A Proposed Football Signal System.

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A PROPOSED FOOTBALL SIGNAL SYSTEM

A Thesis
Presented to
the Faculty of the Department of Physical Education
College of William and Mary

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts

by
James Andrew Brakefield
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. INTRODUCTION</strong></td>
<td>1</td>
</tr>
<tr>
<td>The problem</td>
<td>1</td>
</tr>
<tr>
<td>Definition of terms</td>
<td>1</td>
</tr>
<tr>
<td>Scope and limitations</td>
<td>2</td>
</tr>
<tr>
<td>Significance of the study</td>
<td>3</td>
</tr>
<tr>
<td>Sources of data</td>
<td>4</td>
</tr>
<tr>
<td>Procedure</td>
<td>5</td>
</tr>
<tr>
<td>Organization of the remaining chapters</td>
<td>7</td>
</tr>
<tr>
<td><strong>II. A BRIEF HISTORY OF FOOTBALL AS RELATED TO</strong></td>
<td>8</td>
</tr>
<tr>
<td>SIGNAL SYSTEMS</td>
<td></td>
</tr>
<tr>
<td><strong>III. PRESENTATION OF DATA</strong></td>
<td>16</td>
</tr>
<tr>
<td>Introduction</td>
<td>16</td>
</tr>
<tr>
<td>Series</td>
<td>16</td>
</tr>
<tr>
<td>Pass plays</td>
<td>19</td>
</tr>
<tr>
<td>Flanker plays</td>
<td>20</td>
</tr>
<tr>
<td>Man-in-motion plays</td>
<td>20</td>
</tr>
<tr>
<td>Variation plays</td>
<td>21</td>
</tr>
<tr>
<td><strong>IV. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS</strong></td>
<td>23</td>
</tr>
<tr>
<td>Series</td>
<td>23</td>
</tr>
<tr>
<td>Pass plays</td>
<td>24</td>
</tr>
<tr>
<td>Flanker plays</td>
<td>25</td>
</tr>
<tr>
<td>Man-in-motion plays</td>
<td>26</td>
</tr>
</tbody>
</table>
LIST OF FIGURES.

<table>
<thead>
<tr>
<th>FIGURE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Diagram of the Proposed Signal System</td>
<td>29</td>
</tr>
</tbody>
</table>
CHAPTER I
INTRODUCTION
THE PROBLEM

The purposes of this study are: (1) to determine the signal systems in use by leading representative colleges and universities, (2) to analyze these data in order to determine common elements and trends, and (3) to recommend a simplified system.

DEFINITION OF TERMS

Offensive football signals. Offensive football signals as used in this study refer to signals as they are given by one member of the team on offense to designate certain plays, the backs that are involved in these plays, the maneuvers the involved backs make, and the hole the play is to go through.

Buck. As used in this study, a buck refers to a power thrust into the line of scrimmage by the ball carrier.

Quickie. A quickie is a play designated to take advantage of an opening in the defensive line before the opponents can counteract it.

Pitch-out. A pitch-out is a play in which one
player pitches the ball laterally, or backwards, to another player as part of an end run.

**Flanker.** A flanker is a player who lines up outside a designated opponent, thus being in a flanking position.

**Man-in-motion.** A man-in-motion is a player in motion laterally, or backward, at the instant the ball is snapped.

**SCOPE AND LIMITATIONS**

This study is concerned only with the problems involved in setting up a signal system for the offensive team. It shows the numbering of holes in the line, whether against the offensive or defensive men. The numbering of the backfield men is discussed and the relationship between the backfield men's numbers, the hole numbers, and the movements of various backfield men on certain plays is shown.

This study deals with the football signal systems in use at the fifty colleges and universities of the nation, that had leading offensive football teams in 1949, as determined by the official National Collegiate Athletic Association offensive rating.

A brief history of the development of offensive football signals, as they have been used in the United
States from the beginning of interscholastic football competition to modern time, has been included to give a general background for the study.

SIGNIFICANCE OF THE STUDY

The problem with which this study deals takes its significance from the fact that one of the greatest problems of football coaches is to be able to use a large number of plays, and have all the players know all of them. The material found in the second chapter of this study is used as a basis for this statement and such authorities as Stagg,1 Dobson,2 and Crisler3 are in agreement with it.

Most signal systems are used, not because of their practicability, but because they are the systems taught the head coaches when they were athletes, consequently they tend to get behind the progress of the other phases of the game.4 These signal systems have often been in use for more than twenty years. When they were set up they were adequate because at that time the average team had only twenty or

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1 Amos A. Stagg, and Wesley W. Stout, Touchdown (New York: Longmans, Green and Company, 1927), Chapter VII.
2 Frank M. Dobson, personal interview.
4 Ibid., p. 102.
twenty-five plays. Today the average school uses at least seventy or eighty plays, and the signal systems are not broad enough to take in all the situations that arise. As a result of this, most schools have started using deviations from their original system, and consequently, after several deviations have been made, there is very little system left. This makes the learning of signals more difficult, with the result that many players never thoroughly learn all the essential plays. One man, not knowing what to do on one play, may cost a team a well deserved victory.

If football is to continue to progress at the present rate, it is essential that the offensive signal systems progress proportionally.

SOURCES OF DATA

The sources of data upon which this analysis is based include reports of related studies, personal interview, periodicals and bulletins, and a questionnaire.

The related studies used are: Touchdown by Amos A. Stagg and Wesley W. Stout; Notre Dame Football-The T Formation by Frank Leahy; Scientific and Practical Treatise on American Football by Amos A. Stagg, and Henry L. Williams; Modern Football by Herbert O. Crisler; and

5 Dobson, loc. cit.
Coaching Football by Robert C. Zuppke.

Mr. Frank Dobson⁶ was contacted for a personal interview concerning the history of football signals.

The periodicals and bulletins used are Scholastic Coach and Athletic Journal.

A questionnaire (see appendix C) was sent to the schools selected for the study with a request for the information needed to complete the study.

PROCEDURE

In gathering information for a brief history of collegiate football in the United States, most of the material came from the writings of Amos Alonzo Stagg. Dr. Stagg is considered by many football men as the greatest living authority on football in the United States before 1900.⁷ His books, Touchdown published in 1924, and Scientific and Practical Treatise on American Football published in 1893 and revised in 1894, were used. The writer also used material from the writings of other authorities in the field, as well as personal interviews with Mr. Frank Dobson, another football authority over the past fifty years.
The primary source of information for this study is the questionnaire. Leading athletic periodicals and bulletins are also being used as part of this study.

A questionnaire was sent to the head football coach of the colleges or universities that were ranked in the first fifty teams of the nation for the 1949 football season. These men were asked to fill in a diagram showing how the holes in the line were numbered, and how the backfield men were designated. They were also asked to state how the play series were set up, how flanker plays were designated, man-in-motion plays, pass plays and plays that deviated from the regular series.

These questionnaires were sent out on February 16, 1950 and the writer began to receive replies on February 20, 1950. Of the fifty questionnaires sent out thirty were returned, giving a percentage of returns of sixty percent. This return was considered adequate to draw conclusions from since most signal systems are similar in many respects, and the returns came from schools in all parts of the United States, giving a cross section sample of the country.

These questionnaires were then studied and the data from them compiled, showing the various systems in use, the type formations used, and the frequency of use of various phases of signal systems.

Taking the better features from each of these
systems and incorporating into them some personal ideas, the writer set up a system which will cover most situations arising in football. This will do away with the variations, from the original systems, that are in use in most schools today. This system should make the learning of signals much easier, since the player will need only to learn the set rules used in the system, and he will be able to know what happens on all play situations.

To show how this system worked, the writer took a typical set of plays, as used by Notre Dame University, and numbered them with the system set up as a result of this study.

ORGANIZATION OF THE REMAINING CHAPTERS OF THIS THESIS

In chapter two will be found a brief history of football signals as they were used from the beginning of organized football in America, to the present date. Chapter three will deal with the analysis of the data collected from the various sources. In chapter four will be found a summary of the conclusions, and recommendations.
CHAPTER II

A BRIEF HISTORY OF FOOTBALL AS RELATED TO SIGNAL SYSTEMS

The first intercollegiate football game in the United States was played on November 6, 1869, at New Brunswick, New Jersey.¹ This game, between Rutgers and Princeton, had twenty-five men on each team, and only slightly resembled the game of football as it is played today. In 1870 Columbia University fielded its first team, followed by Yale University and Harvard University in 1872, McGill University in 1874, and the University of Pennsylvania in 1876.²

The Princeton-Rutgers first intercollegiate game was a continuation of a historic annual fight between the schools for the possession of a revolutionary cannon for which Washington and Lord Howe had contended originally. Princeton having ended the war by anchoring the cannon in a bed of cement on the Nassau Campus, a football game was substituted for this occasion.³

As a result of intercollegiate competition, there was a great need for a standard set of football rules.

² Ibid., p. 31.
³ Loc. cit.
Before 1876 each school had its own version of how the game should be played, and as a result the captains of each competing team met and agreed upon the rules for each game. The visiting team was often forced to give up most of the points of conflict, and as a result were usually beaten. In 1873 the first rules conference was held in New York. At this conference the size of a team was reduced from twenty-five to twenty men. In 1876, at another conference, the size of the team was again reduced, this time to fifteen men and in 1880 to eleven.

The first uniforms were worn in a football game in 1876 between Pennsylvania and Germantown. At Pennsylvania the dominant sport was cricket and the football team appeared on the field dressed in white flannel cricket suits. Other schools followed this lead by wearing jerseys of the school colors. Each player devised his own padding, as he desired.

Until 1883 the touchdown did not count any score, its only real value was the opportunity it presented of a free try to kick a goal. That year, 1883, the rules were changed making goal from the field count five points, a goal

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4 Ibid., p. 34.
5 Ibid., pp. 34-40.
6 Ibid., p. 41.
after touchdown count four points, and a touchdown count two points. The following year the touchdown was changed to count four points, in 1898 it was raised to five points, and in 1912 to six points. A goal from the field fell from five to four points in 1904, then to three points in 1909. The goal after touchdown fell from four to two points in 1885 and to one point in 1898.\footnote{Ibid., pp. 59-60.}

Before the year 1876 there were no officials used in football games. All points of controversy were discussed by the two captains until some agreement was reached. This, of course, was a very unsatisfactory arrangement, so in 1876 the rules committee decided that each team should have a judge of its own, and a neutral judge should be appointed to make final decisions in cases where no agreement was reached. These judges soon evolved into advocates, special pleaders, and football lawyers, who made speeches on the field, and in general were just a nuisance. In 1885 these judges were replaced by three neutral judges.\footnote{Ibid., p. 40.}

Since the beginning of football there has been a need for offensive signals. The first signals used were sign signals. They could be given by movements of the arms, legs, head, or any part of the body. The greatest objection...
to these signals was that by close observation the defense could often determine what the signals meant. When giving sign signals, it was necessary that all players look at the quarterback, and this would necessarily attract more attention to what was desired to be covered up.9

The following extract from a code once in operation gives suggestions that were used in setting up a set of sign signals.

Pull up trousers on the right side—right half between center and right guard. Pull up trousers on left side—left half between center and left guard. Right hand on right thigh—right half between right guard and right tackle. Right hand on left thigh—right half between left guard and left tackle. Right hand on right knee—right half between right tackle and right end. Right hand on left knee—right half between left tackle and left end. Right hand on collar on right side—right half around right end. Right hand on collar on left side—right half around left end. Right hand on chin—right tackle around between left guard and left tackle. Pull on jacket lacings—kick down the field.

Similar motions with the left hand will direct corresponding plays in the opposite direction. The motions should be made so naturally that they will not attract attention, but in deciding upon movements care should be taken not to select those which will be used involuntarily, lest signals be given sometimes without intention.10

The next step in the progress of football signals was the use of word signals. This involved certain words or expressions to designate certain plays. Each school had its

9 Amos A. Stagg, and Henry L. Williams, Scientific and Practical Treatise on American Football (Appleton Century Crofts Incorporated, 1894), Chapter on Signals.

10 Loc. cit.
own code book for these plays and much effort was exerted by opponents trying to get this code book. There was no system to this method, it was strictly memory work. Below are some of the signals from the 1889 Yale code book.

Speak to right rusher—left half around the end.
Speak to left rusher—right half around the end.
Praise any play—left half between right tackle and end.
Condemning any play—right half between left tackle and end.
Mention any part of the legs or feet—left half between left guard and left tackle.
Speak of the head—right half between right guard and tackle.
Speak of any part of the torso—left half between left guard and center.
Any part of the arms or hands—right half between right guard and center.
The word neck—left half between right guard and center.
The word hips—right half between left guard and center.
The word remember—quarterback carries the ball.
Losing ground—the wedge.
Anything denoting an opening—kick.

When using word signals the quarterback carried on a continual conversation. He had to use care not to accidentally call plays which he did not want, and had to make his signals fit into the conversation he was carrying on, so they would not be conspicuous.

At Annapolis in 1880, the terminology of sailing ships was used to call signals as: the left halfback was the mainmast, the fullback the mizzen, and the anchor called for a kick. To hear a navy quarterback sing out "Furl the

11 Loc. cit.
12 Stagg and Stout, op. cit., p. 126.
topgallant crew line, all hands by the halyards", confused many a land lubbery opponent.\footnote{Ibid., p. 123.}

The first numerical signals used in college football were used at Yale in the latter part of the 1889 season. Plays were given certain numbers, and several numbers were called out, a certain one of them being designed as the play. Later a code was arranged to be called by numbers. This was the first numerical signal system to be used in the United States.\footnote{Ibid., p. 126.} Below is an example of how such a system may be set up.

A very simple code may be arranged, in which each opening is given a number, and each player a number. The combination of two numbers, then, will indicate the man who is to receive the ball, and the opening through which he is to pass, while a third will be called for the sake of deception. For example: We will suppose that the openings in the line, as they radiate from the center, have been numbered four, six, eight, and ten, respectively, upon the right, and five, seven, nine, and eleven upon the left; the center-rusher will be number one, right guard will be two, right tackle will be four, right end will be six, and right half will be eight: while on the left, left guard will be three, left tackle will be five, left end will be seven, and left half will be nine and fullback will be eleven. We will further suppose that but three numbers are to be given each time; that the first number called will mean nothing; the second number called will indicate the player who is to receive the ball; and the third number the opening through which he is to pass.

To illustrate: The captain calls nine, five, eight. The nine means nothing. The second number indicates the player who is to receive the ball, which in the present instance is number five, the left tackle. The third
number shows the opening through which he is to pass—in this case number eight, and hence between right tackle and right end. The interpretation of the signal, then, is that left tackle is to receive the ball, pass around the center, and dash into the line between right tackle and right end. Thus any combination desired may be effected.

If, after a time, the opposing team discovers the signal for one or more of the plays, the entire system may be changed by simply informing the team by a peculiar signal, previously arranged, that the first number will thereafter indicate the opening, while the third will indicate the player who is to take the ball. The three numbers admit of six different arrangements, and the team should be drilled upon at least three of them until they can execute the plays with equal readiness under each arrangement.15

The calling of plays became more and more complicated in the 1890's running into problems of addition, subtraction, multiplication, and even division until it became practically impossible for the average player to remember them. Long signal drills were held, but more ground was probably lost by the inability of players to learn their own plays, than was gained through the opponents' mystification.16

As the popularity of football increased and tremendous crowds were attending games, it became increasingly difficult to hear the quarterback call the plays above the roar of the crowd. As a result of this situation in the Illinois-South Dakota game of 1921, Illinois introduced the

15 Stagg and Williams, loc. cit.
16 Stagg and Stout, op. cit., pp. 127-128.
huddle to be used for signal calling.\textsuperscript{17} The huddle completely revolutionized the calling of offensive signals. There was no longer a need for secret codes or complicated numbers to fool the opponent. In the huddle the quarterback could say anything he pleased with no fear of being overheard. The huddle became popular immediately and many other schools began to use it. With the use of the huddle schools began to make the signals as simple as possible. During this period the average school used only twenty or twenty-five plays as a maximum, therefore when any deviation was necessary from a regular play the quarterback merely told the players in the huddle what the deviation would be.

As long as teams used only twenty or twenty-five plays, the simple systems in use in the early days of the huddle, plus a word or so from the quarterback, were adequate to designate the plays. As football teams began to add more plays, and use more variations, this became increasingly inadequate.

CHAPTER III

PRESENTATION OF DATA

INTRODUCTION

The chief purpose of this chapter is to present the data taken from the questionnaires returned relative to football signal systems in operation. More specifically, the data are presented in terms of series, passes, flankers, men-in-motion, and variations.

SERIES

The data received from the questionnaire returns showed that every school answering had some system of numbering the holes in the line. In every instance the holes were numbered with single digit numbers ranging from zero to nine. Five systems had more holes in the line numbered than did the others and in two situations one hole had two numbers. In the systems using two numbers for one hole the plays had been originally set up against a seven man line. When the defense used a six man line the center hole had two numbers and when a five man line was used the two center holes had two numbers each.

There were many variations in the arrangement of the numbers for individual holes. The only recognizable
pattern for these numbers was that twenty teams put all the odd numbers on one side of the center and the even numbers on the other.

In one system only one-half of the offensive line is numbered starting with the center and going to outside the end. When a play is called the term "left" or "right" is used designating which side of the line the hole is to be on. As an example, a play outside the end on either side would be an eight play with either "right" or "left" added to designate the direction the play is to go.

Of the thirty questionnaires received, seventeen indicated that the holes are numbered in relation to the men on the offensive team and thirteen showed that the holes are numbered in relation to the men on the defensive team. In all but four cases the teams numbering the offensive men ran the hole to the outside hip of the numbered man. This made all plays being run to the right side of the center on the numbered players right, and all plays on the left side of the center on the numbered players left. The four cases that varied from this procedure, ran the hole directly over the offensive player. In every case where the defensive men were numbered each hole was set to go between two players, or outside of a player, but never to go directly over a defensive man.

In four systems the quarterback designates the type
of blocking that will be used in the line, by a letter given with the signals. In the other systems the same type of blocking is always used with the same play. The three basic types of blocking are cross, straight ahead, and trap. The quarterback varies the blocking assignments according to where the defensive men are playing and how they are charging.

The backfield men were numbered in twenty-five cases. In two systems they were designated by a letter, and in three others no designation was used at all. Of the twenty-five systems numbering the backfield men, nineteen numbered them one, two, three, or four with no apparent pattern to the numbering. In two situations one of the backs was numbered zero, and in two other cases two of the backs were given two numbers each. One school used the numbers two, three, four and five, and another used three, four, five, and six.

In all cases where the backfield men were numbered, the numbers were used as a basis for the regular series of plays. In cases where there was no designation for the backfield men the plays had to be memorized. When these men were given letters instead of numbers, the letters designated the series. In systems that gave the backs two numbers more plays could be run without using variations from the regular series. As an example, one back was number-
ed the three and nine back. He carried the ball on all "thirty" plays as well as all "ninety" plays. The "thirty" plays were straight running plays and the "ninety" plays were spins.

The system found in use at two schools had the backs and linemen numbered to show who carried the ball and through what hole. The series were named. For example, on a straight buck play the quarterback would call the number of the back, the hole number, and then say straight buck. He used a similar method for quickies, traps, slants, and sweeps.

Two systems in use had all the series numbered according to the type play. Regardless of who carried the ball all slant plays, quickies, and bucks had a certain series. In this system everyone must memorize who the ball carrier is on each play.

PASS PLAYS

The questionnaire returns showed that in two systems passes were set into the regular series of plays. In ten systems special series were set up for pass plays, and in seven systems the quarterback called on the receivers for special assignments in the huddle. On all plays where the quarterback gave the receivers special assignments in the huddle, all possible passing areas had to be numbered.
When the quarterback called a pass, all men carried out their normal pass assignments, except the man given a special assignment, who went to the area designated by the quarterback.

**FLANKER PLAYS**

Of the thirty questionnaires returned five schools failed to give information concerning flanker men. Two schools said they did not use flankers in their system. It was found that eighteen systems called the flanker in the huddle by name, and five have the flanker as a definite part of certain plays.

In the systems where the flanker is called out by name the quarterback calls the signals and finishes up by saying, as an example, "left halfback flank on the right". The player assigned as a flanker should know whether to go out wide or remain in close as the situation demands.

**MAN-IN-MOTION PLAYS**

The data compiled from the returned questionnaires showed that twenty-three schools gave information concerning the man-in-motion. Three systems used no man-in-motion in their plays. Twelve schools called the man-in-motion by name in the huddle and told him in which direction to go; two designated him by numbers, and six assigned the man-in-
motion as an actual part of certain plays.

In calling the man-in-motion by name in the huddle the quarterback calls the signals and finishes by saying which man is in motion and in what direction. Examples are: "Left halfback in motion to the right", or "Fullback in motion to the left".

When the man-in-motion is called by a number two extra numbers are added to the signal series. The first number designates the back that is to go in motion and the second number shows the direction he is to go in.

In systems where the man-in-motion is an actual part of the play there is no mention of it in the huddle. The player knows by the play number whether he is to go in motion.

VARIATION PLAYS

Of the thirty questionnaires returned fifteen contained no information on plays that vary from the regular series set-up. In nine systems all plays that were added as variations to the regular series were called by names. Various names were used for these, with an effort always being made by the coach to get something odd so the players would not associate it with anything except the play. Six of the schools gave the variations odd numbers. In no case did these numbers correspond to the other series numbers and
learning them was memory work.
CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

SERIES

The results of the data collected from the questionnaires show that most signal systems, as originally set up, follow a pattern of having the holes in the line numbered and the backfield men numbered. The numbering of the backfield men usually corresponds with the series numbers that are set up for all plays, and the hole numbers are used to designate the area where the ball will be carried. The hole numbers are set up against the defensive team or are set up numbering the offensive linemen. The greatest difficulty with numbering the defensive holes seems to be that in modern football the defenses are continually changing.¹ A team may use a five, six, and seven man line on three consecutive plays. These men may be overshifted or undershifted. These varying situations raise many problems for the offensive blockers, and compel them to adjust their blocking to the defensive holes.²

When numbering the offensive linemen the offensive team has a definite control over the hole positions. This

² Loc. cit.
makes better backfield coordination, as the backs know where the hole will be and do not have to feel for it as they come into the line. The path of the ball carrier will not vary regardless of the positions assumed by the defense. In this situation it is possible to make line assignments as simple as possible against various defensive arrangements. Therefore, it seems that the simplest method of numbering the holes in the line is to number the holes with single digit numbers, using the offensive linemen as a basis for the numbering.

PASS PLAYS

The data compiled from the questionnaire returns showed that the most common method for setting up pass plays was that of using special series of plays for all passes. The next most popular method was to designate the place a certain receiver was to go on a certain play.

It is essential for every team to have a good passing attack. This attack should be so set up that it can

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3 Otis Coffey, "Highlights of the Coaching School of the Texas High School Coaches Association and the University of Tulsa," *Athletic Journal*, 25:47, September, 1944.


5 Crisler, *op. cit.*, p. 83.
take advantage of all defenses. To meet these situations many plays must be used. On most pass plays three or four men are sent down as receivers and the patterns they run cannot be set to any definite system, but must vary so the defense will not know what to expect.\(^6\) This situation makes it desirable to set up a special series of plays that is to be passes only. Any time this series is called everyone knows the play is a pass and the receivers must memorize, individually, what they are to do.

Since one of the greatest difficulties encountered in calling individual assignments for receivers in the huddle, is that all the possible pass receiving zones must be numbered and these numbers learned. This results in additional memory work for everyone concerned, which is undesirable. Therefore, it seems that the simplest method for numbering passes is to have all pass plays set into a special series of numbers and to use no special assignments.

**FLANKER PLAYS**

After computing the data from the questionnaire, it appears that the system of calling the flanker out by name and telling him in which direction to go is the most used method. The method of having the flanker as a definite part

\(^6\) Lyle C. Marlin, "In the Hands of the Receivers," *Scholastic Coach*, 17:7, October, 1947.
of a play seems to be second in popularity.

Experience indicates that there is no simpler method of designating flanker men than by having the quarterback call the plays out in the huddle. In this situation there is nothing for anyone to learn. The involved back merely has to do what he is told. Besides apparently being the simplest method available, it is also very flexible. The quarterback can put any back he desires out as a flanker on either side, on any play. This gives him practically an unlimited number of variations to be used with his plays. Therefore, it seems that the best method for calling flanker plays is to have the quarterback call the plays by name in the huddle.

MAN-IN-MOTION PLAYS

In using the man-in-motion it was found that the signal system arrangement was very similar to that of the flanker. The most popular method seemed to be calling the involved players name in the huddle and telling him what to do. The system that appeared to be second in popularity was having the man-in-motion assigned as a definite part of a certain play.

Experience indicates that it is difficult to find a system that is simpler than the quarterback telling the involved back when to go in motion and in what direction.
When using this system the quarterback is free to use the man-in-motion when he so desires, thereby giving him many variations of plays that he would not have in any other way. As a result of these findings it seems that the best method of calling man-in-motion plays is to have the quarterback call them by name in the huddle.

VARIATION PLAYS

After analyzing the data received from the questionnaire, it is apparent that one of the greatest problems in setting up a signal system is to find a system that is broad enough to take in all situations that may arise at a later date. As the season progresses, situations continually arise that call for new plays to be added. Incorporating these plays into the system is often practically impossible. The questionnaire returns showed no definite pattern toward any system to take care of these situations. Every school did it in its own way, and in no instance did the plan for taking care of these variations fit into the normal series of signals. In most instances these plays were called by odd names. This called for much memory work, which is undesirable for every play. When a large number of variations are added to the regular system the problem of remembering all of them becomes quite difficult, and in many instances practically impossible.
In cases where the plays are given odd numbers the problem of memory again arises. As set up in most systems these numbers have very little meaning, and each play must be memorized separately.

Every signal system should be so set up that it can be expanded to take in all the situations that will become necessary as the season progresses. This expansion should be a normal part of the series set up. Therefore, it seems that every signal system should be so constructed, that every back will be numbered with numbers so designated, that several series of plays can be run as a normal part of the system.

THE RECOMMENDED SYSTEM

Using the recommendations, as set up in this study, the writer attempted to set up a simplified system and made an effort to thoroughly explain how this system could be applied to any typical football team. The T formation was used in the example explained, but the system could be applied to the single wing formation, punt formation, or any other formation desired, by merely arranging the series numbers according to the type plays being used. As an example the series of quickies used in this system are numbered one. If a formation were used that had no quickies, spin plays or any type plays desired could be
numbered one. The hole numbers in the line will be used as shown in Figure I.

![Figure I]

The backfield will have the same numbers shown with the ten back having all the series that go from ten through nineteen; the twenty back having all the series from twenty through twenty-nine; the thirty back having the series from thirty through thirty-nine; and, the forty back having the series from forty through forty-nine. The right end will be numbered fifty and the left end sixty, to take care of any end-around plays that may be desired. Their numbers will be called similarly to those of the backs on end-around plays.

Each type play will be given a number from zero to nine, and this number added to the backfield man's number will tell the type play as well as the man that will handle the ball. The series number on all bucks will be zero, as, twenty, thirty, or forty. All quickies will be one, and all pitchouts two. As an example, any play that has the series
ending in two is a pitch-out. Any play with the series numbered forty-two is a pitch-out to the forty back. If the series number is twenty-one, it is a quickie to the twenty back.

When another type play is to be added, it will be the three series, the next one the four series, etc. Instead of the play being set up as a variation, it will be set up as a regular series of plays and everyone will be given regular assignments as in any other series of plays. These numbers from zero to nine give a variety of ten different plays that each back can run through each hole. This should be more than adequate for any system.

In the huddle the first two numbers the quarterback calls will designate the man that will carry the ball and the maneuvers that will be made by the backs.

There will be three type blocks set up for the linemen for each hole. These will be called regular, cross, and trap. Following the first two numbers of the series the type of blocking desired will be called. Next in the series will come the number of the hole in the line the ball is to be carried through. This will be called by number, as desired. Following the hole number the quarterback will give the snap signal, preceded by the word "on" for clarity.

If a flanker man, or a man-in-motion is to be used the quarterback will call it in the huddle following the
snap signal as; "left half flank on the right," or "left half in motion to the right."

All pass plays will be numbered starting with seventy and going up. This will allow for an unlimited number of pass plays. When a pass is to be called, the series will be called in the same manner, except the pass number will be added where the number of the hole in the line would normally be. The reason for starting the pass series at seventy is that no other plays are numbered this high. Therefore, when any number of seventy or above is called, regardless of what it is, everyone will know at once it is a pass.

In brief, the signals as called in the huddle will be: first, to designate the man carrying the ball; second, to tell the type maneuver that will be made by the backs; third, to designate the type of blocking to be used; fourth, to designate the hole in the line the ball is to be carried through; fifth, to tell the signal the ball will be snapped on; and sixth, if necessary, to designate a flanker or a man-in-motion. A typical set of signals, as called in the huddle, will be: "thirty-one, regular, four, on two;" or, "forty-two, cross, five, on four, right half in motion to the left."
THE RECOMMENDED SYSTEM IN USE

To illustrate the simplicity of this method of setting up a signal system, the writer makes an attempt, in the following paragraphs, to show how this system could be used by Notre Dame. The type plays discussed are taken from *Notre Dame Football* by Frank Leahy.

The basic scoring plays used are power plays or bucks. These bucks are numbered zero. Therefore all bucks, regardless of the back carrying the ball, will be in the zero series as, twenty, thirty, or forty. These plays are run from the two hole to the nine hole and would be called as follows: "forty, regular, two, on two"; "forty, regular, three, on two"; "twenty, regular, nine, on four"; or, "twenty, regular, eight, on two."

The quick-opener, or quickie, is also used by Notre Dame. These plays are numbered one. All quickies will be twenty-one, thirty-one, or forty-one. The quickies to the right half back go through the three or four hole and the quickies to the left half go through the seven or eight hole. These plays would be called as follows: "twenty-one, thirty-one, forty-one.

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regular, three, on four"; "twenty-two, cross, four, on three, left half in motion to the right"; "forty-one, cross, eight, on three"; or, "forty-one, regular, seven, on two, right half flank on the right."

The end sweep or pitch-out is used. It will be called the two series. These plays will be numbered twenty-two, thirty-two, or forty-two according to the back carrying the ball. When the left half carries the ball around the right end the play will be called, "forty-two, regular, one, on three." When the fullback carries the ball on the same play it is called, "thirty-two, regular, one, on three." When the right half carries the ball around the left end the play is called, "twenty-two, regular, zero, on two."

Notre Dame uses a series of plays they call mouse-traps. These plays are automatically taken care of in this series by calling trap blocking on the buck plays instead of regular, or cross, blocking.

A series of passes are used and these passes will start with the number seventy and go up. When a pass is to be thrown by the quarterback, and he is to fake a quickie as he comes back to pass, the play will be called, "eleven, regular, seventy-three, on three." If the quarterback is

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10 Ibid., p. 45.
11 Ibid., p. 58.
12 Ibid., p. 102.
going to pitch the ball out to the forty back faking an end sweep, and then pass, the play will be numbered, "forty-two, regular, seventy-two, on three." In this way any series of plays can be used as pass plays by calling a pass number instead of a hole number in the line.

The man-in-motion or flanker may be used on any play. This is done by calling the name of the involved back and the maneuver he is to execute, at the end of the regular series of plays, in the huddle.

Notre Dame uses a special series of plays called the fullback lateral.13 These plays will be numbered the three series. On a play, using the fullback lateral, when the fullback is to carry the ball around the right end, the play will be called, "thirty-three, regular, one, on two." If around the left end the play will be called, "thirty-three, regular, zero, on two."

Notre Dame has an end around play going to both sides.14 Since this play is a sweep it will be in the two series. When the right end goes around the left end the play will be called, "fifty-two, regular, zero, on two." If the left end is carrying the ball around the right end, the play will be called, "sixty-two, regular, one, on two."

As these series are set up many additional plays can

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13 Ibid., p. 70.
14 Ibid., p. 80.
be added. The writer can see no reason why every situation that comes up cannot be covered by the normal series of plays, without resorting to variations from the regular series.
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APPENDIX A
RANKING OF COLLEGE FOOTBALL TEAMS FOR 1949

The fifty leading offensive football teams of the nation as ranked by the National Collegiate Athletic Association for the 1949 season are:

University of Notre Dame
Villanova College
University of Oklahoma
Texas Western College
United States Military Academy
Boston University
University of Mississippi
University of Missouri
Cornell University
Miami University
Michigan State College
University of Wyoming
Stanford University
University of California
University of Texas
Rice Institute
University of San Francisco
Drake University
College of William and Mary
University of Nevada
University of Idaho
Brown University
Fordham University
University of Kansas
Ohio State University
University of Iowa
Southern Methodist University
University of Virginia
University of Illinois
Syracuse University
University of Denver
Tulane University
Louisiana State University
Oklahoma Agricultural and Mechanical College
University of Detroit
United States Naval Academy
University of Wisconsin
University of Washington
University of Oregon
Boston College
University of Minnesota
Dartmouth College
Marquette University
Princeton University
Montana State University
Clemson College
University of Cincinnati
University of Kentucky
Kansas State University
Rutgers University
The diagrams in Appendix B were taken from the returned questionnaires and illustrate the hole numbering in the line, and the backfield men numbering, as used by the thirty schools returning the questionnaire.
Name and school (if desired)
I am making a study of offensive football signals, and am using this questionnaire to collect data to be used in a thesis for the partial fulfillment of the Master of Arts Degree at the College of William and Mary. My objective is to set up as simple an offensive signal system as possible by taking the best characteristics from individual systems, and combining them into one system. These questionnaires are being sent to the leading offensive college teams of the nation for the 1949 season.

You will be given full credit for any information given, unless otherwise requested, in which case you can be assured your name, or the name of your school, will not be used in any way. Your cooperation will be greatly appreciated.

In the space below I have set up a T formation, and a single wing formation. Use the one that applies to your situation and mark in the hole numbers and backfield men's numbers. No defensive men have been drawn, since I do not know if you number your offensive or defensive holes. Feel free to mark, draw, or change these diagrams in any way you desire.

James A. Brakefield

In the space below and on the back page, if necessary, state how the series are set up, how you designate flanker plays, man in motion, passes, plays that deviate from the regular series, and any comments or recommendations you consider appropriate.