Comparative analysis of selected vowel sounds of the speech of Missoula Montana

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A COMPARATIVE ANALYSIS OF SELECTED VOWEL SOUNDS
OF THE SPEECH OF MISSOULA, MONTANA

by

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CHAPTER I

INTRODUCTION AND STATEMENT OF THE PROBLEM

I. INTRODUCTION

Ever since the westward expansion of America, students of language have been working to determine systematically, through analysis of the important lexical and pronunciation features of spoken English, the various dialects and speech regions of the United States. It was assumed by observers and travellers during the nineteenth century that the United States could be divided broadly into three general areas: New England, the South and the remainder of the country. The speech of the "remainder of the country" was known by several different names, such as "Northern", "Western" and "North-and-West" speech. Finally, in 1920, Windsor P. Daggett used the term "General American". This title has remained in use since that time.

As more information became available, each of these major regions became more sharply defined. With the publication of the Linguistic Atlas of New England (1939-1940), the first portion of the projected Linguistic Atlas

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of the United States and Canada,\(^2\) and A Word Geography of the Eastern United States,\(^3\) the region previously known as the East was broken into two separate areas named by Kurath the North and the Midland. The former included New England, the Hudson Valley and Metropolitan New York. The latter included an area from northern Pennsylvania on the North to western Virginia on the South. The western boundary of this area was not definitely established.

The South has been likewise fairly well delineated. It joins the Midland area on the North and extends southwestward to include southern Missouri, nearly all of Arkansas, and eastern Oklahoma and Texas. The western boundary of this area, also, was not definitely established.

The General American area has remained essentially the same except for its extreme eastern boundary, where certain sections have at times been included in the Eastern and Southern areas. At present, the General American region extends from the Pacific coast east and north to the indefinite western edges of the Eastern and Southern regions, including a narrow strip along the southern shores of the Great Lakes which extends to the Connecticut River, and south to the point where it runs into the Southern region.

\(^2\)Ibid., pp. 172-73, ff. 4.

The Appendix contains a map showing these regional boundaries.

The General American region differs from the other speech regions in one important respect. The above-mentioned regions, the East (the North and Midland) and the South, were delimited according to lexical and pronunciation characteristics. General American, regardless of lexical and pronunciation characteristics, refers to all of the area remaining. Much work has been done to determine the speech characteristics of the General American region, but the results are so incomplete that the greater part of it remains essentially uncharted.

Just as the Midland area was made a sub-division of the Eastern region, it is anticipated by phoneticians that the General American region will gradually be sub-divided into more accurately determined areas. Wise, in his discussion of American speech regions, anticipates that:

There may be some name devised for the area, say, from Missouri and Iowa west, to supplant the term General American; possibly the terms of the East may be extended westward, perhaps with some qualifications for the far west.¹

In summary, the term "General American" does not denote a speech region in the strict sense of the word;

¹Wise, op. cit., p. 177.
rather, it refers to a relatively unexplored area which, pending further investigation, will in all likelihood be sub-divided and re-named according to the dialectal variations discovered.

II. THE PROBLEM

Statement of the Problem.

The purpose of this study was to make a comparison of the vowel sounds used by native residents of Missoula, Montana in forty-eight recorded speech samples with the same sounds typically used in the General American dialect region.

Importance of the Study.

This study is important as one of the first steps in making available experimental data that reveals variations in speech sounds within prescribed areas now included in the larger General American region. Further studies pursuing this type of experiment could eventually chart out the entire General American region, and offer inferences concerning influences affecting speech variations. Kurath stated:

...a network of brief speech-monographs would be of inestimable value, even though the meshes were too big to catch and hold all the relevant facts of American pronunciation. For it would provide investigators of all forms of the spoken language with a chart and spare them much aimless drifting; ...it would enable us to study the history of American pronunciation in conjunction with the "ethnic", "social" and "cultural" history of the
various sections, and, last but not least, it might serve to persuade one or the other of our dictionaries to give a scientific account of American pronunciation. 5

In regard to his own research in the field of dialect, Mr. Kurath said:

The sketches of American pronunciation (given here) are neither full nor altogether reliable, but they reflect, it is hoped, our present state of knowledge which gives us only a very imperfect picture of the actual situation. 6

In other words, at the time of Kurath's writing, thirty years ago, the research in the area of American dialect was far from complete. Although extensive work has been done since that time, to this writer's knowledge, the "network" that Kurath speaks of is still not complete. Wise, writing in 1957, reported that the field work being done for the Linguistic Atlas, of which Kurath was the director, covered North and South Dakota in 1947, California in 1952 and Colorado in 1950-53. 7 Up to 1957, then, no work for the Atlas had been done in the northwestern sections of the General American region. Thomas, in his phonetics textbook, Phonetics of American English, cites


6Ibid., p. 296.

7Wise, op. cit., p. 173.
two examples of General American pronunciation, one drawn from Vermont and the other from San Fransisco, California. Undoubtedly these few examples do not comprise the sum total of the work being done or already completed at the present time, but it is indicative of the sparsity of information available as compared with that available on the Eastern and Southern regions.

Limitations of the Study.

This study was designed to analyze the dialect of Missoula, Montana, and compare the results of the research with other dialect areas of the United States.

The materials of the study were restricted to selected vowel sounds which have been demonstrated to vary from one speech region to another. Variations of consonant sounds, with one or two exceptions included in this study, do not occur significantly. As Thomas stated: "Except for \( r \), there are few consonantal variations which can be traced to a regional base." Also, Wise and Kurath, when discussing regional variations, restrict themselves to vowel sounds.

Secondly, this study is restricted to Missoula,

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9See Chapter II, "Survey of Literature", for discussion of the scope of present research.

10Thomas, op. cit., p. 154.
Montana. No attempt was made to incorporate the speech of any other area into the research.

Thirdly, there was no attempt to make an analysis of the stress patterns or lexical data of the area in this study.

Fourthly, this study is strictly descriptive. No attempt was made to make any value judgements as to so-called "correct" pronunciation.

Definition of Terms.

Vowel sounds. The definition of a vowel used in this study was taken from Applied Phonetics:

A vowel is a speech sound which may constitute a syllable or the nucleus of a syllable.\textsuperscript{11}

Pure vowel. A "pure vowel", as used in this study, is synonymous with "single vowel sound", as distinguished from a diphthong. The term "pure" does not necessarily refer to the actual quality or "purity" of a vowel sound, but is a quantitative term.

Diphthong. Wise defines a diphthong as:

...a complex of vowel sounds beginning with one easily identifiable sound and ending with another.\textsuperscript{12}

Dialect. The definition of "dialect" used for this

\textsuperscript{11}Wise, \textit{op. cit.}, p. 73.

\textsuperscript{12}\textit{Ibid.}, p. 15.
study was taken from two sources: (1) Krapp:

When...the speech of a certain community acquires characteristics peculiar to that community, which thus distinguish the speech of the community from that of the country at large, or from other sections of the country, we have a dialect...Almost every community has its local popular dialect.13

(2) Webster's New Collegiate Dictionary:

"Dialect" applies chiefly to a form of language persisting in a locality or among a group, and marked by peculiarities in vocabulary, pronunciation, usage, etc.14

III. ORGANIZATION OF THE REMAINDER OF THE STUDY

Chapter II. Chapter II deals with a survey of the existing literature in the area of American dialect study. This survey includes a discussion of the Linguistic Atlas of the United States and Canada, contributions in the form of textbooks and other major publications by prominent linguists and phoneticians, and minor contributions by professional and lay language scholars in the form of articles appearing in speech periodicals. It also contains a detailed listing of the sounds to be examined in this study, as determined from a review of the literature in this area.

Chapter III. Chapter III is concerned with setting up the criteria for the selection of the vowel sounds to be examined and establishing a procedure for collecting and analyzing the data.

Chapter IV. Chapter IV contains the detailed results of the study.

Chapter V. Chapter V presents a summary of the results of Chapter IV, a general summary and conclusion, and recommendations for future research.

Bibliography. The Bibliography contains a complete listing of references used in the preparation of this study.

Appendix. The Appendix contains the charts, transcriptions, scripts and other original materials used in this thesis.
CHAPTER II

SURVEY OF LITERATURE

The literature surveyed for this study consisted primarily of the contributions made to the field of dialect research in America by:

1. The Linguistic Atlas of the United States and Canada,
2. Prominent linguists and phoneticians in the area of American dialect study, and
3. Writers in periodical speech publications.

As stated in Chapter I, under Limitations of the Study, research into dialect concentrates upon two major areas: phonetic description and lexical variation. Usually these areas are investigated separately, although the data from each is combined to present a complete picture of regional and local dialect boundaries.

I. LINGUISTIC ATLAS

By far the most important contribution to the field of American dialect has been The Linguistic Atlas of the United States and Canada. Although only one of its volumes was available, it was possible to obtain considerable information concerning the function and achievement of the
The Linguistic Atlas was first conceived in 1928. In 1931, work was started with a training session for the linguists and phoneticians who were to participate in the collection and compilation of data. Between the years 1939 and 1949, a total of six volumes were published under the auspices of the Atlas. These volumes are listed below in the order of their publication:


With the exception of the three volumes of the Linguistic Atlas of New England, the above volumes were concerned entirely with usage and word distribution; data on pronunciation is currently being gathered, but has not been published as yet. Wise, in his discussion of the Atlas, assumes that the phonetic and lexical findings will tend to

\[15\text{Principally from Wise, op. cit., pp. 171-181.}\]
coincide in the determining of dialect boundaries:

...data on pronunciation for the eastern states (outside New England) has not yet been published paralleling the data on word distribution... Kurath has said that he believes the lexical and phonetic isoglosses will substantially coincide... Correspondence from and conversation with other Atlas workers indicate that they believe so too. Studies now under way, when published, confirm their belief.  

The one available publication of the Atlas, Kurath's A Word Geography of the Eastern United States, was sufficient to point out the methods and materials used by the Atlas workers to determine dialect areas. The Word Geography is a compilation of words, showing the distribution and occurrence of certain colloquial usages. The words used for this study were selected according to their regional or local variation. Mr Kurath, in the opening statement of his introduction to Word Geography, implies the general criterion for this selection as well as the general purpose of such studies:

Every word that is not in nation-wide use has its own spread geographically—as well as socially; yet the word boundaries tend to coalesce in some sectors and to be spaced more or less widely in others. Whenever they coalesce to form more or less close-knit strands or bundles, we have speech boundaries of varying importance. If we have at our disposal a sufficiently large number of regionally or locally restricted words, we are able

16Wise, op. cit., p. 177.
to draw dialect boundaries. 17

The words used by Kurath for study were common to everyday colloquial speech, regardless of social, economic or educational usage. Representative examples include such words as "burlap bag", "fried cake", "darning needle", "salt pork" and "spoon bread". These words and/or their equivalents were traced throughout an area and their repeated occurrence and variations were recorded by location. After a large number (between 900 and 1,000) of such words had been traced, the Atlas field workers were able to divide the eastern United States into three major regions, each in turn subdivided into a total of eighteen areas. The body of the Word Geography is taken up with charts showing the geographical occurrences of each of these words.

II. MAJOR CONTRIBUTIONS BY PROMINENT LINGUISTS AND PHONETICIANS

Aside from the organized efforts of many linguistic scholars which have gone into the Linguistic Atlas, other prominent linguists and phoneticians have made independent contributions to the area of American dialect. An exhaustive list or discussion of every such contribution would prove cumbersome; therefore, the following is only

a limited treatment of the more important studies which have added to the present knowledge of American dialect.

Mencken's three-volume series, *The American Language*, is a compendium of American English as it developed since the founding of the colonies. It covers nearly every phase of the American language, its historical development, pronunciation, grammar, spelling and dialects.

Of particular interest were Chapters VI and VII, which dealt with pronunciation, usage and dialect areas. Mr. Mencken's discussion of pronunciation is from an historical standpoint; that is, he discusses the pronunciation of a particular word or words in terms of its change from one time to another. Also, he does not normally assign particular pronunciation characteristics to specific areas, except in rather gross situations, such as the elision of the post-vocalic /r/ in Southern speech, or the quality of what is termed "Negro" speech.

At the time Mencken was writing, the major dialect regions of the United States had been roughly established. He discusses the boundaries of these regions in detail, although his discussion has been largely superseded by more recent work, either by the Atlas research or by more contemporary linguists.

At the beginning of his discussion of American di-

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alects, Mr. Mencken cites several linguists writing before 1900 who stated that the general tendency in America was toward a gradual leveling of all dialectal variation. His refutation of this belief is one which has been borne out by more modern research; he states that despite great political, social and economic uniformity in the United States:

...there are dialectical differences in spoken American, and they have been observed and recorded by a multitude of phonologists, both professional and lay. The organization of the American Dialect Society in 1889, the continuous, if somewhat infrequent, appearance of Dialect Notes ever since, and the preparation of a Linguistic Atlas of the country are sufficient evidences that American dialect really exists. 19

Krapp's The English Language in America, 20 a two-volume work, is also an historical treatment of English from colonial times to 1925.

As the title implies, Mr. Krapp's work is comparative, tracing the development of British English to American English and comparing one to the other. From this comparative basis, Mr. Krapp was not concerned primarily with specific discussions of regional dialect variations.

Of far more practical value to this study were two fairly recent textbooks on phonetics, Phonetics of American

19Ibid., p. 356.
English by Thomas,^{21} and Applied Phonetics by Wise.^{22} The value of both of these volumes lies in their systematic discussion of regional variations in pronunciation.

Chapters 21 and 22 of the Thomas text are devoted entirely to regional pronunciation, especially of the three major dialect regions, Eastern, Southern and General American, although Thomas does discuss more specific areas of the Eastern region, as detailed by publications of the Linguistic Atlas. The scope of the research and the preparation which contributed to Thomas's text are best expressed by Thomas himself in his preface to the volume:

"The sources of my material are 20 years and more of phonetic study, the steadily increasing phonetic literature that has developed during the same period, and seven thousand records of speakers from all over the country whose speech I have analyzed in detail."^{23}

Wise's Applied Phonetics, postdating Thomas's book by ten years, is a far more eclectic and detailed work. Whereas Thomas intended his text for a phonetic primer, Wise aimed his book primarily at the discussion of the various dialects of the English language. As he states in his preface:

\[^{21}\text{Thomas, op. cit.}\]
\[^{22}\text{Wise, op. cit.}\]
\[^{23}\text{Thomas, op. cit., p. vi.}\]
The title *Applied Phonetics* has been given to this book to suggest its main intent: to apply phonetic symbols and nomenclature to the description of the principal varieties of the English language in America and the British Isles.\(^2\)

Chapters 6 through 25, containing nearly 75% of the book, are given over to detailed discussions and descriptions of dialectal variations in spoken English. A large part of this section of the book is also taken up with a discussion of foreign dialects in English.

In addition to the books discussed above, several other books were consulted and used in this study. A complete listing of these volumes is included in the Bibliography.

III. PERIODICAL LITERATURE

An exhaustive canvass of the periodical literature in the Montana State University library netted very little in the way of articles dealing specifically with regional dialect in the western United States. Only two articles were found which were remotely related to the area of this study.

Mills, in an article entitled "Oregon Speechways," discussed the history of colloquial usages common to

\(^{2}\)Wise, op. cit., p. v.
lumbermen in Oregon.\textsuperscript{25} Moncur, in his article, "A Comparative Analysis of \([u]\) and \([\nu]\) Variants in the San Francisco and Los Angeles Areas," reported the variations he found between \([u]\) and \([\nu]\) in such words as "roof", "root" and "hoof".\textsuperscript{26}

Three other articles dealt with setting up a methodology for collecting phonetic and lexical data in dialect research. They were: Cassidy, "On Collecting American Dialect;"\textsuperscript{27} Haltzin, "An Essay On Phonetic Methodology;"\textsuperscript{28} and Ives, "Use of Field Materials in the Determination of Dialect Groupings."\textsuperscript{29}

Two articles dealt specifically with individual sounds examined in this study. They were: Peterson and Coxe, "The Vowels \([\varepsilon]\) and \([\alpha]\) in American Speech;"\textsuperscript{30} and Hubbell, "The Phonemic Analysis of Unstressed Vowels."\textsuperscript{31}

From the almost complete lack of published material

\textsuperscript{25}From \textit{American Speech}, XXV (May, 1950), pp. 81-90.
\textsuperscript{26}From \textit{Quarterly Journal of Speech}, XLII (February, 1956), pp. 31-36.
\textsuperscript{27}From \textit{American Speech}, XXII (Oct.-Dec., 1948), pp. 194-203.
\textsuperscript{28}From \textit{Quarterly Journal of Speech}, XXXVI (April, 1950), pp. 189-196.
\textsuperscript{29}From \textit{Quarterly Journal of Speech}, XVI (December, 1955), pp. 359-364.
\textsuperscript{30}From \textit{Quarterly Journal of Speech}, XXXIX (February, 1953), pp. 33-41.
\textsuperscript{31}From \textit{American Speech}, XXV (May, 1950), pp. 105-111.
in the speech periodicals concerning dialect research in this region, it seemed logical to assume that the Northwestern states, including Montana, had received little attention as to their dialect characteristics up to this time.

IV. RESUME OF PERTINENT VOWEL SOUNDS

The three major dialect regions of the United States have been delineated on the basis of variations among certain vowel sounds. In order to make an accurate comparative survey of the speech of Missoula, Montana, it was necessary to compile a list of these variable vowel sounds. This list was chosen from the following sources: Wise, *Applied Phonetics* and Thomas, *Phonetics of American English* (discussed above); Kurath, *American Pronunciation*; Kantner and West, *Phonetics*; Kenyon and Knott, *A Pronouncing Dictionary of American English*; and Needleman, *A Manual of Pronunciation*.

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32 Kurath, *op. cit.*


(NOTE: During the detailed resume, the above two pronouncing dictionaries will not be referred to by page numbers.)
Nearly all the vowel sounds which vary from one region to another have been established; yet, though there is no dispute as to which sounds vary from General American dialect, there is comparatively little known as to what variations occur within specific areas of the General American region.

Consequently, the vowel sounds selected for this study were (1) those which the above sources discussed as being variable from region to region, and (2) those among which there was disagreement as to the quality used in the General American region.

Vowelized /r/, stressed and unstressed.

The quality of the sound represented by the letter "r" was found to be one of the most distinguishing features of regional variation. As Thomas states:

The most striking difference between the various regional pronunciations, and the difference about which the most lively, though inconclusive, arguments have revolved, is the nature of the sounds which correspond to the letter "r". 36

The /r/ in General American is typically sounded in all orthographic positions. The [r]-colored vowels, [r] in a stressed position and [ɔ] in an unstressed position, appear in such words as "work" ([wɔr]) and "father" ([far]), appear

36 Thomas, op. cit., p. 144.
consistently, as contrasted with [ɔ] and [ɔ] which appear in stressed and unstressed positions, respectively, in Southern and Eastern areas. In such words as "worry" and "courage", the vowel quality may range from [ɔ], the retroflex vowelized consonant in ['wɔIr], to where the central vowel [ʌ] is followed by consonantal [r] in ['wʌrI]. Every source agreed on this point, although Thomas stated that the available evidence is not conclusive.

Vowels preceding "r".

The greatest variation in vowel quality for which the /r/ is responsible occurs in vowels preceding the "r". In such words as "very", "carry" and "merry", the vowel may range from [ɛ] to [æ]. Phoneticians are in only partial agreement as to which of these two sounds predominates in General American. Thomas uses either [ɛ] or [æ];\footnote{Wise, op. cit., p. 188.} Kantner and West use [ɛ] consistently in transcription;\footnote{Ibid., p. 160.} Needleman uses both [ɛ] and [æ], with slight preference for [æ]; Kurath prefers [æ] over [ɛ].\footnote{Kantner and West, op. cit., pp. 374–396.} Wise says that:

[æ] probably predominates in the General American
at large...individuals or communities lean to one or to the other, or are inexplicably inconsistent.\(^{42}\)

In such words as "near" and "clearly", the vowel sound is always\(\text{[I]}\).

The vowel sound for the orthographic "a" as in "father", "dark" and "farm", ranges among\(\text{[e]}, \text{[o]}\) and\(\text{[a]}\).

When orthographic "o" precedes "r" as in "border" and "downpour", or when "a" precedes "r" and is in turn preceded by "w", as in "warranted", the vowel sound is predominantly\(\text{[e]}\).\(^{43}\)

**Unstressed initial, medial and final syllables.**

In unstressed syllables of such words as "fearless", "gallop", "minute" and "terrible", the vowel ranges from the neutral unstressed vowel\(\text{[ə]}\) to the slightly higher, front vowel\(\text{[I]}\). Wise states that the tendency in General American is heavily toward the schwa (\(\text{[ə]}\)).\(^{44}\) Thomas, in an illustration of General American, uses\(\text{[ə]}\) almost exclusively.\(^{45}\) Kantner and West, on the other hand, imply that the\(\text{[I]}\) vowel is becoming more widespread:

\(^{42}\)Wise, op. cit., p. 184.

\(^{43}\)All sources agreed on the vowels cited in the last three instances.

\(^{44}\)Wise, op. cit., p. 186.

\(^{45}\)Thomas, op. cit., p. 166.
...general (sic) American style shows two marked tendencies: (1) to give each unaccented vowel some of the quality of one of the standard vowels ...; (2) to use the indefinite and nondescript schwa sparingly. 46

Kenyon and Knott use either form, with a slightly greater emphasis on [I]; Needleman likewise uses both sounds.

Orthographic "a" preceding nasals, laterals and unvoiced fricatives and stops.

In such words as "grass" and "ranch", where the orthographic "a" precedes nasals, laterals and unvoiced fricatives and stops, the vowel sound [æ] predominates in General American. Considerable variation among [æ], [a] and [ə] occurs in other areas. 47

Orthographic "u" following /t/, /d/ and /n/.

When orthographic "u" is preceded by the dental consonants [t], [d] and [n], in such words as "duty" and "stupid", the General American vowel may appear as [y] or with a slight on-glide as [jy] or [1y]. Wise states that [y] is used in the majority of cases, although there is a strong educational and radio pressure toward [jy] and [1y]. 48 Needleman and Kenyon and Knott list both. Kurath states that: "The simple

46Kantner and West, op. cit., p. 280.
47Kurath, op. cit., p. 287; Wise, op. cit., p. 183.
48Wise, op. cit., p. 186.
vowel [ɪ] seems to be more common in everyday words.  

Diphthongs.  

The diphthongs chosen for examination were taken from Wise. He recognizes five "rising" diphthongs which he transcribes as [eɪ], [ɔu], [ɔɪ], [ɔɪ], and [aʊ], all of which begin with a low or mid vowel and glide to a higher vowel position.

The diphthongal sounds [eɪ] and [ɔu], in such words as "fate" and "grow", differ from the other three diphthongs in that they each have pure vowel cognates, [e] and [ɔ], which are phonemically identical to the diphthongs [eɪ] and [ɔu]. In other words, the added glides of [ɪ] and [u] do not create a change in meaning from [e] and [ɔ]. Wise consistently uses [eɪ] and [ɔu], respectively when the sound is in a stressed position, and the pure vowels [e] and [ɔ] when the stress is secondary or weak. Thomas, Needleman and Kenyon and Knott employ the pure vowels [e] and [ɔ] in both stressed and weakly stressed positions. Kantner and West use [eɪ] and [ɔu] in both stressed and unstressed positions, with occasionally the

49 Kurath, op. cit., p. 287.
50 Wise, op. cit., p. 96.
51 Ibid., pp. 184-85.
52 Thomas, op. cit., pp. 56, 166.
pure vowels being used in positions of weak or secondary stress. Kurath maintains that these sounds, while being clearly diphthongal in British English, are but slightly so in General American. This conclusion conflicts with further statements by Wise and Thomas that the use of the pure vowel is usually the mark of foreign birth, since the majority of European languages do not diphthongize these sounds.

It is interesting to note that Peterson and Coxe, through spectrographic analysis of these two sounds, arrive at [eɪ] or [ɛ] for the "a" ("fate") vowel, and [ɔʊ], [aʊ], [ou] or [ɑ̃] for the "ow" ("grow") vowel.

The diphthongal sound in such words as "noise" and "voice" is represented consistently as [ɔɪ], although Thomas notes variations ranging from [ɔɪ] to [æɪ] and [ɛɪ]. Of the five diphthongs, the greatest variation occurs in the first element of [æɪ] and [əʊ], represented ortho-

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53 Kantner and West, op. cit., p. 377. ([j] and [w] correspond exactly to [j] and [u] in these two diphthongs. The [j] and [w] glides are merely alternate forms, and are not significant to this discussion.)

54 Kurath, op. cit., p. 287.

55 Wise, op. cit., p. 185; Thomas, op. cit., p. 166.


57 Thomas, op. cit., p. 106.
graphically as the "i" in "like" and the "ow" in "down", respectively. Wise and Needleman transcribe these sounds as $[\text{ai}]$ and $[\text{au}]$, respectively; Thomas, as $[\text{ai}]$ and $[\text{au}]$ or $[\text{au}]$; Kantner and West, as $[\text{aj}]$ and either $[\text{aw}]$ or $[\text{aw}]$.

**Orthographic "a", "o" and "ou" in stressed positions.**

The spellings "a", "o" and "ou" cover a wide range of pronunciations and variations, and no attempt is made to include all the possibilities. The following list includes the more predominant variations:

- **Orthographic "a"** as in such words as "watch" and "father" ranges among $[\text{æ}]$, $[\text{æ}]$, and $[\text{a}]$.
- **Orthographic "ou"** as in "thought" is predominantly the $[\text{æ}]$ vowel in General American.
- **Orthographic "a"** followed by "ll" as in "tall" varies between $[\text{æ}]$ and $[\text{a}]$, with $[\text{æ}]$ predominant.

**Suffixes: "le", "ul" and "ile".**

In such words as "supple" and "plentiful" the suffix is predominantly $[\text{æl}]$. In "fertile" where $[\text{t}]$ and $[\text{l}]$ are homorganic, the suffix is usually $[\text{!}]$. The $[\text{æl}]$ variation

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58 Wise, op. cit., p. 96.
60 Kantner and West, op. cit., p. 377. (Cf. ff. 25).
also exists in the case of "fertile" and related words. Initial "wh".

Thomas states that the initial "wh" consonant combination appears frequently as [w] in urban areas and as [m] (h+w) in rural areas. Wise uses [m] consistently for General American. In his discussion of Standard Southern British, or "stage speech," Wise uses [w] predominantly over [n], although both forms are common. As in the case of the [æ] and [ɪ] vowels in unstressed syllables, there is the possibility of a limited educational influence favoring the [w].

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63 Thomas, op. cit., p. 154.
64 Wise, op. cit., p. 187.
65 Ibid., p. 243.
CHAPTER III

PROCEDURE

The procedure for this study required: (1) the selection of vowel sounds to be examined, as designated in Chapter II; (2) the preparation of a recording script incorporating these sounds; (3) the determination of subjects whose speech had been the least influenced by the speech of other areas; (4) the tape recording of samples of the speech of these subjects; (5) the transcription of the recorded speech samples of these subjects into standard phonetic symbols; and (6) the comparison of the sounds under investigation as they appeared in the recorded samples and as they appeared in the sources cited above.

Selection of vowel sounds.

The detailed list of selected vowel sounds appears in the last part of Chapter II.

Preparation of the recording script.

To facilitate the analysis of the selected sounds, a uniform script was read by the subjects and recorded for playback. In this way, it was possible to select words incorporating the desired sounds rather than having to search for the sounds in the text of a random interview. It was also decided that the script should have a logical train of thought
rather than a series of unrelated words to be pronounced out of context.

In preparing the script, a word-list was made up which used the desired sounds. From this list a short descriptive essay was composed. The essay was designed to be as brief as possible.

A copy of the script is included in the Appendix.

**Determination of subjects for recording.**

To insure the greatest accuracy in the study, it was necessary to impose rather stringent restrictions on the subjects whose speech would be chosen for analysis. First, the age of the subjects was restricted between ten and fifty-five. The minimum limit was set to guarantee that the subject's speech had matured sufficiently; the maximum limit was set to guard against any possible deterioration of the speech of the subject.

Secondly, it was necessary for the subject to have been born in Missoula, Montana. This restriction was set up in the interest of mitigating the influence of speech from other areas.

Thirdly, the subject must have maintained continuous residence in Missoula from his birth to the time of the recording, with intervals of absence of no more than six months at any one time. This six-month restriction was arbitrary and was set up to minimize the effect of the speech
of other areas.

Fourthly, the subject was to have no notable speech or hearing disorders or defects. This information was supplied by the subject, to the best of his knowledge.

Fifthly, precautions were taken by use of a questionnaire to avoid any dialectal influence of foreign languages. The subject was asked to state his nationality and what relationship existed between himself and his most recent immigrant relatives.

No restrictions were placed on the sex, education or socio-economic status of the subjects, since, as far as the author is aware, these factors do not affect dialectal speech.

The sample. The subjects used for this study were divided into two general groups according to age. One group was composed of thirty-five subjects whose ages ranged from sixteen to twenty-three, with the mean age of seventeen-eighteen. The second group was composed of thirteen subjects whose ages ranged from thirty-five to fifty-five, with the mean age of forty-three.

A variety of ancestry was represented among the subjects; sixteen different nationalities overlapped among the forty-eight subjects. Of these sixteen, English, German and Irish appeared the most frequently, with respective totals of nineteen, sixteen and thirteen occurrences. The remaining thirteen nationalities were represented from one to
seven times. Five subjects were first generation, twenty-two were second generation and eighteen were third generation Americans.

A copy of the questionnaire is included in the Appendix.

**Recording of speech samples.**

Making contact with qualified subjects was expedited wherever possible through local organizations such as the PTA and Missoula County High School. The majority of recordings were gathered in this manner. The remainder were gathered through personal contacts with subjects who were co-operative.

The speech samples were recorded on magnetic tape with a Webcor tape recorder with double recording heads, making possible recording in either direction. The microphone used was the unit supplied with the machine.

The recordings could not be made in a studio or other acoustically designed room. The equipment was set up wherever convenience dictated, with all possible care taken to cut background noise to a minimum. With proper monitoring during recording sessions, it was possible to make the tapes almost completely free from extraneous sounds.

**Transcription of the recordings.**

For transcription, the International Phonetic Alphabet was used, the complete text of which is included in the
Appendix. In addition to the standard IPA symbols, a system of modifiers was used which enabled closer transcription than the standard phonetic symbols would allow. These modifiers are also included in the Appendix.

To speed up transcription, a special script was devised which provided a blank space for each sound in question. A copy of this transcription blank is included in the Appendix.

Transcriptions were made with appropriate symbols after listening to each single sound played back at least five times. Each sound in the script was taken in order.

Accuracy and consistency were checked by making frequent spot-checks on recordings previously transcribed. Also, no more than three complete transcriptions were made at one sitting, in the interest of minimizing the influence of previous transcriptions.

Reliability. In order to check on the accuracy of the transcription, a qualified phonetician transcribed random samples. A comparison showed an almost identical correspondence with the original transcriptions of this study. Out of 119 sound occurrences tested, positive agreement was found in all but seven instances.

CHAPTER IV

RESULTS OF THE STUDY

The accuracy of transcription was hampered by two factors. First of all, many of the variations of sounds cited in Chapter II, when pronounced out of context, were easily identifiable. However, when these same sounds occurred in the context of a word, spoken with considerable speed, it was difficult to distinguish their actual quality. This problem was compounded by the fact that the concept of a "pure" vowel is a completely theoretical one, and the symbols used to indicate a particular sound refer not to that sound as a specific entity, but to a phoneme which admits variations within its particular family of sounds.

Hubbell pointed out another difficulty of transcription:

It is suggested with some trepidation that in transcription we may all have a tendency to listen to (sounds) rather cursorily and then write what we merely assume would occur in a particular syllable.67

To expedite the detailed discussion of each sound in question, a series of charts was devised which would allow the variations of each sound to be seen in numerical relation to each other. A separate chart of each sound,

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its variations and the numerical occurrence of each variation, precedes each section to be discussed in detail.

In each chart the words are listed in the order of their discussion, and in terms of their relationship to each other. Columns #1, #2 and #3 are given over to the variations described by the sources consulted in Chapter II. Columns #4 and #5 present other variations which were found during the investigation.

In many cases, the number of occurrences for a word listed on the charts is less than the total number, forty-eight. Frequently during the recording sessions, a subject would falter, stutter or otherwise destroy or distort a sound.

When a word appeared more than once in the script, the vowel in each occurrence was analyzed. If a repeated word varied noticeably from the others, the word is repeated in the chart; if no variation was found, the word appears only once in the charts.

1-a. Vowelized /r/, stressed.

<table>
<thead>
<tr>
<th>WORD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>work</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fertile</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>courage</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In the three instances of the "er" sound in a stressed position, there was not a single exception to the retroflex vowelized consonant $[^3]$. The $[^4r]$ combination in column #3, noted earlier as a General American variation in "courage", did not occur.

1-b. Vowelized /r/, unstressed.

<table>
<thead>
<tr>
<th>WORD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>border</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>father</td>
<td>47</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ever</td>
<td>47</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>humor</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>temper</td>
<td>47</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>wither</td>
<td>46</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>loiter</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>paper</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>behavior</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The "hard" or "pure" /r/ also appeared consistently in unstressed positions. From a total of 480 possible instances, only five $[^4 \raisebox{0.1em}{\~}]$ variations appeared. In every case, this reduction to $[^4 \raisebox{0.1em}{\~}]$ was due to the rapidity with which the subject read the script. It was therefore not considered significant as a dialectal variation.
2-a. Orthographic vowels preceding "r": "e" and "a".

<table>
<thead>
<tr>
<th>WORD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>terrible</td>
<td>40</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>varied</td>
<td>28</td>
<td>15</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>daring</td>
<td>38</td>
<td>7</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>merry</td>
<td>33</td>
<td></td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>very</td>
<td>43</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hair</td>
<td>38</td>
<td>2</td>
<td></td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

The orthographic vowels "e" and "a" preceding "r" presented a greater pattern of variation. The word "terrible" whose vowel sound was recorded as $[^{[E]}]$ forty times and "very" whose vowel sound was recorded as $[^{[E]}]$ forty-three times were the only two words of the six tested which contained a consistently "pure" $[^{[E]}]$ vowel.

In the remaining four words, there seemed to be an orthographic influence controlling the sound of the $[^{[E]}]$ vowel. The two words "varied" and "daring", containing "a" preceding "r", demonstrated a slight lowering of the $[^{[E]}]$ ($[^{[E]}]$). The subjects recorded fifteen instances of this lowering in "varied" and seven instances in "daring".

In the words containing orthographic "e" as in "merry", the consonantal "r" was anticipated sufficiently to produce the quality of the vowelized $[^{[E]}]$. Fifteen in-
stances of this $[r]$-coloring occurred in "merry". This $[r]$ quality was never strong enough to produce the vowel sound of "worry" ([wᵊ³rɪ]), but it was sufficient to cause a distinct coloring.

The word "hair" presented another variation which seemed to compromise the [ɛ] and [ɛ]. In only two instances did the vowel become lowered, but in eight cases the vowel was accompanied by a [e] glide.

2-b. Orthographic vowels preceding "r": "ea".

<table>
<thead>
<tr>
<th>WORD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>near</td>
<td></td>
<td>47</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>fearless</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>clearly</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the words where orthographic "ea" preceded "r" ("near", "fearless" and "clearly"), the vowel sound was a relatively pure [ɪ] in all cases. Also, the consonantal /r/ was "hard" or "pure" in every instance, with no reduction of the retroflex [r] to [ə].

2-c. Orthographic vowels preceding "r": "a".

<table>
<thead>
<tr>
<th>WORD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>farm</td>
<td></td>
<td>47</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>dark</td>
<td></td>
<td>42</td>
<td></td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>
The orthographic "a" preceding "r" as in "dark" and "farm" was found to be a stable \([a]\) in nearly every instance. In six instances of the word "dark", the vowel sound was pronounced with a clearly fronted and raised \([a] ([a^{\text{r}}])\). The fronting and raising, however, were not great enough to justify their transcription as \([\tilde{a}]\).

<table>
<thead>
<tr>
<th>WORD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>border</td>
<td>47</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>unfortunately</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>warranted</td>
<td>46</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>roar</td>
<td>43</td>
<td></td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>downpour</td>
<td>45</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The orthographic vowel "o" and its combinations of "oa" and "ou", and the orthographic "a" preceded by "w" appeared fairly consistently as the \([\vphantom{\text{r}}\text{e}]\) vowel. "Border", "unfortunately" and "warranted" were pronounced with the \([\vphantom{\text{r}}\text{e}]\) vowel in all cases. In five instances, the duration of the vowel sound in "roar" was extended and the vowel was raised approximately to \([\text{o}]\) or \([\text{o}^\text{r}]\). When it was raised, it became slightly diphthongal, incorporating a \([\text{æ}]\) glide approaching the \([\text{r}]\). Three pronunciations of the vowel in "downpour" were also raised to \([\text{o}]\) or \([\text{o}^\text{r}]\) and became diphthongal \((\text{[oæ]}\)). In each of these instances, the stress of the second syllable
of "downpour" increased from weak to secondary.

3. Unstressed initial, medial and final syllables.

<table>
<thead>
<tr>
<th>WORD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>terrible</td>
<td>2</td>
<td>40</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>plentiful</td>
<td></td>
<td>48</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>warranted</td>
<td>42</td>
<td></td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>unfortunately</td>
<td>44</td>
<td>3</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>unfortunately</td>
<td>39</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>courage</td>
<td></td>
<td></td>
<td></td>
<td>48</td>
<td>1</td>
</tr>
<tr>
<td>(14-14)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>gallop</td>
<td>45</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>behavior</td>
<td></td>
<td>48</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>believe</td>
<td>32</td>
<td>14</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>greatest</td>
<td>3</td>
<td>33</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tempest</td>
<td>35</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>reckless</td>
<td>45</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fearless</td>
<td>25</td>
<td>21</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>endless</td>
<td>22</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>minutes</td>
<td>15</td>
<td>33</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>stupid</td>
<td>26</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The quality of the vowel sounds in initial, medial and final unstressed syllables was probably the least consistent of all the vowel sounds examined. In the sixteen words tested, no clear-cut pattern favoring either [ɔ] or [ɨ]
could be found.

The vowel sound in the medial unstressed syllable of the words "terrible" and "plentiful" was recorded almost entirely as [I]. The vowel in "terrible" was pronounced as [I] forty times; the vowel in "plentiful", as [I] forty-eight times. There seemed to be two reasons for this: (1) the influence of the orthographic "i"; and/or a local dialect tendency. The first reason seemed the more accurate in light of other words under examination. For example, "warranted" also contains a medial unstressed syllable, comparable structurally to "terrible" and "plentiful". "Warranted", however, with the exception of six instances which were pronounced with no clear vowel quality at all (merely a further reduction of [ɔ] /[:]/), was recorded with the [ɔ] vowel exclusively. As a further example, the vowel in the unstressed "tu" syllable in "unfortunately" was pronounced as [I] in only three instances. The following "nate" syllable was not pronounced with the [I] vowel at all; in fact, it was left out altogether in three instances.

Hubbell stated that the one exception to the [ɔ] reduction tendency in American English occurs in such words as "music", "kicking" and "fetish", all of which contain final palatal or velar consonants.68 The word "courage" would fall into this category, the [dʒ] consonant being the voiced af-
fricative cognate of the unvoiced fricative [ʃ]. The final unstressed vowel of "courage" followed this tendency; in every instance the vowel was pronounced as [ɪ], fourteen of which were distinctly raised ([ɪ̥]).

Orthographic influence was also present in the unstressed vowel of "gallop" which was pronounced as [ə] in every instance. The dominance of the [ə] vowel in this word is probably due to the fact that (1) orthographic "o" tends to be pronounced with low and back vowels, and (2) the preceding "ll" was "dark", or backed in every case.

The words "behavior" and "believe" contain essentially identical initial unstressed syllables, seemingly implying a relationship between form and sound. This relationship, however, did not exist. The vowel in "behavior" was pronounced as [ɪ] in every instance; the vowel in "believe" was recorded as [ə] in thirty-two instances, and as [ɪ] in fourteen instances.

Two other seemingly similar suffixes in the words "greatest" and "tempest" differed markedly in the sound of the vowel, with the final vowel in "greatest" being recorded as [ɪ] in forty-four instances, and in "tempest", as [ə] in thirty-five instances and as [ɪ] in thirteen instances.

The three words "reckless", "fearless" and "endless", again apparently similar in the form of the final suffix, demonstrated considerable variation. "Fearless and "endless" showed definite agreement, with the vowel in "fearless" being
pronounced twenty-five times as [ə] and twenty-one times as [ɪ], and the vowel in "endless" being pronounced twenty-two times as [ə] and twenty-four times as [ɪ]. The unstressed vowel in "reckless", however, was pronounced as [ə] in all but three instances.

The two remaining words, "minute" and "stupid", were also inexplicably inconsistent. The final vowel in "minute" was recorded as [ə] fifteen times, and as [ɪ] thirty-three times; the final vowel in "endless" was pronounced as [ə] twenty-six times, and as [ɪ] twenty times.

<table>
<thead>
<tr>
<th>WORD</th>
<th>1 [æ]</th>
<th>2 [ə]</th>
<th>3</th>
<th>4 [ɑ]</th>
<th>5 [ɑ']</th>
</tr>
</thead>
<tbody>
<tr>
<td>ranch</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hands</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>laughing</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>grass</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>valleys</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>gallop</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>angry</td>
<td>24</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The orthographic "a" preceding nasals, laterals and unvoiced fricatives and stops in every word tested, with one exception, was pronounced exclusively as [æ]. Within the phoneme, there is considerable variation, and sometimes it was extremely difficult to distinguish between it and the
lower compromise vowel, [ə]. Of the sounds recorded as [ɛ], very few actually reached the "flat" sound of the pure [ɛ] vowel. Rather, they were lowered very slightly (near [ə]), but this lowering was not sufficient to warrant transcription of the [ə] vowel.

The single exception to this tendency was the word "angry". In twenty-two of the instances, the [ɛ] vowel was raised ([ɛ] or [ɛ̃]). Also, in every case where this raising occurred, the vowel was highly nasalized.

5. Orthographic "u" in a stressed position, following /t/, /d/ and /n/.

<table>
<thead>
<tr>
<th>WORD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>duties</td>
<td>46</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>June</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>stupid</td>
<td>47</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(tissue)</td>
<td>33</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The educational or dialectal pressure toward the [ju] or [ɪ] in words where orthographic "u" follows /t/, /d/ and /n/ was found to be virtually non-existent in the words examined. The [j] glide in "duties" and "stupid" was discovered in the reading of a single individual, implying a possible educational or dialectal influence on that one person. The vowel in "June" was pronounced as [u] in every instance.

The word "tissue" demonstrated a variation in its "u"
syllable following the fricative consonant $[y]$. In thirty-three instances the vowel was pronounced with a definite glide to $[u]$; in thirteen instances, the $[y]$ glide was not pronounced and the vowel was lowered slightly ($[u]$).

When observed in the context of a word, the exact quality of any sound is difficult to pinpoint. This difficulty was increased considerably in the case of the five diphthongs examined, since a diphthong is made up of a gliding complex of sounds which combine to create the acoustic effect of a single sound. This is especially true with the diphthongs $[eI]$ and $[ou]$ because they can easily be confused with the pure vowels $[e]$ and $[o]$, which are phonemically identical but not diphthongal in character.

In regard to the first of these two problems, it has been demonstrated by Peterson and Coxe that most phoneticians, without the services of the spectrograph, have incorrectly symbolized the two diphthongs $[eI]$ and $[ou]$. However, to avoid confusion, these diphthongs are represented here in their traditional forms, except in cases where the variants were clearly sounded.

The distinction between diphthong and pure vowel was more easily and reliably detected by reducing the play-back speed of the tape recorder. When played back at three and three-fourths inches per second, one-half of the recording

69 Peterson and Coxe, op. cit.
speed, the extended play-back time "stretched" the sound, making it possible to single out any gliding second element which signified a diphthong, even though the actual phonetic sound quality was distorted.

6-a. Diphthongs: [eI]

<table>
<thead>
<tr>
<th>WORD</th>
<th>1/eI/</th>
<th>2/e/</th>
<th>3/eI/</th>
<th>4/e/</th>
<th>5/e/</th>
</tr>
</thead>
<tbody>
<tr>
<td>play</td>
<td>40</td>
<td></td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>raised</td>
<td>31</td>
<td>16</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Canadian</td>
<td>10</td>
<td>38</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>amazing</td>
<td>13</td>
<td>34</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>behavior</td>
<td>3</td>
<td>45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>greatest</td>
<td></td>
<td>47</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>make</td>
<td>5</td>
<td>43</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>paper</td>
<td>2</td>
<td>46</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>facing</td>
<td>3</td>
<td>45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>great</td>
<td>22</td>
<td>26</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the words used to test the diphthong[eI] versus the pure vowel[e], only one word was found to contain a consistently diphthongal sound. This diphthong occurred in forty-eight instances of the word "play". Since "play" occurred at the end of a sentence, the extended duration of the sound probably introduced the[I] glide. Also, since this vowel sound was extended, it was possible to examine both the first and second elements more closely. It was found that
In at least eight instances, the word "play" was pronounced with a distinct [ɛ] in the first element. However, this variation seemed dialectally non-significant, since it would very likely appear in any word of this group at the end of a sentence.

The vowel sound of the word "raised" was pronounced as a diphthong in thirty-one instances. It is possible that the consonant [z], a voiced fricative continuant, might have lengthened the vowel, making possible the intrusion of the [ɪ] glide.

When the sound appeared medially in the words "Canadian", "amazing" and "behavior", the pure vowel [ɛ] appeared in about 80% of the instances. The vowel in "Canadian" was pronounced as [ɛ] in thirty-eight instances, "amazing", in thirty-four instances and "behavior", in forty-five instances. The vowel in "amazing" was pronounced as the diphthong [ɛɪ] in the most instances, again possibly because of the fricative continuant [z].

When the sound appeared in a stressed position preceding an unvoiced consonant, as in "great", "greatest", "make", "paper" and "facing", it was pronounced almost exclusively as the pure vowel [ɛ]. The vowel in "greatest" was pronounced as the pure vowel forty-seven times; "make", forty-three times; "paper", forty-six times; and "facing", forty-five times.

The one exception to this tendency was "great",
whose vowel sound was pronounced twenty-six times as the pure vowel and twenty-two times as the diphthong. In the twenty-two instances in which the diphthong occurred, the normal lingua-alveolar articulation of the \([t]\) became the glottal stop \([\text{?}]\), or an unaspirated allophone. Whenever this sound was substituted for the lingua-alveolar articulation of the \([t]\), the vowel sound was extended and the \([\text{I}]\) glide was intruded.

### 6-b. Diphthongs: \([ou]\)

<table>
<thead>
<tr>
<th>WORD</th>
<th>1 ([oo])</th>
<th>2 ([o])</th>
<th>3</th>
<th>4</th>
<th>5 ([o\text{a}])</th>
</tr>
</thead>
<tbody>
<tr>
<td>most</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>rolling</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>rolls</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>known</td>
<td>8</td>
<td>28</td>
<td>12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the group of words incorporating the \([ou]-[o]\) sounds, relatively little variation was found. About 90% of the subjects recorded the pure vowel \([o]\). The word "rolling" was pronounced with the diphthong seven times; "rolls", four times; and "most", three times.

The word "known" displayed the greatest variation, with twenty instances being recorded as the diphthong \([ou]\) and \([o\text{a}]\). In eight of these instances, the glide rose to an indefinite point approximating \([u]\). In twelve cases, this glide was pronounced as a definite \([\text{a}]\). The increased vari-
ation found in "known" might be accounted for by the fact that it appeared at the end of a sentence, as did "play" in the previous section.

6-c. Diphthongs: \([\text{i}]\]

<table>
<thead>
<tr>
<th>WORD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>voice</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>loiter</td>
<td>46</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The vowel sound in the words "voice" and "loiter" was pronounced exclusively as \([\text{i}]\). Only one instance of \([\text{o}]\) variation was noted in "loiter".

6-d. Diphthongs: \([\text{ai}]\]

<table>
<thead>
<tr>
<th>WORD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>my</td>
<td>31</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>like</td>
<td>35</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>life</td>
<td>34</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>liked</td>
<td>34</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The vowel sound appearing in the words "my", "like", "life" and "liked" was extremely difficult to identify as belonging to the \([\text{ai}]\) or \([\text{a}]\) phoneme. In all four of the words examined, about 65% of the instances were pronounced as \([\text{ai}]\) and about 35% were pronounced as \([\text{a}]\), in the first element. "Like" was recorded thirty-five times as \([\text{ai}]\) and thirteen
-49-
times as [ai]; "life", thirty-four times as [ai] and thirteen
times as [ai]; "liked", thirty-four times as [ai] and fourteen
times as [ai]; and "my", thirty-one times as [ai] and
seventeen times as [ai]. Neither [a] nor [a] was found to be
pure; rather, the sound ranged between [a] and [a] ([a] or [a]).

6-e. Diphthongs: [au]

<table>
<thead>
<tr>
<th>WORD</th>
<th>1 [au]</th>
<th>2 [au]</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>round</td>
<td>37</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>clouds</td>
<td>33</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>downpour</td>
<td>36</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the case of the sounds incorporated in such words
as "round", "clouds" and "downpour", the diphthong [au] was
found in about 75% of the instances. "Round" was pronounced
thirty-seven times as [au] and 11 times as [au]; "clouds",
thirty-three times as [au] and fifteen times as [au]; and "down-
pour", thirty-six times as [au] and twelve times as [au].
In "round" and "downpour", where the vowel preceded "n", the
fronting toward [ai] occurred a greater number of times than in
"clouds", although the fronting was too slight to make note of.

7. Orthographic "a", "o" and "ou" in stressed positions.

<table>
<thead>
<tr>
<th>WORD</th>
<th>1 [a]</th>
<th>2 [o]</th>
<th>3 [a]</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>father</td>
<td></td>
<td></td>
<td></td>
<td>48</td>
<td></td>
</tr>
</tbody>
</table>
In the stressed vowel of the word "watching", where the "a" vowel is preceded by "w", four instances were pronounced as [a] and forty-four instances as [a].

In "father" and "thought", all forty-eight instances were recorded as [a]. In the script, "thought" and "father" were separated by only two other words, making comparison a simple matter.

The vowel sound [p] appeared forty-six times in the word "tall", where orthographic "a" is followed by "ll". The remaining two instances were recorded as [a].

Likewise, the vowel sound in "long" appeared forty-two times as [p] and six times as [a].

8. "le", "ul" and "ile" suffixes.

<table>
<thead>
<tr>
<th>WORD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>supple</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>terrible</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>plentiful</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The words "supple", "plentiful" "terrible" and "fertile" presented an interesting comparison of final syllabic consonants. In all cases, "supple", "terrible" and "plentiful" were pronounced with the ends, while "fertile", with its homorganic consonants and in close succession, was recorded with the syllabic in every case. The final syllable of "fertile" was always pronounced more rapidly, leaving no time for an intervening vowel.

9. Initial "wh".

<table>
<thead>
<tr>
<th>WORD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>when</td>
<td>21</td>
<td>27</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The occurrence of and as the sound of the initial consonant combination of "when" at first created a problem due to the fact that no system could be found to account for variations of the sound. The word "when" appeared three times in the script. The cumulative results of the three occurrences indicated that the unaspirated appeared more frequently. The sound was recorded twenty-seven times and the sound, twenty-one times. However, closer examination disqualified this conclusion for two reasons. First of all, the total number of pronunciations of both and was so nearly even that no conclusion could be drawn. Secondly, closer re-examination of a number of recordings showed that many of the instances where was
recorded were due to faulty articulation and too great a reading speed. In nearly every instance where $[\mathcal{W}]$ appeared, there was no distinct break between that word and the preceding word. For these reasons, the $[\mathcal{W}]$ sound appeared to be dialectally non-significant.
CHAPTER V

SUMMARY AND CONCLUSIONS

I. DETAILED SUMMARY AND CONCLUSIONS

On the basis of the findings of this study, as detailed in Chapter IV, the variations of each vowel sound may be summarized as follows:

Vowelized /r/, stressed and unstressed.

In both stressed and unstressed positions, in such words as "work" and "father", the /r/ was always pronounced. The distinct retroflexion in every case created a consistently "hard" or "pure" /r/ sound. The only variation to this tendency was an occasional reduction of [ɛ] to [ə] in unstressed positions. This variation was not considered dialectally significant, since in every case, the reduction was due either to faulty articulation or the speed with which the subject read.

Vowels preceding "r".

In such words as "merry" and "daring", where the consonant "r" is preceded by orthographic "e" or "a", the vowel was found to be predominantly [ɛ]. In the case of orthographic "e" preceding "r", it was found that the vowel sound was frequently pronounced with distinct [r]-coloring.
In the word "hair", about 20% of the instances were recorded as a diphthongal [ɛə].

The vowel sound in the words in which orthographic "a" preceded "r", as in "daring", was frequently the lowered [ɛ] vowel ([ɛɹ]).

The [r] -coloring of the [ɛ] vowel in words where orthographic "e" precedes "r", as in "merry", and the diphthongization of the [ɛ] vowel in "hair" were not considered dialectally significant, since the [ɛ] phoneme remained intact. The lowering of the [ɛ] vowel in the words where orthographic "a" precedes "r", as in "daring", was considered significant in light of the [ɛ] variation cited by a majority of the sources consulted in Chapter II.

In such words as "near" and "clearly", where orthographic "ea" precedes "r", the vowel sound was always pronounced as [ɪ].

The vowel sound in the words "farm" and "dark", where orthographic "a" precedes "r", was almost always [ə]. Variation was negligible.

In such words as "border", "roar" and "warranted", where orthographic "o" precedes "r", and "a" precedes "r" and is in turn preceded by "w", the vowel sound was generally pronounced as [ɔː]. The diphthongal variant [əə] was noted occasionally.

Conclusion concerning vowelized /r/ and preceding vowels. The greatest single factor contributing to a
similarity between the results of this study and the speech of the General American region was the quality of the sound represented orthographically by the letter "r". In nearly every occurrence of the /r/, whether it appeared as the vowelized consonants [ə], stressed, or [ɔ] unstressed, or as a consonant immediately following a vowel, the /r/ sound and the quality of the vowel sounds it affected when an orthographic vowel precedes it compared positively with General American.

One exception to this correlation occurred in the case of orthographic "e" and "a" preceding "r" in such words as "merry" and "daring". The results of the study indicated that the preponderance of instances were pronounced as the [ɛ] vowel, as contrasted with Wise and Thomas who cite the predominance of [æ] in General American.

In the case of orthographic "a" preceding "r" in such words as "farm" and "dark" the evidence indicating the predominance of the [a] vowel tends to describe the preference of the Missoula area.

Unstressed initial, medial and final syllables.

The vowel sound in initial and final unstressed syllables, in such words as "believe" and "tempest", was pronounced with either [ə] or [ɪ], except where phonetic laws other than dialectal were operative. In unstressed medial syllables, in such words as "minutes", the [ɪ] vowel was found
Conclusion concerning unstressed syllables. The results of this study concerning (1) a local or regional preference for either \([\varepsilon]\) or \([\iota]\) in unstressed syllables, and/or (2) a general tendency toward either of these two vowel sounds, were negative. The sixteen words examined further demonstrated the lack of agreement among phoneticians as to the predominance of \([\varepsilon]\) or \([\iota]\).

Orthographic "a" preceding nasals, laterals and unvoiced fricatives and stops.

In such words as "ranch", "grass" and "valleys", the vowel sound was pronounced as \([\varepsilon]\) in every instance. The word "angry" was the only exception to this pattern, where slightly less than half of the subjects raised the vowel approximately to \([\varepsilon^1]\) or \([\varepsilon^2]\). This raising was not considered dialectally significant, since it occurred in only one word.

Conclusion concerning orthographic "a". In the case of orthographic "a" preceding nasals, laterals and unvoiced fricatives and stops, there was complete agreement between the findings of this study and accepted General American pronunciation in favor of a phonetic \([\varepsilon]\).

Orthographic "u" in stressed positions following /t/, /d/ and /n/.

In the words "duties", "June" and "stupid", the pure vowel \([u]\) appeared in all but two cases. "Tissue" was pro-
nounced predominantly with a \([j]\) glide following the conso-
nant \([ʃ]\), although roughly one-third of the instances were
pronounced without the \([j]\) glide.

**Conclusion concerning orthographic "u".** In the case
of orthographic "u" following /t/, /d/ and /n/, the results
of this study were found to be in complete agreement with
General American pronunciation favoring a phonetic \([u]\).

**Diphthongs.**

In such words as "make", "paper" and "behavior", where the stressed \([e]\) vowel either preceded an unvoiced con-
sonant or appeared medially, it was pronounced as the pure
vowel \([e]\) rather than as the diphthong \([eɪ]\). When the stressed
\([e]\) preceded a voiced fricative consonant in such words as
"raised" and "amazing", the sound was found to be diphthongal
in a majority of cases. When the stressed \([e]\) vowel appeared
in a word at the end of a sentence, the vowel was always
diphthongal.

The "o" in such words as "most" and "rolling" was found
to be the pure vowel \([o]\) in a preponderance of instances.
The exception to this pattern was the word "known" which was
recorded as a definite \([ou]\) or \([oʊ]\) diphthong in about 40% of
the instances.

The vowel sound in the words "voice" and "loiter" was
found to be the diphthong \([əɪ]\) in all cases.

In words containing the diphthong \([əɪ]\), such as
"like" and "my", about 65% of the instances were recorded
as $[\tilde{a}]$ as the first element of the glide, with the remaining 35% being recorded as the $[a]$ vowel.

Slightly over 75% of the instances of the $[au]$ diphthong in the words "round", "clouds" and "downpour" were pronounced with the vowel $[\tilde{a}]$ as the first element of the glide, with 25% pronounced as $[a]$.

**Conclusion concerning diphthongs.** In the case of the two diphthongs $[ei]$ and $[ou]$, the results of the study conflict partially with Wise's treatment. Whereas Wise uses the diphthongal forms $[ei]$ and $[ou]$ in every stressed position, the findings of this study indicated that following consonants and word position tend to govern the occurrence of the pure vowel and diphthong. In the case of the $[ou]$ diphthong, as in "most" and "known", the preponderance of instances were pronounced with the pure vowel, and when the sound did become diphthongal, the glide became $[\varepsilon]$ more often than $[\nu]$, particularly in the case of "known".

**Orthographic "a", "o" and "ou" in stressed positions.**

The words "father" and "thought" were pronounced with the vowel $[a]$ in every instance. "Watching" was pronounced with the $[\tilde{a}]$ vowel in the great majority of instances, with $[\tilde{a}]$ being recorded in four cases.

The vowel sound in "tall" and "long" was predominantly $[\beta]$, with $[a]$ being recorded in two and six instances respectively.
Conclusion concerning orthographic "a", "o" and "ou". In the case of orthographic "a", "o" and "ou", the sounds recorded during this study compare positively with those recognized in General American. The word "tall", as it was recorded in this study, conflicts with Wise's description of the sound in General American. This discrepancy in which the vowel [p] predominates in the sample studied, constitutes a local variation.

Suffixes: "le", "ul" and "ile".

In the word "fertile", where the consonant [l] follows the homorganic [t], the suffix was pronounced as the syllabic consonant [I]. In the words "supple", "terrible" and "plentiful", where the consonants are not homorganic, the suffix contained the [Ə] vowel in all instances.

Conclusion concerning "le", "ul" and "ile". The results of this study and the accepted General American usage in the case of the "le", "ul" and "ile" suffixes are in complete agreement, favoring the syllabic [I] where the consonant [l] follows the consonant [t].

Initial "wh".

In the word "when" an apparent variation between [n] and [w] was found. After closer examination, it seemed that in the majority of cases involving [w], faulty articulation and excessive reading speed tended to eliminate the aspirate quality of the [n]. For this reason, the variation
Conclusion concerning initial "wh". In the case of the initial "wh" sound, the findings of this study were consistent with General American pronunciation, favoring the aspirate approach to the \[w\].

II. GENERAL SUMMARY AND CONCLUSION

In the great majority of instances, the findings of this study compare positively with the accepted standards of General American pronunciation. The following vowel sounds were found to differ from General American: (1) the orthographic "e" and "a" preceding "r" in such words as "daring" and "merry" were found to be pronounced with the \[ɛ\] vowel, as contrasted to Thomas and Wise's preference for \[ɛ\]. (2) Orthographic "a" preceding "ll" in "tall" was pronounced with the \[ɒ\] vowel in contrast to the General American vowel \[ɔ\]. It is possible that this apparent discrepancy is one of symbolization, since the \[ɔ\] phoneme in General American includes the lowered \[ɔ\] (\[ɔ\]), and the \[ɒ\] phoneme used by subjects in this study was slightly raised (\[ɒ^+\]). Hence, the oral difference between the two virtually disappears and the use of either symbol, \[ɒ\] or \[ɔ\], is arbitrary. (3) The stressed \[ɛ\] vowel in such words as "make" and "paper", where the vowel is followed by an unvoiced consonant, was pronounced with the pure vowel \[ɛ\], contrasted to the General American use of the diphthong \[ɛɪ\] in all positions of primary stress.
It is suggested, pending further investigation, that the occurrence of the pure vowel \([e]\) is due to the speed with which the script was read. Therefore, this discrepancy probably cannot be considered to be dialectally significant. (4) The stressed \([o]\) vowel in the words "most" and "known" was pronounced as the pure vowel \([e]\) in the majority of cases, as against the General American use of the diphthong \([oo]\) in all positions of primary stress. Also, whenever the diphthongal form appeared, it was more often pronounced as \([o\d]\) than as \([ov]\). The discrepancy between pure vowel and diphthong in the case of the stressed \([o]\) is identical to the pure vowel-diphthong variation with the stressed \([e]\) vowel. The alternation of \([ov]\) and \([o]\) is likewise non-significant.

It is assumed that the variations noted in #1 and #2 above are peculiar to the Missoula area, and, possibly to the Northwest at large.

III. RECOMMENDATIONS FOR FURTHER STUDY

Recommendations for further study, growing out of this study, developed along two lines: (1) the extension of this study to cover a large area; and (2) the supplementing of data herewith obtained with research into local and regional usage and word distribution, patterned after Kurath's *Word Geography*.

Extension of phonetic research.

As outlined in the first chapter, this research pro-
ject was designed to examine the dialectal characteristics of the speech of Missoula, Montana, through an investigation of selected vowel sounds from forty-eight recorded speech samples. Through the expansion of this study to cover a large number of localities, sufficient data could be collected to allow the accurate mapping of dialect boundaries in this general area. For the sake of efficiency and speed, it would probably be necessary to reduce the number of recorded speech samples per locality. Kurath suggests a method for collecting data from a large area:

1. Selection of materials embodying examples of known variations.

2. Selection of "from 75 to 100 localities that are known or thought to be representative of as many districts."

3. Selection of from ten to fifteen subjects in each of these localities.

4. Gathering of the data, preferably by one person, using phonetic notation and-or recording equipment.70

Research into usage and word distribution.

The gathering of lexical data could be implemented through the same general procedure used in the phonetic research. Cassidy suggests the following procedure:

1. Selection of samples of topical usage presented in questionnaire form. (He cautions

70 Kurath, American Pronunciation, op. cit., p. 296.
that a complete list of such usages would be impossible to compile, since there is such a great number of them.)

2. Selection of informants who know local speech.

3. Distribution of the questionnaire to the various localities under investigation.

4. Compilation of the returns and subsequent mapping of areas. 71

The magnitude of such undertakings is demonstrated by the seemingly slow progress of the Linguistic Atlas whose vast research projects so far have resulted in only six publications, all of which are concerned with the Eastern United States. Nevertheless, the final results of such research would provide accurate and detailed knowledge of both phonetic and lexical variation in this area.

71 Fredric G. Cassidy, op. cit., pp. 194-203.
BIBLIOGRAPHY

BOOKS


PERIODICALS


APPENDIX
# INTERNATIONAL PHONETIC ALPHABET (IPA)

## I. CONSONANTS

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Key Word</th>
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<tbody>
<tr>
<td>[p]</td>
<td>peep</td>
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<tr>
<td>[b]</td>
<td>bib</td>
</tr>
<tr>
<td>[m]</td>
<td>main</td>
</tr>
<tr>
<td>[f]</td>
<td>laugh</td>
</tr>
<tr>
<td>[j]</td>
<td>deed</td>
</tr>
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<td>[t]</td>
<td>noon</td>
</tr>
<tr>
<td>[k]</td>
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</tr>
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</tr>
<tr>
<td>[f]</td>
<td>either</td>
</tr>
<tr>
<td>[v]</td>
<td>fife</td>
</tr>
<tr>
<td>[x]</td>
<td>valve</td>
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## II. VOWELS

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</thead>
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<td>[i]</td>
<td>beet</td>
</tr>
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<td>[ɪ]</td>
<td>sit</td>
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<tr>
<td>[ɛ]</td>
<td>chaotic</td>
</tr>
<tr>
<td>[æ]</td>
<td>cave</td>
</tr>
<tr>
<td>[ɒ]</td>
<td>set</td>
</tr>
<tr>
<td>[a]</td>
<td>sat</td>
</tr>
<tr>
<td>[ɑ]</td>
<td>father</td>
</tr>
<tr>
<td>[æ]</td>
<td>ask</td>
</tr>
<tr>
<td>[ɔ]</td>
<td>horse</td>
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## III. DIPHTHONGS

<table>
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<tbody>
<tr>
<td>[aɪ]</td>
<td>ice</td>
</tr>
<tr>
<td>[aʊ]</td>
<td>house</td>
</tr>
<tr>
<td>[ɒɪ]</td>
<td>boy</td>
</tr>
<tr>
<td>[ɜʊ]</td>
<td>mute</td>
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IV. MODIFIERS

<table>
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<tr>
<th>Symbol</th>
<th>Key Word</th>
<th>Symbol</th>
<th>Key Word</th>
</tr>
</thead>
<tbody>
<tr>
<td>[l]</td>
<td>raising (raised)</td>
<td>[t]</td>
<td>lowering (lowered)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[t]</td>
<td>backing (backed)</td>
</tr>
</tbody>
</table>
I was raised on a farm near the Canadian border. Ranch life for me was a reckless merry-go-round of work and play. I thought that my father was about the greatest, most amazing fellow I had ever known. He was very tall with huge supple hands and a merry laughing sense of humor. Unfortunately he had a terrible temper and when he was angry, the roar of his voice could wither the most fearless of men.

My duties on the farm were many and varied. In June when the grass was long and plentiful in the fertile valleys, I would gallop through the endless fields with the wind in my hair, or I would loiter for many minutes watching the rolling clouds billowing like great rolls of tissue paper. Even when the sky grew angry and dark and the clouds rolled with the threat of a downpour, I liked to make believe that I was facing a tempest with courage and daring. To my father this behavior was stupid and clearly warranted a trip to the woodshed.
I was raised on a farm near the C-nd____

b-rd__. Ranch life for me was a reckles-s__m-r__g-
o er a i e e y o
r__d of w__k and pl__. I th__ght that my f__th__ was about
ou or ay ou a er

the gr__t st m__t am__zing fell I had ev__ kn__n. He

was very t__l with h__ge supp__ h__nds and a m__r__ l__ghing

sense of h__m__. Unf__rt_n__tely he had a t__rr__b__

temp__ and __en he was __ngry the r__r of his v__ce could
er wh a o

with__ the m__t f__rl__s of men. M__ d__ties on the f__rm
er o ea e y u a

were m__ny and v__ried. In J__ne __en the gr__ss was l__ng
a a u wh a o

and plent__ in the f__t__ v__lleys I would g__ll__

through the endl__ss fields with the wind in m__ h__r or I

l__t for m__ny min__tes w__tching the r__lling cl__ds
oi er a u a o

bill__wing l__ke gr__t r__lls of ti__ p__p__. Even __en

the sky grew __ngry and cl__ds r__lled with the threat of a
a ou o

d__n p__r I l__ked to m__ke b__lieve that I was f__cing a
ow ou l a e a
temp__st with c__r__ge and d__ring. To m__ f__th__ this
   e ou a a y a er
b__h__vi__ was st__pid and cl__rly w__rr__nted a trip to the
   e a or   u ea a a
woodshed.
RECORDING QUESTIONNAIRE

Code number______ Footage______

Please fill in all the blanks below:
Age____ Sex____ Address__________________________ Occupation__________

Education: _____ Elementary; _____ High school; _____ College;
Total years_____.

Were you born in Missoula? Yes___ No___

If not, you moved to Missoula at what age? ____.

Have you ever lived anywhere other than in Missoula for any length of time? If so, how long? ____ years.

Nationality: Your ancestors originally came from: ______
__________________________________________________________________________

What relation were they to you? (Parents, grandparents, great-grandparents, etc.)____
__________________________________________________________________________

To your knowledge, do you have any: hearing loss? Yes____ No____
speech defects? Yes____ No____