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The Historical Development of Personal Baseball Equipment from Origin of the Game to Present Day

Donald J. Shore

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THE HISTORICAL DEVELOPMENT OF PERSONAL BASEBALL EQUIPMENT
FROM ORIGIN OF THE GAME TO PRESENT DAY

by

Donald J. Shore

B.S. in Physical Education, University of North Dakota 1960

A Thesis
Submitted to the Faculty
of the
Graduate School
of the
University of North Dakota
in partial fulfillment of the requirements
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Master of Science

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August
1963
This thesis submitted by Donald J. Shore in partial fulfillment of the requirements for the Degree of Master of Science in the University of North Dakota, is hereby approved by the Committee under whom the work has been done.

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CHAPTER I

INTRODUCTION

The historical method is defined as the development of general principles by the study of the historical facts. This study represented an effort on the part of the writer to contribute some historical facts and data in a chronological order from the origin of the game of baseball to the present day and to help coaches and athletes better understand how the development of equipment through the years has revolutionized and popularized the game.

In colonial days, the aristocracy of young New York spent leisure hours playing or watching a game similar to cricket, brought from England by the settlers. At the same time the people of Boston were playing a somewhat similar game called rounders. These two imported games, cricket and rounders, appear to have been the joint ancestors of the great American game of baseball.

The colonial youngsters actually started the development of baseball equipment. When they wanted to play, they had to make their own equipment out of whatever materials they could find. It was from this point that the writer started to trace the developments and innovations and reasons why they took place.

Statement of the Problem

The problem of this study was to demonstrate how the development of personal baseball equipment through the years has gradually changed
baseball and revolutionized and popularized it to the point where it became and still holds the title today of "Our National Pastime."

Through this study, the writer hoped to demonstrate some major innovations in the game as a result of improvements and development of baseball equipment that has made the game of baseball what it is today.

Delimitations of the Study

This study was limited to personal baseball equipment and was a study only of what has developed in the United States from the early 1800's to the present day.

The personal baseball equipment covered in this report included baseball bats (including fungos), baseballs, catching paraphernalia, gloves, shoes, and player uniforms. Covered under catching paraphernalia are the mask, chest protector, and shin guards. The cap, belt, sliding pads, batter's protective helmet, stockings, pants, and jersey are covered under player uniforms.

Definitions

Baseball: A sphere with a cork or rubber center, wound with twine, and covered with sections of bleached white horsehide or leather, stitched together. The ball weighs not less than five nor more than five and one-fourth ounces avoirdupois, measures not less than nine nor more than nine and one-fourth inches in circumference, and meets the approved resiliency standards.

Bat: The implement with which the batter hits the ball. It must be round, not over two and three-fourths inches in diameter at the thickest part, not more than forty-two inches long, and entirely in one piece. Twine may be wound around it, or a granulated substance
applied, for a maximum distance of eighteen inches from the handle. The most common and satisfactory wood is ash.

**Gum:** The visored head covering worn in baseball, usually decorated with the team's initials or insignia.

**Chest Protector:** An inflated pad usually worn over the front part of the body as protection from injury, used by the catcher and the plate umpire—especially to guard against foul tips.

**Fungo Bat:** A bat used for hitting fly balls and grounders to fielders during practice. It is thinner than the ordinary bat, with the weight centered more in the head.

**Glove:** An article of protection worn on a fielder's hand (not his throwing hand) when playing defensively. That worn by all players, save the catcher and first baseman, is usually called a fielder's glove or mitt. It must be leather, not more than twelve inches long nor more than eight inches wide from the base of the thumb crotch to the outside edge of the glove. Such gloves have fingers as well as a thumb. The first baseman's mitt does not have all fingers, although a three-divisional "trapper's mitt" has been developed. It may not be longer than twelve inches from top to bottom nor more than eight inches wide across the palm. Other rules limit webbing and spaces between thumb and finger section. The catcher's mitt is unrestricted but is almost invariably nearly round, heavily padded and with a depression ("hole or pocket") in the middle in which the ball will stick.
Leg Guards: A protective device worn on each leg over the front and sides to protect against injury, used by the catcher and the plate umpire—especially to guard against foul tips.1

Mask: A protective device to shield the face of the catcher and the plate umpire against injury, particularly from line fouls from the bat. Not mandatory in the rules, but invariably worn (save by occasional small boys who do not mind courting disaster).

Shoe: The footwear worn. The baseball shoe is a low, leather one, with spikes on the ball and heel of the sole.

Sliding Pad: A heavy pad, worn under the pants, to prevent bruises and abrasions from sliding.

Spike: A metal projection on the bottom of the shoe for better traction. It is the part of a triangular plate, and there is one plate on the ball of the shoe, one on the heel, the latter plate being smaller. Each has three spikes, and these spikes are sharpened, thin flanges, roughly one-half inch square.

Toe Plate: A metal plate on the toe of the pitcher’s pivot foot, serving to protect the toe of this shoe, which constantly digs into the ground.

Uniform: The clothing worn. Major league rules insist on conformity by all players and call for both home and traveling uniforms, the two to contrast in color and style. The outer garment is usually flannel, more rarely silk, consisting of knickerbocker-type trousers that come somewhat below the knee, and a half-sleeve shirt. A full-sleeved jersey is usually worn under the shirt, and sliding pads under
the trousers are customary. The stockings are long. Low, spiked shoes and a baseball cap complete the uniform. There is lettering or insignia on the shirt and cap, sometimes the sleeve, and numbering on the back of the shirt.\textsuperscript{1}

\textsuperscript{1}Cummings, pp. 3-6.
CHAPTER II

THE PROBLEM AND ITS SCOPE

Purpose of the Study

The purpose of this study was to demonstrate how the development of personal equipment through the years has gradually changed baseball and its rules, and also to demonstrate how rule changes and improved playing techniques and knowledge have caused baseball equipment to develop to what is seen today.

Need for the Study

Little has been done in the field of historical research in the field of sports. In the development of baseball equipment, the writer has not been able to find records of work having been done. There is a wealth of baseball historical information available in scattered bits, but no semblance of an attempt to trace the historical development of equipment has been found in the literature by the writer.

In this thesis, the writer has pieced together source material that will be available for investigators in the field of baseball research. It is also felt that the author has directed attention to some possible major innovations that have taken place in the game as a result of improvements and development in baseball equipment.

Method of Procedure

The material for this thesis was gathered from the following sources: books, articles, periodicals, and personal correspondence.
Books

Several books were checked for information pertaining to baseball equipment. Especially helpful was Allison Dansig's *The History of Baseball*.

Other books are listed in the bibliography.

Articles

Very little material was found in newspapers but articles from sporting goods catalogs helped greatly. The articles are listed in the bibliography.

Periodicals

Numerous articles in periodicals were checked for information on sports equipment and a wealth of material was gleaned from this source. Copies of the *Rawlings Roundup* proved to be a very valuable aid. Other periodicals are listed in the bibliography.

Personal Correspondence

Personal correspondence was valuable as the author gained valuable source material and hints on how to find, develop, and present the material.

---


CHAPTER III

EVOLUTION OF THE BASEBALL

Dead or alive: Each new decade of baseball fans is led to believe that the current baseball is the "live" one and that the ball of yesterday was relatively "dead." But such is not really the case. There was talk of the "live" baseball 100 years ago, and perhaps 100 years from now the baseball of today may be referred to as the "dead" ball of the twentieth century.

Actually, the baseball has undergone very little change since the early days of the game, at least in the specifications prescribed in the rules. Baseball gloves and mitts, and uniforms have undergone numerous changes in size, shape and appearance, but for nearly 100 years, since 1872, the baseball has weighed five ounces and measured nine inches in circumference.

All baseballs do not conform exactly to the specifications, of course, as these are minimums and there are slight tolerances.¹

The rules prescribe that:

The ball shall be a sphere formed by yarn wound around a small core of cork, rubber or similar material covered with two strips of white horsehide, tightly stitched together. It is to weigh not less than five and one-quarter avoirdupois and measure not less than nine nor more than nine and one-quarter inches in circumference.²

¹"Dead or Alive," Rawling's Roundup, April 1959, p. 13.
The early day baseballs of the colonial period were developed and made by resourceful youngsters. They would start by using something for a center—perhaps bunched up rags—wrapping that with string until it had become sizeable enough to serve as a ball.\(^1\)

The baseball of the early nineteenth century was composed of a melted rubber center around which yarn was wound and generally included a sewn-on leather cover. The weight of the ball was three ounces and because of its size and construction it was a much livelier ball than the baseball of today. Scoring of over 100 runs in a game was not too uncommon until, in 1846, the rules were amended to provide that the first team to score twenty-one runs was the winner. It was not until 1857 that the length of a game was set at nine innings. Pitching was underarm from a distance of forty-five feet and the batter was out if a fielder caught the ball on the first bounce.

In 1854 the weight of the ball was increased to five and one-half to six ounces and the diameter to two and three-quarters to three and one-half inches. (A variance in circumference from eight and five-eighths to eleven inches.) Four years later as a result of the larger and less lively ball the "first bounce" rule was abolished.\(^2\)

In 1859 the ball was reduced in weight a quarter of an ounce and a quarter of an inch in circumference. The following year there was another reduction of a quarter inch in size and a quarter ounce in weight of the ball.\(^3\)


\(^2\) "Dead or Alive," Baseball's Roundup, April, 1959, p. 13.

In 1872, the tolerances on the weight and circumference of the baseball were reduced to those of today. (Five to five and one-quarter ounces in weight and nine to nine and one-quarter inches in circumference.) With the change in weight of the baseball in 1854, the ball became less lively and more uniform but there was still some variation in the composition of baseballs. The so called "lively ball" did not disappear completely as the home run record for one team (140) was established by the 1884 Chicago White Stockings. This withstood the assault of all teams until the 1927 Yankees hit 158, including sixty by Babe Ruth.

In the early years of organized professional baseball, beginning with the National Association in 1871, baseballs were still noted for their lack of uniformity. As the home team was responsible for furnishing the game ball, strategy entered into the determination of the type baseball to be supplied. A team with a lot of batting power supplied a lively ball while a good defensive club could be expected to put into play a dead ball. These extremes went so far that the Kelley Brothers firm of New York, in an effort to find favor with the good fielding teams, claimed in an advertisement that their "... professional dead balls are made of all yarn without rubber and are the deadest balls made."2

Even at that early date, however, most baseballs were made of the same general ingredients that go into the making of baseballs today. Rubber cores surrounded by tightly wound woolen yarn and covered with leather are these general ingredients.

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1 "Dead or Alive," Baseball's Roundup, April, 1959, pp. 13-14.
When the National League came into being in 1876, its rules established specifications for the baseball and stated that if the umpire found any ball not meeting these specifications, a ball "of the same manufacture" should not be used thereafter. Nevertheless the baseballs of that year were not uniform and in 1877 the rules specified that all balls were to be obtained through the Secretary of the league.¹

The baseball itself was much less lively about this time and this was because of the poor construction. The balls at first were fashioned by hand, but as the demand for them grew and better quality was required, manufacturers began making them by machine. In 1877, Albert G. Spalding founded the firm that bears his name, and the National League provided a ready market for his product.²

Baseball's expanding influence directly affected the manufacture and sale of sporting goods. When the game was in its infancy, two or three makers sufficed to supply clubs with baseballs, and most of the demands for bats could be satisfied by one man. After the civil war period, balls and bats were purchased by the hundreds and thousands, whereas before they were bought by the dozen or individually. By the 1880's, each major league city had a "regular ball and bat manufacturer."

In time the Spalding Company began absorbing its competitors and controlled the sporting goods companies of the country. The companies absorbed in the corporation continued to operate under their own names, but each concentrated on what it did best. The Reach Company specialised in making baseballs. Its leadership was due to the intricate machines invented by Reach's partner, Ben Shibe. A check of Department


of Commerce records made a few years ago by a reporter for Sports Illustrated revealed that at least sixty-five patents have been obtained by people trying to improve the baseball. But the most prolific innovator was Shibe, who contrived machines for winding the yarn and cutting out and punching holes in the covers to exact specifications.¹

Before the 1878 season opened, A. G. Spalding, manager of the Chicago White Stockings and also a partner in A. G. Spalding & Bro. of Chicago, obtained for his firm the National League baseball adoption.² Since this date the Spalding baseball has been the only one the major leagues have used. A few years later when the American League came into being the trademark of Reach appeared on the ball but, except for that, the ball was identical and both were manufactured by A. G. Spalding & Co. Spalding baseballs ranged all the way from the cheapest ball at five cents to the official League Ball at one dollar and fifty cents; and some of them, in this era, were red, on the theory that red was easier to see.³

The first official Baseball Guide was published in 1878, and the rules covering the baseball were as follows:

Section 1. The ball must weigh not less than five nor more than five and one-quarter ounces avoirdupois. It must measure not less than nine nor more than nine and one-quarter inches in circumference. It must be composed of woolen yarn, and shall not contain more than one ounce of vulcanized rubber in mould form, and shall be covered with leather, and to be furnished by the Secretary of the League.

²"Dead or Alive," Rawling's Roundup, April, 1959, p. 1b.
³Bartlett, p. 174.
Section 2. In all games, the ball or balls played with shall be furnished by the home club, and shall become the property of the winning club.

Section 3. No ball shall be played with in any championship game unless it is furnished by the Secretary of the League.

Section 4. When the ball becomes out of shape, or cut or ripped so as to expose the yarn, or in any way so injured so as to be unfit for fair use, a new ball shall be called for by the umpire at the end of even innings, at the request of either captain. Should the ball be lost during the game, the umpire shall, at the expiration of five minutes, call for a new ball.

Any outline of the evolution of the baseball must, of necessity, include the evolution of the rules concerning the baseball and the evolution of the rules concerning the delivery of the baseball.

Curve ball pitching, first used by William Arthur (Candy) Cummings in the 1860's, came into general use in the National League in 1877 and was followed in a few years by the lifting of the restrictions on the delivery of the ball. Overhand pitching replaced the underhand style and in 1881 as an aid to the batters, the pitching distance was increased from forty-five to fifty feet. In 1893, the present distance of sixty feet six inches was adopted.

The first change in the official rule in regard to the baseball was made in 1883 when the umpire was authorized to introduce a new ball when needed rather than to wait until the end of an even "inning." In 1886, the umpires no longer had to wait for five minutes to put a new ball into play after a ball had been knocked out of the park or lost. In 1887, the home teams were required to furnish two new balls at the start of the game and additional balls as needed. At the same time, the rules were amended so that the winning team was awarded only the last ball in play. In 1896, with the game continuing to grow in stature, the home team was required to have at least a dozen balls on the field for each game.
In 1897, as a measure against the doctoring of baseballs, the following was added to the rules: "In the event of a new ball being intentionally discolored or otherwise injured by a player, the umpire shall, upon appeal of the captain of the opposite side, forthwith demand the removal of that ball and shall substitute another new ball and impose a fine of five dollars upon the offending player."

An important change in the composition of the baseball was made in 1910 with the introduction of the cork center. At Philadelphia in 1909, Alfred J. Reach patented an invention of Benjamin S. Shibe a baseball with a cork center, and the following year, without interference, it was made available for major-league play. Batting almost immediately improved, and the hit-and-run play replaced the sacrifice as a more popular offensive weapon.

To offset the new "lively ball" pitchers soon began to develop so-called "freak" deliveries such as the shine ball, spit ball, mud ball, anyway ball and others. Drastic changes were made in the rules in 1920 to outlaw these pitches. However, recognized "spit ball" pitchers, seventeen in all, were permitted to continue using their specialty for the remainder of their careers. Most successful of them and the last to close his major league career was Burleigh Grimes, who pitched last for the Yankees in 1934.

Another important change in the composition of the baseball was made at the end of World War I. A fine grade of Australian wool yarn

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1 "Dead or Alive," Rawlings's Roundup, April, 1959, p. 14.
2 Allen, p. 123.
became available and the manufacturers had improved the winding machines. These mechanical improvements stretched the yarn more tightly than the old yarn would stand without breaking. The high grade Australian wool yarn would stand the strain of the tight winding. Nobody supposed that this would put more bounce in the baseball.

If one squeezes a handful of wool yarn and then suddenly open their fingers, a good grade of wool will spring upward from their palm. A poor grade of wool will lie "dead." Any woman who knows how to select fine wool for her knitting knows this—but the man who made the baseball didn't know it would put so much bounce in the ball.¹

Suddenly, in 1920, pitchers who had specialized on pop flies to the infield began to slap out more home runs in a season than the league leading home run hitters had been making and the national game started on a home-run debauch.

The cry of "rabbit ball" shook the walls of the factory in Philadelphia where the balls were being made. Pitchers were complaining that they were in danger of being killed and infielders were afraid of getting their heads knocked into the laps of the bleacher fans.²

At Redland Field in Cincinnati, for example, no fair ball had ever been hit out of the park since its construction in 1912. But on June 2, 1921, Pat Duncan, outfielder of the Reds, hit a home run over the left field wall, an event that caused giddy talk in the city’s streets for days. Later in the season Babe Ruth visited the park with the Yankees for an exhibition game against the Reds and hit home runs

²Wolfe, p. 130.
over the center field fence and into the right field bleachers. Other
parks, built in the belief that no ball would ever be hit out of them,
reported similar occurrences.¹

The ensuing home run debauch came immediately after the most
dangerous blow that has ever been dealt to the game of baseball—the
sell-out in the World Series of 1919 which was better known as the
"Black Sox" scandal. Club owners were shaking in their financial socks
and the manufacturers of sporting goods were seriously concerned about
the future of their business. The fans, their faith in the game's
honesty betrayed, were expected to stay away from the baseball parks
until the turnstiles were covered with cobwebs. Some of the newspapers
were even advocating this. Then a barrage of home runs began to fly
over the fences—and the fans started coming out to see what the
shooting was all about.²

Fans seized the Australian wool explanation as the whole story,
but there were many factors, actually, in the change that was coming
over the game. The new pitching regulations supplied part of the
story. Changes in managerial strategy curbed sacrifice hitting and
put the stolen base in decline. Other players, in imitation of Ruth,
forgot place hitting and began to slug for distance, knowing that a
respectable home run total would mean a raise in pay.³ Home run heroes
became numerous. Nobody cared what had happened in 1919. The future
of the game of baseball had been saved.⁴

¹Allen, p. 170.
²Wolfe, p. 131.
³Allen, p. 171.
⁴Wolfe, p. 131.
Before 1928 the National League used a cover sixty thousandths inches thick and a five strand thread, against the American League's fifty thousandths and four strand thread. This led to controversy over the higher seam and deader action of the National League ball. In 1928 a compromise ball was made standard for both leagues.1

In 1931 the center of the ball was again changed when the cushioned cork center, consisting of a small sphere of composition cork, was molded to a layer of rubber. The first layer of black rubber is made up of two hemispheric shells. The two openings where these shells meet are sealed with a cushion of red rubber and a layer of red rubber surrounds the entire center.2 The present day ball has the same ingredients.

From 1941 until the end of World War II, balata was used instead of rubber around the cork core, and synthetic rubber cement was used to affix the cover. These improvisations were held to have no perceptible effect. Since the end of World War II, baseballs have been back to normal.3

The finished baseball is carefully wound on top of the cork and rubber center by automatic machines. First, one hundred-and-twenty-one yards of one type of grey wool yarn is wound on the ball. Following that, forty-five yards of another type of grey yarn and fifty-three yards of still another type of cream yarn are wound on the ball. The last winding consists of one-hundred-and-fifty yards of fine white cotton.

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2"Dead or Alive," Reading's Roundup, April, 1939, p. 24.
The winding is so important that the winding room is maintained at constant temperature and humidity, and the tension of the yarns is checked periodically with a portable tensiometer. Any deviation would produce balls whose windings were not uniform. Loose windings would mean a deader ball; tight windings, a livelier ball. The four windings consume nearly one quarter mile of yarn.

Next, the ball receives a coat of pure, crepe rubber cement to form a permanent bond. The same cement is applied to the inside of the covers just before they are sewed on the ball. Unlike the football, which is not made of pigskin, the baseball is true to its nickname as the covers are made from alum tanned horsehide.

After the cover halves have been cut out, complete with the stitching holes, they are machine split to a uniform thickness and then hand graded according to grain, texture, and color. Each half must match the other half, not only in appearance but in grain structure and strength. The matched halves are then thoroughly moistened and stapled loosely in place on the ball before it goes to the stitchers. By stitching the covers on while damp, a tighter final fit is obtained when the leather shrinks back to normal size.

Next, the ball goes to the stitching room. There, the two hourglass shaped halves of the horsehide cover are sewed on by hand with 108 carefully placed stitches. Girls do most of this work. So far, there are no machines that can duplicate the hand sewed over and under cross stitch. The average stitcher can sew a ball in about twelve minutes, averaging about forty balls a day.

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The hides from 35,000 horses are needed to meet the yearly 
baseball cover needs of Spalding alone, and getting good horsehide is 
a critical problem. They can't be the hides from ordinary range or dray 
nags. They are apt to be cut, bruised, and scarred and thus can't meet 
the rigid requirements for smoothness and uniform strength. In the 
early days of baseball, the hides of retired fire horses were used for 
covers. Later, when the gasoline engine replaced the fire horse and 
the demand for baseballs grew, prime horsehides were imported from 
France and Belgium. Today, however, practically all baseball covers 
come from the hides of well cared for domestic horses. ¹

The covers are then hand stitched with eighty-eight inches of 

waxed left twisted red cotton thread on a needle, and the worker pulls 

the thread through with a final sip, like a pitcher turning loose a 

fast ball.² Any pinching that occurs when the cover shrinks back 
tight is eliminated by rolling the balls. By now, the circumference 
is the regulation nine to nine and one-fourth inches and weighs between 
five and five and one-fourth ounces.

All the balls head for either of two stamping machines. One, 
for American League baseball, stamps the "Reach" trademark plus the 
American League president's autograph on the cover. The other, for 
National League baseballs, registers the "Spalding" symbol as well as 
the National League president's signature. Aside from the printing on 
the cover, the balls of both leagues are absolutely identical.³

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¹Walts, p. 165.
³By Tukin and S. G. Thompson, The Official Encyclopedia of 
As the big league balls roll off the production line, sample balls are removed periodically for testing. A mechanical batter housed on a test field back of the plant wallops out homers with a standardized force to check a ball's pop and carry—giving it more wear in a few minutes than it would get in dozens of innings. Walt's comments that: "The balls slugged out while I watched all landed within a few feet of each other."  

In the laboratory, ingenious torture machines measure a baseball's ability to take it. An air gun fires balls at a test panel with many times the impact they would receive from a home run hitter's bat. A drop hammer literally hammers a ball to see just how much squeeze it can take. Walt's comments:

"Of one thing I felt absolutely sure when we had finished and that was that big league baseballs are as standardized as it is physically possible to make them. I'm going to remember this when some player or fan raises the perennial cry about the ball being livelier."

Allison Danzig, a noted baseball historian, comments that:

According to a long time employee of A. G. Spalding, the reason for the lively ball is simple. The core is now made with natural, not synthetic rubber, and has more bounce. The yarn is now the finest American Wool. The cotton is better than ever, so is the cement and the workmanship. The improvement in the horsehide cover has been tremendous. Before World War II all hides came from France, Belgium and Germany. Horsemeat is a staple article of diet there and horses are raised like cows. Their hides are softer. Now the hides come from Canada where the horses are sturdier. This adds up to better hides and a livelier ball.

Spalding's assurance that today's ball is the same is confirmed by its chief seamstress, Mrs. Beryl Gauthier. Mrs. Gauthier heads a crew of seventy-five women who finish the ball-making process by closing

1Walts, p. 165.
the cover seams with exactly 108 couple stitches of red yarn. Seamstress Gauthier is firm about her craft: "The ball is just the same as it ever was." All of which struck out the "rabbit ball" theorists leaving them to face the unavoidable reality of baseball of 1961, as stated by Mrs. Gauthier: "The ball is flying into the stands more often simply and entirely because the man at bat is hitting it there."  

Robert Boyle reports on tests made on the 1961 baseball:

Now Sports Illustrated is able to present proof that today's baseball is different. It is significantly livelier than baseballs made as recently as 1953. Scientific tests show that the average 1961 baseball tested bounces higher, is firmer, and weighs more. Incredibly enough, it even weighs more than the rules of baseball allow.

When the pitching rules were revised in 1920, the rules in regard to the baseball were supplemented to recommend the use of a soft dry cloth to remove the gloss from each new baseball. This gloss develops from the heat produced in the rolling operation outlined above. While the reference to the use of the cloth was still included in the rules until 1953, the use of such a cloth had become obsolete previously by the use of soil to remove the gloss. In 1939, the major leagues adopted a special dirt supplied by Lena Blackburne, long time coach of the Philadelphia Athletics. This dirt comes from the Delaware river bottom and about a pound, or a cigar box full, lasts a team the entire season.

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In 1949, the official baseball rules were completely reviewed by a special committee and a number of revisions were made including the shortening of the rule on the baseball as follows:

The ball is to weigh not less than five nor more than five and one quarter ounces avoirdupois, measure not less than nine nor more than nine and one quarter inches in circumference and is to meet the approved resiliency standards.¹

Eliminated from the rules were provisions such as the one awarding the last ball in play to the winning team and the providing of sufficient baseballs for use in the game. Such requirements were now considered automatic and no longer needed to be outlined in the rules.

One provision of the new rules—the reference to the "approved resiliency standards"—needed clarifying as no such standards had ever been set. In December, 1954, when the present rule was put into effect, this reference was eliminated, and the official ball was defined only in terms of size, weight, and composition.

While the baseball, and the rules relating to it, have undergone a logical evolution down through the years, leading to the requirements for, and the development of, the consistent, uniform baseball of today, two significant figures have stood out since 1872. They are five and nine—a baseball in 1872 had to weigh between five and five and one-quarter ounces and measure between nine and nine and one-quarter inches in circumference. Dead or alive, the baseball of today must conform to the same figures.

Newest baseball on the market is Rawling's Glo-Bal, the brainchild of Ray Danton, head of the National Baseball Congress.

It is a bright orange ball offering maximum visibility and it has been used since 1959 in National Baseball Congress tournaments.¹

¹"Dead or Alive," Rawling's Roundup, April, 1959, p. 15.
The wide tolerance in the size of baseballs prior to 1872 is best illustrated by a comparison with specifications after that date. The thin black line represents present tolerance as set in 1872. The red area shows the latitude in size allowed before 1872.

Early baseball had melted rubber center. Ball of the 1840's weighed only three ounces and was very much "alive."

The cushioned cork center baseball, introduced in 1931, is still in use. While baseball specifications have changed little since 1872, construction has now reached a peak of uniformity.

The cork center baseball was introduced 1910.

"Dead or Alive," Rainier's Roundup, April, 1929, pp. 13-14.
The inside of the baseball.

First winding placed over center consists of 121 yd. of gray yarn.

In second winding, 45 yd. of another type of special yarn are added.

1. State of a baseball. Cork composition is molded into a sphere.
2. Then two halves of hollow rubber sphere are molded.
3. These, together with gasketlike rubber ring, form cover for bore.
4. Second rubber cover is stretched over the tendon-veen center.
5. Finally, the two halves of the horsehide cover are stitched on with 108 hand-made stitches.
6. The fourth and final winding consists of 140 yd. of fine cotton yarn.
CHAPTER IV

EVOLUTION OF THE BASEBALL BAT

Baseball may have evolved from a combination of rounders and cricket, with cricket the more fruitful source. So much of early baseball called for cricket terms and use of cricket equipment that baseball may have begun as a modified form of cricket. Colonial youths watched their elders playing at cricket and they, too, wanted to indulge. Equipment was limited and a few balls and bats were passed down to the youngsters. With these well battered balls and derelict bats, the colonial boys probably devised their own game and this probably was the beginning of baseball in crude form. The pioneer bats were replaced by sticks made from cordwood or tree branches. The "home made" bats generally were fashioned like cricket bats, with a flat surface for hitting. Sometimes the bats were flat boards, according to Bartlett:

A tosser stood close to the home base and tossed the ball straight upward about six feet for the batsman to strike at on its fall. The batsman used a four-inch flat-board bat.

The first regulations regarding bats were written in 1863. At that time, bats had to be round, made of wood, could not exceed two and one-half inches in diameter and had no restrictions as to length.

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1 Henke, p. 14.
2 Bartlett, p. 7.
Porter W. Ware, in his research on baseball, reports:

In 1865 the bat was limited to forty inches in length. In 1868 it was lengthened to forty-two inches, and was two and one-half inches in diameter at the thickest portion. In 1895 the diameter was placed at two and three-quarters inches at the thickest portion. In 1885 to 1893 permission was granted for a slight flattening of the bat on one side for the better bunting, but was later rescinded. 1

In 1940, for the first time in forty-five years, the rule was changed once more. The new rule stated that the bat must be round, not over two and three-fourths inches in diameter at its thickest part, nor more than forty-two inches in length and entirely of hardwood in one piece. Twine could be wrapped around it or a granulated substance applied to it for a distance of eighteen inches from the end of the handle, but not elsewhere. 2

The Official 1963 rulebook states that:

(a) The bat shall be a smooth, rounded stick, not more than two and three-fourths inches in diameter at the thickest part and not more than 42 inches in length. The bat shall be (1) one piece of solid wood, or (2) formed from a block of wood consisting of two or more pieces of wood bonded together with an adhesive in such a way that the grain direction of all pieces is essentially parallel to the length of the bat. Any such laminated bat shall contain only wood or adhesive, except for a clear finish. No laminated bat shall be used in a professional game until the manufacturer has secured approval from the Rules Committee of his design and method of manufacture. In giving or withholding such approval, the Rules Committee will be guided by comparison of the laminated bat with one-piece solid wood bats. Laminated bats which are inferior to one piece solid wood bats in safety or durability will not be approved. A design or method of manufacture which produces a loaded or freak type of bat or which produces a substantially greater reaction factor than one-piece solid bats will not be approved.

(b) The bat handle, for not more than 18 inches from the end, may be covered or treated with any material to improve the grip. No such material shall improve the reaction or distance factor of the bat. 3

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1 Porter W. Ware, "Antique Sports," Hobbies, October, 1962, p. 29.
2 Bourquardes, p. 29.
Ball players and bat manufacturers recognize a few characteristics in which bats differ. Thus, while the rules state that a bat may be forty-two inches long and two and three-fourths inches in diameter at the largest part, many variations are possible. A bat, in ball player's language, may have a big end or a small end. It may have a quick taper, which limits the space where the ball may be struck, or a gradual taper, which increases that space. The bat may have a small, medium, or large handle, with a small, medium or large knob. There can be any combination of these characteristics a player desires.

In the past, there were fewer differences in bats than at the present. The average bat of 1925 had a medium barrel with a gradual taper to a medium large handle and small knob. This type of bat provided the player with near maximum of hitting space and normally weighed thirty-seven to forty ounces.¹

One former big league ball player used a piece of timber shaped like an old style beer bottle with a wide barrel which stayed wide right down to the bat handle and narrowed only for the bat grip. Heine Groh's famous bottle bat is the timber talked about.²

Many people claim that Babe Ruth used the heaviest bat ever taken to the plate, a fifty-two ounce giant, that he used as many as one hundred and seventy heavy sluggers a season, and that he liked a big mushroom end on his bat handles.³

The present trend is toward a bat thirty-five inches long, weighing within an ounce or two of thirty-five ounces, with a small

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¹Bourqueydes, p. 29.
³Biemiller, p. 140.
hitting surface and slightly more than two and one-half inches in
diameter at the largest part of the barrel.

The modern style bat, which has a small or short hitting surface
limits the effective hitting surface to a space not more than eight to
ten inches from the end of the bat. Such a bat satisfies the modern
free swinging style of baseball, but calls for much greater accuracy
and sharper vision than the old style bats required. Adoption of the
new style of hitting which caused the new type of thin handle, large
barrel bats, with a short hitting surface, and this created a challenge
to bat manufacturers. Breakage was increased by the thinner handle plus
the concentration of weight at the barrel end and by the lighter weights
required for free swinging. Ty Cobb reputedly modeled off Davis,
later came Hornsby, Ruth, and Harry Heilmann to insist on thinner
handles, which added "whip" to the bat.

The nature of baseball lore being as it is, there are different
versions as to how the Slugger arrived at its present shape. There is
a seventy-eight-year-old fan in Long Island City, New York, one A. H.
Kissel, who attributes today's fence busting not to a more lively ball
but to changes in the bat. In a letter to the makers of the Louisville
Slugger, Mr. Kissel wrote:

It all began due to the willowy bat created by Frank Schulte
of the old Chicago Cubs. Schulte shaved his bat handle down to the
thickness of a broomstick and at once got more power, and soon all
other hitters followed as you folks changed the models of the Slugger.

Formerly, players were advised merely to hold the trade mark up,
since any bat might be broken that was held improperly; now they are
advised to hit the ball on the exact space provided. Any ball hit on the

1Bourquarden, pp. 29-30.
2Bisnaller, pp. 141-142.
extreme end or too near the handle of a modern bat may put too much of
a strain on the wood and result in a break.

Bat makers further discouraged the use of long bats that increased
the strain which a full blow put on a bat. They recommend that the
average player use a bat thirty-four or thirty-five inches long,
weighing at least an ounce to an inch, and concentrate on accurate
hitting instead of going in for long lengths and wild swings. This
trend is borne out by the bats used by professional players today. A
recent survey of two hundred and seventeen models used by professional
players of the two major leagues showed that eighty-eight per cent were
thirty-five inches or less in length. Six per cent were thirty-three
inches long, twenty-six per cent thirty-four inches long, fifty-six
per cent thirty-five inches long and twelve per cent thirty-six inches
long.

There is an excellent reason why most players should adopt bats
thirty-five inches or less in length. Those who insist on long, light
bats overlook the important factor of balance. Many players believe
they can swing a long, light bat better than a short, relatively
heavier bat, thereby getting longer distance. Just the opposite is
true, however, for a shorter and correctly balanced bat can be swung
faster since the speed of the bat and the resulting impact on the ball
is a result of wrist snap. It should be emphasized, however, that
correct balance has nothing to do with overall weight. The swinging
or leverage weight is the controlling factor. For example, a thirty-
five inch bat weighing only thirty-four ounces may have a heavier
swinging weight than a thirty-four inch bat weighing thirty-six ounces.
This is an important point for every ball player.1 The most important

1Bourquarde, pp.30-31.
part on the bat is the percussion center. This is the spot where the most energy in the batter's swing is transferred to the ball. Dr. Lyman J. Briggs, director emeritus of the National Bureau of Standards states:

> It is a theoretical point inside the bat and is a few inches from the bat's end. Players can tell when they sock the ball on the center of percussion. The hit feels solid and the bat does not sting. A ball struck at the center of percussion goes farther than if hit closer to the batter's hands or nearer the bat's end. Maybe the added distance would put it over the fence. The center of percussion may not be the same for two bats. The size, shape, and weight distribution of the bat determines the location of this invisible point.¹

The bat is patterned for the professional ballplayer and nearly all the major and minor league players use the Louisville Slugger. The manufacturers of this famous line produce about one-half of the six million bats used today with over two hundred styles and sizes.

The best baseball bats get their start on the wooded mountain slopes of Pennsylvania and New York. Most of them are made from second growth white ash, which has the tensile strength and resiliency required. It is through those properties in the finished bat that power or drive is transmitted.² There is no real substitute for good ash in bat making. The wood has a combustive quality despite the fact that it is a branch member of the olive family by virtue of pinnated leaves. The Vikings once used ash for the oars of their raiding dragon ships. Barbarian spearmen harried the Roman Empire with resiliant shafts of the same toughness of ash used in making the Louisville Slugger.³ The weight of ash is also favorable, being very much in line with what is demanded.

³Mesthesia, p. 78.
Ash has always been the most popular type of wood used in bats but years ago much hickory was used. Hickory has many desirable bat qualities, but it is a trifle heavy to meet the present demand.\textsuperscript{1}

Several years ago bats made of Cuban wood, or Majaya, were popular, but the cost of obtaining this wood was excessive and its use as bat timber was discontinued. Some hackberry is used, where extremely light bats are required, but this timber lacks the resiliency and solidity of ash and there is a limited demand for it. Willow is used most often for fungo bats, primarily because it is very light, quite resilient and still as tough as many hardwoods.\textsuperscript{2}

Timber buyers who locate ash for bats look in certain locations and under specific conditions. The locations and conditions that prove most favorable are ridge tops and the northerly or easterly exposed slopes of mountains and hills. In such places the soil is rather rich and holds at all times just enough moisture for a uniform, moderately fast year in and year out growth. Then, too, in these locations the growth of other trees is usually thick, which protects the ash trees from wind-twisting and forces them to shoot straight and high for life giving sunlight.

Straightness of grain, regularity of grain structure, strength and durability are considered qualities essential to good bat timber. After the selection of the trees has been made crews are sent in to cut the trees into forty inch lengths. Small logs are split into wedges and turned into "rounds" while big ones are sawed into bat size squares. Billets, or rounds, are examined and graded by a timber

\textsuperscript{1}Laycock, p. 132.

\textsuperscript{2}Bourquardes, p. 29.
inspector. He determines the size each bat will make and marks the handle end. The billets are then cured. Several billion bats-in-the-rough are stacked in a seasoning yard for twelve to eighteen months.

The next step in the process involves sending the cured billet into a turning lathe. Fifteen seconds later, a set of forty-nine razor sharp knives have roughed out the timber into the general shape of a baseball bat. These rough-outs are carefully weighed and each piece is graded according to the model for which it is best suited. Inspection is continuous along the bat assembly line. Knives of the final turning lathe are adjusted to cut and form rough-outs to the exact length, diameter, and shape of the original handmade bats.

The important sanding process is next. Here a rough job is being done by a powered sander belt. During production "homestretch," each bat gets a light hand rubbing with steel wool. Under daylight lamps, all bats must pass the critical eyes of highly skilled inspection men. If there are no newly exposed defects, bats then go to the final automatic sander.

Autographs of ballplayers are branded on commercial copies of their original Slugger models in the next step in bat manufacturing. Most big leaguers are represented. Bats are then given either a natural finish or are stained in a choice of colors. The final treatments are waxing and buffing which give the bat a glass-hard finish.

From the cream of this ash crop come the Louisville Sluggers for the professional ball players. Professional ball players treat their favorite bats with love and respect, handle them gently except at home plate, and from anyone who dares touch them. They know that it takes a lot of skill to make a good bat, just as it does to use it.
Bats are still turned out for professionals in much the same manner. Here is what happens if the Chicago Cubs wire Louisville for a half-dozen bats for Ernie Banks. First, the original of Banks' personal model is taken from the archives, a locked, fireproof room stacked with timber stacks. An expert selects just the piece which, when turned to an exact duplication of Banks' bat, will match it in weight to within a fraction of an ounce.

In the turning shop, the model is put in a parallel rack on the lathe into which the selected billet is locked. The new bat is turned with hand chisels until it is an exact duplicate of the original.

In 1953, when the subject of laminated bats came up, the bat experts in Louisville had already put years of research into them. But they think the laminated bat hasn't been made that can hold its own against the solid-wood club at home plate.

\[\text{Laycock, p. 132.}\]
FROM A RAW and rough-shaped split of wood, the Slugger is cut and turned into a balanced bat.
CHAPTER V

EVOLUTION OF THE BASEBALL GLOVE

Great catches in modern day baseball have become commonplace as have great fielding plays. Great catches are not only a thing of present time baseball but also were prevalent in early baseball. However, fielding records and testimony of old times seem to indicate that baseball’s first seventy-five years did not see many of the plays made which today are taken for granted every day of the season.

Are the ballplayers of today better ballhawks than those of yesteryear? This is and has been an issue of much debate, but there is another factor about which there can be no debate. The gloves and mitts which are being carried on the field today are many times more efficient than those used by stars only twenty-five years ago.

The players of today, used to the masterpieces of craftsmanship with which they field, might be hard pressed to equal the fielding marks of fifty years ago if they had to use the relatively flat, shapeless gloves used then. The story behind the evolution of gloves and mitts is one of contribution from individuals, experience, trial and error, craftsmanship and research.¹

The glove of today is "broken in" when a player takes it out of the box. Gone are the days when a budding young ball player tied a ball into his glove then soaked the "mitt" in water to assure a deep and

lasting pocket. Gone, too, is the necessity for treating a glove with neats foot oil to make it pliable. Today, the glove purchased comes with a built-in pocket. If fact, the real pocket of action in the modern glove has moved from the palm to the web between the thumb and first finger. The web does most of the work for infielders and outfielders. Fielders’ gloves, which once were skimpy hunks of leather, now have much in common with the first baseman’s mitt of a few years ago. The modern first baseman’s mitt has made the traditional baseball razz “get a bushel basket” archaic. These mitts are bushel baskets—in leather.¹

From an unpretentious beginning, the business of making gloves and mitts has grown to where it encompasses the talents of many people simply to engineer one model of a present day glove or mitt. As might be suspected, the use of gloves and mitts arose as a means of protection at first and not to serve any functional fielding service as do the gloves and mitts of our time.²

A part of the gallantry of the game in the mid 1800’s was the noble catcher who lasted nine innings and still disdained to wear either glove or mask, even though he caught the ball on the first bounce. The ninth inning often found him battered but unbowed. Soon, amid the jeers of the he-man players, catchers started to wear tight gloves, flesh colored, hoping not to be noticed.³ The catchers and first basemen,

particularly, of the 1860's found themselves with red, swollen hands after a tough, extra-inning game. They, naturally, were the first players to use gloves and mitts, with some individual exceptions. Some years later the outfielders, infielders and pitchers started using gloves.¹

There is some doubt as to who wore the first baseball glove. Perhaps the fans made so much fun of early glove users that players preferred sore hands to the jeers of the crowd. If the player of one hundred years ago had any inkling of the eventual importance of gloves and mitts to the game of baseball and, incidentally, of the monetary return for glove endorsements, perhaps there would have been less reticence to becoming the "first" to use a baseball glove.

Some baseball historians credit catcher Doug Allison of the famous 1869 Cincinnati Red Stockings with using a glove. It is claimed that he had a saddlemaker make him a mitt. The earliest supported evidence of the first glove or mitt dates to 1875. The honor is given to Charles C. Waite of St. Louis who wore a pair of thin flesh-colored gloves. The fingers were cut off the right hand glove so as not to restrict throwing and there were round openings on the back of each glove for ventilation.² Despite the attempted subterfuge, he still had to brave the jeers of fans, teammates, and opponents. This reaction to "sissy" innovation was responsible for lack of similar actions by other players until 1877.³


Some claim that Arthur Irwin, Providence, Rhode Island shortstop, was the man who put the glove in baseball. He had broken the third and fourth fingers of his left hand. In those days teams carried ten or eleven players. Every man was his own substitute and had to play as long as he could stand up. Irwin went to a glover and had him take a buckskin driving glove of large size, pad it, sew together the third and fourth fingers, and there Irwin had the answer to his dilemma. The question was, could he "get away" with it?

In those days, ball players were expected to be as immune to punishment as prize fighters. Bare hands were the rule—snarled, scarred, and appeared out of shape and joint. Irwin was crippled with the broken fingers, and thus, he dared to risk the ire and ridicule of the spectators and appeared on the field with the glove. Luckily, no one jeered and John Montgomery Ward, one of the future greats in the game, also had the courage to use a glove. He, too, "got away" with it, even though he had no broken fingers. Within a few weeks orders were placed for hundreds of gloves.¹

Others gave the credit for bringing the glove into general use to Al Spalding, one of the great players of that day. In 1876, Spalding and his brother had started a sporting goods business in Chicago, so it is not certain whether his use of a glove was to alleviate the wear and tear on his hands or to help develop sales for his company. After winning forty-six games in 1876 to lead the Chicago White Stockings to the pennant, Spalding switched to first base in 1877. Whatever his reason, he wanted everyone to know that he was wearing gloves, so he chose the color black.²

¹Danzig, p. 42.
It was a black kid glove which he had modified by cutting off all but stubs of the fingers and thumb and inserted a little bit of padding. As had Waite, he cut a hole in the back to provide ventilation. Thus, the glove resembled very closely the present golf glove.

This time the fans and players said nothing. If the great Al Spalding wanted to keep his hand from being bruised, that was quite all right with them. With this acceptance, the innovation began to take hold, as, little by little, more players were playing with the modified gloves. Spalding's type of glove was the style for several years with most players wearing them on both hands and adding a little padding.

The first gloves were made from cowhide, horsehide or "Indian tamed buck," the latter selling for the exclusive price of two dollars and fifty cents. Cheaper gloves were priced from one dollar up. Most gloves and mitts were made of horsehide until calfskin was introduced for catcher's mitts in 1908, but it was not until 1949 that cowhide came into general usage for all gloves.

Today horsehide is rarely used for gloves. Years ago, the price of horsehide was considerably lower than cowhide, and it was plentiful in fine quality. Horsehide, while making strong leather, is very stretchy and does not produce the firmness required for a baseball glove today. Hides coming from cows killed between late May and early November are called summer hides and are of much higher quality than those killed in other months. Some sheepskin is used in practically every glove and mitt. This type of leather is made into linings in lower-priced gloves and is used as binding material in better quality gloves.

1 "Be a Sports Equipment Expert," Reading's Roundup, May, 1962, pp. 4-5
For the most part, players who used gloves wore them on both hands. One reason, of course, was that earlier players invariably used both hands to catch the ball. On one occasion, 1882, first baseman Henry Luff of Cincinnati was fined five dollars by manager Charlie Fulmer for making a one-handed catch. Luff promptly quit the club.

In 1886, gloves with fingers were sold for the first time, although the fingerless "throwing" gloves were still available for those players who wanted gloves for both hands. Gloves were then being used by most players although there were two notable holdouts, both of whom were second basemen.\(^1\)

In the middle 1880’s, the catchers went to full fingered and heavier padded gloves while still wearing the abbreviated type glove on the throwing hand. The next step for the catching hand was a mitt in the true sense of the word. It looked like the first baseman’s mitt of some later years. The first pillow type of mitt is said to have been worn by William (Buck) Ewing, famous New York Giants catcher.

Since then, most changes have been in the overall design, padding, and lacing. Padding has evolved from bulk cotton to bulk wool and then to the different grades including covered wool tubing, jute, pressed wool felt and asbestos felt. Its placement and the amount used has changed in accordance with design changes. The threads are now nylon and improved cottons.

Design advancements have been many and varied over the eighty some year history of gloves and mitts. In the 1890’s the gloves and mitts took on the appearance of special type equipment rather than make-shift kid dress gloves. Buckskin was still used for the best models.

Restriction of the weight of fielders' gloves to ten ounces made them small and light.

After the turn of the century, the gloves showed a great improvement over previous designs but were still crude by present day standards. There was no formed pocket, and the web between the thumb and first finger was small and solid.

Rawlings' 1912 catalog displayed a one piece glove with sewed in finger channels giving the appearance of a duck's foot. The copy reads:

The web between the fingers, thumb and palm is of one piece of leather, rendering the glove more durable and greatly increasing the efficiency of the user.

The catcher's mitts were large and bulky with only a single leather thong for a web. The first baseman's mitts were of the same nature. The next few years saw the solid web on the fielder's glove connected from the tip of the thumb to the tip of the first finger. Then a few of the gloves began to appear with the solid leather web cut out at the crotch of the thumb and finger.¹

Perhaps the most important date in the evolution of baseball gloves is the day in 1919 when Bill Doak, righthanded spitball pitcher of the St. Louis Cardinals, came to the Rawlings plant with some ideas for improving existing gloves. In cooperation with Rawlings production chief, William P. Whitley, Doak was responsible for the greatest development in glove making up to that time. The new glove featured a multi-thong web laced into the first finger and thumb, and a natural formed deep pocket with an inner greased palm.²

Bill Doak was responsible for the greatest advance in glove making for years to come. In 1920, after having been field tested by major league players the year before, the Bill Doak glove made its official bow. Bill Doak gloves remained in the Rawlings line until 1953. The influence of the glove's design was felt throughout the line of catcher's and first baseman's mitts. The new catcher's mitt also had a snap opening for self-adjustment of the padding and a wrist protector. It too had a multi-thong web although not laced into the shell.

In 1922, a young ex-professional baseball player of seven seasons joined Rawlings. Within two years he had developed the first two of many glove and mitt patents. His talent for improving the design and utility of gloves and mitts soon won for him the title of "Glove Doctor" and Bud Latina became known as "Doc" Latina.¹

In 1925, the Rawlings XL fielder's glove came into being. Its main feature was a rather complicated interwoven leather thong web. Another first was featured in the top catcher's mitt—adjustable finger loops in the thumb and little finger stalls which kept the mitt from being knocked off and afforded the player greater control over the mitt. This feature was also put into the first base mitt along with a patented reinforced crotch and multi-thong web.

Introduced about the same time was a three-fingered fielder's glove, a large little finger enclosing the stalls for both the third and little fingers. It came recommended as "a fine cover-up for a pitcher." By 1935, the Bill Doak glove had a two piece leather web and the first baseman's mitts had "T" webs, the first notable design change in the mitt for many years.

This influenced the next year's models to the extent that practically all the fielder's gloves had more extensive webbing. In 1937 came the first change from the "round" or "square" first baseman's mitt which had been in existence practically since the beginning of baseball. Rawling's Hal Trosky mitt was truly a designing triumph. The fielder's gloves of the year included two more "firsts": a web between the little and third fingers and lacing between all the fingers. The "I" web was put on the market three years later. The patented "Deep Well" Pocket was a 1941 innovation. The same year saw the most radical change in glove and mitt designing since the three-fingered glove—the Trapper Mitt. This streamlined "Claw" soon came to be the most popular type of first baseman's mitt in baseball and extended its design influence into the realms of the conventional mitts. With the coming of the "Deep Well" design, catcher's mitts, for the first time in history, began to lose a little of their heavy, pillowy look.

In 1941, Latina started his annual practice of touring the spring training camps. Many of the improvements in gloves and mitts that have resulted from his efforts have come about from observing players in action and visualizing how certain changes would help their fielding.

The streamlining trend in gloves continued the next year with the "U" crotch and web and the fingers taking on more shape and form in the fielder's gloves. The laced pocket and multi-thong lacing made their first appearances in the top catchers' mitts improving even more their appearance, feel and efficiency.

In 1943, Rawlings introduced the famous line of three-fingered Playmaker gloves. Unlike the three-fingered gloves of many years before, the Playmaker's three-fingers were the same width and the middle finger enclosed the two stalls. Adding to the glove's appearance and functional
qualities was the lacing together of all the fingers. In 1950 the Trapper Mitts featured a new Web Controller, a leather piece across the top of the glove to insure constant pocket control. The following season saw the advent of the V-Anchored Web and Snugger Wrist Adjustment.

In 1959, the Trap-eze six-finger glove found favor with many major league players, particularly pitchers and outfielders. Outfielders gloves ordinarily have longer fingers than infielders gloves, and pitchers like to use a wide, long glove to keep their handholds secret before delivering a pitch. The long fingers and width of the glove appealed especially to pitchers and outfielders and they used the Trap-eze glove to good advantage.

Changes in glove and mitt design continued with each passing season. Glove and mitt designers believe that the perfect glove and the perfect mitt have not yet evolved and that there will never be an end to the design changes.

There are nearly as many models of baseball gloves as there are of bats. Many companies retain players and coaches whose names are used on various gloves. Each autographed model is usually available as long as the athlete is in the public headlines. When selecting a baseball glove, the choice is based on personal likes and dislikes and the position to be played.

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2 "Innovations," The New Yorker, October 7, 1950, p. 25.


4 Bourquardes, p. 39.
A notable change in the last decade, not in the design but in the merchandising of gloves, has been the widespread use of the autographs of major league baseball players to aid in the sale of gloves and mitts. While players’ names have been used in this capacity from almost the earliest use of baseball gloves, it has only been in recent years that these names have been used so extensively and to such advantage.

The construction and manufacture of a baseball glove is a complicated process and bears investigation. The initial step in the construction of a glove is a mighty important one, the selection of top-grade, quality leather, free from flaws and other blemishes. The next step is cutting the pattern by means of a clicker machine which presses the cutting die into the leather. This operation is accurate to one sixty-fourth of an inch. Next comes the first sewing operation. The back portion of the web is stitched to the front part of the web which, with the palm, is a single unit in all gloves. The front and rear sections of the glove are then sewn together inside out. This inside out sewing process is used in the construction of all gloves and mitts.

The glove now goes to the turning machine which accomplishes just what the name implies—turning the glove, one finger at a time, to bring the inside out and into its proper position. Next is the first stretching operation. The glove is placed on a heated stretching form where any wrinkles in the leather and waiting are smoothed out. The inserting operation is also accomplished on a metal form. The inner lining and padding is fitted onto the form and the outside of the glove is then pulled down over it so that the fingers and thumb of each unit

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are matched. At this time the glove goes through a roll binding process. The leather binding is sewn along the entire bottom of the glove and then rolled and sewn again.

The next step is the lacing and this is done carefully by hand. This process finishes the actual construction of the glove. The glove is then placed on a wooden board and the palm and web section are pounded into just the right shape. This is done by using a sixteen pound shot attached to a metal handle. Then the glove receives its final inspection of lacing, shape, and quality. If it passes these tests, the glove is then packaged and shipped.¹

The development of gloves and mitts through the years has been greatly affected by the rules. Although baseball gloves came into use in the 1870's, they were first accorded mention in the official rules in 1895 when it was stated that:

The catcher and first baseman are permitted to wear a glove or mitt of any size, shape or weight. All other players are restricted to the use of a glove or mitt weighing not over ten ounces and measuring in circumference around the palm of the hand, not over fourteen inches.

The first change in the rules came in 1931 when it was specified that all gloves and mitts be made of leather and that the pitcher's glove be uniform in color. In 1939, the first restrictions were imposed on the size and shape of the first baseman's mitt. It was to be:

... not more than twelve inches long from top to bottom and not more than eight inches across the palm connected by leather lacing of not more than four inches from thumb to palm, which lacing shall not be enlarged, extended or or reinforced by any process or material whatever.²

In the spring of 1949 the rules committee met in Sarasota, Florida and amended the rule on the pitcher's glove to require that the glove be dark in color. A year later it was changed again to state that it must be of a color other than white or gray. The big news out of the 1949 meeting, however, was the announcement that, effective in 1950, the Trapper or "Claw" type first base mitt would be outlawed, although it had been used by a large majority of first basemen since its introduction in 1940. This decision evoked much comment in the press, both pro and con, and in July it was announced that the committee had reversed its original decision. One reason for the change was the introduction of Rawling's patented Web Controller which could restrict the width of the web.

As a direct result of the Trapper controversy, the rules committee decided to rewrite the rules on gloves and mitts for 1950. This action was long overdue as the ten ounce weight limitation on fielders' gloves had been on the books since 1895 but obviously had not been enforced for many years. (Current fielders' gloves weigh up to twenty-four ounces.)

The rules, as rewritten in 1950, have undergone only minor changes in wording since that time. The current rules are as follows:

1.12 The catcher may wear a leather glove or mitt of any size, shape or weight.

1.13 The first baseman may wear a leather glove or mitt not more than twelve inches long from top to bottom and not more than eight inches wide across the palm, measured from the base of the thumb crotch to the outer edge of the mitt. The space between the thumb section and the finger section of the mitt shall not exceed four inches at the top of the mitt and three and one-half inches at the base of the thumb crotch. The mitt shall be constructed so that this space is permanently fixed and cannot be enlarged, extended, widened or deepened by the use of any materials or process whatever. The web of the mitt shall measure not more than five inches from its top to the base of the thumb crotch. The web may be either a lacing through leather tunnels, or a center piece of leather which may be an extension of the palm connected to the mitt with lacing.
and constructed so that it will not exceed the above-mentioned measurements. The webbing shall not be constructed of wound or wrapped lacing or deepened to make a new type of trap. The glove may be of any weight.

1.14 Each fielder, other than the first baseman and the catcher, may wear a leather glove not more than twelve inches long nor more than eight inches wide, measured from the base of the thumb crotch to the outer edge of the glove. The space between the thumb and the forefinger shall not exceed four and one-half inches at the top nor more than three and one-half inches at the base of the thumb crotch. The webbing may be standard leather or lacing and shall not be enlarged, extended or reinforced by any materials or process whatever. The webbing shall not be constructed of wound or wrapped lacing to make a net type of trap. The glove may be of any weight.

1.15 (a) The pitcher’s glove shall be uniform in color, and shall not be white or gray.

(b) No pitcher shall attach to his glove any foreign material of a color different from the glove.1

The rules can and may change again in the future. Whether they do or not, however, the evolution of baseball gloves and mitts will continue. If this evolution follows the pattern set by the Bill Doak glove and the changes in design and other innovations made by Latins in the past generation, it will lead to better gloves and better fielding.2

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The Evolution of Baseball Gloves and Mitts

First baseball gloves offered for general sale were in 1877. The Spalding Guide of 1878 stated that "no catcher or player subject to sore hands should be without a pair of these gloves."

Fielding Percentages
National League .......................... .948
American League (1901) .................. .937

The three finger model glove was introduced in 1925. Above is Les Bell model of 1927.

Fielding Percentages
National League .......................... .965
American League .......................... .964

Fielding Percentages
National League .......................... .972
American League .......................... .971

1908

1918

1938

The Trapper mitt for first baseman was patented by Rawlings in 1940 and became the most popular mitt in baseball. It became the center of much controversy in 1949 and led to the rewriting of the rules covering gloves and mitts.

Among the many famous ball players who use and endorse Rawlings gloves and mitts is Yankee star Mickey Mantle. Above is the MMP Mickey Mantle Personal Model Glove.

The TRAP-EZE, or so-called "six-finger" glove, introduced by Rawlings in 1959, quickly became a favorite of many major league players.
CHAPTER VI

EVOLUTION OF PROTECTIVE BASEBALL EQUIPMENT

Except for the catcher, the player in the field is considered adequately armored when he wears his regulation uniform and glove. The glove was covered in the previous chapter and the uniform along with the protective batting helmet or hat will be covered in a following chapter.

The catcher wears a mask, chest protector, and shin guards in addition to his glove, and the first three items are considered the protective equipment. The mask fits the front half of his head and has a padded metal frame, with solid bars across its open front, so that the catcher has full visibility, but is protected from being hit in the face or about the head, ears and throat by the ball. The chest protector is a solid padded framework extending up over both shoulders and down between the legs, folding at about the waistline to allow stooping. The catcher’s shin guards are of light metal over the shins, with padded leather extensions so that a catcher blocking home plate has reasonable protection from the spikes of a player sliding feet first. Also, the shin guards serve as protection against wild pitches and foul balls.

The umpire, whose uniform is similar to a navy blue serge business suit, with a cap of the same shade, likewise wears a mask, chest protector, shin guards, and special baseball shoes with a hard toe, when on duty behind the plate. The mask is similar to the catcher’s. Most umpires
wear a special umpire's body protector under the outer clothing. A few
leagues' umpires wear their body protectors outside of the outer clothing.
The umpire's shin guards are worn under his trousers, which extend full
length to the insteps, so that from the stands the umpire's only visible
protection appears to be his mask.1

There seem to be no written rules regarding the catcher's mask,
body protector, and leg guards in the baseball rule book. The first time
any protective equipment appeared was in 1875, and the piece of equipment
was the mask. Fred G. Thayer invented the mask. James Tyng of Harvard
was the first to wear it in a game.

Thayer, captain of Harvard's baseball team, tried to get Tyng to
catch on the team. Being a young man of rather handsome features, Tyng
declined the honor and risk of stopping a foul tip with his face. At
this moment a fencer passed by, carrying his mask. It gave Thayer an
idea. Borrowing the mask, he tried it on, found the vision was unsatis-
factory for baseball and went to a tinsmith to have eye holes cut in the
mask. The tinsmith put on his thinking cap and improved on the mask,
substituting a wide, firm mesh strong enough to withstand the impact of
the ball and provide perfect vision. Harvard's friends from Yale jeered
when they first caught sight of Tyng wearing the contraption and called
it a bird cage, but the gilded youth from New Haven were in the same cage
before long.2 Previous to this time, the only protection the catchers
had were rubber mouthpieces to keep their teeth from being knocked out.3

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1"Baseball," Encyclopaedia Britannica, (Chicago, Illinois: The

2Danzig, p. 42.

3Bartlett, p. 111.
Very little material was available on the development of the mask and none at all on the development of the body protector. However, some material was available on the leg guards. Baseball leg guards are generally credited to the initiative of a New York Giant catcher named Roger Breenahan who, in 1907, sought protection against the painful injuries administered by wild pitches and foul balls. Two other ball-players also claim the honor. They were Matthew Fitzgerald, a teammate of Breenahan’s, and Charles (Red) Dooin, a catcher and later manager of the Philadelphia Phillies.

Rawlings first listed leg guards in its 1914 catalog. There were two models—the Professionals Catcher’s Shin and Knee Guard made of extra heavy canvas covered cane ribs with a leather kneecap, and the Amateur Catcher’s Shin Guard featuring olive green kahki cloth over cane rib with a well-padded kneecap. Heavy fibre board replaced the cane rib in the 1916 Rawlings leg guards. The company felt it had developed a protector that afforded “absolute protection to the ankles, shins, and knee-caps.”

In 1920, the Number One Professional Model was developed. With an entirely new and improved design, the guard was built according to the specifications of a “leading catcher” in the major leagues. The Number 0 Rawlings “Fibre” Catcher’s Leg Guards improved on the 1920 model two years later. A white felt joint was developed to connect the shin and knee pieces.

The 1927 innovations increased wearing comfort: a laced leather shock absorber on the inside guard and three elastic leg straps. Eight years later in 1935, Rawlings completely redesigned its leg guard line. The company manufactured protective armor that featured an extra heavy fibre leg piece with a leather shock absorber.
a molded kneecap and a rubber padded fibre instep protector. Red fibre and molded, corrugated, double-hinged kneecaps were the important innovations on the Gh "Professional De Luxe" Catcher's Leg Guards in 1937.

During the next fifteen years, there were no major changes in the construction of leg guards. But in the 1950's, Airlite rubber and Aire-Guard vinyl were innovated in the cushioning of leg protectors. Rawlings also changed the color of this type of protective equipment from red to navy blue and orange.

Other than basic design changes, fibre improvements and cushioning innovations, there had not been a major contribution to improve leg guards in four decades until 1960. The development, by Rawlings, of Armor-Lite plastic parts for "shin" protectors may be termed as one of the most important improvements in the history of catchers' leg guards.

Armor-Lite is stronger and more flexible than fibre, the material previously used in leg guards. It is also water and perspiration proof which prevents deterioration. The new leg guards encompass another feature. A set of side wings have been added as a safety factor to protect the wearer's calves from occasional wild pitches and foul tips. Made of leather-covered Aire-Guard vinyl, these additions will also add to the wearing comfort of the "shin" protectors.1

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Mr. Ware wearing Thayer’s mask, patented February 12, 1876. In hand, old style mask with ear protectors.
—National Baseball Hall of Fame and Museum

2 Ware, p. 29.
The New York Knickerbockers are generally credited with being the first baseball team to wear uniforms. The Knickerbocker Baseball Club, the first organized baseball team, made its debut in 1845. The following year the Knickerbockers appointed a committee to draft a set of rules which for the first time limited a team to nine players. It was then that Alexander Cartwright was designated to lay out the new dimensions of a playing field. What he drew is the baseball diamond of today.

It was in 1851 (some sources say 1849) that the Knickerbockers established another "first" for baseball when they appeared for a game outfitted in long, Navy blue trousers, webbed belts, white shirts, and straw hats. A cricket type cap for baseball came into vogue a few years later. The straw hats apparently—and understandably—proved something less than satisfactory on the diamond, however sporting they looked, and were soon discarded in favor of mohair cricket hats. With this change and the addition of a black patent leather belt to the ensemble, the Knickerbocker uniform became permanently established, and remained virtually unchanged until the club finally disbanded in 1882.

2Bartlett, p. 16.
New clubs also adopted the "knickerbocker look" in uniform fashions. The Electrics of New York disported themselves in dark blue flannel pants, white shirts trimmed with blue, red belts, and white caps decorated with blue stars. But the leaders in sartorial splendor undoubtedly were the Charter Oaks of Brooklyn, who cavorted in white pants with pink stripes, pink shirts with shoulders and stars, white caps with blue peaks, and black belts on which the name Charter Oaks was inscribed.¹

Another claim for being the first to design uniforms is made by Di Clemente who states:

In 1866, Harry Wright designed the first true baseball uniform, which in this case, was red and white and very similar to today's uniforms.²

The traditional knee length Knickerbocker pants for baseball were introduced by the Cincinnati Red Stockings in 1868. This new attire provoked a lot of laughter and jeering from opposing players, but very shortly became standard for all baseball teams. By the time the National League was organized in 1876 uniforms were considered a very important part of the game and some of the owners went to great expense in outfitting their players. The Official Baseball Guide of 1876 had this to say in regard to uniforms:

Uniforming clubs has come to be as much a matter for the dealers as the sale of balls and bats. It was not many years ago that clubs thought that they could get up their own uniforms better and more cheaply than they could buy them outright, but that idea and practice has passed away and it is now deemed the proper way to order a whole outfit for a club from some reasonable dealer. The commonest and by all odds the prettiest combinations of colors are those where only white and one other are used.

¹Seymour, p. 38.
In 1882, the National League adopted a rule providing a specific color for each team's uniforms as follows: Boston (Red); Cleveland (Navy Blue); Chicago (White); Buffalo (Grey); New York (Green); Detroit (Old Gold); Worcester (Blue); and Providence (Light Blue). This innovation was not well received and the following year the color regulations were revised to apply only to stockings.

A few years later, a rule was effect, reading much the same as the current rules on professional baseball uniforms.1 The present rules are:

1.11 (a) (1) All players on a team shall wear uniforms identical in color, trim and style. (2) Any part of an undershirt exposed to view shall be of a uniform color for all players on a team. (3) No player whose uniform does not conform to that of his teammates shall be permitted to participate in a game.

(b) A league may provide that (1) each team shall wear a distinctive uniform at all times, or (2) that each team shall have two sets of uniforms, white for home games and a different color for road games.

(c) (1) Sleeve lengths may vary for different players, but the sleeves of each individual player shall be of approximately the same length. (2) No player shall wear ragged, frayed or slit sleeves.

(d) No player shall attach to his uniform tape or other material of a different color from his uniform.

(e) No part of a uniform shall include a pattern that imitates or suggests the shape of a baseball.

(f) Glass buttons and polished metal shall not be used on a uniform.

(g) No player shall attach anything to the heel or toe of his shoe other than the ordinary shoe plate or toe plate.2

When the Rawlings Sporting Goods Company was launched in 1893, it was evident that one of the top items in its line was to be baseball uniforms, as page one of Rawlings inaugural catalog was devoted to baseball uniforms with emphasis that they were all "our own manufacture."


2 Official 1963 Baseball Rulebook (Wichita, Kansas: National Baseball Congress of America, p. 3.)
For sixty years Rawlings has had this same high regard for the manufacture of baseball uniforms which accounts for the fact that more major league teams and clubs throughout professional baseball wear Rawlings made uniforms than any other.

The major league uniform described in Rawlings 1898 catalog was:

"All wool eight ounce athletic flannel."

The shirt was available with a laced, button, or shield front and was set off with silk stitching down the front, around the collar and cuffs and around the button holes. The pants featured braid down the side seams and a silk stitched pocket. Cost of the uniform including stockings, belt and cap was twelve dollars and fifty cents with an extra charge of ninety-three cents if padded pants were desired.

The next decade saw the half sleeve replace the traditional full length sleeve on baseball shirts. The lace front shirt also dropped out of style. In 1911 the section on baseball uniforms in Rawlings catalog, in describing the top uniforms in the line, pointed out that:

The flannel used in these uniforms is made of strictly all wool yarn of the very finest quality. It is made on the flat or broadcloth weave which experience has proven to be much stronger and more durable than the twill (which most manufacturers use). As the strength is distributed in all dimensions, it is practically everlasting. Each uniform is cut to measure and full size with enough allowance to all directions to insure perfect freedom of motion. All uniforms are put together in a scientific and up-to-date manner with a view to strength and durability. All seams are felled and double stitched and reinforced at all points subject to the greatest strain—no raw edges appear anywhere.

It was about this time that the sun collar began to lose favor and the baseball shirt took on an appearance somewhat like that of today. In recent years, the only order for a uniform with a sun collar has been from Eddie Stanky, former manager of the St. Louis Cardinals and now a coach in the American League. In the middle 1920’s, the shirts were
made more colorful with addition of trim around the collar, down the front of the shirt and around the sleeve ends. In the 1930's, the zipper front shirt was introduced and, until recently, was about equally as popular as the button front style. In the past few years, however, use of zipper front shirts has declined although several major league teams still use them.

From the early days of organized baseball, teams have been identified by the use of names or letters across the front of the baseball shirt. Numbering of players did not begin until 1916, but in the early days of the National League different colored caps were used to serve the dual purpose of providing identification and adding color to the uniforms.1 In 1876, Al Spalding of Chicago carried through his idea of different colored caps for all his players, choosing blue for himself and dividing the rest of the rainbow among the others. Reactions to this innovation were mixed. When the variantly becapped players took the field for the first time, in Louisville, the Courier-Journal thought the effect was "too much like racing," but decided the next day that the caps were "just the thing." The Boston Journal thought the nine presented a rather gay appearance with their jockey colored caps.

Spalding may have had an eye to business in trying to establish this new fashion, hoping that other teams would take it up and so be in the market for new caps. For he had now become a leader in baseball goods as well as a player.2

2 Bartlett, p. 97.
In 1916, Robert Halsey, Cleveland Business Manager had numbers pinned on the backs of Cleveland players in a game against the White Sox. Jack Graney of the Cleveland Indians achieved the distinction of being the first player to go to bat wearing a number on his uniform. The numbering had been proposed by newspapermen and fans for years, but somehow the owners felt that to ask a player to wear such a number was to degrade him. Not until football began to number its players did the Cleveland baseball team follow suit, and Graney happened to be the first man up on the day the innovation was tried.

The Cleveland experiment was short-lived. The numbers, worn on the sleeve and hardly visible from the grandstand, were soon abandoned, and not until 1929 did numbering come back, with Babe Ruth wearing on his broad back the figure "3" that identified him.1

In 1931, the American League adopted universal numbering of players with the National League following two years later. In recent years some clubs have begun to use numbers on the front of the shirt as well as the back. The Chicago White Sox first put the player’s name on the back of his uniform. This practice has prevailed itself on other major league clubs.

The most radical innovation in baseball uniforms down through the years was the use of shorts and knit shirts by Hollywood and Fort Worth and other minor league teams about 1950. However, this "new look" fostered by Branch Rickey was short lived and never did reach the majors.

Early baseball stockings were full length stockings and were generally made of wool. However, the Chicago White Stockings in their

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great years in the early 1880's wore silk stockings. Shortly after the
turn of the century stirrup type stockings replaced the conventional
full stockings. About 1910, two color stocking patterns came into vogue
in place of the traditional solid colors from which a number of teams had
gathered their names (Red Sox, White Sox, White Stockings, Browns, Reds,
etc.). In the 1930's, the colorful striping patterns of today came
into use.¹

Early baseball shoes were high cut. With the organization of
the National League in 1876 and the subsequent increase in interest in
the game, both players and fans became more equipment conscious. As
the years went by, uniform styles changed and so did baseball shoes.
The high top shoe gave way to three-quarter style after the turn of the
century, and a little later to the present day low quarter model. Heel
and sole plates, unattached to the shoe at first, had become a basic
part of the shoe by 1890.

With the passing of time, baseball shoes showed improvement in
materials. The introduction of kangaroo leather and better methods of
construction were valuable innovations. Utilization of the Goodyear
welt system, then and now recognized as the finest method of assembling
the component parts of a shoe, caused better construction. Refinements
in the shaping of lasts, which are the wooden blocks or forms shaped
like a foot, over which shoe uppers are drawn or shaped caused better
fit and comfort.

Rawlings 1911 catalog described the top "professional sprinting
baseball shoe" as being "made of selected black kangaroo, guaranteed

¹"The White and the Grey," Rawling's Roundup, December, 1957,
hand made." Other features included "Goodyear welt," full wing tipped, outside face lacing, full back stay, full reinforced ball, flexible shank, soles trimmed close to the edge to prevent gathering dirt, best hand-forged professional light weight steel plates riveted to heel and toe.

In the 1920's, Rawlings was advertising its Rogers Hornsby model baseball shoe as one that met "all requirements of the most critical professional." It was made of selected yellowback Australian kangaroo leather, made on an orthopedic last for snug fit, and featured "hand-forged spikes of the latest pattern."

During the years that followed, there were only minor changes in the construction and appearance of baseball shoes. Blueback kangaroo leather joined yellowback as a widely used leather for uppers, though calfskin and athletic tanned cowhide were also used. The concave curvature of the triangular shaped sole plate became convex for better sole support. The heel plate underwent the same change a few years later.

When Rawlings introduced its Fleetfoot baseball shoe in 1953, it combined all of the finest features developed in a baseball shoe since the game began. The top model was made of yellowback kangaroo leather, featured Goodyear welt construction and was seam throughout with nylon thread. A new feature on Rawlings top baseball shoe for 1957 was the split spike arrangement on the sole plate. The split spike tended to free the sole plate from the mud that often clung to shoe plates.¹

The old time flat top baseball caps gave way to the modern style shortly after 1900. The most notable change in head attire since then has been the introduction of protective caps in recent years, with the most popular of these being the fibre glass cap pioneered by Branch Rickey. The use of a protective cap or head protector by a batter is now mandatory in nearly all classes of baseball. Many big leaguers take advantage of this protection even while running the bases. In most organized boys' programs, head protectors or protective caps are required for all batters and base runners.

In general, the baseball uniform of today that has evolved from the one of one hundred years ago is a result of many changes which, combined together, present quite a contrast. Uniforms are now lighter weight (four or six ounce flannel instead of eight) and looser fitting to provide greater comfort and to give more freedom of movement to the arms and legs of players. Colorful numbering, lettering and trim have added to the attractiveness of uniforms and have aided in the identification of players. The Cincinnati Reds have come with another innovation in the past few years. They have cut the sleeves off the uniform altogether and the shirt resembles a basketball jersey.

Stockings are more colorful and the stirrup type has replaced the full stocking. Flat top caps have given way to the head conforming style and protective caps have come into common use. The innovations go on and on. In a letter to the author R. M. Spajian states:

In the past six years the knitted baseball uniform made out of nylon and cotton has received greater acceptance than uniforms made out

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of flannel. Since its inception six years ago the knit baseball uniform has proved to be the most ideal and comfortable garment for this particular sport. It has more strength than the flannel fabric, due to the filament nylon knit with cotton backing. It is available in all baseball uniforms with the exception of the pin stripe effect. The knit baseball uniform is guaranteed to outwear a flannel uniform three to four times in normal wear and will never tear up when a player is sliding. It is washable and has no allergic properties such as the wool flannel; and, it is budgeted to sell for less than twenty dollars. The top knit baseball uniform, in comparison to a top flannel uniform, is at least fifteen to twenty dollars less.1

Another sartorial innovation has been initiated by the Kansas City Athletics of the American League. The following is an article describing the radical new uniforms of Kansas City:

When the Kansas City Athletics crowded onto the field Tuesday in their new kelly green and gold uniforms, the somber, grey-clad New York Yankees broke into titters of polite laughter.

The Yankees, standing along the third base line for the opening day ceremonies before winning the game, eight to two, blew kisses to their opponents who established a major league precedent Tuesday by replacing the usual white home uniform with one consisting of gold pants and yest, green long-sleeved undershirts, caps, socks and numerals.2

Such is the story of the constant evolution of baseball uniforms—the story of the white and the grey . . . and the green and gold?

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1Letter from R. M. Spanjian, President, Spanjian Manufacturers of Athletic Clothing, Pasadena, California, March 22, 1963.

Jesse Burkett, Cleveland star in the 1890's, wears a pair of the then popular padded pants.

Pre-1900 - Adrian (Cap) Anson wears laced front shirt with sun collar and flat cap.

Early 1900's - Sam Crawford's uniform demonstrates utility of sun collar.

1876 Baseball Uniform on display at the Baseball Hall of Fame in Cooperstown, New York. It is correct in detail including the bow tie, except for the fact that the figure has on a pair of modern spiked shoes, whereas players in 1876 used soft-soled, canvas-topped shoes that laced around the ankles.

ILLUSTRATION 8
EVOLUTION OF BASEBALL EQUIPMENT

EARLY 1920's — George Sisler's uniform shows early use of braid trim.

1950 — Fred Haney models Hollywood style shorts.

1957 — Latest in major league uniforms.

PROTECTIVE HELMET

BASEBALL UNDERSHIRT

The very first baseball team to appear in uniform was the 1861 Knickerbockers.

Ain't they purty?

In 1868 Cincinnati went to knee length pants—called themselves the Red Stockings.

Advent of the American League (1901) eliminated laced front shirts, label collars, flat cricket caps...

Cleveland was the first club to wear numbers—1916.

Reminds me of sing sing.

Night game or not, we advise you wear your dark glasses tonight!!

Kansas City's Prismatic Peacocks are here for the first time in their new uniforms...gone is the grubby grey road suit—now it's gold and gaudy!!

It's embarrassing when I slide!

In 1950 the Hollywood Stars showed up in shorts! Remember?

CHAPTER VIII

CONCLUSIONS

The sport of baseball, as played today, would hardly be recognizable to the founders and early pioneers of the game. Improved techniques of teaching, rule changes, and changes in equipment have revolutionized and changed the sport to the degree that the United States Government considers the professional part of the sport "big business." The game of baseball, as it exists today, is practically a product of the ball with which it is played. In the last few years, the major and minor leagues have drawn paid admissions of more than $30,000,000 annually. This is a marvelous stimulus for business because the baseball dollar probably has a larger turnover and covers a wider area in the channels of trade than any other dollar that is spent anywhere. Countless millions of Americans are either playing the game or being entertained by it among the professional leagues, colleges, semi-pro, school and sandlot teams everywhere.

Rule changes have caused equipment like the bat and the glove to conform to specifications but the ball and the uniform have caused rules to evolve and change through the years. The reverse of each might also be shown. It could be true in the development of the game that the changing equipment, new rules, and changing rules have worked a "checks and balances" system on one another through the years.

The size and weight of the ball have remained fairly constant in the last one hundred years as have the ingredients. The big
difference in the baseball through the years has been the improving
quality of the ingredients.

The shorter, lighter bat is now in use by most players. The
shorter and correctly balanced bat can be swung faster, and this speed
and the resulting impact on the ball gives more distance to drives and
this might be one of the reasons for the increasing number of home runs.

The gloves of today are many times more efficient than those
used by stars only twenty-five years ago. The fielding in the game has
become progressively better during each passing decade. The fielding
average of the National League in 1898 was .948 per cent, and, in 1958,
it was .977 per cent. The fielding percentage of the American League
in 1898 was .937 per cent, and, in 1958 the percentage was .979 per
cent. In each case percentages show a rise of over twenty-five points
in the overall averages.

The birth of protective equipment, its evolution and need can be
traced to the early changes in the ball and changing concepts in the game
as a result of the ball and its effect on pitching and hitting.

Knit uniforms with either cotton or nylon material have received
widespread acceptance. The heavier garments such as the flannel seem to
be on the way out. Colorful and flashy uniforms seem to be the vogue
these days as evidenced by the Cincinnati "brief" style and the new
Kansas City green and gold uniforms.

Personal Opinions

The so called "lively ball" has made a lot of news in baseball
history. The "lively ball" is not the only reason for long ball hitting.
It is just one of the combinations of factors that have changed the game
from one of high averages and short distances to low averages and long
distances in hitting. New pitching regulations, changes in managerial strategy, swinging for the fences, and lighter bats all made their contribution. The "lively ball" has turned out to be the savior of baseball. After the "Black Sox scandal" of 1919, baseball almost died. The changed game as a result of the new ball and other contributions brought the fans out again in increasing numbers and saved the game.

The baseball bat that is the most effective is probably the hardest piece of equipment to find. Often it takes months and possibly years for a player to find the bat suitable to the characteristics and needs that he, as a player, has.

Ball players are better than ever today but new glove patterns, designs, and developments are making great defensive ball players out of average ones, in the opinion of the writer.

**Recommendations**

The writer suggests that future researchers in baseball equipment visit the National Baseball Hall of Fame at Cooperstown, New York. Photographs of their displays and access to their bound permanent files of "The Sporting Life" and "Sporting News" would be invaluable aide. Also, a wealth of material would be available to those that could visit the offices and libraries of A. G. Spalding & Bros., Inc. of Chicopee, Massachusetts and Hillerich and Bradsby Co. of Louisville, Kentucky. Spalding has old "Official Baseball Guides" that go back to the early 1800's and these would broaden the scope of any researcher in baseball equipment. At Hillerich and Bradsby, the makers of the famous "Louisville Slugger" baseball bats, a researcher could view and photograph all of the old baseball bat styles and their changes over the last century.
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This abstract of a thesis submitted by Donald J. Shore is partial fulfillment of the requirements for the degree of Master of Science in the University of North Dakota is hereby approved by the committee under whom the work of the thesis has been done.

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THE HISTORICAL DEVELOPMENT OF PERSONAL BASEBALL EQUIPMENT
FROM ORIGIN OF THE GAME TO PRESENT DAY

Donald J. Shore, Master of Science

The thesis here abstracted was written under the direction of Walter C. Koenig and approved by John Guaday and Roy Jorgensen as members of the examining committee, of which Mr. Koenig was Chairman.

The primary purpose of this study was to contribute some historical facts and data in a chronological order with respect to the development of the origin of the game of baseball to the present day. The research should help baseball coaches, athletes, and fans better understand how the development of equipment through the years has revolutionized and popularized the game.

The bulk of the material is covered in five chapters and deals with the evolution of the ball, bat, baseball glove, protective equipment, and uniforms. This development of equipment through the years has gradually changed baseball and its rules, and also rule changes and improved playing techniques and knowledge have caused baseball equipment to develop to the high level demonstrated today.

The size and weight of the ball have remained fairly constant during the last one hundred years as have the ingredients. The big differences can be attributed to improving quality of the ingredients. The shorter, lighter bat is now used by most players to great advantage in terms of longer drives and more home runs. The gloves built today are helping to improve fielding averages in all leagues and any account.
in part, for brilliant catches by ordinary performers. The evolution of protective equipment was caused by early changes in rules regarding the pitching of the ball. Knit uniforms are slowly replacing the flannel garment. Colorful and flashy uniforms seem to be the vogue these days as evidenced by the Cincinnati "brief" style and the new Kansas City green and gold innovation.