	3:3:2 .3981	4:3:2 .5648	5:3:2 .7315	6:3:2 .8981
1:3:3 .0694	2:3:3 .2361	3:3:3 .4028	4:3:3 .5694	5:3:3 .7361	6:3:3 .9028
1:3:4 .0741	2:3:4 .2407	3:3:4 .4074	4:3:4 .5741	5:3:4 .7407	6:3:4 .9074
1:3:5 .0787	2:3:5 .2454	3:3:5 .4120	4:3:5 .5787	5:3:5 .7454	6:3:5 .9120
1:3:6 .0833	2:3:6 .2500	3:3:6 .4167	4:3:6 .5833	5:3:6 .7500	6:3:6 .9167
1:4:1 .0880	2:4:1 .2546	3:4:1 .4213	4:4:1 .5880	5:4:1 .7546	6:4:1 .9213
1:4:2 .0926	2:4:2 .2593	3:4:2 .4259	4:4:2 .5926	5:4:2 .7593	6:4:2 .9259
1:4:3 .0972	2:4:3 .2639	3:4:3 .4306	4:4:3 .5972	5:4:3 .7639	6:4:3 .9306
1:4:4 .1019	2:4:4 .2685	3:4:4 .4352	4:4:4 .6019	5:4:4 .7685	6:4:4 .9352
1:4:5 .1065	2:4:5 .2731	3:4:5 .4398	4:4:5 .6065	5:4:5 .7731	6:4:5 .9398
1:4:6 .1111	2:4:6 .2778	3:4:6 .4444	4:4:6 .6111	5:4:6 .7778	6:4:6 .9444
1:5:1 .1157	2:5:1 .2824	3:5:1 .4491	4:5:1 .6157	5:5:1 .7824	6:5:1 .9491
1:5:2 .1204	2:5:2 .2870	3:5:2 .4537	4:5:2 .6204	5:5:2 .7870	6:5:2 .9537
1:5:3 .1250	2:5:3 .2917	3:5:3 .4583	4:5:3 .6250	5:5:3 .7917	6:5:3 .9583
1:5:4 .1296	2:5:4 .2963	3:5:4 .4630	4:5:4 .6296	5:5:4 .7963	6:5:4 .9630
1:5:5 .1343	2:5:5 .3009	3:5:5 .4676	4:5:5 .6343	5:5:5 .8009	6:5:5 .9676
1:5:6 .1389	2:5:6 .3056	3:5:6 .4722	4:5:6 .6389	5:5:6 .8056	6:5:6 .9722
1:6:1 .1435	2:6:1 .3102	3:6:1 .4769	4:6:1 .6435	5:6:1 .8102	6:6:1 .9769
1:6:2 .1481	2:6:2 .3148	3:6:2 .4815	4:6:2 .6481	5:6:2 .8148	6:6:2 .9815
1:6:3 .1528	2:6:3 .3194	3:6:3 .4861	4:6:3 .6528	5:6:3 .8194	6:6:3 .9861
1:6:4 .1574	2:6:4 .3241	3:6:4 .4907	4:6:4 .6574	5:6:4 .8241	6:6:4 .9907
1:6:5 .1620	2:6:5 .3287	3:6:5 .4954	4:6:5 .6620	5:6:5 .8287	6:6:5 .9954
1:6:6 .1667	2:6:6 .3333	3:6:6 .5000	4:6:6 .6667	5:6:6 .8333	6:6:6 1.0000

THE GROUND RULES

Let's all gather at home plate and make sure we all understand the game we are about to play.

"Extra Innings" suggested itself as a title for this form of table baseball because it is a means to extend the fun and excitement of actual baseball. It is a way to have today's players duplicate their diamond feats; it is a means by which the players of the past can recreate their skills forever.

"Extra Innings" gets its results by combining the precision of mathematics with the random rolling of dice to provide the excitement of a game. Baseball itself has been described as a "game of percentages." "Extra Innings" is also a game of percentages.

To achieve as close to total realism as is possible with a table game, "Extra Innings" combines exact computations with a reasoned approach to bring about the logical result in all situations.

In undertaking this game it is important to know that it is designed for play on various levels of complexity. Interest in the concept of table baseball and the promise of realistic competition attracts the interests of a wide range of people.

As is true with many hobbies, stamp and coin collecting, ham radio operation, model railroading, etc., most people start in the early teens and many sustain this hobby the rest of their lives. Many leave the hobby temporarily during college or service years and those early years of being married and establishing a career and then return to it.

"Extra Innings" was devised to give its players a complete game now and the knowledge with which they could extend the play of the game in the years to come or apply to any level of competition which appealed to them.

While the game includes all contemporary teams and a generous supply of teams and players from the past, the owner of "Extra Innings" also has, in this book, the information from which to structure any team, or combination of players, from any statistics which include the needed data.

"THE BIG SECRET"

All table games, whether sports related or not, are a mixture of chance and probability. Some achieve this with dice, some with spinners, some with cards, some with a combination of "activators" and then refer you to charts or instructions.

The number of dice combinations, cards used, spaces on the spinner card, etc. offer the chances. These are then apportioned according to likelihood of some action taking place.

The more sophisticated the game the more exacting is the creating of the possibilities and their assignment.

Most games hide these factors in codes. "Extra Innings" does not.

It will help you understand the explanation of the method of "Extra Innings" if you look at the "Master Chart" (opposite page).

The "Master Chart" is simply a computer print-out of all the decimal equivalents possible from three dice, arranged in sequence, so that they read 1-1-1 through 6-6-6. (The dice with "Extra Innings" are always arranged red, white and green for reading so that these combinations remain constant.) There are 216 combinations possible (6 x 6 x 6).

The quickest way to grasp how this chart is used to establish the percentage of something taking place, is to understand that if you assign all dice combinations from the start of the chart 1-1-1 down to 2-5-5, you have set up .3009 (30%) of the possible combinations. (As a batting average we'd express that as .301.)

If you want to create a ".300 hitter" you give him a base hit every time he rolls between 1-1-1 and 2-5-5 (anything higher being a put out.)

"Extra Innings" takes this simple formula into rather complex expressions to obtain realistic results. But the basic premise is really very simple and is the basis for the authentic results obtained.

We'll discuss how this approach is applied to obtain realistic hitting, pitching, fielding and strategy moves as we go along.

THREE LEVELS OF PLAY

One difficulty in presenting a game which can range from a very simple form to a highly complicated one, is knowing the ability of the person who will play the game and the variation of the game which will be most satisfactory. You can arbitrarily establish an assumed level of competence, usually too high for the novice and too low for the sophisticated player. Or, as we have done, present the game on three levels and let the player either take his choice or advance from one level to the next.

We have designed the game at these levels: Basic, Intermediate, Pro-Level.

The Basic Level deals with realism only in terms of the batter's hitting average and extra base power. In this form all pitchers are equal. Strategy is optional. Base stealing, sacrifices, etc. can be added to play as the player at the Basic Level absorbs the game. The Basic Level is aimed at the younger player, particularly the one whose technical knowledge of baseball itself is still limited. No one who takes up "Extra Innings" is assumed to remain at this level very long. The game itself teaches strategy to the player and a maturing mind is more able to make the adjustments to the more complex chart interpretations.

The Intermediate Level provides realism in terms of hitting and pitching. Base running is also introduced. All Strategy Charts are used. When we reach that part of the book you will see that all pitchers are divided into five grades (related to their earned run averages). The better grade of pitcher also has other advantages, the lesser grade has disadvantages. Many players will find this level of competition provides all the realism and excitement they require.

The "Pro-Level". For players who want the maximum of realism, we provide Defensive Ratings and an ERA Adjustment Chart. This requires of the player of the game further effort. Many welcome this added challenge and the results obtained.

The ERA Adjustment Chart gives even greater shadings of ability among pitchers.

The Defensive Ratings turn some put outs into hits; convert some hits into put outs; create defensive differences among players of different abilities.

All of these differences will be discussed as we reach each section of play.

THE MECHANICS OF THE GAME

The First and Second Roll

Those who have played other table sports games may wonder why two rolls of the dice are necessary. (They may also wonder why other games, using a single action are limited in their satisfactions.)

"Extra Innings" strives for realism. From a percentage point of view, the surest place to obtain this is in batting average. After all, the batting average is, itself, a percentage (the number of hits made per times at bat.)

In our earlier reference to the use of the Master Chart and how you would obtain a .300 hitter, we showed this was done by working with hits and put outs. Once you start mixing in errors, hit batsmen, walks, balks, catcher's interference, and other factors, you lose the balance between the basic ingredients of a batting average (hits and outs.)

So, we have established "Extra Innings" as a two roll game. On the First Roll we handle everything except hits and outs (which result from the batter's action.) On the Second Roll we deal only with hits and outs. The Second Roll Chart contains only put outs. Depending upon the hitter's ability, a share of these can be converted into base hits.

The two rolls are considered necessary to provide a more perfect balance. Having two rolls is also an added action value when the game is played two-handed. The team "in the field" makes the first roll; the team "at bat" makes the second roll. This, obviously, gives both players action on every batter. In solitaire form, to continue the obvious, the player makes both rolls.

FIRST ROLL CHART

This chart is used at all levels of competition. The information has been put in chart form to make it available in the most concise form possible.

The player at the Basic Level should read only the middle column under ERA 3.01 - 4.00. This will give him an average experience in playing the game. While all data is expressed on the chart, the interpretations will be given in this text portion, to insure clarity and understanding.

Players of the game at the Intermediate and "Pro-Level" will use this chart in its entirety.

Lines 1-1 down to 1-5-5 are bases on balls. These have been divided so that the lower a pitcher's ERA the fewer walks he yields. (A low yield of walks is usually a component part of obtaining a low ERA.)

1-5-6 This is the Balk Line. The first column (ERA up to 2.50) is open. These pitchers are never charged with a balk. Pitchers with an ERA from 2.51 to 3.00 are charged with a balk only when the bases are loaded. Pitchers with an ERA from 3.01 to 4.00 are charged with a balk only with two or three men on base. Pitchers with an ERA of 4.01 and higher are charged with a balk regardless of the number of base runners.

1-6-1 Wild Pitch. Regardless of the grade of pitcher, this number on the first roll is always a wild pitch.

1-6-2 Wild Pitch for all grades of pitchers except ERA up to 2.50.

1-6-3 Wild Pitch for pitchers graded from 4.01 and up only.

1-6-4 Passed Ball. Valid only when pitchers with an ERA from 3.01 to 4.50 are pitching.

1-6-5 Pickoff Play. Applies to all grades of pitching up to 4.50.

1-6-6 Pickoff Play. Applies only to pitchers with ERA up to 2.50. In all pickoff plays with only one runner on base, the assist is given to the pitcher and the put out to the baseman (never the shortstop on pickoffs at second base.) When

more than one runner is on base, runner nearest home is picked off base by the catcher's throw. Assist to the catcher and put out by the baseman, with the short stop making the put out on plays at second.

2-1-1 thru 2-2-6 This is a base on balls to players who are rated "SP" (Special Player). These numbers are not used when playing at the Basic Level. An explanation of the "Special Player" designation will be given at the end of this section.

2-3-1 Hit Batter. Applies to all grades of pitching.

2-3-2 Batter out of game. (Is not used when playing at the Basic Level.) When this number is rolled and is followed, on the Second Roll by a strike out, the batter is ejected from the game for disputing the strike out call.

2-3-3 Interference by the catcher. (Is not used when playing at the Basic Level.) When this number is rolled and is followed, on the second roll by any sequence starting with a SIX on the red die, and a SIX on the white die (6-6-x) the Second Roll interpretation is cancelled and the batter given first base (and an error charged to the catcher.)

2-3-4 Triple Play. (Is not used when playing at the Basic Level.) When this number is rolled and the game situation has runners on first and second, or bases full, and no outs, and an infield double play is rolled on the Second Roll, a triple play is recorded. It is scored as a line drive to the infielder first handling the ball with him throwing the ball to the next infielder indicated and then on to the first base man with each runner doubled off base. The double play possibility must be within the range of effectiveness of the pitcher. As you'll learn, the grade of pitcher also controls the double play possibility.

2-3-5 thru 3-3-2 These numbers are unassigned. When rolled, simply pass on to the Second Roll.

3-3-3 Injury. When this number is followed, on the second roll, by a double or triple, the batter is injured, reaching base safely. He leaves the game. (Duration of games lost to injury described below).

3-3-4 thru 4-4-3 These numbers are unassigned. When rolled, simply pass on to the Second Roll.

4-4-4 Injury. When this number is followed, on the second roll, by a double or triple, the baseman is injured by the batter reaching his base safely. Short stop injured on play at second if batter right handed; second baseman if batter left handed.

4-4-5 thru 5-5-4 These numbers are unassigned. When rolled, simply pass on to the second roll.

5-5-5 Injury. When this number is followed, on the second roll, by a put out, the player making the put out is injured if: it is the first out of the inning and put out is made by an outfielder; if the second out of the inning and put out is made by an infielder; if the third out of the inning and put is made by pitcher or catcher. Does not apply to strike outs.

5-5-6 thru 6-5-5 These numbers are unassigned. When rolled, simply pass on to the second roll.

6-6-1 Error (behind all pitchers) for play between teams which played prior to 1950 only. If competition is between contemporary teams or teams which played since 1950, do not use this designation.

6-6-2 Error behind all pitchers.

6-6-3 Error behind all pitchers.

6-6-4 and 6-6-5 Error behind pitchers with ERA from 2.51 and higher.

6-6-6 Error behind pitchers with ERA from 4.01 and higher.

All of this information has been condensed onto the First Roll Chart. Use of this chart for play will speed the game, requiring consulting of these more detailed descriptions only occasionally.

ERRORS

As stated in the opening of this book, "Extra Innings" combines exact computations with a reasoned approach to bring about the logical result in all situations.

Errors are a considerable problem when devising a game which will play realistically. Not only must errors occur with the same frequency they are experienced in real play; if you are going to be realistic, they must be made in correct totals according to positions. The effect of errors on base runners must be considered. And, most importantly, when you are projecting the mathematics of batting averages, they must not upset the balance between hits and outs.

An error is a charged time at bat. Its effect on a hitter's batting average is to lower it. Games which lump errors in with hits deprive the batter of an opportunity to get a base hit on that time at bat.

In "Extra Innings" we retain that opportunity. When an error is designated on the First Roll, the description of that error is withheld until after the Second Roll. If, on the Second Roll the batter has made an "out," the error is applied and replaces the out.

However, if the batter has made a hit, we add the error onto the hit. This gives the batter his earned hit (resulting in truer averages) yet gives the suitable penalty to the defense.

To repeat: If, on the First Roll, an error is designated, Make the Second Roll. If the batter has made a hit, add the error onto the hit, advancing the batter and any other base runners according to the Error Designation Chart. If the batter has made an out, put him on base, advance runners, again, according to the Error Designation Chart.

ERROR DESIGNATION CHART

This can be used, optionally, at the Basic Level. If preferred by the player of the game at this level, all error designations can be used to simply put the batter on first base or add one base to his hit. If he has a single, move him to second on the error.

We strongly urge that, at the Basic Level, no importance be given to how an out is made (unless it effects the movement of base runners).

For the Intermediate Level use all of the information on the Error Designation Chart, except that bracketed under the "SD" heading. That is for the "Pro-Level" player and will be explained in the "Pro-Level" section.

The First Roll might indicate an error has been made. When this is so, make the Second Roll to determine if the error replaces an out or is added on to a hit.

Then roll the dice again, (this would be a third roll for the batter) read them in color sequence (red, white, green) and consult the Error Designation Chart.

When the batter has made a hit, use the left side of the chart. When he has made an out, use the right hand side of the chart. Defensive players will have different ranges of errors in either situation.

When the green die reads one through five, the error is a one-base error. The batter, if the error is replacing an out,

takes first base and any base runners advance one base. If the batter has made a hit, move him to the next base and move any base runners one base further than the hit would have moved them.

When the green die is a SIX, it is a two-base error. Same application as above, except that everyone moves two bases more instead of one base more.

You'll find additional information as a footnote to that chart.

The most unusual aspect of the charging of errors in "Extra Innings" is to vary the likelihood of an error being committed according to the quality of the pitching. This is one of those "reasoned" approaches used to obtain greater variety in levels of play.

The logic of having defenses play behind better pitchers is this: The injection of quality into any general situation raises the overall level of quality. A high handicap golfer will shoot a better score, while losing, when playing with a low handicap player. Put a pretty girl into the secretarial pool and the plain ones will type better. You have probably played sports extensively (or you wouldn't be interested in "Extra Innings" in the first place.) Think about it. We're sure you'll agree that you have responded with an effort "over your head" when challenged by a superior athlete.

There are no statistics to verify this, but having watched, scored or played in thousands of games, we observe that fewer errors are made behind the best pitchers.

For one thing, an outstanding pitcher forces the batter to hit more routine put outs. It is easier to handle a pop up or a routine ground ball than a line drive or a sizzling grass-cutter.

So, while we feel this technique of arranging the possibility of an error taking place requires explanation, we do not feel it need be justified to have more errors happen behind the less able pitchers. It's just a fact of life.

"SPECIAL PLAYERS"

The "SP" designation, drawing a base on balls on the First Roll Chart between 2-1-1 and 2-2-6, all grades of pitchers, is designed to provide a greater number of walks for those hitters who earn them in real play.

Any player who has drawn 100 or more walks a season is designated a "Special Player." Some, like an Eddie Stanky or an Eddie Yost "work the pitcher" for walks. Others, the feared sluggers like Ruth, Williams, Killebrew, Yastrzemski, etc., get a larger share of walks because pitchers work around them.

By providing these numbers on the First Roll Chart as walks to players designated "SP" we insure they will have this offensive value to their team. Also, in the case of the power hitters, we insure that their season's at bats will closely approximate reality.

"Extra Innings" is designed to bring about an average of 60 bases on balls for regular players in a 162 game schedule.

If a Harmon Killebrew, or a Ruth or any great home run hitter, had only 60 walks a season, he would come to bat many additional times. Since, as you'll learn when we

describe the Second Roll Chart, his opportunity for extra base hits is mathematically related to his total hits, he would use these added at bats to re-write the record books.

The rosters which come with the game have the SP designations on them for players who are in this category.

OTHER POINTS

The choice of 3-3-3, 4-4-4 and 5-5-5 among otherwise unassigned numbers was because these combinations are attention-getting and are a quick way of signaling that an injury is a potential play.

Also, the use of combinations beginning with 6-6 draws attention to the coming of an error.

When a number which is unassigned on the First Roll comes up, there is no action and you go on to the Second Roll.

When a number designates action which is not possible (a wild pitch with no one on base, for example) simply go on to the Second Roll.

THE SECOND ROLL CHART

All action on the second roll chart has been expressed in standard score keeper's short hand for put outs.

The primary purpose is to permit placing all instructions on one chart for quick reference.

For those unfamiliar with these designations, we'll explain. All defensive positions are referred to by a number. 1 pitcher; 2 catcher; 3 first baseman; 4 second baseman; 5 third baseman; 6 short stop; 7 left fielder; 8 center fielder; 9 right fielder.

6 - 3 means a ground out, short stop to first baseman; 8 means a fly out to the center fielder.

Other designations used on the Second Roll Chart include: K strike out; FO foul out; UA unassisted.

Other markings which have special interpretations are: * Sacrifice Fly; ** Unassisted double play.

You will also notice that some of the combinations are boxed and that some of the Ks are in parenthesis. These are for use at the Pro Level only and will be explained in that section of the book.

The fact that all 216 possible combinations are expressed as put outs will be explained when you learn how a share of these put outs are converted into base hits according to each hitter's ability.

All dice are read in the color sequence RED, WHITE, GREEN (this order never changes in any aspect of the game.) Therefore, the first designation on the chart 1-1-1 simply means a one on each dice, RED, WHITE and GREEN. The last designation, 6-6-6, completes the 216 possible combinations.

There are six principal columns on the Second Roll Chart. 1-1-1 down to 1-6-6; 2-1-1 down to 2-6-6; 3-1-1 down to 3-6-6; 4-1-1 down to 4-6-6; 5-1-1 down to 5-6-6; 6-1-1 down to 6-6-6.

The fifth column is divided into two sections. The first is used when there is no runner on first base. The second is used when there is a runner on first base. This also applies to the sixth column, with a third section added to cover infield double play situations. These will be explained in detail in the following line-by-line discussion of everything on the Second Roll Chart.

1-1-1 thru 2-5-2	Everything in this range is a strike out.
2-5-3 thru 2-6-4	All are fly outs to the second baseman. (K) applies at Pro-Level only.
2-6-5 and 2-6-6.	Both are fly outs to the short stop.
3-1-1	Out first baseman to the pitcher. ** If runner on first and less than two out, this is an unassisted double play by first baseman.
3-1-2	Out first baseman to pitcher.
3-1-3 thru 3-2-1	Out second baseman to first baseman. Any base runners advance one base (unless infield is playing in; if so, consult that chart.)
3-2-2 thru 3-2-6	Fly out to left field. * Sacrifice Fly Option can be used, consult that chart.
3-3-1 thru 3-3-5	Fly out to center field. * Sacrifice Fly Option can be used, consult that chart.
3-3-6 thru 3-4-6	Fly out to right field. * Sacrifice Fly Option can be used, consult that chart.
3-5-1 thru 3-6-3	Fly out to left field. * Sacrifice Fly Option can be used, consult that chart.
3-6-4 thru 3-6-6	Strike out.
4-1-1	Out first baseman to the pitcher. **If runner on first and less than two out, this is an unassisted double play by first baseman.
4-1-2 thru 4-2-5	Out second baseman to first baseman. Any base runners advance one base (unless infield is playing in; if so, consult that chart.)
4-2-6 and 4-3-1	Unassisted put out by first baseman. Any base runners advance one base (unless infield is playing in; if so, consult that chart.)
4-3-2 thru 4-5-3	Fly out to center field. * Sacrifice Fly Option can be used, consult that chart.
4-5-4 thru 4-6-6	Strike out.
5-1-1	Sec. A (no runner on first) Out first baseman to pitcher. Runners on second and/or third advance one base with less than two out. Sec. B (runner on first, less than two out only) Out pitcher to second baseman. Runners on second and/or third advance one base. With two out, out pitcher to first baseman.
5-1-2 thru 5-3-3	Sec. A (no runner on first) Out short stop to first baseman. No advance by a base runner on second. Runner on third scores. Sec. B (runner on first, less than two out) Runner forced at second

5-1-2	Runner forced at second, short stop to second baseman.	6-3-2 thru 6-3-5	Sec. A (no runner on first) Out shortstop to first baseman.
5-1-3	Runner forced at second, second baseman to short stop.	6-3-6	Foul out to catcher.
5-1-4	Runner forced at second, short stop to second baseman.	6-4-1 thru 6-4-6	Fly out to short stop.
5-1-5	Runner forced at second, first baseman to short stop.	6-5-1 and 6-5-2	Fly out to right field. * Sacrifice Fly Option can be used, consult that chart.
5-1-6	Runner forced at second, short stop to second baseman.	6-5-3 thru 6-5-6	Fly out to third baseman.
5-2-1 and 5-2-2	Runner forced at second, second baseman to short stop.	6-6-1 and 6-6-2	Foul out to third baseman.
5-2-3 thru 5-2-6	Runner forced at second, short stop to second baseman.	5-6-3 thru 6-6-6	Foul out to catcher.
5-3-1	Runner forced at second, third baseman to second baseman.	DOUBLE PLAYS: DP Section of Sixth Column.	
5-3-2	Runner forced at second, first baseman to short stop.	With runner on first base and less than two out.	
5-3-3	Runner forced at second, second baseman to short stop.	Pitcher ERA up to 2.50 ONLY.	
5-1-2 thru 5-3-3	NOTE: With two out batter is retired at first. All plays made short stop to first baseman.	6-1-1	Double play; pitcher to short stop to first.
5-3-4 thru 5-3-6	Foul out to first baseman.	6-1-2	Double play; third to second to first.
5-4-1 and 5-4-2	Fly out to right field.	6-1-3	Double play; second to short stop to first.
5-4-3 thru 5-6-6	Strike out.	6-1-4	Double play; short stop to second to first.
6-1-1 thru 6-3-1	Sec. A (no runner on first) Out third baseman to first baseman. No advance by any base runners.	6-1-5	Double play; first baseman to short stop to first baseman.
6-1-1	Sec. B (runner on first, less than two out only) Out pitcher to second baseman.	6-1-6	Double play; third to second to first.
6-1-2	Runner forced at second, first baseman to short stop.	Pitcher ERA up to 3.00 ONLY.	
6-1-3	Runner forced at second, second baseman to short stop.	6-2-1 and 6-2-2	Double play; second to short stop to first.
6-1-4	Runner forced at second, short stop to second baseman.	6-2-3 thru 6-2-6	Double play; short stop to second to first.
6-1-5 and 6-1-6	Runner forced at second, third baseman to second baseman.	All Pitchers	
6-2-1 and 6-2-2	Runner forced at second, first baseman to short stop.	6-3-1 thru 6-4-2	Double play; short stop to second to first.
6-2-3 thru 6-2-6	Runner forced at second, second baseman to short stop.	6-4-3 thru 6-4-6	Double play; second to short stop to first.
6-3-1 thru 6-3-4	Runner forced at second, short stop to second baseman.	6-5-1 and 6-5-2	Double play; first baseman to short stop to first baseman.
6-3-5 and 6-3-6	Runner forced at second, third baseman to second baseman.	6-5-3 thru 6-5-6	Double play; third to second to first.
		6-6-1 thru 6-6-6	NOTE: use only for teams from 1950 and later. If teams are from an earlier era, there is no double play on these six combinations.
		6-6-1 thru 6-6-3	Double play; short stop to second to first.
		6-6-4 and 6-6-5	Double play; second to short stop to first.
		6-6-6	Double play; third to second to first.
		COMMENT ON DOUBLE PLAYS	
		When there is a runner on first base and a combination starting with a SIX (on the RED die) is rolled on the second roll, it is a potential double play, when less than two out.	

Pitchers with an ERA up to 2.50 always get the double play.

Pitchers with an ERA from 2.51 to 3.00 always get the double play on combinations starting from 6-2-1. On combinations from 6-1-1 through 6-1-6 they only get the runner from first on a force out at second, the batter beating out the relay to first.

Pitchers with an ERA from 3.01 and up get the double play only on combinations from 6-3-1. On combinations from 6-1-1 through 6-2-6 they only get the runner from first on a force out at second, the batter beating the relay to first.

The double play range from 6-6-1 through 6-6-6 is not used when playing with teams from years earlier than 1950. (There were fewer double plays made prior to 1950).

Movement of base runners on double plays.

If the double play does not end the inning runners on second or third advance one base while the double play is being made.

If the double play "attempt" results only in a force out at second, runners from second and third advance one base.

COMMENT TO SECOND ROLL CHART

Many players will not keep detailed defensive records and the apportioning of put outs will have little meaning to them.

However, many put outs effect the movement of other base runners. This can be remembered simply: If a base runner on second or third is not forced, he moves to the next base on any ground ball "hit behind him" to the first or second baseman. He holds his base on any ground ball "hit in front of him" - to the short stop, third baseman or pitcher if the runner is on second; to the third baseman and pitcher if the runner is on third.

As with the description of the First Roll Chart, it is expected that the player of "Extra Innings" will have no difficulty in using only the chart for the second roll and will refer to these line-by-line descriptions only for occasional clarification.

On combinations 3-1-1 through 3-2-1 and 4-1-1 through 4-3-1, all base runners, including a runner on first, advance one base while the batter is being retired at first base. (If the infield has been played shallow, consult that chart).

BATTING FOR AVERAGE AND POWER

According to his batting average, each hitter can convert a range of put outs on the second roll chart into base hits. We will explain how these are divided into his extra base hits separately.

If you will look at the Master Chart (last page) again, you'll see that the 216 combinations do not provide a percentage for every batting average possible.

However, this has been obtained by weighting averages and giving one dice combination when the hitter is batting against a right handed pitcher and one when batting against a left handed pitcher. (About 80% of all pitchers are right handed and 20% are left handed).

If we give each batter a set percentage against right handers and a set percentage against left handers, in a 4 to 1 ratio, we arrive at the average he is expected to hit.

There is an artificiality in this approach, but, until baseball statistics are published showing what each batter hit against both left and right handed pitching, we must establish our percentages according to logic and custom.

Each right handed batter is programmed to hit better against left handed pitching and each left handed batter to hit right handers better. Some batters are programmed to hit equally against either right or left handed pitchers.

The superiority against one kind of pitching or another is purposely varied as averages move from one figure to the next. In two-handed play this provides a slight edge in the handling of his players by the manager who studies his roster closely.

In a later section of this book, when we show how to create your own playing rosters, you will find all charts showing how specific batting averages are reached for right and left handed batters.

All hitting data is contained on the playing rosters. Look at any one of them. The rosters for contemporary teams show hitting ranges against five grades of pitching, A through E. You'll remember from the First Roll Chart that these grades are related to the pitcher's earned run average.

Grade C is the average pitcher with an ERA from 3.01 to 4.00. In extended play this is the grade of pitching the batter will face most often. The grades below and above the middle grade will, in composite, average out. There are more grade D and E pitchers but they pitch about the same total number of innings as the A and B. The D and E pitchers are mostly the less effective, relief pitchers, the A and B mostly outstanding starters who pitch many complete games.

In playing "Extra Innings" you use the column for the grade of pitcher who is facing the batter, using either the left or right hand column, depending upon whether the pitcher is left handed or right handed.

If the batter is a right handed .300 hitter and is facing a Grade C left-handed pitcher, any combination ON THE SECOND ROLL, from 1-1-1 to 2-6-2 is a base hit. If he were facing a right handed pitcher, any combination on the second roll, from 1-1-1 to 2-5-4 would be a base hit. Regardless of what the Second Roll Chart showed as a put out within that range, it would be converted to a base hit for this batter.

Now that we know the batter's base hit range, we want to divide his base hits into home runs, triples, doubles and singles. Each of these categories is a percentage of the total hits.

For extra base hits it doesn't matter whether the pitcher is right handed or left handed or what his pitching grade is.

Home runs start at 1-1-1 and continue upward according to the batter's power. The figure given under H.R. on the roster is the top of his home run range. Any combination from 1-1-1 to that number is a home run for that batter. Next come triples; the figure given under triples is the top of his range on three base hits. Then come doubles; the figure given is the top of his two base hit range. All remaining combinations up to, and including, the top of his base hit range are singles.

Occasionally a player will not have hit a home run. In that case the column is left blank and his extra base hits would start from 1-1-1 under the suitable column. Or, he may not have hit any triples or doubles. The column is left blank.

The rosters with the contemporary teams give all pitchers the same batting average (.160). Separately, all pitchers' batting averages are given should you wish to use them. They are left off the rosters because it is not possible to include hitting lines for all the pitchers and keep the rosters to their 8 1/2 x 11 page size. Also, because many pitchers have relatively few plate appearances, you often have on the roster a pitcher who hit for a very high average and some who failed to get a base hit at all. There is a temptation to use a .333 hitting pitcher (who might have gotten one scratch single in three times at bat all season) as a pinch-hitter, or to keep him in the game for his hitting potential rather than pinch hit for him. Or, with the pitcher who failed to get a hit at all, and who might have only been to bat a few times, he's an automatic "out" everytime he comes to the plate.

By providing all pitcher's batting averages separately, and applying a standard hitting line for all pitchers on the roster, we give you the option of which to use.

You will also find, among your rosters of contemporary teams, two-team averages for those players who appeared with more than one team in the same league during the season. Their composite averages appear on the roster of the team with which they ended the season.

The rosters for contemporary teams are arranged so that they are most convenient for play at the Intermediate Level and, by using only the Grade C Column, for play at the Basic Level. Their use at the Pro-Level will be discussed in that section.

The rosters for historic teams include only the C Grade pitching ratings. Pitching batting averages are not included (except in a few instances where a pitcher was such a good hitter that he also was used frequently as a pinch-hitter.) This is done to economize on space and make it possible to provide the maximum number of historic teams.

We will return to the general subject of rosters when we describe in more detail the playing of "Extra Innings."

MOVEMENT OF BASE RUNNERS

You will observe that all players are rated for running ability on the rosters. We will deal with this again when discussing the Base Stealing Chart. However, the rating is a subjective one and is a composite of raw speed and innate ability on the base paths. All runners are rated as Superior, Above Average, Average and Slow. Pitchers, with a few exceptions, are rated slow because pitchers rarely steal or take an extra base.

Two base hits move base runners as follows:

When there are two out, they clear the bases.

With less than two out they score only Superior and Above Average runners from first base.

One base hits move base runners as follows:

Singles through 2-2-2 advance any base runners two bases.

Single from 2-2-3 and up advance any base runners one base.

The running ability of the base runner is not a factor on singles.

When a hitter rolls exactly the number required to hit a single, and there are no runners on base, the batter is put out at second, attempting to stretch the single into a double.

To go back to our .300 hitter whose hitting range against a left handed C Grade pitcher is 1-1-1 through 2-6-2, if exactly 2-6-2 were rolled, with no runners on base, he would be out at second trying to stretch his single into a double.

If batter has hit a double or triple, and there are no runners on base, and the third die is a six, the batter is out at the next base.

To provide a statistic for those who keep defensive ratings, the assist is given to the left fielder if this is the first out of the inning; to the center fielder if the second out; to the right fielder if the third out.

You will probably have observed that many of the details of this game provide a defensive explanation for every happening. To many this is a complication they'd just as soon avoid. It makes "Extra Innings" seem much more complicated than it really is.

Other movements of base runners which result from strategy moves (stolen base, sacrifice bunts and flies, hit and run, etc.) will be discussed separately in the next sections which deal with these managerial options.

MANAGERIAL OPTIONS AND STRATEGY

Every phase of offensive and defensive strategy is included in "Extra Innings." Certain movements are optional at any time, such as line up changes, replacing of pitchers, use of pinch-hitters. A base on balls can be optional and is not limited to those which are rolled on the First Roll. If, as the defensive manager, you want to pass a batter, you can.

These strategy moves are suggested as optional when the game is played at the Basic Level. It is recommended they be worked into the play of the game and that the move up to the Intermediate Level be made as quickly as possible.

As with the First Roll and the Second Roll, these actions are condensed to a single chart. However, for clarity they will be discussed in detail.

STOLEN BASE CHART

When a team elects to try a steal, this must be attempted before the First Roll is made. After the outcome of the attempt is known, then the First Roll is made for the batter.

A steal may be attempted after the First Roll only if the runners on base have advanced as result of a wild pitch or passed ball on the First Roll. You may then elect a steal attempt before making the Second Roll on the batter.

You'll notice the Stolen Base Chart provides data for steals of second, third, or home, with chances of success related to the running ability of the base runner. Also, the chances of success are governed by whether the pitcher is left handed or right handed. A right handed pitcher who faces the runner on first while winding up reduces the percentage of success in stealing second.

We have put a limit on the number of stolen base attempts (not successes) according to the ability of the runner. This is done to keep base stealing within the realm of likelihood.

STOLEN BASE CHART

Action takes place **BEFORE** First Roll. After it is completed, proceed with First Roll on the batter. Remember, all players on the roster have been rated for base running: Slow, Average, Above Average and Superior.

To Steal **SECOND** BASE:

	Right Handed Pitcher	Left Handed Pitcher
Slow Runner	1-1-1 thru 1-6-6	thru 1-5-6
Average Runner	1-1-1 thru 2-4-6	thru 2-3-6
Above Average Runner	1-1-1 thru 4-4-6	thru 4-3-6
Superior Runner	1-1-1 thru 5-3-6	thru 5-2-6

To Steal **THIRD** BASE:

Slow Runner	1-1-1 thru 1-5-6	thru 1-6-6
Average Runner	1-1-1 thru 2-3-6	thru 2-4-6
Above Average Runner	1-1-1 thru 4-3-6	thru 4-4-6
Superior Runner	1-1-1 thru 5-2-6	thru 5-3-6

To Steal **HOME**:

Slow Runner		Cannot steal home
Average Runner	1-1-1 thru 1-5-6	thru 1-6-6
Above Average Runner	1-1-1 thru 2-3-6	thru 2-4-6
Superior Runner	1-1-1 thru 4-3-6	thru 4-4-6

NOTE: Above average runner is limited to one stolen base **attempt** per nine inning game. Is unlimited in extra innings.

Superior base runner is limited to two stolen base **attempts** per nine inning game. Is unlimited in extra innings.

Slow and Average Runners are unlimited in their attempts.

DOUBLE AND TRIPLE STEALS. all action is governed by front runner. Others advance whether front runner is safe or not.

ERRORS ON STEAL ATTEMPTS, ETC., SEE TEXT.

Double and Triple Steals

All action is governed by the front runner. The other runners advance safely whether the front runner is safe or out.

Errors On Stolen Base Attempts

On any successful stolen base attempt (but never on an unsuccessful attempt) if the GREEN die is a SIX, it is an error on the catcher's throw. The batter gets credit for his stolen base and goes to the next base on the error. This does not apply, obviously, on steals of home. Any other base runners also move one base on the error.

Steals of Second with a Runner on Third.

The runner on third is not involved in the action. He remains on third whether the runner stealing second is safe or out (advancing only in the event of an error.)

Put-Out Data

Here we are with the trivia of defensive statistics again. On a put out on a steal attempt at second credit the put out to the short stop if the GREEN die number is odd; to the second baseman if it is an even number. Third baseman makes all put outs on stolen base attempts at third; the catcher on steals of home.

SACRIFICE BUNT

When the team at bat elects to try to move a base runner with a sacrifice bunt, this must be attempted before the First Roll and concludes the action on the batter.

The data as expressed on the chart is complete and needs no reinforcing explanation is this text portion. By now it is assumed that you understand the designation of positions by numbers.

SQUEEZE PLAY

This is used only when there is a runner on third and less than two out. It is not announced until the defensive team has elected to play the infield in (to try to cut the runner at third down at the plate) or to play back (in hopes of an infield double play and to reduce the likelihood of the batter getting a hit because the infield is playing shallow.) This contingency will be discussed in detail when we take up that defensive strategy.

NOTE: When playing the game on a solitaire basis, the infield is automatically played in when the game reaches the seventh inning and the runner on third represents the tying or go-ahead run.

There are two kinds of squeeze play, safety and suicide. The probabilities of success and the outcome of these attempts are different. So, the Squeeze Play Chart presents two situations (infield shallow or infield deep) and the option of trying the Safety Squeeze or the Suicide Squeeze to the team at bat.

SACRIFICE FLY OPTION

You will notice on the Second Roll Chart that most of the outfield fly outs are marked with an asterisk (*). When there is a runner on third base and the fly out has not ended the inning, the * means that the runner on third can attempt to

score. The absence of an asterisk means the ball was hit too shallow to permit the attempt.

The running ability of the runner on third is not a factor in his success or failure.

Instead, the logic of the game situation is applied. After all, the slowest runner can score if the ball has been hit deep enough.

We have divided the game situation into two parts; innings one through seven and inning eight and nine (and extra).

We have made it more difficult to score on a sacrifice fly in the late innings. Because of the game situation a team is more likely to attempt to score on a sacrifice fly in the late innings on a riskier situation than in the early innings.

We have also made it more difficult to score when the fly is the second out of the inning. Again, a risk will be taken more often when the team at bat has been reduced to the final out of the inning. If the fly out is the first out of the inning the team with the runner on third still has two more opportunities to score him.

So, we have adjusted the risk according to the game situation, believing this is a more realistic approach.

On sacrifice fly attempts, when the runner is out at home, credit the assist to the outfielder making the put out, the put out to the catcher. When the runner is out at the plate, other base runners advance one base (on the put out at the plate.)

When the runner does score any other base runners remain at their base (a cut-off is assumed).

HIT AND RUN

The team at bat can announce a "hit and run" play either before the first roll or the second roll. If before the first roll it is a "conditional" circumstance and can be "taken off" should a base runner advance as a result of first roll action. A wild pitch, passed ball or balk may change the strategy situation. A hit batsman or a walk on the first roll would eliminate it.

However, if an error has been designated on the first roll, the offensive team cannot put on a "hit and run" before the second roll, unless one had already been designated conditionally.

With the "hit and run" in effect, a base hit moves any base runners one base further than that hit would have done. All runners, regardless of rating, score from first base on a double.

Slow and Average base runners go from first to third on all singles.

Above average base runners go from first to third on singles starting with a TWO or THREE on the RED die. They score from first on singles starting with a ONE on the RED die.

Superior runners score from first on any single.

When the batter makes an out in a "hit and run" situation the following takes place:

SQUEEZE PLAY CHART (with runner on 3rd, less than two out)

DEFENSIVE TEAM MUST DECIDE TO PLAY IN OR BACK.

When infield is playing BACK.

("SUICIDE SQUEEZE") Offensive team must announce before first roll.
(This becomes only roll for the batter)

1-1-1 thru 2-2-2	Everyone SAFE. Credit batter with sacrifice.
2-2-1 thru 3-3-3	Runner SAFE. Batter OUT (1 to 3). Credit with sacrifice.
3-3-4 thru 6-1-4	Runner OUT (1 to 2). Batter reaches first on FC.
6-1-5 thru 6-6-6	DOUBLE PLAY. 1 to 2 to 3.

("SAFETY SQUEEZE") Offensive team must announce before first roll.

1-1-1 thru 1-6-1	Everyone SAFE. Credit batter with sacrifice.
1-6-2 thru 2-5-6	Runner SAFE. Batter OUT (5 to 3). Credit with sacrifice.
2-6-1 thru 3-6-6	Runner OUT (1 to 2). Batter reaches first, FC.
4-1-1 thru 4-4-4	DOUBLE PLAY. Runner out 1 to 2. Batter out 2 to 3.
4-4-5 thru 6-6-6	Runner HOLDS THIRD BASE. Batter out 5 to 3.
(4-4-5 thru 6-6-6)	(If bases loaded, or runners on first and third, batter is struck out.)

WHEN INFIELD IS PLAYING SHALLOW

("SUICIDE SQUEEZE") Offensive team must announce before first roll.

1-1-1 thru 2-2-2	Everyone SAFE. Credit batter with sacrifice.
2-2-3 thru 3-1-4	Runner SAFE. Batter OUT, 3 unassisted.
3-1-5 thru 6-1-4	Runner OUT (1 to 2). Batter reaches first, FC.
6-1-5 thru 6-6-6	DOUBLE PLAY. Runner out 1 to 2. Batter out 2 to 3.

("SAFETY SQUEEZE") Offensive team must announce before first roll.

1-1-1 thru 1-6-1	Everyone SAFE. Credit batter with sacrifice.
1-6-2 thru 3-1-1	Runner SAFE. Batter OUT. 3 unassisted.
3-1-2 thru 3-6-6	Runner OUT, 1 to 2. Batter reaches first, FC.
4-1-1 thru 4-4-4	DOUBLE PLAY. 1 to 5 (runner doubled off third).
4-4-5 thru 6-6-6	Runner HOLDS THIRD BASE. Batter out 5 to 3.
(4-4-5 thru 6-6-6)	(If bases loaded, or runners on first and third, batter is struck out.)

Strike Out: If the batter strikes out, the runner is handled as though he were attempting a steal. Apply the Stolen Base Chart to the runner. If more than one runner, apply to the front runner as in a double steal.

Outfield Fly: When the batter flies out, base runners return safely to their bases.

Infield Fly Out: A fair fly ball results in a double play. If more than one base runner, the front runner is doubled off his base. On a foul out to the catcher, first baseman or third baseman, runners return safely.

In the event a triple play possibility has been signaled on the first roll (2-3-4), the infielder catching the ball starts a triple play. He retires the batter on the hit ball, steps on his own base and throws to the nearest base to put that runner out. A ball hit to the short stop in this situation would be scored TP 6-3 (the shortstop getting two put outs and an assist).

Infield ground ball. Runners advance one base with the batter being retired at first. There can be no force out at second and no double play on a ground ball in a "hit and run" situation.

NOTE: When the "hit and run" is elected with two out, the middle die, WHITE, is lowered by one number for the batter.

If the batter's hit range was 2-3-5, in this time at bat, with the "hit and run" being used, it would be 2-2-5. This is done to discourage use of the "hit and run" in two out situations when there is no risk of hitting into a double play.

PLAYING THE INFIELD SHALLOW

(With Runner on Third)

When this defensive adjustment is made the First Roll is eliminated and action on the batter is limited to the Second Roll.

However, if, before the infield is drawn in, the First Roll has been completed on the batter and resulted in a base runner advancing to third (on a balk, wild pitch or passed ball) or if the runner has stolen third base, the defensive team may now elect to play in. The purpose here is to avoid leaving the defensive team without the option of playing to cut the runner off at the plate.

When the defense plays its infield in, in real play, they increase the chances of the batter hitting the ball safely through the infield. Accordingly, raise the middle die, WHITE, by one number for the batter. If the batter's hit range was 2-3-5, in this turn at bat it would be 2-4-5.

All put outs made by the batter on the Second Roll are unchanged except ground balls. If the batter has flied out, fouled out or struck out, the interpretation is unchanged. However, if the batter has hit a ground ball to an infielder or the pitcher, the following action takes place.

All ground balls on the Second Roll Chart are in the third, fourth, fifth or sixth column. With the infield playing shallow use only Sec. A of the fifth and sixth columns if the action comes from these columns.

Ground balls in the third column (3-1-1 through 3-2-1) result in the runner from third being SAFE at the plate and the

batter reaching first base safely on a fielder's choice.

Ground balls in the fourth column (4-1-1 through 4-3-1) result in the runner being SAFE at the plate and the batter being out at first. The play goes as it appears on the chart.

Ground balls in the fifth column (5-1-1 through 5-3-3) and in the sixth column (6-1-1 through 6-3-5) result in the runner from third being out at the plate, the batter reaching first on a fielder's choice. The assist is given to the infielder to whom the ball was hit.

You'll notice there is a greater possibility that the runner from third will be cut down at the plate. This is offset by having increased the possibility of the batter getting a hit.

This concludes the discussion of strategy plays. Except for the Hit and Run and Playing the Infield Shallow they are expressed in condensed form on the charts which are placed later in this book.

RATING THE PLAYERS

The original purpose of creating this non-secret game was to give its players all the knowledge they need to prepare any team, past, present or future, for play with "Extra Innings." We had been discouraged from taking up games which do a good job of producing realistic performances because competition had to be limited to those players and teams which had been rated by the game's manufacturer. The long delay in obtaining data after the conclusion of a season was another discouragement. The need to continually reinvest in data was also discouraging.

We are about to provide you with the step-by-step methods of determining batting averages and extra base hitting characteristics. In fairness, we must admit this is a time consuming operation, particularly computing the extra base hit data.

However, if you want the immediacy of current competition and the flexibility of being able to replay any season from the past or competitions among any teams from any eras, you will be able to do it.

BATTING AVERAGES

This is quite simple. Knowing the batting average of the player you wish to rate, and whether he hits left or right handed, or is a switch hitter, just look up his average on the appropriate page in the Batting Average section and copy it onto your roster. This will be that batter's top hit level against C Grade (average pitching) ERA 3.01 to 4.00.

If a switch hitter throws right-handed use the data for a right handed batter. If left handed, the reverse. The assumption here is that a hitter will do better from his natural side.

If you are playing the game at the Intermediate Level you lower the third die (GREEN) by one number when he faces B Grade pitching; by three numbers when he faces A Grade pitching. You raise the third die (GREEN) by one number when he faces D Grade pitching; by two numbers when he faces E Grade pitching.

If you are still playing the game at the Basic Level you shouldn't attempt rating players yourself.

SACRIFICE BUNT CHART

(Takes place BEFORE the First Roll and is the final action on the batter.)

1-1-1 thru 4-4-4	Sacrifice is successful. Runner(s) advance one base. Batter out 1 to 4.
4-4-5 thru 5-6-6	Base runner is put out. If more than one base runner, front runner is put out, other(s) move to next base and batter is safe at first on a fielder's choice. If runner is retired at third, play is 3 - 5. If runner is retired at second, play is 5 - 6.
6-1-1 thru 6-3-6	Batter strikes out. No advance by runner(s).
6-4-1 thru 6-5-5	DOUBLE PLAY. Batter is out to the pitcher, and lead runner is doubled off base. If at third, put out by 5; if at second, put out by 6, if at first, put out by 4.
6-5-6 thru 6-6-6	Batter is safe at first on bunt single. All runners advance one base.

If you have advanced to the "Pro-Level" you will be using the ERA Adjustment Chart and that will be discussed in the "Pro-Level" section.

EXTRA BASE HITTING

This is the most difficult and time consuming step in giving each batter his correct data.

We use the Master Chart when figuring out which hitting lines to assign for each type of extra base hit. As you now know, this gives the decimal equivalent for all dice combinations 1-1-1 through 6-6-6. There are 216 lines on the chart. Find the line nearest the hitter's batting average. We'll call this his "hitting line."

We'll illustrate how this is worked out by using a .300 hitter who went to bat 400 times and had 120 hits. Of these hits, 30 were home runs, six triples, 40 doubles and 44 singles.

A .300 average comes on the 65th line (2-5-5 .3009). We divide these 65 hit lines proportionately starting with home runs. His 30 home runs are 25% of all his hits. (120 hits divided into 30 home runs). Therefore, 25% of his "hit lines" (starting from 1-1-1) are home runs.

Find 25% of his 65 hit lines. (Multiply 65 by .25). 25% of the 65 hit lines assigned to him as a .300 hitter is .1625. Rounded off, that is the sixteenth hit line (1-3-4). Any dice roll between 1-1-1 and 1-3-4 is a home run for this batter.

Now, the same steps with his triples. His six triples were 5% of all his hits. 5% of his 65 "hit lines" is 3.25. Rounded off, this would set his next three hit lines as triples. 1-3-5 through 1-4-1 would be three base hits.

Now the doubles. He had 40 of them, which was 33% of all his hits. 33% of his 65 "hit lines" is .2145, rounded off at 21. His next 21 "hit lines" would be designated as doubles. From 1-4-2 through 2-1-4 would be base hits. The remaining "hit lines" would be singles. His batting information of the roster would appear this way:

Sam Slugger BR AR .300 1-3-4 1-4-1 2-1-4 2-6-2 2-5-4.

This would tell you that Sam Slugger bats right handed, is an average runner, is programmed to bat .300. Against a left handed C Grade pitcher any roll between 1-1-1 and 2-6-2 is a base hit; against a right handed C Grade pitcher, any roll between 1-1-1 and 2-5-4 is a base hit. Any base hit up to 1-3-4 is a home run; from 1-3-5 up to 1-4-1 is a triple; from 1-4-2 to 2-1-4 is a double and the rest are singles.

That's the nitty-gritty of it! We wish it were easier or that we could simply give you a chart for extra base hitting, as we have for finding batting averages. Each ingredient of extra base hitting must be worked out independently. We realize it is a slow process.

RATING THE BASE RUNNERS

All runners are graded Superior, Above Average, Average and Slow. Assigning these grades must be a subjective decision. Statistics provide guide lines but, unlike the statistics of batting average and extra base hits, cannot be reduced to absolute formulas.

We grade all runners on rosters which come with the game. Each is the result of a subjective judgement made by the

game's designer. When you are grading players for base running ability we suggest you follow our guide lines.

We start by assuming all base runners are of average speed of foot and have major league ability in running the bases. We then look for the exceptions to the average, either above or below.

Let's start with those who demonstrate below average ability. There are not many very slow runners in baseball. We automatically remove from this category all short stops, second basemen and center fielders. They play positions where slowness of foot would be an eliminating handicap.

We examine the stolen base statistics for all other positions (except pitchers) and look for those who very rarely steal. We classify them as slow. You might want to watch for a rare exception such as Mickey Mantle. His fragile legs and the fact that he was followed in the Yankee lineup by sluggers during his best years with that team, resulted in very few stolen base attempts by Mantle. When you can rationalize a player out of the slow category, do so. In the case of a Mantle you would want to move him up to an Above Average Runner so that he could score from first on a hit and run single or from first on a two base hit with less than two out.

We automatically grade all pitchers as slow. Some pitchers have outstanding speed of foot. One who comes to mind is the heavy-set relief pitcher, John Wyatt. Despite his apparent bulk he could out foot race practically everyone in running contests. Yet, he never stole a base in his major league career. Pitchers are rarely asked to attempt a steal. They are not given to taking an extra base.

You may, at times, want to use a pitcher as a pinch runner. If you do, rate him an average runner for that purpose only.

Moving to the above average runner and the superior runner is a combination of statistics and reputation. An Al Kaline doesn't steal many bases, but is known as a smart base runner who gets the jump on the pitchers and knows when to go for the extra base on a ball hit to the outfield. He'd be an example of an above average runner.

The superior runners are more rare and easier to identify. They can be picked out on stats alone. Any regular who has stolen 40 or more bases a season is automatically a superior runner.

RATING THE PITCHERS

The most reliable statistic to measure a pitcher's ability is his earned run average, an available statistic.

We have set up "Extra Innings" to be governed by the pitcher's ERA. We use a "norm" of 3.01 to 4.00 for the Basic Level of the game; a spread of five grades for the Intermediate Level and will discuss the Adjusted ERA for the "Pro-Level" in that section of the book.

In creating your own ratings, you simply look up the pitcher's ERA and assign him his proper grade.

In the play of "Extra Innings" you'll see that a pitcher's ERA not only effects how batters will hit against him, it is also a factor in the walks he yields, the batters he hits, his pick off play possibilities, the balks he makes, the wild pitches he makes and the errors and double plays made behind him. As has been explained, each of these is a factor in his

SACRIFICE FLY OPTION CHART

(This action can take place only after the Second Roll.)
Certain outfield flyouts — on the Second Roll Chart — are marked with an asterisk (*).

With a runner on third base, and less than two out, the team at bat may elect to attempt to score after the put out. Although all base runners on the roster will have been designated for base running ability (slow through superior) **THESE RATINGS DO NOT APPLY in the Sacrifice Fly Option.**

When using this option the following charts apply.

INNINGS ONE THROUGH SEVEN.

When fly ball is **FIRST OUT** of the inning, must roll from 1-1-1 through 5-6-6 to score from third.

When fly ball is **SECOND OUT** of the inning, must roll from 1-1-1 through 4-6-6 to score from third.

INNINGS EIGHT AND NINE — AND IN EXTRA INNINGS.

When fly ball is **FIRST OUT** of the inning, must roll from 1-1-1 through 5-3-6 to score from third.

When fly ball is **SECOND OUT** of the inning, must roll from 1-1-1 through 4-3-6 to score from third.

When runner **FAILS TO SCORE**, credit assist to outfielder making put out, put out on the runner to the catcher.

When runner **FAILS TO SCORE**, any other base runners advance one base.

When runner **DOES SCORE**, any other runners remain at their base.

performance and contributes to his ERA.

DEFENSIVE RATINGS

"Extra Innings" uses defensive ratings only on an individual basis and only at the "Pro-Level." Some, who will be satisfied to play the game at the Intermediate Level, might wish to add the defensive play to their action. They are invited to read the "Pro-Level" section and use from it any refinements they wish.

PLAYING TABLE BASEBALL

Before going on the "Pro-Level" discussion, this would be an appropriate place to discuss the many ways the game can be played.

It is the purpose of "Extra Innings" to provide a means of playing games between teams of any kind which appeal to the player. For many this means the present major league teams.

You have received a set of major league rosters, ready-to-play, for all teams based upon end of the season records of the most recently completed season. If you wish, you can transfer traded players from one roster to another.

If you want to be as contemporary as possible, you can play the current season right along with your teams. For this you will need statistics as they change from week to week. These are published, in detail, in *The Sporting News*. For players who have performed the previous year we would recommend adjusting only the batting average to his present one. The extra base hitting will remain reasonably constant. A Howard will continue to hit home runs, an Aparicio will continue to hit singles. Because of the time involved in working out the particulars of extra base hitting, we recommend you retain that part of the hitter's previous year's record and adjust only his batting average rating as the season progresses.

Pitcher's ERAs are also published as the season moves along. You can make this adjustment very easily on your roster.

First year players, for whom you have no record from the previous year, will have to be worked out for extra base hitting. But, you have the knowledge to do this.

You may want to play inter-league competitions. You can! You may want to play teams from the past against today's teams. You can! You may want to play teams from the past against each other. One problem which arises here is that the Lou Gehrig of the 1927 Yankees may be playing against the Lou Gehrig of the 1936 Yankees. We'll leave the solving of that to you.

You may prefer to make up your own mythical competitions. You can! You can either arbitrarily assign characteristics to the names you put on your roster or you can give them characteristics taken from real players.

You may prefer to play competitions among all-star players. You can! Just make up suitable rosters, putting on them whatever players you wish. Many of the great players of the past and all of the present appear on the rosters you get with "Extra Innings." And you've received the Hall of Fame players with "Extra Innings."

You may want to re-play an entire season from the past. You can...but you'll have to obtain the league statistics and compile the rosters for all league members.

Sources of statistics on past teams and players are found in Guide Books. If you have MacMillan's "Baseball Encyclopedia" you have all the statistics from 1968 back to the start of league play. This book also gives you the principal players on each team for every year. If you want to know the substitutes, Barnes' book, "All-Time Rosters for Major League Baseball Clubs" provides this in detail (but does not have all the stats necessary to make up a roster). Not everyone will find their satisfactions this deeply in the past. These references are given here for those who will.

The actual playing of "Extra Innings" provides a wide variety of possibilities, starting with the accommodations you have at home. This is how we play our own games.

We play on a wooden topped desk which is against a wall. We stand a large piece of processed board on the desk leaning against the wall. We tack to this the charts which we will consult during the game. We roll the dice against this back board.

A word about dice. Table game players develop odd feelings about the implementia of their games. The activators hold a strange fascination. The dice which come with "Extra Innings" are durable. They are standard sizes (1/2, and 3/8 inch) and standard colors. They are uniformly made by the nation's largest producer of dice. They are without bias.

Dice sometimes seem to have a mind of their own, running one way for long series of rolls and then another. They will, of course, eventually average out.

We have chosen to provide them in decreasing sizes to make arrangement into color sequence easier for the eye. We have used red as the color of the largest as it seems to catch the eye's attention quickest, setting up the reading more rapidly.

We keep our playing rosters and score pad on the desk in front of us. Because we are scoring the game as it progresses, we have no need for a miniature baseball field, with markers to show the position of base runners, or indicators to be changed to show the number of runs scored in the inning of the game.

Such implementia serve only to stimulate the imagination or to replace play-by-play scoring. Most of us have some sort of a playing board left over from some other game. If you are comfortable with this, use it. It has been left out of "Extra Innings" as unnecessary and as a manufacturing cost which would have to be passed on to the buyer.

The rolling of the dice brings up a few considerations. They can be put in a cup and rattled around before being rolled or simply rolled by hand. In solitaire competition it shouldn't matter. With a suspicious opponent in a two-handed game it would be best to use a cup and bounce the dice off a backstop.

Boxscores provide a problem. Keeping a boxscore is such an individualistic thing that, other than standardizing the defensive positions by number, we don't want to be drawn into methodology. Whether you wish to indicate a single with a straight line toward first; with a 1B; with an S; with a straight horizontal line, etc. isn't important. What is important is that you know the batter has singled.

There are two kinds of boxscores, basically. One is simply a square box beside each player's name for each inning. The other, sometimes called a "New York" boxscore, has a diamond inside the box. The corners of the diamond are used to mark a player's progress around the bases.

Since we propose that those of you who will use large numbers of boxscores simply make your own, we don't advise use of the "New York" style. If you wish to buy them ready made, fine.

From time to time sporting publications will have ads offering score books for sale. These usually are intended for use by a team and have fewer pages than you might expect to use in prolonged play.

One good source of quantities of inexpensively printed boxscores, and quite adequate for keeping records, is Leonard Gaydos, 29 South Kingston Street, San Mateo, Calif. 94401.

Having given Mr. Gaydos a "free plug," we will also suggest that many players can mimeograph their own supplies of boxscores. We do. We have included one with "Extra Innings" simply as an illustration of how one can be made.

Most of us have access to a mimeograph machine; at work, at school, at church. A reasonable request, and providing your own stencil and paper, should result in permission to use the machine. Most of us live near a small print shop which should be able to run off quantities of stencils or multilith boxscores for you at a reasonable price.

Roster forms for those wishing to make up their own team need not be limited to 8 1/2 by 11 pages as they have been to fit the dimensions of this binder. We have been faced with the need to get as much detail into the space available as possible.

You may wish to use even larger sheets, or put hitting details on one side of a page and pitching on the back.

We find that placing all data on one roster page is the most convenient way to locate information. We have become so accustomed to using this form we have no difficulty in following a player's line across the page. However, at first you might want to use a straight edge placed below a player's name to guide your eye to other columns.

Some may feel more at home with the data transcribed to cards. 3 x 5 index cards are a standard stationary store item if such a preference is yours.

You will not find it necessary to consult your roster data on every roll of the dice. A hitter has to have an average well over .300 before there is any chance of converting an out into a base hit on a combination starting with THREE. This means that virtually all players are out on the Second Roll unless the sequence starts with a ONE or a TWO on the RED die.

The more familiar you become with each batter's average, the more often you know whether to consult his hitting data on the roster.

"Extra Innings" can be played either in solitaire form or between players, each managing a team. Circumstances or preference will make your choice for you.

Most of those who play such games as "Extra Innings" want to conduct a formal "league" competition, keep records, etc.

When playing the game solitaire, you should set up a schedule which you can reasonably expect to complete in a year's time. A 162 game schedule for each team can be well beyond the leisure time of most of us. However, an 81 game schedule (half) or a 54 game schedule (one third) has the advantage of providing individual results which can be multiplied by two or three to see how they compare with full season totals.

Competition between two or more players in a league provides the added problem of all members having an equal amount of free time, an undiminished interest, etc.

One way to overcome this problem, at least, in part, is to set up a competition in which each person manages a division of a league. He can play his intra-division games on a solitaire basis and his inter-division on a head-to-head basis. League championships are conducted between the individual division winners, determined however the one handling his division decides.

We enjoy exchanging correspondence with players of "Extra Innings." We often learn from the experiences of others. We cannot become pen pals or serve as intermediaries, but we will reply to all questions. We anticipate "Extra Innings" will alter in some ways during the years. We'd expect these changes to come in the "Pro-Level" of the game. Those of you who are interested in taking the game to that level, with its added complexities, are invited to join us in the club house.

THE "PRO-LEVEL" OF EXTRA INNINGS

We began this explanation of the methods of "Extra Innings" gathered around home plate for a discussion of the ground rules. Now, let's assume we're sitting around the club house to take up the ways by which "Extra Innings" can be played at a more complex level.

Many players will be satisfied with the game at the Intermediate Level. Some may pick up some of the embellishments from the "Pro-Level" and add them to the Intermediate Level.

Even at the Basic Level "Extra Innings" cannot provide the instant gratification many look for in a table game. And, at the "Pro-Level" it requires considerable application to enjoy the added realism of the game. This level of the game has been added to provide further enjoyment for those who wish it.

There are two major areas of satisfaction at this level: Defensive Ratings and a more sophisticated method of adjusting pitcher's ratings.

To add more competitive trimmings and to bring realism to the defensive side of the game we have created two defensive categories. These are: Superior Defense and Limited Defense. Unlike batting averages and extra base hitting, which can be defined precisely in mathematical projections, defense cannot be measured by statistics absolutely.

DEFENSIVE DIFFERENCES

We define the differences in defensive ability at the extremes: Superior Defense (SD) and Limited Defense (LD). There are shadings of ability among the unrated, average, players, but we do not get into them. We are motivated to add defensive characteristics as much from a sense of gamesmanship as realism. True, we want the absolutely best "golden glove" types to perform accordingly, but, mostly, we want to provide the added experience of having some "sure hits" turned into outs or having routine put outs drop safely.

LIMITED DEFENSE: This category is not made up entirely of inept fielders. Actually, there are very few major leaguers who can't catch a ball they can get a glove on. What separates players defensively is more a matter of range, resulting from quick starts and speed of foot, and reflexes that get the player to the ball or adjust to a last minute hop.

When we consider putting a player in the Limited Defense category we are more motivated by the concept of a slow footed fielder failing to reach a ball others would catch, than the idea of it popping out of his glove.

To provide this in actual play we have boxed certain put out numbers on the Second Roll Chart. When these are rolled and an LD rated player is at the position, they become singles instead of put outs.

For example: If 3-6-6 were rolled with an LD player in left field, instead of a fly out, it would become a single. Any runners would advance one base as a result.

In the Double Play column on the Second Roll Chart, you'll see that we have boxed the position number of the man starting the double play in the range of rolls from 6-5-6 to 6-6-6. With LD rated player in the position which is boxed, the double play is not made. The runner from first is forced at second but the batter reaches first on a fielder's choice.

For example: if 6-5-6 were rolled and an LD player was at third, the play would be modified to a 5-4 force out at second.

SUPERIOR DEFENSE: Again, we are not so much motivated by a low number of errors as we are by range. We are thinking here of the fleet-footed player who reaches balls which go for hits when average players are in the position.

To provide a means whereby base hits can be "taken away" we have boxed certain combinations in the second column on the second roll chart. The numbers inside these boxes are added together to provide a defensive position number. When an SP player is at that position, the hit is changed into an out. It is considered a put out by that player with no advance by any base runners.

For example: if 2-2-1 were rolled, and was a base hit for the batter, with an SD first baseman (2+1=3) it would not be a hit, it would be an out to the first baseman.

ERROR REDUCTION: The SD rated players make fewer errors. A special column has been added to the Error Designation Chart. Under the SD heading you'll find numbers enclosed in parenthesis. When an SD player is at the position designated for making an error, any roll in that position's range, including the sequence in parenthesis, is not an error. Instead, it is a put out. We use this only when the batter has made an out, never when he has made a hit.

For example: Let's assume the first roll indicated an error and the batter had made out on the second roll. You would now roll the dice to learn the results of the error. If you rolled a 1-1-2 (one base error by the first baseman) but an SD first baseman were playing that position, it would be a put out to the first baseman, not an error.

Those are the ways in which LD and SD players change the play of the game.

Defensive Ratings

This is the most frustrating area to measure from statistics. It becomes even more difficult to set comparisons between eras of baseball. The gloves, playing surfaces, particularly the advent of artificial turf, and even the greater size of modern ball players, has resulted in substantial improvements in defensive statistics. Fielding averages are higher.

Reputation is a factor. Certain players of the present and past have reputations for fielding excellence which isn't totally verified by their statistics. However, a put out is a put out, whether it is a pop fly caught without moving a step or a sizzling line drive pulled down at the fence. Yet the number of put outs made by players in most defensive positions, can be taken as indicative of the player's range. The more mobile the player, the more sure-handed, the more put outs he can be expected to make over the course of a season.

Assists for outfielders and infielders is another indicator of range, particularly for short stops, third basemen and second basemen. For first basemen a large number of assists might mean the pitcher had to race over to take throws from a slow footed first baseman who couldn't beat the runner to the bag.

Anyone who tries to correlate fielding statistics to the reputation a player earned on the field eventually comes up with the Bonura paradox. Zeke Bonura was a White Sox and Senators first baseman in the 1930s. A long ball hitter, who had several good years, he had the reputation of "playing on a dime." Yet, a look at his statistics would give the person who'd never seen the slow-footed Zeke in action (or, inaction) the belief that here was an all-time golden glove! Zeke led all American League first basemen in fielding percentage in 1934, 1936, 1938. You could dismiss this as evidence that he caught what he could get to, or what got to him, with sure hands. But, Zeke further confounds those who must rely on statistics to measure defensive skills by leading the league in total chances per game in 1935, 1936 and 1937. To top the paradox, in 1936, he led in put outs, assists and double plays, while fielding a league leading .996.

Determining a player's defensive skills, pro or con, is a judgement matter. One's judgement can be influenced by the team one watches most often, the league in which it plays, the publicity channels which build reputations.

In considering the introduction of defensive ratings to "Extra Innings", the fact that it would mean additional values to the game, overcame the reluctance to undertake a judgement factor which could not satisfy everyone.

The defensive ratings given with the teams which come with "Extra Innings" are the judgements of its designer. He is the first to deny omnipotence in such matters. These judgements are derived from following contemporary baseball closely and from personal observation of major

ERROR DESIGNATIONS BY POSITION

If the first roll has established that an error will occur, ROLL THE DICE TO DETERMINE IF THE BATTER HAS MADE A HIT OR AN OUT. Then, ROLL THE DICE AGAIN (yes, a third time) AND APPLY THE INFORMATION ON THIS CHART. This charges the error to a defensive position and establishes whether it is a one base or two base error.

If the batter has made a HIT, the error follows the hit. Credit the hit to the batter and he moves an extra base (or bases) as a result of the error. Any other base runners advance as designated by the hit and as many extra bases as designated on the error.

When the third die (GREEN) in the error roll ends in a "six," (1-2-6, for example) batter and any runners advance TWO bases.

When Batter Has Made A Hit Charge Error to:

1-1-1	-	1-1-2	First Base
1-1-3	-	1-1-5	Second Base
1-1-6	-	1-2-4	Third Base
1-2-5	-	1-3-5	Short Stop
1-3-6	-	3-2-3	Right Field
3-2-4	-	5-1-2	Center Field
5-1-3	-	6-5-6	Left Field
6-6-1	-	6-6-3	Catcher
6-6-4	-	6-6-6	Pitcher

When Error Replaces An Out Charge Error To:

SD*		
1-1-1	(1-1-3)	1-3-6 First Base
1-4-1	(1-4-6)	2-4-4 Second Base
2-4-5	(3-1-1)	4-1-5 Third Base
4-1-6	(4-4-4)	5-6-3 Short Stop
5-6-4	(5-6-6)	6-1-6 Right Field
6-2-1	(6-2-4)	6-3-5 Center Field
6-3-6	(6-4-1)	6-5-1 Left Field
6-5-2	(6-3-4)	6-5-6 Catcher
6-6-1	(6-6-3)	6-6-6 Pitcher

*Pro-level only. When a Superior Defensive player converts an error to an out, he is credited with the put out; no advance by any base runners.

If batter is out attempting to stretch a hit, the error cancels the put out. Assist to outfielder, error to second or third baseman.

league players going back to the mid-1930s. For earlier eras, reputation and statistics must serve.

For those of you who will want to undertake the rating of players defensively we can offer these guidelines.

Each position must be considered independent of other positions, even to which outfield position was played. Center fielders should have more put outs than left and right fielders, more balls are hit to them. Second basemen should have more put outs than short stops; they are the middle man in most infield double plays as well as taking force out throws at second from both the short stop and the third baseman.

A catcher's put outs include strike outs. The catcher for a staff of strike out artists will have more put outs than one catching for a weaker pitching staff.

Errors alone are not a measuring stick, particularly for infielders. It is not unusual to find the player who made the most errors at his position in a season, also lead in assists and/or put outs. He simply reached more balls, played most of them safely, booted a share. Such reputed defensive fielders as Sam Rice, Jimmy Dykes, Davy Bancroft, Ross Youngs, Bucky Harris, George Sisler, Gabby Hartnett, Pie Traynor, Ossie Bluege, Joe Cronin, Charlie Gehringer, Billy Herman, Luke Appling, Dolph Camilli, Joe DiMaggio, Frank Crossetti, Enos Slaughter, Pew Wee Reese, Joe Gordon, George Kell, Ferris Fain, Nellie Fox, Vic Power, Luis Aparicio, Bill Mazeroski, Bobby Knoop, Jim Fregosi and Don Kessinger are among those who led their league in errors while also leading the position in put outs and/or assists.

Fielding average is a good starting point. In giving Superior Defense rating it is justified to require the player had a better fielding average than most others at that position that season. Limited Defense players should come from those at the bottom of the list.

In making judgements one should also keep in mind the objectives in establishing these defensive classifications in "Extra Innings". The Superior Defensive player is one who, because of his sure-handedness and steady throwing, gets fewer errors and also has the capability of cutting off base hits. The Limited Defense player is not so much a clumsy fingered ball player as one with limited range, who lets balls others would reach go for base hits.

We've actually put this feature into the game with some reluctance since it alters the mathematically perfect formula for obtaining batting averages. It is characteristic of major league play that the superior fielders will outnumber the limited fielders. There are fewer positions at which to "hide" a weak glove or arm. We've arranged the chances of a base hit being converted into a put out so that it is less than the chance of an out going for a hit. But the true balance is difficult to obtain. You cannot know how many SD and LD players will be in the games to be played with "Extra Innings." Yet, the feature adds another element to the "gamesmanship" which is among "Extra Innings" attributes.

ERA ADJUSTMENT CHART

The other variation at the "Pro-Level" of play is the use of the ERA Adjustment Chart and the SK (Superior Strike Out) classification for pitchers.

By using the ERA Adjustment Chart you obtain even finer separations among the pitchers. This is particularly rewarding to those who have had super seasons. The range of 3.39 to 3.54 has been selected as "the norm."

When you use the ERA Adjustment Chart you adjust the batter's standard hitting level accordingly. If the pitcher had an ERA in the range from 2.69 to 2.81, the GREEN die would be lowered by five. A hitter with a standard of 2-6-6 would be reduced to 2-6-1 against this pitcher. No further adjustments would be made. This feature is not a supplement to the five grades of pitching used at the Intermediate Level, it replaces it.

However, in order to maintain the same balance among pitchers in terms of walks, balks, hit batters, wild pitches, and errors and double plays made behind them, use the Grade A through Grade E designations on the First Roll Chart and Second Roll Chart (sixth column, double plays). Just put the pitcher in the category he belongs according to his ERA.

Until you become easily familiar with the adjustment factor, particularly on those with very low or very high ERAs, you might find it more convenient to guide yourself with the Master Chart.

For example, if a batter started with batting level of 2-5-5 and was facing an ERA pitcher with a 2.09, you'd lower his batting mark by ten places (0/-1/-4). By counting down ten lines from 2-5-5 on the Master Chart you'd find the batter's rating had dropped 2-4-1.

The ERA Adjustment Chart does only two things: it either turns put outs into singles, by moving the batter's hitting range upward; or, it turns singles into put outs by moving it downward. It does not change singles into doubles, doubles into triples or triples into home runs.

It does not turn one form of a put out into another. The only adjustment you make is to either take a hit away or change a put out into a single when you raise or lower the batter's hitting range as it is effected by the pitcher's ERA.

The ERA adjustment must so effect the hitter's range that it is the difference between a hit or an out or else you do not apply it.

SUPERIOR STRIKE OUT PITCHERS

You will not find this designation on the rosters which come with the game. This was an addition at the "Pro-Level" which was introduced after the rosters for the contemporary teams had been printed. You will find a separate listing of SK pitchers with your rosters.

The Superior Strike Out pitcher averages 7 strike outs per nine innings.

Divide the number of innings pitched by nine to learn the equivalent of nine inning games. Divide that into the number of strike outs to learn the strike out rate per nine innings pitched.

A pitcher rated SK (Superior Strike Out) is credited with a strike out on the Second Roll Chart on all combinations from 2-5-1 through 2-6-6. (unless, of course, they are hits for the batter.)

As a matter of interest, low ERA pitchers, who are usually proficient in striking out batters, acquire additional strike outs by lowering the batter's hitting range, via the Adjusted ERA Chart.

While seven strike outs per game is a substantial number of Ks to put in the book, there are a few super strike out pitchers who should rank even higher.

For the pitcher who averages eight or more strike outs per game, credit him with a strike out on all foul outs to the catcher. This doesn't change the play of the game and the catcher gets the put out either way.

We'll indicate this rarity as SK-1.

The Defensive Ratings and use of the Adjusted ERA Chart, and the SK and SK-1 rating for pitchers are the major elements of playing the game at the "Pro-Level."

We could go on defining and redesigning the game almost endlessly. We'll resist this temptation and leave it to those of you who are attracted by such finite manipulations to add them yourselves. For example, the Sacrifice Chart could be redesigned so that certain types of players would have greater success than others. While there are many exceptions, sluggers rarely bunt runners along with the same success that singles hitters do. The best bunters are found among those with low extra base power and among the best pitchers. Again, this can't be proven by statistics (they aren't published) but observation leads to the certainty that low ERA pitchers sacrifice with more success than high ERA pitchers.

However, the more decision-making which is built into the game the more time it takes to prepare rosters. "Extra Innings" was designed to overcome the liabilities of otherwise excellent table baseball games. These are: The length of time players of those games must wait for new data to be published; the fact that they must purchase it; and that competition is limited to those teams and players the game's manufacturer chooses to publish. In a search for more precise definitions, "Extra Innings" could fall into the same category. It is well within the competence of the techniques of "Extra Innings" and its designer to produce such a game. But, it would take many months to produce each year's rosters; time is money, there would be added printing costs and we'd all end up with another game which was late with data, limited in its scope of competition and which sold its data each year.

We feel that "Extra Innings" covers all contingencies which arise in a ball game. About the only thing we can conceive which is not included is the game which is called off because of rain or a power failure. As there is nothing more frustrating at the ball park than to depart with a soggy rain check to show for your visit, we've left that out.

May the sun always shine on your games or, if you're playing "under the lights," may you never blow a fuse.

JACK KAVANAGH

ERA Adjustment Chart

ERA	Adjustment
0.00-0.87	0/-4/-1
0.88-0.94	0/-4/0
0.95-1.01	0/-3/-5
1.02-1.08	0/-3/-4
1.09-1.15	0/-3/-3
1.16-1.23	0/-3/-2
1.24-1.31	0/-3/-1
1.32-1.39	0/-3/0
1.40-1.48	0/-2/-5
1.49-1.57	0/-2/-4
1.58-1.67	0/-2/-3
1.68-1.77	0/-2/-2
1.78-1.87	0/-2/-1
1.88-1.97	0/-2/0
1.98-2.08	0/-1/-5
2.09-2.19	0/-1/-4
2.20-2.31	0/-1/-3
2.32-2.43	0/-1/-2
2.44-2.55	0/-1/-1
2.56-2.68	0/-1/0
2.69-2.81	0/0/-5
2.82-2.95	0/0/-4
2.96-3.09	0/0/-3
3.10-3.23	0/0/-2
3.24-3.38	0/0/-1
3.39-3.54	0/0/0
3.55-3.70	+0/0/-1
3.71-3.86	+0/0/-2
3.87-4.02	+0/0/-3
4.03-4.20	+0/0/-4
4.21-4.38	+0/0/-5
4.39-4.56	+0/-1/0
4.57-4.76	+0/-1/-1
4.77-4.96	+0/-1/-2
4.97-5.16	+0/-1/-3
5.17-5.37	+0/-1/-4
5.38-5.58	+0/-1/-5
5.59-5.80	+0/-2/0
5.81-6.02	+0/-2/-1
6.03-6.25	+0/-2/-2
6.26-6.50	+0/-2/-3
6.51-6.75	+0/-2/-4
6.76-7.00	+0/-2/-5
7.01-7.26	+0/-3/0
7.27-7.52	+0/-3/-1
7.53-7.78	+0/-3/-2
7.79-8.06	+0/-3/-3
8.07-8.34	+0/-3/-4
8.35-8.64	+0/-3/-5
8.65-8.95	+0/-4/0
8.96-9.26	+0/-4/-1

Designed by Jeff Sagarin, M.I.T. '70

BATTING AVERAGE RATING CHART (Left Handed Batters)

Left column when facing left handed pitcher.

Right column when facing right handed pitcher.

.012	1-1-1	1-1-3	.061	1-2-4	1-3-2	.110	1-4-5	1-4-6
.013	1-1-2	1-1-3	.062	1-2-5	1-3-2	.111	1-4-6	1-4-6
.014	1-1-3	1-1-3	.063	1-2-6	1-3-2	.112	1-4-3	1-5-1
.015	1-1-1	1-1-4	.064	1-3-1	1-3-2	.113	1-4-4	1-5-1
.016	1-1-1	1-1-4	.065	1-3-2	1-3-2	.114	1-4-5	1-5-1
.017	1-1-2	1-1-4	.066	1-2-6	1-3-3	.115	1-4-6	1-5-1
.018	1-1-3	1-1-4	.067	1-3-1	1-3-3	.116	1-5-1	1-5-1
.019	1-1-1	1-1-5	.068	1-3-2	1-3-3	.117	1-4-5	1-5-2
.020	1-1-2	1-1-5	.069	1-3-3	1-3-3	.118	1-4-6	1-5-2
.021	1-1-3	1-1-5	.070	1-2-6	1-3-4	.119	1-5-1	1-5-2
.022	1-1-4	1-1-5	.071	1-3-1	1-3-4	.120	1-5-2	1-5-2
.023	1-1-5	1-1-5	.072	1-3-2	1-3-4	.121	1-4-5	1-5-3
.024	1-1-2	1-1-6	.073	1-3-3	1-3-4	.122	1-4-6	1-5-3
.025	1-1-3	1-1-6	.074	1-3-4	1-3-4	.123	1-5-1	1-5-3
.026	1-1-4	1-1-6	.075	1-3-1	1-3-5	.124	1-5-2	1-5-3
.027	1-1-5	1-1-6	.076	1-3-2	1-3-5	.125	1-5-3	1-5-3
.028	1-1-6	1-1-6	.077	1-3-3	1-3-5	.126	1-4-6	1-5-4
.029	1-1-4	1-2-1	.078	1-3-4	1-3-5	.127	1-5-1	1-5-4
.030	1-1-5	1-2-1	.079	1-3-5	1-3-5	.128	1-5-2	1-5-4
.031	1-1-6	1-2-1	.080	1-3-3	1-3-6	.129	1-5-3	1-5-4
.032	1-2-1	1-2-1	.081	1-3-4	1-3-6	.130	1-5-4	1-5-4
.033	1-1-4	1-2-2	.082	1-3-5	1-3-6	.131	1-5-2	1-5-5
.034	1-1-5	1-2-2	.083	1-3-6	1-3-6	.132	1-5-3	1-5-5
.035	1-1-6	1-2-2	.084	1-3-3	1-4-1	.133	1-5-4	1-5-5
.036	1-2-1	1-2-2	.085	1-3-4	1-4-1	.134	1-5-5	1-5-5
.037	1-2-2	1-2-2	.086	1-3-5	1-4-1	.135	1-5-2	1-5-6
.038	1-1-5	1-2-3	.087	1-3-6	1-4-1	.136	1-5-3	1-5-6
.039	1-1-6	1-2-3	.088	1-4-1	1-4-1	.137	1-5-4	1-5-6
.040	1-2-1	1-2-3	.089	1-3-4	1-4-2	.138	1-5-5	1-5-6
.041	1-2-2	1-2-3	.090	1-3-5	1-4-2	.139	1-5-6	1-5-6
.042	1-2-3	1-2-3	.091	1-3-6	1-4-2	.140	1-5-3	1-6-1
.043	1-2-1	1-2-4	.092	1-4-1	1-4-2	.141	1-5-4	1-6-1
.044	1-2-2	1-2-4	.093	1-4-2	1-4-2	.142	1-5-5	1-6-1
.045	1-2-3	1-2-4	.094	1-3-6	1-4-3	.143	1-5-6	1-6-1
.046	1-2-4	1-2-4	.095	1-4-1	1-4-3	.144	1-6-1	1-6-1
.047	1-2-1	1-2-5	.096	1-4-2	1-4-3	.145	1-5-5	1-6-2
.048	1-2-2	1-2-5	.097	1-4-3	1-4-3	.146	1-5-6	1-6-2
.049	1-2-3	1-2-5	.098	1-3-6	1-4-4	.147	1-6-1	1-6-2
.050	1-2-4	1-2-5	.099	1-4-1	1-4-4	.148	1-6-2	1-6-2
.051	1-2-5	1-2-5	.100	1-4-2	1-4-4	.149	1-5-5	1-6-3
.052	1-2-2	1-2-6	.101	1-4-3	1-4-4	.150	1-5-6	1-6-3
.053	1-2-3	1-2-6	.102	1-4-4	1-4-4	.151	1-6-1	1-6-3
.054	1-2-4	1-2-6	.103	1-4-1	1-4-5	.152	1-6-2	1-6-3
.055	1-2-5	1-2-6	.104	1-4-2	1-4-5	.153	1-6-3	1-6-3
.056	1-2-6	1-2-6	.105	1-4-3	1-4-5	.154	1-6-1	1-6-4
.057	1-2-4	1-3-1	.106	1-4-4	1-4-5	.155	1-6-2	1-6-4
.058	1-2-5	1-3-1	.107	1-4-5	1-4-5	.156	1-6-3	1-6-4
.059	1-2-6	1-3-1	.108	1-4-3	1-4-6	.157	1-6-4	1-6-4
.060	1-3-1	1-3-1	.109	1-4-4	1-4-6	.158	1-6-1	1-6-5

BATTING AVERAGE RATING CHART (Left Handed Batters)

Left column when facing left handed pitcher.

Right column when facing right handed pitcher.

.159	1-6-2	1-6-5	.208	2-2-3	2-2-3	.257	2-3-6	2-4-2
.160	1-6-3	1-6-5	.209	2-1-6	2-2-4	.258	2-4-1	2-4-2
.161	1-6-4	1-6-5	.210	2-2-1	2-2-4	.259	2-4-2	2-4-2
.162	1-6-5	1-6-5	.211	2-2-2	2-2-4	.260	2-3-5	2-4-3
.163	1-6-2	1-6-6	.212	2-2-3	2-2-4	.261	2-3-6	2-4-3
.164	1-6-3	1-6-6	.213	2-2-4	2-2-4	.262	2-4-1	2-4-3
.165	1-6-4	1-6-6	.214	2-2-1	2-2-5	.263	2-4-2	2-4-3
.166	1-6-5	1-6-6	.215	2-2-2	2-2-5	.264	2-4-3	2-4-3
.167	1-6-6	1-6-6	.216	2-2-3	2-2-5	.265	2-3-6	2-4-4
.168	1-6-4	2-1-1	.217	2-2-4	2-2-5	.266	2-4-1	2-4-4
.169	1-6-5	2-1-1	.218	2-2-5	2-2-5	.267	2-4-2	2-4-4
.170	1-6-6	2-1-1	.219	2-2-3	2-2-6	.268	2-4-3	2-4-4
.171	2-1-1	2-1-1	.220	2-2-4	2-2-6	.269	2-4-4	2-4-4
.172	1-6-4	2-1-2	.221	2-2-5	2-2-6	.270	2-4-2	2-4-5
.173	1-6-5	2-1-2	.222	2-2-6	2-2-6	.271	2-4-3	2-4-5
.174	1-6-6	2-1-2	.223	2-2-3	2-3-1	.272	2-4-4	2-4-5
.175	2-1-1	2-1-2	.224	2-2-4	2-3-1	.273	2-4-5	2-4-5
.176	2-1-2	2-1-2	.225	2-2-5	2-3-1	.274	2-4-2	2-4-6
.177	1-6-5	2-1-3	.226	2-2-6	2-3-1	.275	2-4-3	2-4-6
.178	1-6-6	2-1-3	.227	2-3-1	2-3-1	.276	2-4-4	2-4-6
.179	2-1-1	2-1-3	.228	2-2-4	2-3-2	.277	2-4-5	2-4-6
.180	2-1-2	2-1-3	.229	2-2-5	2-3-2	.278	2-4-6	2-4-6
.181	2-1-3	2-1-3	.230	2-2-6	2-3-2	.279	2-4-4	2-5-1
.182	2-1-1	2-1-4	.231	2-3-1	2-3-2	.280	2-4-5	2-5-1
.183	2-1-2	2-1-4	.232	2-3-2	2-3-2	.281	2-4-6	2-5-1
.184	2-1-3	2-1-4	.233	2-2-6	2-3-3	.282	2-5-1	2-5-1
.185	2-1-4	2-1-4	.234	2-3-1	2-3-3	.283	2-4-4	2-5-2
.186	2-1-1	2-1-5	.235	2-3-2	2-3-3	.284	2-4-5	2-5-2
.187	2-1-2	2-1-5	.236	2-3-3	2-3-3	.285	2-4-6	2-5-2
.188	2-1-3	2-1-5	.237	2-2-6	2-3-4	.286	2-5-1	2-5-2
.189	2-1-4	2-1-5	.238	2-3-1	2-3-4	.287	2-5-2	2-5-2
.190	2-1-5	2-1-5	.239	2-3-2	2-3-4	.288	2-4-5	2-5-3
.191	2-1-3	2-1-6	.240	2-3-3	2-3-4	.289	2-4-6	2-5-3
.192	2-1-4	2-1-6	.241	2-3-4	2-3-4	.290	2-5-1	2-5-3
.193	2-1-5	2-1-6	.242	2-3-2	2-3-5	.291	2-5-2	2-5-3
.194	2-1-6	2-1-6	.243	2-3-3	2-3-5	.292	2-5-3	2-5-3
.195	2-1-3	2-2-1	.244	2-3-4	2-3-5	.293	2-5-1	2-5-4
.196	2-1-4	2-2-1	.245	2-3-5	2-3-5	.294	2-5-2	2-5-4
.197	2-1-5	2-2-1	.246	2-3-2	2-3-6	.295	2-5-3	2-5-4
.198	2-1-6	2-2-1	.247	2-3-3	2-3-6	.296	2-5-4	2-5-4
.199	2-2-1	2-2-1	.248	2-3-4	2-3-6	.297	2-5-1	2-5-5
.200	2-1-4	2-2-2	.249	2-3-5	2-3-6	.298	2-5-2	2-5-5
.201	2-1-5	2-2-2	.250	2-3-6	2-3-6	.299	2-5-3	2-5-5
.202	2-1-6	2-2-2	.251	2-3-3	2-4-1	.300	2-5-4	2-5-5
.203	2-2-1	2-2-2	.252	2-3-4	2-4-1	.301	2-5-5	2-5-5
.204	2-2-2	2-2-2	.253	2-3-5	2-4-1	.302	2-5-2	2-5-6
.205	2-1-6	2-2-3	.254	2-3-6	2-4-1	.303	2-5-3	2-5-6
.206	2-2-1	2-2-3	.255	2-4-1	2-4-1	.304	2-5-4	2-5-6
.207	2-2-2	2-2-3	.256	2-3-5	2-4-2	.305	2-5-5	2-5-6

BATTING AVERAGE RATING CHART (Left Handed Batters)

Left column when facing Left Handed Pitcher.
Right column when facing Right Handed Pitcher.

437
331 3-3-4
524 3-2-6

.306	2-5-6	2-5-6	.355	3-1-3	3-1-5	.403	3-3-3	3-3-3
.307	2-5-4	2-6-1	.356	3-1-4	3-1-5	.407	3-3-4	3-3-4
.308	2-5-5	2-6-1	.357	3-1-5	3-1-5	.412	3-3-5	3-3-5
.309	2-5-6	2-6-1	.358	3-1-3	3-1-6	.417	3-3-6	3-3-6
.310	2-6-1	2-6-1	.359	3-1-4	3-1-6	.421	3-4-1	3-4-1
.311	2-5-4	2-6-2	.360	3-1-5	3-1-6	.426	3-4-2	3-4-2
.312	2-5-5	2-6-2	.361	3-1-6	3-1-6	.431	3-4-3	3-4-3
.313	2-5-6	2-6-2	.362	3-1-4	3-2-1	.435	3-4-4	3-4-4
.314	2-6-1	2-6-2	.363	3-1-5	3-2-1	.440	3-4-5	3-4-5
.315	2-6-2	2-6-2	.364	3-1-6	3-2-1	.444	3-4-6	3-4-6
.316	2-5-6	2-6-3	.365	3-2-1	3-2-1			
.317	2-6-1	2-6-3	.366	3-1-4	3-2-2			
.318	2-6-2	2-6-3	.367	3-1-5	3-2-2			
.319	2-6-3	2-6-3	.368	3-1-6	3-2-2			
.320	2-5-6	2-6-4	.369	3-2-1	3-2-2			
.321	2-6-1	2-6-4	.370	3-2-2	3-2-2			
.322	2-6-2	2-6-4	.371	3-1-5	3-2-3			
.323	2-6-3	2-6-4	.372	3-1-6	3-2-3			
.324	2-6-4	2-6-4	.373	3-2-1	3-2-3			
.325	2-6-1	2-6-5	.374	3-2-2	3-2-3			
.326	2-6-2	2-6-5	.375	3-2-3	3-2-3			
.327	2-6-3	2-6-5	.376	3-1-6	3-2-4			
.328	2-6-4	2-6-5	.377	3-2-1	3-2-4			
.329	2-6-5	2-6-5	.378	3-2-2	3-2-4			
.330	2-6-3	2-6-6	.379	3-2-3	3-2-4			
.331	2-6-4	2-6-6	.380	3-2-4	3-2-4			
.332	2-6-5	2-6-6	.381	3-2-2	3-2-5			
.333	2-6-6	2-6-6	.382	3-2-3	3-2-5			
.334	2-6-3	3-1-1	.383	3-2-4	3-2-5			
.335	2-6-4	3-1-1	.384	3-2-5	3-2-5			
.336	2-6-5	3-1-1	.385	3-2-2	3-2-6			
.337	2-6-6	3-1-1	.386	3-2-3	3-2-6			
.338	3-1-1	3-1-1	.387	3-2-4	3-2-6			
.339	2-6-5	3-1-2	.388	3-2-5	3-2-6			
.340	2-6-5	3-1-2	.389	3-2-6	3-2-6			
.341	2-6-6	3-1-2	.390	3-2-3	3-3-1			
.342	3-1-1	3-1-2	.391	3-2-4	3-3-1			
.343	3-1-2	3-1-2	.392	3-2-5	3-3-1			
.344	2-6-6	3-1-3	.393	3-2-6	3-3-1			
.345	3-1-1	3-1-3	.394	3-3-1	3-3-1			
.346	3-1-2	3-1-3	.395	3-2-5	3-3-2			
.347	3-1-3	3-1-3	.396	3-2-6	3-3-2			
.348	2-6-6	3-1-4	.397	3-3-1	3-3-2			
.349	3-1-1	3-1-4	.398	3-3-2	3-3-2			
.350	3-1-2	3-1-4	.399	3-3-1	3-3-3			
.351	3-1-3	3-1-4	.400	3-3-2	3-3-3			
.352	3-1-4	3-1-4						
.353	3-1-1	3-1-5						
.354	3-1-2	3-1-5						

BATTING AVERAGE RATING CHART (Right Handed Batters)

Left column when facing left handed pitcher.

Right column when facing right handed pitcher.

.006	1-1-3	1-1-1	.052	1-3-1	1-2-5	.098	1-4-4	1-4-3
.007	1-1-4	1-1-1	.053	1-3-2	1-2-5	.099	1-4-5	1-4-3
.008	1-1-5	1-1-1	.054	1-3-3	1-2-5	.100	1-4-6	1-4-3
.009	1-1-6	1-1-1	.055	1-2-6	1-2-6	.101	1-5-1	1-4-3
.010	1-1-3	1-1-2	.056	1-3-1	1-2-6	.102	1-4-4	1-4-4
.011	1-1-4	1-1-2	.057	1-3-2	1-2-6	.103	1-4-5	1-4-4
.012	1-1-5	1-1-2	.058	1-3-3	1-2-6	.104	1-4-6	1-4-4
.013	1-1-6	1-1-2	.059	1-3-4	1-2-6	.105	1-5-1	1-4-4
.014	1-1-3	1-1-3	.060	1-3-1	1-3-1	.106	1-5-2	1-4-4
.015	1-1-4	1-1-3	.061	1-3-2	1-3-1	.107	1-4-5	1-4-5
.016	1-1-5	1-1-3	.062	1-3-3	1-3-1	.108	1-5-1	1-4-5
.017	1-1-6	1-1-3	.063	1-3-4	1-3-1	.109	1-5-2	1-4-5
.018	1-1-4	1-1-4	.064	1-3-5	1-3-1	.110	1-5-3	1-4-5
.019	1-1-5	1-1-4	.065	1-3-2	1-3-2	.111	1-4-6	1-4-6
.020	1-1-6	1-1-4	.066	1-3-3	1-3-2	.112	1-5-1	1-4-6
.021	1-2-1	1-1-4	.067	1-3-4	1-3-2	.113	1-5-2	1-4-6
.022	1-2-2	1-1-4	.068	1-3-5	1-3-2	.114	1-5-3	1-4-6
.023	1-1-5	1-1-5	.069	1-3-3	1-3-3	.115	1-5-4	1-4-6
.024	1-1-6	1-1-5	.070	1-3-4	1-3-3	.116	1-5-1	1-5-1
.025	1-2-1	1-1-5	.071	1-3-5	1-3-3	.117	1-5-2	1-5-1
.026	1-2-2	1-1-5	.072	1-3-6	1-3-3	.118	1-5-3	1-5-1
.027	1-2-3	1-1-5	.073	1-4-1	1-3-3	.119	1-5-4	1-5-1
.028	1-1-6	1-1-6	.074	1-3-4	1-3-4	.120	1-5-2	1-5-2
.029	1-2-1	1-1-6	.075	1-3-5	1-3-4	.121	1-5-3	1-5-2
.030	1-2-2	1-1-6	.076	1-3-6	1-3-4	.122	1-5-4	1-5-2
.031	1-2-3	1-1-6	.077	1-4-1	1-3-4	.123	1-5-5	1-5-2
.032	1-2-1	1-2-1	.078	1-4-2	1-3-4	.124	1-5-6	1-5-2
.033	1-2-2	1-2-1	.079	1-3-5	1-3-5	.125	1-5-3	1-5-3
.034	1-2-3	1-2-1	.080	1-3-6	1-3-5	.126	1-5-4	1-5-3
.035	1-2-4	1-2-1	.081	1-4-1	1-3-5	.127	1-5-5	1-5-3
.036	1-2-5	1-2-1	.082	1-4-2	1-3-5	.128	1-5-6	1-5-3
.037	1-2-2	1-2-2	.083	1-3-6	1-3-6	.129	1-6-1	1-5-3
.038	1-2-3	1-2-2	.084	1-4-1	1-3-6	.130	1-5-4	1-5-4
.039	1-2-4	1-2-2	.085	1-4-2	1-3-6	.131	1-5-5	1-5-4
.040	1-2-5	1-2-2	.086	1-4-3	1-3-6	.132	1-5-6	1-5-4
.041	1-2-6	1-2-2	.087	1-4-4	1-3-6	.133	1-6-1	1-5-4
.042	1-2-3	1-2-3	.088	1-4-1	1-4-1	.134	1-5-5	1-5-5
.043	1-2-4	1-2-3	.089	1-4-2	1-4-1	.135	1-5-6	1-5-5
.044	1-2-5	1-2-3	.090	1-4-3	1-4-1	.136	1-6-1	1-5-5
.045	1-2-6	1-2-3	.091	1-4-4	1-4-1	.137	1-6-2	1-5-5
.046	1-2-4	1-2-4	.092	1-4-5	1-4-1	.138	1-6-3	1-5-5
.047	1-2-5	1-2-4	.093	1-4-2	1-4-2	.139	1-5-6	1-5-6
.048	1-2-6	1-2-4	.094	1-4-3	1-4-2	.140	1-6-1	1-5-6
.049	1-3-1	1-2-4	.095	1-4-4	1-4-2	.141	1-6-2	1-5-6
.050	1-3-2	1-2-4	.096	1-4-5	1-4-2	.142	1-6-3	1-5-6
.051	1-2-6	1-2-5	.097	1-4-3	1-4-3	.143	1-6-4	1-5-6

BATTING AVERAGE RATING CHART (Right Handed Batters)

Left column when facing left handed pitcher.

Right column when facing right handed pitcher.

.144	1-6-1	1-6-1	.190	2-1-5	2-1-5	.236	2-3-3	2-3-3
.145	1-6-2	1-6-1	.191	2-1-6	2-1-5	.237	2-3-4	2-3-3
.146	1-6-3	1-6-1	.192	2-2-1	2-1-5	.238	2-3-5	2-3-3
.147	1-6-4	1-6-1	.193	2-2-2	2-1-5	.239	2-3-6	2-3-3
.148	1-6-2	1-6-2	.194	2-2-3	2-1-5	.240	2-4-1	2-3-3
.149	1-6-3	1-6-2	.195	2-1-6	2-1-6	.241	2-3-4	2-3-4
.150	1-6-4	1-6-2	.196	2-2-1	2-1-6	.242	2-3-5	2-3-4
.151	1-6-5	1-6-2	.197	2-2-2	2-1-6	.243	2-3-6	2-3-4
.152	1-6-6	1-6-2	.198	2-2-3	2-1-6	.244	2-4-1	2-3-4
.153	1-6-3	1-6-3	.199	2-2-1	2-2-1	.245	2-3-5	2-3-5
.154	1-6-4	1-6-3	.200	2-2-2	2-2-1	.246	2-3-6	2-3-5
.155	1-6-5	1-6-3	.201	2-2-3	2-2-1	.247	2-4-1	2-3-5
.156	1-6-6	1-6-3	.202	2-2-4	2-2-1	.248	2-4-2	2-3-5
.157	1-6-4	1-6-4	.203	2-2-5	2-2-1	.249	2-4-3	2-3-5
.158	1-6-5	1-6-4	.204	2-2-2	2-2-2	.250	2-3-6	2-3-6
.159	1-6-6	1-6-4	.205	2-2-1	2-2-2	.251	2-4-1	2-3-6
.160	2-1-1	1-6-4	.206	2-2-2	2-2-2	.252	2-4-2	2-3-6
.161	2-1-2	1-6-4	.207	2-2-3	2-2-2	.253	2-4-3	2-3-6
.162	1-6-5	1-6-5	.208	2-2-3	2-2-3	.254	2-4-4	2-3-6
.163	1-6-6	1-6-5	.209	2-2-4	2-2-3	.255	2-4-1	2-4-1
.164	2-1-1	1-6-5	.210	2-2-5	2-2-3	.256	2-4-2	2-4-1
.165	2-1-2	1-6-5	.211	2-2-6	2-2-3	.257	2-4-3	2-4-1
.166	2-1-3	1-6-5	.212	2-3-1	2-2-3	.258	2-4-4	2-4-1
.167	1-6-6	1-6-6	.213	2-2-4	2-2-4	.259	2-4-2	2-4-2
.168	2-1-1	1-6-6	.214	2-2-5	2-2-4	.260	2-4-3	2-4-2
.169	2-1-2	1-6-6	.215	2-2-6	2-2-4	.261	2-4-4	2-4-2
.170	2-1-3	1-6-6	.216	2-3-1	2-2-4	.262	2-4-5	2-4-2
.171	2-1-1	2-1-1	.217	2-3-2	2-2-4	.263	2-4-6	2-4-2
.172	2-1-2	2-1-1	.218	2-2-5	2-2-5	.264	2-4-3	2-4-3
.173	2-1-3	2-1-1	.219	2-2-6	2-2-5	.265	2-4-4	2-4-3
.174	2-1-4	2-1-1	.220	2-3-1	2-2-5	.266	2-4-5	2-4-3
.175	2-1-5	2-1-1	.221	2-3-2	2-2-5	.267	2-4-6	2-4-3
.176	2-1-2	2-1-2	.222	2-2-6	2-2-6	.268	2-5-1	2-4-3
.177	2-1-3	2-1-2	.223	2-3-1	2-2-6	.269	2-4-4	2-4-4
.178	2-1-4	2-1-2	.224	2-3-2	2-2-6	.270	2-4-5	2-4-4
.179	2-1-5	2-1-2	.225	2-3-3	2-2-6	.271	2-4-6	2-4-4
.180	2-1-6	2-1-2	.226	2-3-4	2-2-6	.272	2-5-1	2-4-4
.181	2-1-3	2-1-3	.227	2-3-1	2-3-1	.273	2-4-5	2-4-5
.182	2-1-4	2-1-3	.228	2-3-2	2-3-1	.274	2-4-6	2-4-5
.183	2-1-5	2-1-3	.229	2-3-3	2-3-1	.275	2-5-1	2-4-5
.184	2-1-6	2-1-3	.230	2-3-4	2-3-1	.276	2-5-2	2-4-5
.185	2-1-4	2-1-4	.231	2-3-5	2-3-1	.277	2-5-3	2-4-5
.186	2-1-5	2-1-4	.232	2-3-2	2-3-2	.278	2-4-6	2-4-6
.187	2-1-6	2-1-4	.233	2-3-3	2-3-2	.279	2-5-1	2-4-6
.188	2-2-1	2-1-4	.234	2-3-4	2-3-2	.280	2-5-2	2-4-6
.189	2-2-2	2-1-4	.235	2-3-5	2-3-2	.281	2-5-3	2-4-6

FIRST ROLL CHART

	ERA to 2.50		2.51-3.00		3.01-4.00		4.01-4.50		4.50 up	
	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"J"
1-1-1	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-1-2	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-1-3	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-1-4	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-1-5	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-1-6	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-2-1	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-2-2	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-2-3	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-2-4	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-2-5	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-2-6	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-3-1	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-3-2	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-3-3	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-3-4	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-3-5	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-3-6	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-4-1	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-4-2	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-4-3	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-4-4	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-4-5	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-4-6	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-5-1	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-5-2	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-5-3	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-5-4	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-5-5	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-5-6	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-6-1	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-6-2	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-6-3	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-6-4	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-6-5	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB
1-6-6	BB	BB	BB	BB	BB	BB	BB	BB	BB	BB

batter out of game, arguing, if Ks 2d roll interference by 2 if 2nd roll 6-6-1 to 6-6-6 TRIPLE PLAY when followed by Inf DP

3-3-3 Injury if a hit follows (see text)
4-4-4 Injury if a hit follows (see text)
5-5-5 Injury if batter out (see text)

ERRORS AGAINST PITCHER

ERA to 2.50 2.51-3.00 3.01-4.00 4.01 & up

6-6-1 E E E E E
6-6-2 E E E E E
6-6-3 E E E E E
6-6-4 E E E E E
6-6-5 E E E E E
6-6-6 E E E E E

(6-6-1) For pre-1950 play only.

NOTE: PRE-1920 Teams Errors All Pitchers 6-6-1 thru 6-6-6

BB — Base on Balls

HB — Hit batter

WP — Wild Pitch

PB — Passed Ball

PkOff — Pickoff Play

Balk (3) Only when bases loaded; (2) only with two on; (1) when anyone on any base.

SECOND ROLL CHART

SECOND ROLL CHART															
DICE COMB.					a)	b)	a)	b)	a)	b)	DP	Pitcher ERA up to 2.50 Only			
1-1-1 K	2-1-1 K	8-1-1	3-1**	4-1-1	3-1	5-1-1	3-1	(1-4)	6-1-1	5-3	1-4	1-6-3			
1-1-2 K	2-1-2 K	3-1-2	3-1	4-1-2	4-3	5-1-2	6-3	(6-4)	6-1-2	5-3	3-6	5-4-3			
1-1-3 K	2-1-3 K	3-1-3	4-3	4-1-3	4-3	5-1-3	6-3	(4-6)	6-1-3	5-3	4-6	4-6-3			
1-1-4 K	2-1-4 K	3-1-4	4-3	4-1-4	4-3	5-1-4	6-3	(6-4)	6-1-4	5-3	6-4	6-4-3			
1-1-5 K	2-1-5 K	3-1-5	4-3	4-1-5	4-3	5-1-5	6-3	(3-6)	6-1-5	5-3	5-4	3-6-3			
1-1-6 K	2-1-6 K	3-1-6	4-3	4-1-6	4-3	5-1-6	6-3	(6-4)	6-1-6	5-3	5-4	5-4-3			
Pitcher ERA up to 3.00 Only															
1-2-1 K	2-2-1 K	3-2-1	4-3	4-2-1	4-3	5-2-1	6-3	(4-6)	6-2-1	5-3	3-6	4-6-3			
1-2-2 K	2-2-2 K	3-2-2	7*	4-2-2	4-3	5-2-2	6-3	(4-6)	6-2-2	5-3	3-6	4-6-3			
1-2-3 K	2-2-3 K	3-2-3	7*	4-2-3	4-3	5-2-3	6-3	(6-4)	6-2-3	5-3	4-6	6-4-3			
1-2-4 K	2-2-4 K	3-2-4	7*	4-2-4	4-3	5-2-4	6-3	(4-6)	6-2-4	5-3	4-6	6-4-3			
1-2-5 K	2-2-5 K	3-2-5	7*	4-2-5	4-3	5-2-5	6-3	(6-4)	6-2-5	5-3	4-6	6-4-3			
1-2-6 K	2-2-6 K	3-2-6	7*	4-2-6	3ua	5-2-6	6-3	(3-6)	6-2-6	5-3	4-6	6-4-3			
All pitchers															
1-3-1 K	2-3-1 K	3-3-1	8*	4-3-1	3ua	5-3-1	6-3	(6-4)	6-3-1	5-3	6-4	6-4-3			
1-3-2 K	2-3-2 K	3-3-2	8*	4-3-2	8*	5-3-2	6-3	(6-4)	6-3-2	6-3	6-4	6-4-3			
1-3-3 K	2-3-3 K	3-3-3	8*	4-3-3	8*	5-3-3	6-3	(4-6)	6-3-3	6-3	6-4	6-4-3			
1-3-4 K	2-3-4 K	3-3-4	9*	4-3-4	8*	5-3-4	3fo		6-3-4	6-3	6-4	6-4-3			
1-3-5 K	2-3-5 K	3-3-5	9*	4-3-5	8*	5-3-5	3fo		6-3-5	6-3	5-4	6-4-3			
1-3-6 K	2-3-6 K	3-3-6	9*	4-3-6	8*	5-3-6	3fo		6-3-6	2fo	5-4	6-4-3			
1-4-1 K	2-4-1 K	3-4-1	9*	4-4-1	8	5-4-1	9		6-4-1	6		6-4-3			
1-4-2 K	2-4-2 K	3-4-2	9*	4-4-2	8	5-4-2	9		6-4-2	6		6-4-3			
1-4-3 K	2-4-3 K	3-4-3	9*	4-4-3	8	5-4-3	K		6-4-3	6		4-6-3			
1-4-4 K	2-4-4 K	3-4-4	9	4-4-4	8	5-4-4	K		6-4-4	6		4-6-3			
1-4-5 K	2-4-5 K	3-4-5	9	4-4-5	8*	5-4-5	K		6-4-5	6		4-6-3			
1-4-6 K	2-4-6 K	3-4-6	9	4-4-6	8	5-4-6	K		6-4-6	6		4-6-3			
1-5-1 K	2-5-1 K	3-5-1	7*	4-5-1	8*	5-5-1	K		6-5-1	9*		3-6-3			
1-5-2 K	2-5-2 K	3-5-2	7*	4-5-2	8*	5-5-2	K		6-5-2	9*		3-6-3			
1-5-3 K	2-5-3 4(K)	3-5-3	7*	4-5-3	8*	5-5-3	K		6-5-3	5		5-4-3			
1-5-4 K	2-5-4 4(K)	3-5-4	7*	4-5-4	K	5-5-4	K		6-5-4	5		5-4-3			
1-5-5 K	2-5-5 4(K)	3-5-5	7*	4-5-5	K	5-5-5	K		6-5-5	5		5-4-3			
1-5-6 K	2-5-6 4(K)	3-5-6	7*	4-5-6	K	5-5-6	K		6-5-6	5		5-4-3			
1-6-1 K	2-6-1 4(K)	3-6-1	7*	4-6-1	K	5-6-1	K		6-6-1	5fo		6-4-3			
1-6-2 K	2-6-2 4(K)	3-6-2	7*	4-6-2	K	5-6-2	K		6-6-2	5fo		6-4-3			
1-6-3 K	2-6-3 4(K)	3-6-3	7	4-6-3	K	5-6-3	K		6-6-3	3fo		6-4-3			
1-6-4 K	2-6-4 4(K)	3-6-4	K	4-6-4	K	5-6-4	K		6-6-4	2fo		4-6-3			
1-6-5 K	2-6-5 6(K)	3-6-5	K	4-6-5	K	5-6-5	K		6-6-5	2fo		4-6-3			
1-6-6 K	2-6-6 6(K)	3-6-6	K	4-6-6	K	5-6-6	K		6-6-6	2fo		5-4-3			

*Sac. Fly Opt. **Dbl Play UA a) no runner on first b) runner on first (K) Strike Out SK & SK.1 Pitchers only (Pro-Level)

Boxed Numbers: see text Pro-Level Defensive Ratings 6-6-1 thru 6-6-6 DP teams from 1950 only.

92
463
345/342

BATTING AVERAGE RATING CHART (Right Handed Batters)

Left column when facing left handed pitcher.

Right column when facing right handed pitcher.

.282	2-5-1	2-5-1	.328	3-1-2	2-6-4	.374	3-2-6	3-2-2
.283	2-5-2	2-5-1	.329	2-6-5	2-6-5	.375	3-2-3	3-2-3
.284	2-5-3	2-5-1	.330	2-6-6	2-6-5	.376	3-2-4	3-2-3
.285	2-5-4	2-5-1	.331	3-1-1	2-6-5	.377	3-2-5	3-2-3
.286	2-5-5	2-5-1	.332	3-1-2	2-6-5	.378	3-2-6	3-2-3
.287	2-5-2	2-5-2	.333	2-6-6	2-6-6	.379	3-3-1	3-2-3
.288	2-5-3	2-5-2	.334	3-1-1	2-6-6	.380	3-2-4	3-2-4
.289	2-5-4	2-5-2	.335	3-1-2	2-6-6	.381	3-2-5	3-2-4
.290	2-5-5	2-5-2	.336	3-1-3	2-6-6	.382	3-2-6	3-2-4
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