



1-1-1931

Techniques in Spelling Supervision

Ralph M. Ingersoll

Follow this and additional works at: <http://digitalcommons.butler.edu/grtheses>

 Part of the [Education Commons](#)

Recommended Citation

Ingersoll, Ralph M., "Techniques in Spelling Supervision" (1931). *Graduate Thesis Collection*. Paper 169.

This Thesis is brought to you for free and open access by the Graduate Scholarship at Digital Commons @ Butler University. It has been accepted for inclusion in Graduate Thesis Collection by an authorized administrator of Digital Commons @ Butler University. For more information, please contact fgaede@butler.edu.

TECHNIQUES IN SPELLING
SUPERVISION

BY

RALPH MONTELLE INGERSOLL

A THESIS SUBMITTED TO THE GRADUATE COMMITTEE
IN PARTIAL FULFILLMENT OF THE REQUIRE-
MENTS FOR THE DEGREE OF MASTER OF
SCIENCES IN EDUCATION



COLLEGE OF EDUCATION
BUTLER UNIVERSITY

1931

12 Oct. 31

LD
701
.B82h
I533

A C K N O W L E D G M E N T S

In presenting this study, the writer wishes to express his indebtedness to Dr. W. L. Richardson, for suggestions, and to Dr. Irvin T. Shultz for his valuable guidance, cooperation, assistance and criticisms of a very helpful nature.

Ralph M. Ingersoll

T A B L E O F C O N T E N T S

Chapters	Page
I. Purpose and Method of Investigation	5
1. Introduction	5
2. Selection of the Words to be Used	7
3. Preparation of Testing Materials	12
4. Source and Treatment of Data	20
II. Experiment	31
1. Testing of Eighth Grade, Tenth Grade, and Twelfth Grade Levels for Accuracy of the 268 Words	31
2. Testing of Persistence of the Most Fre- quent Misspellings Through the Three Grade Levels	41
3. Determining of Extent of the Concentra- tion of the Misspellings Upon the Most Frequently Occurring Forms	54
4. Determining of the Hard Spots in the Most Difficult of the Common Difficult Words	66
5. Determining of Persistence of Difficulty in Certain Words after study	71
6. Relation of Four Spelling Rules to errors made at the Three Grade Levels	85
III. Classification of the Types of Errors Oc- curring at the Eighth Grade Level	97
1. Phonetically Correct Misspellings	108
IV. Summary of Procedure and Results	111
1. Bibliography	114

T A B L E S

Numbers	Page
1. Distribution of the Schools Cooperating in the Study	22
2. Papers Received from the Three Grade Levels ..	23
3. Data Concerning "Accommodate"	26
4. Data Concerning "Dropped"	27
5. Data Concerning "Pneumonia"	28
6. Accuracy at Different Grade Levels	31
7. Means, Ranges, and Standard Deviations for the 268 Words at the Different Grade Levels	39
8. Words Having One Form of Misspelling Which is Acceptable for 50 per cent or more of the total Misspellings at one or more of the Grade Levels	42
9. Summary of Contents of Table 8	46
10. Words in Which Two Forms of Misspelling are Required to Account for 50 per cent or more of the Total Misspellings at Some One or More of the Grade Levels	49
11. Number of Forms Required at the Different Grade Levels to Account for 50 per cent and 75 per cent of the total Misspellings for each of the 268 words	53
12. Summary of Table 11	56
13. Average Number of Forms Required to Make 50 per cent of total Misspellings	63
14. Method of Analysis (from Tireman)	64
15. Hard Spots in Eighth Grade List of Speller A and List of 268 Words in this Study Arranged in Order of Decreasing Accuracy as Determined by Papers from Pupils Using Speller A	74
18. Words Common to the Eighth Grade List of Speller A and the List of 268 Words Used in this Study Grouped According to Lesson Placement ..	78
19. Words Common to the Eighth Grade List of Speller A and the List of 268 Words Used in this Study Grouped According to Length	81
20. Average Accuracies of the 268 Words When Grouped According to Length	84
21. Rule Number One	88
22. Rule Number Two	89
23. Rule Number Three	94
24. Rule Number Four	95
25. Summary of the Relation of Four Spelling Rules to the Forms of Misspelling Which the Application of the Rules Would Entirely Correct	96
26. Summary of the Classified Errors	104

CHAPTER I

PURPOSE AND METHOD OF INVESTIGATION

1. Introduction

Though research in spelling is relatively far advanced, many problems remain to be solved. In the Fourth Yearbook of the Department of Superintendence will be found "a partial list of the outstanding investigations which the committee feel need to be pursued in the immediate future" (7, pp. 171-172).

Among the many problems which are in need of study in the field of spelling instruction, an analysis of the types and causes of errors is surely of great value. Attempts to discover how best to teach difficult words cannot be very profitable until investigations have first determined the frequencies of the various types of difficulties and the words in which they are found. Horn says that "the economical application of such a method (the presentation of typical errors or hard spots in italics or colors) must be delayed until investigations now under way show which words have typical errors, and what the errors are" (5, p. 68).

The need for an investigation of the types and causes of error has been seen for a long time. In 1919 Tidyman said that "locating the difficult part of the word is an important part of the work of teacher and pupils.

This is not a superhuman task for the teacher to perform, although much help can be given by a more careful and systematic experimental study of the kinds and frequencies of errors that children made" (20, p. 56). Cook and O'Shea state that "teachers ought to know, in order to be of greatest service to their pupils, not simply that separate is a commonly misspelled word, but they should know also where the mistake is likely to occur, and why, so that attention may be effectively directed to the source of trouble" (4, p. 24). The committee on spelling for the Fourth Yearbook of the Department of Superintendence list among their problems for further research the need of "more intensive investigation . . . on the causes of misspelling and the relative frequency of each cause" (7, p. 171).

The purpose of this study is to examine the errors which eighth grade pupils, tenth grade pupils, and twelfth grade pupils make in their attempted spellings of a list of common difficult words. These three grade levels were chosen in order to secure new data as to the difficulties of these words at these levels and also to discover the extent of the persistence of types of difficulties over a period of years.

-
- (5) Eighteenth Yearbook of the National Society of the Study of Education, Part II, Public School Publishing Company, Bloomington, Illinois, 1922.
- (4) Cook, W. A., and O'Shea, M. V., The Child and His Spelling, The Bobbs-Merrill Company, Indianapolis, 1914.
- (12) Horn, Ernest and Ashbaugh, Ernest J., Lippincott's New Horn Ashbaugh Speller, J. B. Lippincott Company, Philadelphia, 1926.

2. SELECTION OF THE WORDS TO BE USED.

The practical problem in teaching spelling is to aid pupils in increasing their ability to spell words which are the most likely to be used in writing in life outside the school. Since this investigation is concerned with difficult words, it is necessary to choose from among the words most frequently written, those which offer the greatest and most constant difficulty.

Two methods were open to use in the selection of such a list of words. One of these, used by Smith (19) in securing a list of spelling demons, may be termed the "product method", meaning the use of the product found by multiplying the frequency and difficulty as a measure of importance. The term "difficulty" whenever used in connection with the original list of words used in this study refers to the difficulties for the remaining words secured from additional unpublished data by the same investigation.

The method mentioned above was considered at some length but was discarded. Many of the words which, according to this method, have the highest products and hence would be included in the study are missed by only a small percentage

of the pupils in the eighth grade. Such words cause no serious trouble. For example, this method would place among the highest in importance (to, too, truly, and your.) Only one or two pupils, the very poorest in a class of thirty, miss them.

The second method consists in limiting both in difficulty and in frequency of use, the words which should be considered in the study. This was adopted. Although the limits selected are to an extent arbitrary, the factors influential in their determination are important. The number of words contained in the textbooks which are used in the elementary schools should be a fair estimate of the number of words school officials consider necessary as a foundation. If, in addition to the common practice in this respect, we can show by some objective measure, the number of words which should be included in the course of study, we shall have a fair indication of the words which should receive attention in a study of this nature.

-
- (19) Smith, J. Frank, A List of 201 Spelling Demons, Teachers' College, New York.
- (1) Ashbaugh, Ernest J., Spelling Scales; Their Derivation, Use, and Limitations. Teachers' College, New York.
- (10) Horn, Ernest, A Basic Writing Vocabulary; 10,000 Words Most Commonly Used in Writing, Teachers' College, New York.

The number of words included in the course of study for use in grades one to eight ranges from about 3500 to 5000. It is evident that the authors of these texts consider that the mastery of the four or five thousand most commonly used words provide an adequate basis in spelling.

A more reliable method of determining the number of words which should be taught is to use, if possible, some objective measure. Horn has applied the law of diminishing returns to the list of words contained in *A Basic Writing Vocabulary* (10). These words are arranged in order of frequency. "A Study of this order of frequency shows clearly how the law of diminishing returns operates in the subject of spelling. After a thousand words are taught, the addition of each group of approximately a thousand words adds a very small per cent to the total number of running words which are controlled by the learner" (11, p. 177). "Since the increment of value is much smaller for each additional thousand words, the difficulty of justifying each successive thousand becomes great. For example, the student who knows how to spell the 4042 commonest words can spell 94.5 per cent of all the running words that he writes. The learning of an additional thousand words adds only slightly more than one per cent to the number of running words which he can spell" (11, pp. 177-178). Horn concludes that "for the present, about 4500 words should be taught" (11, p. 179). In the light of the above data, an intensive study to determine the particular

types of difficulty occurring in the words beyond the first 5,000 would be of little value for use in the first eight grades.

A second decision becomes necessary. Even though a word may occur within the first 5,000 in *A Basic Writing Vocabulary* (10), what should be its difficulty in order that it should be considered in need of special attention in regard to the errors in its misspelling?

The difficulty limit lacks any objective measure to be used in its determination such as was used in selecting the frequency limit. One factor, however, does seem to have some weight in setting this limit. If hard spots are emphasized they will most likely be emphasized before the entire class in the first teaching of the words. It seems of doubtful value to include in such a list words which can be spelled correctly by a large majority of the class. The limit was fixed so as to include only the words having an accuracy of 60 per cent or less in the eighth grade." Those words occurring in the first 5,000 which are missed by less than 40 per cent of the eighth grade pupils must be considered as individual difficulties.

The basis, then, upon which the words for use in this study were selected was the occurrence of the word within the first 5,000 of *A Basic Writing Vocabulary* (10) together with the fact that the word, according to Ashbaugh (1), is

misspelled by 40 per cent or more of the eighth grade pupils. Altogether 268 words were found which satisfied those conditions, all abbreviations being omitted.

A study of the errors occurring in words within the first 5000 which have an accuracy of 60 per cent or more at the eighth grade level, would be valuable in helping the less gifted spellers. A study of the errors occurring in the second 5000 words would be of value in determining an additional list for more advanced work. These problems, must however, be postponed for future investigation.

-
- (10) Horn, Ernest, *A Basic Writing Vocabulary; 10,000 Words Most Commonly Used in Writing*, Teachers' College, New York.
- (11) Horn, Ernest, "How Many Words Should Be Taught In Spelling," *Proceedings of the Sixth Annual Session of the Ohio State Educational Conference*, *The Ohio State University Bulletin* XXXI (August 15, 1926).
- (1) Ashbaugh, Ernest J., *Spelling Scales; Their Derivation, Use, and Limitations*, Teachers' College, New York.

3. PREPARATION OF TESTING MATERIALS

It is maintained by some writers that the only reliable way to test spelling ability is in context form. Lester says that the proper way to measure spelling ability "is the number of words written correctly in a given amount of free composition as compared with the number written incorrectly," (13, p. 117). Other writers in the field, acknowledging the loss due to transfer, believe that other items such as economy in time, both in preparing and giving the tests, outweigh this loss. McKee (14) found that the loss in transfer from the spelling in column to the spelling in context is small, lowering the accuracy of a group of words by about five per cent. The column test was selected for use in this investigation because it is a much more economical procedure from the standpoint of administration. The loss in accuracy did not seem sufficient to outweigh this advantage. According to McKee (14), the forms of misspelling found in the column test are, in general, the same forms which would have been found by using the context test.

The 268 words for testing purposes were divided into five lists, four of the lists having fifty-four words each and one list having fifty-two. Where two or more words in any one of the lists had the same accuracy rating these words were arranged alphabetically. Words were also interchanged between lists in order to avoid the occur-

rence in the same list of more than one word having the same base. These lists, with their accuracies for the eighth grade level, as given by Ashbaugh (1), follow. By investigating these lists it will readily be seen that with the exception of a few of the very difficult words those of one list can be paired according to their accuracy rating word for word with any of the other lists.

A preliminary set of directions to be sent to the teachers for their use in administering these tests was first tried out under the writer's observation. The teachers were given no instructions in addition to those contained in the printed form. This preliminary trial was very valuable in suggesting changes which were made before the directions were finally multigraphed and sent to the teachers.

From the papers of the pupils who participated in these preliminary tests, it was discovered that certain words should be used in sentences to make clear the spelling which was desired. All such words, most of which were homonyms, were starred and a set of sentences, in which one of these starred words was used in each sentence, was made to accompany the lists. The teachers were instructed to read these sentences illustrating the use of the starred words.

-
- (13) Lester, John A., "What is a Misspelling," *School and Society* XV (January 1922) pp. 117-120.
- (1) Ashbaugh, Ernest J., *Spelling Scales; Their Derivation, Use, and Limitations*, Teachers' College, New York.
- (14) McKee, Paul, *Spelling Difficulty in Context Form*, 1921, Teachers' College, New York.

To eliminate any effect which might result from giving the lists in the same order in every case, a Roman numeral was placed at the top of each list to indicate to the teachers the order in which the lists were to be given. The order of these numerals was varied and it is probable that no one order of giving the lists is significantly more common than any other.

The 268 words for testing purposes were divided into five lists, four of the lists having fifty-four words each and one list having fifty-two. Where two or more words in any one of the lists had the same accuracy rating these words were arranged alphabetically. Words were also interchanged between lists in order to avoid the occurrence in the same list of more than one word having the same base. These lists, with their accuracies for the eighth grade level, as given by Ashbaugh (1), follow. By investigating these lists it will readily be seen that with the exception of a few of the very difficult words those of one list can be paired according to their accuracy rating word for word with any of the other lists.

List No. 1

1. analysis	60
*2. customer's	60
3. economical	60
4. folly	60
5. mortgage	60
*6. representatives	60
7. decidedly	59

List No. 2

1. anticipation	60
*2. delegates	60
3. epistle	60
*4. folks	60
5. mysterious	60
6. virtue	60
7. enthusiastic	59

List No. 1 (Contd)

8.	acknowledging	58
9.	continuous	58
*10.	entrance	58
11.	phase	58
12.	through	58
*13.	dying	57
14.	acquaintance	56
15.	originally	56
16.	curious	55
17.	folk	55
18.	expenditure	55
*19.	vacancies	55
20.	conceive	54
21.	materially	54
22.	communicate	53
23.	pneumonia	47
24.	delinquent	48.
25.	divine	51
*26.	cease	50
27.	elementary	50
28.	initiation	50
29.	picturesque	50
30.	spiritual	50
31.	efficiency	49
32.	competent	48
33.	recommended	48
*34.	president's	47
35.	approximately	46
36.	equipped	46
37.	affidavit	45
38.	solemn	45
39.	transferred	45
*40.	conscience	43
41.	tragedy	43
*42.	courteous	42
43.	attaching	40
44.	mathematics	40
45.	sympathetic	40
46.	physician	38
47.	definitely	37
48.	incidentally	35
49.	infinite	33
50.	tournament	31
51.	countenance	27
52.	ridiculous	20
53.	annum	15
54.	questionnaire	5

List No. 2 (Contd)

*8.	agencies	58
9.	cooperate	58
10.	fundamental	58
11.	possess	58
12.	vacancy	58
*13.	enemies	57
14.	refrigerator	57
15.	anonymous	56
16.	determined	56
17.	bungalow	55
18.	esteemed	55
19.	unfortunate	55
20.	triumph	55
*21.	ceased	54
22.	recommend	54
*23.	economics	53
24.	referred	53
25.	completion	52
26.	visible	51
27.	grateful	51
28.	chemistry	50
*29.	employees	50
30.	judgment	50
31.	suspicion	50
32.	remembrance	49
33.	apology	48
34.	temporary	48
35.	bankruptcy	46
36.	extraordinary	46
37.	curiosity	45
38.	supplement	45
39.	accustomed	44
40.	guarantee	43
41.	conveniently	41
42.	criticism	40
43.	scandal	40
44.	acknowledgment	38
45.	schedule	38
46.	collateral	36
*47.	conscious	35
48.	kindergarten	33
49.	perceive	32
50.	requisition	28
51.	consistent	23
52.	cancellation	21
53.	prejudice	21
54.	psychology	10

List No. 3

1. apparent	60
2. eventually	60
3. imitation	60
4. mystery	60
5. sufficiency	60
6. unusually	59
7. all right	58
8. damage	58
9. geometry	58
*10. virtues	58
11. anxiety	57
12. enemy	57
13. romantic	57
14. continent	56
15. adjourned	55
16. disappoint	55
17. immediately	55
18. confirmation	54
19. exquisite	53
*20. recommendations	53
21. completing	53
22. genius	52
23. philosophy	52
24. receiver	51
25. committed	50
26. gorgeous	50
27. mustn't	50
28. recognition	50
29. unfortunately	50
30. regretted	49
*31. catalogues	48
*32. grippe	48
33. violence	48
34. affectionately	47
*35. committees	46
36. existence	45
*37. today's	45
38. privilege	44
39. procedure	42
40. mutual	42
41. enthusiasm	41
42. inconvenienced	40
43. specially	40
*44. seized	40
45. preferred	39
*46. counsel	38
47. debit	36
48. pamphlet	35
49. accommodation	34
50. Chautauqua	33
51. restaurant	28
52. adequate	25
53. discretion	21
54. canceled	19

List No. 4

1. absurd	60
2. congress	60
*3. documents	60
4. exists	60
5. deny	60
6. innocent	60
7. permanently	60
*8. week's	60
9. acceptable	59
10. alumni	58
11. damaged	58
*12. role	58
*13. arrangements	57
*14. ere	57
15. thoroughly	57
16. recommendation	56
17. anticipating	55
18. economic	55
19. immediately	55
20. coupe'	54
21. galvanized	53
22. specimen	53
*23. attorneys	52
*24. conception	52
*25. principles	52
26. bulletin	51
27. referring	51
28. courtesy	50
29. guardian	50
30. occasionally	50
31. specific	50
*32. bored	48
33. laboratory	48
34. vulgar	48
35. amiable	47
36. controversy	46
37. indefinite	45
38. canceling	44
39. partial	43
40. guaranteed	41
41. ascertain	40
42. intellectual	40
43. accommodate	39
44. literally	38
*45. negotiations	37
46. anniversary	35
47. reckon	35
48. undoubtedly	35
*49. edition	33
*50. pamphlets	30
51. unanimous	25
52. miscellaneous	21
53. tonnage	19
54. melancholy	13

List No. 5

1. affectionate	60	27. dining	50
2. correspondence	60	28. inconvenience	50
3. dropped	60	29. ordinarily	50
4. financially	60	*30. specimens	50
5. itemized	60	31. appetite	49
*6. receipts	60	32. comparatively	48
7. basketball	59	*33. facilities	48
8. recommending	58	34. prior	48
9. anticipate	58	35. appropriate	46
10. despair	58	36. deem	46
11. minimum	58	37. magnificent	45
12. so-called	58	38. technical	44
13. buried	57	39. rheumatism	43
14. rating	57	40. beneficial	42
*15. opportunities	57	41. temporarily	42
16. voucher	57	42. indefinitely	40
17. accompanying	56	43. strenuous	40
18. eliminate	56	44. necessarily	38
19. approximate	55	45. fascinating	37
20. statistics	55	46. apparently	35
*21. canvass	54	47. scheduled	35
22. memorandum	53	48. duly	33
23. congratulations	52	49. sorority	30
24. satisfactorily	52	50. accrued	26
25. disappointed	51	51. dormitory	20
26. auditorium	50	52. conscientious	19

SENTENCES TO BE USED IN GIVING THE WORD LISTS

Sentences for List No. 1

Word No.

2. It was the customer's business to count his change.
6. All states do not have an equal number of representatives.
10. The entrance to the building was small.
13. The dying soldier was carried from the field.
19. Two vacancies on the committee were to be filled.
26. The children were told to cease their whispering.
34. The president's secretary opened the letter.
40. A guilty conscience kept him awake all night.
42. The guests were extended many courtesies.

Sentences for List No. 2

Word No.

2. Five delegates were sent to the convention.
4. His return is not expected for some time so folks say.
8. The teachers' agencies are all busy at this time of
the year.
13. A good man has few enemies.
21. All the noise had ceased by ten o'clock.
23. The study of economics is not required for graduation.
29. All the employees were given a raise in salary.
47. The man was not conscious of his actions.

Sentences for List No. 3

Word No.

10. Love is one of the Christian virtues.
20. Good recommendations are required in securing a good
position.
31. Several catalogues were consulted before purchasing
the goods.
32. Much of the sickness has been due to the grippe.
36. Three special committees were appointed at the meeting.
37. The forecast for today's weather is more promising.
44. The stolen goods were seized by the police.
46. An able lawyer was selected as counsel for the criminal.

Sentences for List No. 4

Word No.

3. The entire set of documents was stolen.
8. The week's program is heavy.
12. Each actor had a difficult role to play.
13. All arrangements have been made for the party.
14. We shall be victors ere this day shall close.
23. Both attorneys were able lawyers.
25. Our captain is a man of good principles.
32. A large hole was bored through the post.
45. The last edition of the paper has gone to press.
50. As we entered, several pamphlets were handed to each of us.

Sentences in List No. 5

Word No.

6. The receipts for the entire year were filed in one drawer
15. When opportunities are once gone, they are lost forever.
21. Every member aided in the canvass of the town.
30. Every student was busy collecting specimens.
33. Excellent facilities were provided each experimenter.

4. SOURCE AND TREATMENT OF DATA

Since only a limited amount of material could be used to advantage, some method of selecting the schools which would be asked to cooperate was necessary. The first limitation involved the restriction of territory so as to include only schools in the state of Indiana. This was very advantageous from the standpoint of securing cooperation. The criticism might be made that such a limitation would not allow an adequate sampling of the entire country. However, all the evidence which has so far been secured indicates that with the exception of a few words which are well beyond the frequency limit of the words used in the study, the writing vocabularies of one section of the country are very similar to those of any other section. The exact misspellings might vary somewhat from one section of the country to another, but it is probable that in a sampling from larger territory the misspellings would vary as much from community to community as from one part of the country to another.

The school systems which were asked to cooperate in this study were varied in size, type, and location within the state. Four first-class cities were chosen. Sixteen second-class cities were chosen at random from the alphabetical list of second-class cities of the state of Indiana. From the alphabetical list of the remaining towns and villages of the state which did not have consolidated schools, twenty-one were chosen. Fifty-nine towns of the state which have consolidated schools were chosen.

In the selection of consolidated schools a map was used.

A letter was sent to each of the superintendents of the one hundred school systems asking for their cooperation in having the eighth, tenth, and twelfth grade pupils in their school systems spell the lists of words. A card was enclosed for the superintendents to sign and return stating whether or not they were willing to participate in the study.

Category	Number of Schools	Number of Pupils	Number of Words Spelled
Schools in study	100	10,000	100,000
Schools not in study	100	10,000	100,000
Total schools	200	20,000	200,000

Table 1 gives the number of schools which were in the study, the number of pupils, and the number of words which were spelled.

The total number of words spelled from each of the three grade levels for each of the 100 schools is given in the following table:

Grade Level	Number of Words Spelled
8th Grade	100,000
10th Grade	100,000
12th Grade	100,000

TABLE 1

Distribution of the Schools Cooperating in the Study

	Number of schools asked to cooperate	Number of schools responding favorably	Number of schools from which papers were received
Schools in first-class cities	4	4	4
Schools in second-class cities	16	7	6
Schools in towns and villages (not consolidated)	21	12	9
Consolidated Schools	<u>59</u>	<u>32</u>	<u>22</u>
Total public schools	100	55	41

Table 1 gives the number of schools which are asked to participate in the study, the number consenting, and the number from which papers were eventually received.

The total number of papers received from each of the three grade levels for each of the five lists of words is given in the following table:

TABLE 2

The number of Papers received from the Three Grade Levels:

Word List	Grade 8	Grade 10	Grade 12
No. 1	1490	1012	277
2	1617	1084	291
3	1577	900	263
4	1877	1016	261
5	1544	1030	236

Not all the schools found it convenient to give all the lists in the various grades. This accounts for the variation in the figures in the different columns to Table 2.

From each of the sets of papers indicated in Table No. 2, 200 papers were selected at random, making fifteen sets of 200 papers each. The exact misspellings of each word as found in the 200 papers for each list at each of the grade levels were recorded.

The rules which were followed in tabulating the misspellings are those used by Ashbaugh: "Words omitted, words illegibly written, words substituted due to misunderstanding the pronunciation, wrong form of homonyms, changes in number and tense except when the change involved an addition to, but no change in, the form given, --were all counted

wrong. One form of the spelling for a word was considered right except the few words for which Webster's New International Dictionary lists two spellings as equally correct" (1, p. 22). Very few of the attempted spellings were illegible. When such were found they were classified with the "unattempted."

In order to illustrate the procedure which was followed, three words with their misspellings are given. These three words were selected from the 268 words as representation of different types. The word "accommodate" with its misspellings illustrates the type of word having a fairly large number of forms of misspellings, one of which occurs much more frequently than the other forms. The word "dropped" with its misspellings illustrates the type of word having few different misspellings with one form of misspelling occurring with a high frequency. The word "pneumonia" illustrates the type of word having a great variety of misspellings, no one of which occurs with a high frequency.

In the upper left-hand corner of each of the following tables is given the correct spelling of the word. Immediately beneath the correct form are two numbers separated by a hyphen. The first of these indicates the ordinal position of the word within the list. The lists to which these numbers refer are to be found on pages 20 to 24.

TABLE 3

Data Concerning Accommodate

accommodate 4-43	Accuracy at different grade levels			
	8th	9th	10th	12th
Ingersoll	32		52.5	41
Ashbaugh	39			
Simmons		40(68)	30(41)	
Frequency of correct spellings of given word	64		105	82
Frequency of correct spellings of derived forms	<u>0</u>		<u>0</u>	<u>0</u>
Total	64		105	82
Frequency of incorrect spellings	154		95	118
Number unattempted	<u>2</u>		<u>0</u>	<u>0</u>
Total	136		95	118
Number of different incor- rect forms	16		14	10

Misspellings with their frequencies

	Grade				Grade		
	8	10	12		8	10	12
accomdate	1			accomodate	80	67	90
accodate				accomodaty	1		
accomadate				accomode	1		
accomadite				accomodiate		1	2
accomdate				accomondate	1		1
accomidaate				accondate	1		
accommadate				accmadate	5		
accommdate				acomidate		1	
accommedate				accommodate	4	3	
accomidate				accommodiate		1	
accommodation				acomodate	19	2	
accommondate				aconadate	1		
accomnadate				acronodate		1	
accomnodate				acrommodate	1		
acommodat				accommodate	1		

134 95 118

TABLE 4
Data Concerning Dropped

dropped 5-3	Accuracy at different grade levels			
	8th	9th	10th	12th
Ingersoll	79.5		90	94.5
Ashbaugh	60			
Simmons		68(180)	90(92)	
Frequency of exact spellings of given word	159		180	189
Frequency of correct spell- ings of derived forms	<u>0</u>		<u>0</u>	<u>0</u>
Total	159		180	189
Frequency of incorrect spellings	41		20	11
Number unattempted	<u>0</u>		<u>0</u>	<u>0</u>
Total	41		20	11
Number of different incor- rect forms	8		7	3

Misspellings with their frequencies

	8th	10th	12th
drapped	<u>3</u>		
draught	1	2	3
drop	2	2	
droped	25	6	7
dropit	1		
droppted		1	
dropt	6	7	1
dropted	2	1	
drought	<u>1</u>	<u>1</u>	
	41	20	11

TABLE 5

Data Concerning Pneumonia

pneumonia 1-23	Accuracy at different grade levels			
	8th	9th	10th	12th
Ingersoll	37		66.5	82
Ashbaugh	53			
Simmons			65(40)	
Frequency of exact spellings of given word	74		122	164
Frequency of correct spellings of derived forms	<u>0</u>		<u>0</u>	<u>0</u>
Total	74		132	164
Frequency of incorrect spellings	122		65	34
Number unattempted	<u>4</u>		<u>3</u>	<u>2</u>
Total	126		68	36
Number of different incorrect forms	75		39	21

Misspellings with their frequencies

	Grade				Grade		
	8	10	12		8	10	12
ammonia	1			pheneumonia		1	1
amonnia	1			phenimonia	1		
amomea	1			phenioma	1		
amonia			1	phenomenia			2
anomina		1		phenomia	3	3	
anonianu	1			phenomnia		1	
anumonia	1			phenomonia		1	1
demondia	11			phenomn		1	
knemonu	1			phenoumia	1		
memonia	1			phenoumina		2	
munonia	1			phenoumonia	1		
namoia	1			phenumia	1		
namouny	11			phenumonia		2	3
nemonia	4			pheomena	1		
nephenema	1			pheumonia	1	3	
nephonia			1	pheunomia	1	1	2
neumonia	4	3		Pheumonia		1	
newmonia	4			pheunomina		1	
newmony	1			pheuphmonia		1	
nomina	1			phewmunia	1		
nuemonia	1			phmeuaina	1		
numoia	1			phmeinia	1		
numonia	8	1	1	phnemona			1
numonua	1			phnemonia	2	2	1
peneumia		1		phnemounia	1		
penmonia	1			phnenimonia		1	
penominia	1			phneomia	1		
penumonia	1			phneomina	1		
peunmonia		1		phneumonia	9	13	4
peunomia		1		phnomeia	1		
phemomina	1			phnomia	2		
phemonia		1	1	phnuemonia	4	1	
phemonua	1			phnumonia	1		
phemouine		1		Phnumonia		1	
phenomonia	1		1	phomonia		1	
phomoniow	1			pneumia			1
Phonia	1			pneumnia			1
phonimonu	1			Pneumonia			2
phuemonia	3	2		pneumphia	1		
phumonia	1	1		pneumunia		1	
phunemonia	1			pneunomia			2
phunmonia	1			pneunomia		1	
pnesumonia			1	pneurminu	1		
pneimonia	1			pnmonia	1		
pnemonia	8	3	1	pnomonia	2		
pnemoninia		1		pnuemonia	4	2	5
pnemounia	1	1		pnueounia	1		
pnenomia	1			pnumeia	1		
pnenomionia	1			pnumonea		1	
pnenonea		1		pnumonenia			1
pnenonia	1			pnumonia	4	2	
pnenumoia	1			ponuine	1		
pnemonia		1		pounia	1		
pneuanmia		1		puemonia	1		
pneumaine	1			remote	1		

S U M M A R Y

CHAPTER I

1. Eighth grade pupils, tenth grade pupils, and twelfth grade pupils in fifty-two public school systems of the state of Indiana, were asked to spell the 268 most difficult words occurring in the 5,000 words most frequently used in writing. At these grade levels 200 papers were selected at random and for each of the 268 words the various forms of misspellings with their frequencies were recorded.

2. The average accuracy for these words at the three grade levels is 49.67 per cent, 76.75 per cent, and 86.53 per cent. The rank order of the words, when arranged in order of decreasing accuracy, changes more between the eighth grade and tenth grade levels than between the tenth grade and the twelfth grade levels.

CHAPTER II

E X P E R I M E N T

1. Testing of Eighth Grade, Tenth Grade, and Twelfth Grade Levels for Accuracy of the 268 Words.

For the purpose of this study three grade levels, the eighth, tenth, and twelfth grades were chosen. This permits the computing of the accuracy at three levels. Ashbaugh (1) includes no grades beyond the eighth. Simmons' (18) study included the ninth and tenth only. The 268 words used in this study are given in Table 6, together with the accuracy for each word as given by Ashbaugh (1), Simmons (18) and as derived from this investigation. It must be kept in mind that the accuracies reported by Ashbaugh in every case are based upon not less than 200 spellings, selected at random. Many of the accuracies given by Simmons are not reliable, not only because the number of cases is small, but also because they were not selected at random. The figures in parenthesis following the accuracy as given by Simmons indicate the number of attempted spellings upon which the reported accuracy is based.

TABLE 6

Accuracy at Different Grade Levels

	8th	9th	10th	12th		
	Ashbaugh	Ingersoll	Simmons	Simmons	Ingersoll	Ingersoll
1. absurd	60	42.5	68(43)	80(47)	86	97
2. acceptable	59	72.5	80(30)	86(50)	93.5	96.5
3. accommodate	39	32	40(68)	30(41)	52.5	41
4. accommodation	34	35	42(68)	32(41)	46.5	53
5. accompanying	56	51.5	49(68)	69(48)	69.5	69
6. accrued	26	11.5	33(30)	28(14)	36.5	67
7. accustomed	44	61.5	52(68)	83(41)	80	88.5
8. acknowledging	58	68	67(68)	76(41)	91.5	95
9. acknowledgment	38	42.5	47(68)	49(41)	48	54.5
10. acquaintance	56	57.5	59(68)	88(41)	81	96
11. adequate	25	41	32(66)	72(42)	87	95
12. adjourned	55	56	63(32)	80(47)	89.5	81
13. affectionate	60	74.5	67(129)	87(99)	91	96
14. affectionately	47	55.5	60(129)	80(99)	83.5	95
15. affidavit	45	38.5	55(129)	44(99)	55.5	75
16. agencies	58	57.5	66(32)	83(48)	90.5	96.5
17. all right	58	48	48(102)	38(102)	60.5	41.5
18. alumni	58	51.5	57(94)	82(114)	74.5	85.5
19. amiable	47	33	63(30)	56(50)	71.5	77.5
20. analysis	60	44	50(89)	70(121)	82.5	96
21. anniversary	35	42	42(109)	64(120)	71	81
22. annoyance	56	48.5	64(30)	87(36)	78.5	91.5
23. annum	15	37.5	19(32)	53(47)	61.5	83
24. anticipate	58	71	70(56)	87(115)	90	99
25. anticipating	55	58	50(56)	89(115)	87.5	94.5
26. anticipation	60	66	78(92)	85(121)	88	95.5
27. anxiety	57	36			80	97.5
28. apology	48	47	55(129)	84(81)	84	93.5
29. apparent	60	69	67(82)	84(80)	92.5	96.5
30. apparently	35	62.5	40(30)	80(102)	83.5	93.5
31. appetite	40	50	53(127)	87(99)	80	91.5
32. appropriate	46	43.5	54(151)	70(80)	76	93.5
33. approximate	55	58	57(32)	80(45)	82.5	96
34. approximately	46	38.5	54(151)	78(80)	72.5	93
35. arrangements	57	70.5	65(129)	88(101)	91.5	97
36. ascertain	40	33	30(30)	74(88)	75.5	87.5
37. attaching	40	76.5	40(31)	92(101)	92	95.5
38. attorneys	52	63.5	60(220)	81(92)	75	82.5

Table 6 (Contd)

	8th	9th	10th	12th		
	Ashbaugh	Ingersoll	Simmons	Ingersoll		
39. auditorium	50	61	59(220)	76(92)	87.5	98
40. bankruptcy	46	45	54(222)	80(23)	75.5	85
41. basketball	59	77	59(146)	85(59)	78.5	68.5
42. beneficial	42	55.5	49(246)	81(101)	74	88.5
43. bored	48	74.5	74(58)	73(58)	92.5	96.5
44. bulletin	51	58.5	53(59)	68(31)	80.5	81
45. bungalow	55	69.5	62(57)	65(31)	83.5	88.5
46. buried	57	58.5	65(73)	90(30)	82.5	89
47. canceled	19	68	40(35)	45(47)	83.5	97.5
48. canceling	44	77.5	43(35)	47(47)	96.5	97
49. cancellation	21	29.5	60(35)	68(47)	63	79
50. canvass	54	52	92(115)	97(63)	58.5	75
51. catalogues	48	57	56(121)	88(34)	93.5	92.5
52. cease	50	66.5	59(49)	96(51)	94.5	100
53. ceased	54	65.5	63(30)	92(47)	93	98
54. Chatauqua	33	45	12(188)	43(126)	67	60
55. chemistry	50	53.5	68(192)	88(128)	82.5	93
56. collateral	36	20	66(35)	60(47)	52	82.5
57. committed	50	59.5	83(30)	87(30)	92	93
58. committees	46	50	46(46)	70(30)	93.5	96.5
59. communicate	53	65.5	69(173)	92(133)	92	93
60. comparatively	48	32	55(210)	77(113)	58	79.5
61. competent	48	38	55(203)	73(113)	74	83.5
62. completing	52	83	67(30)	100(10)	92.5	95.5
63. completion	52	70.5	90(30)	100(30)	94	97
64. conceive	54	54.5	90(30)	87(30)	80	86.5
65. conception	52	58	93(30)	94(50)	95	99.5
66. confirmation	54	38	64(168)	90(84)	67.5	83
67. congratulations	52	69	60(107)	88(84)	85	96.5
68. congress	60	77.5	52(168)	86(96)	83	81
69. conscience	43	29	44(32)	71(45)	72.5	86
70. conscientious	19	9	25(32)	51(45)	36.5	67
71. conscious	35	25	43(125)	80(84)	68	92
72. consistent	23	26.5	66(32)	73(40)	60.5	79
73. continent	56	66	64(137)	93(83)	89.5	92.5
74. continuous	58	48.5	45(168)	69(95)	72.5	89
75. controversy	46	57.5	54(168)	83(95)	89	90
76. conveniently	41	48.5	64(163)	76(95)	67	80
77. cooperate	58	29	66(167)	92(95)	23.5	26.5
78. correspondence	60	64	64(163)	86(95)	81.5	87

Table 6 (Contd)
8th 9th 10th 12th

	Ashbaugh	Ingersoll	Simmons	Simmons	Ingersoll	Ingersoll
79. counsel	38	19	46(37)	(20)	55.5	63.5
80. countenance	27	37	50(32)	77(31)	62.5	86
81. coupe'	54	5.5	62(32)	(20)	24.5	31.5
82. courtesies	42	41	49(252)	70(77)	58.5	79
83. courtesy	50	60.5	58(229)	98(45)	86	86
84. criticism	40	29	45(235)	78(82)	67.5	95
85. curiosity	45	42	53(30)	73(46)	70	89
86. curious	55	65	63(30)	98(46)	90.5	98.5
87. customer's	60	24.5	80(71)	86(37)	58.5	60.5
88. damage	58	95.5	98(235)	100(77)	97	97.5
89. damaged	58	81.5	67(30)	98(46)	98	94.5
90. debit	36	47.5	97(30)	(20)	87.5	92.5
91. decidedly	50	51	67(30)	(27)	78.5	90.5
92. deem	46	51	55(126)	85(98)	84.5	93.5
93. definitely	37	28	48(126)	65(82)	65	88
94. delegates	60	67.5	43(65)	87(40)	87.5	92.5
95. delinquent	52	35.5	83(30)	71(42)	75	92.5
96. deny	60	69.5	68(146)	80(98)	91.5	97
97. despair	58	54	63(55)	87(40)	71	76.5
98. determined	56	62	61(62)	97(40)	87	79
99. dining	50	51.5	70(62)	85(40)	75.5	89
100. disappoint	55	70.5	65(167)	78(91)	85	87.5
101. disappointment	51	67	67(142)	77(105)	72.5	83.5
102. discretion	21	28	28(53)	72(40)	75.5	87.5
103. divine	51	45	90(108)	99(74)	69.5	77.5
104. documents	60	78	83(36)	100(31)	92	98
105. dormitory	20	41.5	27(62)	71(38)	66	93.5
106. dropped	60	79.5	68(180)	90(92)	90	94.5
107. duty	33	49	41(213)	67(93)	72	85.5
108. dying	57	64.5	72(65)	86(43)	83	92
109. economic	55	63.5	59(34)	100(31)	94	97
110. economical	60	58.5	59(213)	92(93)	91.5	95.5
111. economics	53	65.5	54(63)	95(59)	90	95.3
112. edition	33	57.5	41(212)	89(72)	86.6	92
113. efficiency	49	40	57(214)	78(91)	74.5	85
114. elementary	50	46	57(65)	100(51)	79.5	97
115. eliminate	56	54.5	64(44)	89(61)	78.5	85
116. employees	50	67.5	57(44)	92(61)	88.5	93.5
117. enemies	57	62.5	73(44)	94(83)	94.5	90
118. enemy	57	81	88(163)	95(57)	95	99.5
119. enthusiasm	41	49	62(178)	63(57)	83.5	96

TABLE 6 (Contd)

	8th		9th		10th		12th	
	Ashbaugh	Ingersoll	Simmons	Simmons	Ingersoll	Ingersoll		
120. enthusiastic	59	54	69(162)	72(57)	76	91		
121. entrance	58	79	66(44)	99(120)	94.5	98		
122. epistle	60	32	67(163)	78(49)	68.5	93.5		
123. equipped	46	45	51(163)	23(61)	76	74.5		
124. ere	57	45	62(142)	60(61)	66	69.5		
125. esteemed	55	51	63(52)	89(47)	78	86.5		
126. eventually	60	62	68(31)	91(47)	91.5	97.5		
127. existence	45	34	56(52)	57(47)	63	82		
128. exists	60	41	67(36)	87(39)	85.5	85.5		
129. expenditures	55	55.5	62(40)	90(39)	94.5	98		
130. exquisite	53	34.5	60(40)	90(42)	81	93.5		
130. extraordinary	46	49	53(95)	90(39)	74.5	78		
132. facilities	48	48.5	56(125)	82(93)	79	95.5		
133. fascinating	37	21.5	28(32)	65(40)	54.4	72		
134. financially	60	59.5	51(149)	92(50)	85.5	95		
135. folk	55	88	72(149)	100(50)	95	100		
136. folks	60	90.5	90(149)	94(50)	96.5	97.5		
137. folly	60	80.5	91(43)	100(40)	91	98		
138. fundamental	58	43.5	62(188)	76(125)	77	90.5		
139. galvanized	53	67	60(198)	78(77)	86	83		
140. genius	52	44	59(39)	34(32)	88.5	91.5		
141. geometry	58	60	93(239)	98(253)	95	94.5		
142. gorgeous	50	50.5	52(288)	69(148)	87	89		
143. grateful	m51	53.5	66(323)	97(147)	74.5	91		
144. grippe	48	35	47(303)	53(135)	66	81.5		
145. guarantee	42	43	60(326)	70(143)	62	81.5		
146. guaranteed	41	40	78(326)	64(143)	55.5	64.5		
147. guardian	50	49	54(39)	66(32)	83.5	91		
148. imitation								
149. immediately	55	51.5	58(169)	78(74)	93	96.5		
150 immensely	55	35	50(167)	77(83)	68	76		
151. incidentally	35	28.5	36(145)	69(94)	56.5	73.5		
152. inconvenience	50	51.5	66(144)	69(102)	70.5	89		
153. inconvenienced	40	29.5	47(49)	(20)	69.5	90.5		
154. indefinite	45	54	53(49)	89(36)	84	89.5		
155. indefinitely	40	34.5	38(154)	69(94)	56	83		
156. infinite	33	36.5	40(167)	67(102)	70.5	94		
157. initiation	50	30.5	57(49)	67(36)	67.5	88.5		
158. innocent	60	67	68(134)	67(92)	90.5	95.5		
159. intellectual	40	26	47(49)	95(38)	81	97.5		
160. itemized	60	42.5	49(57)	54(54)	75	86		
161. judgment	50	95	70(164)	61(106)	100	98		

TABLE 6 (Contd)
8th 9th

	8th		9th		10th		12th	
	Ashbaugh	Ingersoll	Simmons	Simmons	Ingersoll	Ingersoll		
162. kindergarten	33	59	39(313)	95(164)	75		87.5	
163. laboratory	48	40.5	44(197)	67(184)	66		81.5	
164. literally	38	60.5	60(252)	81(106)	89.5		90.5	
165. magnificent	45	50	53(30)	49(51)	65.5		78	
166. materially	54	67.5	53(174)	89(185)	94		97.5	
167. mathematics	40	51.5	46(197)	86(185)	72		86.5	
168. melancholy	13	20	37(55)	48(85)	53		73	
169. memorandum	53	64	60(170)	85(182)	85.5		97	
170. minimum	58	56.5			78.5		94	
171. miscellaneous	21	18	29(55)	37(65)	65		74.5	
172. mortgage	60	71	84(58)	82(90)	82		91	
173. mustn't	50	42	50(109)	71(49)	68.5		79.5	
174. mutual	42	75.5	49(45)	87(66)	98	100		
175. mysterious	60	56	59(129)	92(67)	86.5		95.5	
176. mystery	60	61	57(129)	92(62)	90.5		98	
177. necessarily	38	43.5	49(129)	85(92)	73.5		92.5	
178. negotiations	37	46	47(30)	(20)	77		86.5	
179. occasionally	50	50	62(119)	70(82)	85		76.5	
180. opportunities	57	55.5	55(129)	73(82)	87.5		92.5	
181. ordinarily	50	38	90(31)	100(33)	66		85.5	
182. ordinarily	56	57.5	60(30)	87(47)	79		93	
183. pamphlet	35	44.5	32(34)	92(74)	79		92.5	
184. pamphlets	30	43	32(34)	83(47)	66.5		82.5	
185. partial	43	48.5	52(297)	80(153)	88.5		95	
186. perceive	32	45	49(188)	81(91)	75.5		86	
187. permanently	60	47	30(188)	59(91)	71.5		85	
188. phase	58	21.5	49(188)	92(91)	79.5		90.5	
189. philosophy	52	21.5	60(47)	82(62)	74		98	
190. physician	38	44.5	72(47)	85(62)	74.5		89.5	
191. picturesque	50	51	58(188)	100(91)	87		96	
192. pneumonia	53	37	65(54)	55(40)	65.5		82	
193. possess	58	60.5	72(64)	84(67)	74.5		92	
194. preferred	39	60	57(30)	82(40)	84		90.5	
195. prejudice	21	14.5	29(19)	59(91)	57.5		81	
196. president's	47	39	46(159)	68(75)	70.5		72.5	
197. principles	52	40.5	59(159)	78(91)	87.5		94	
198. prior	48	62.5	67(58)	94(81)	86		98	
199. privilege	44	47	48(58)	85(81)	68		67.5	
200. procedure	42	27.5			64		72	
201. psychology	10	1.5	90(79)	37(41)	45.5		90	
202. questionnaire	5	.5	*	*	4.5		24	
203. rating	57	72	64(121)	100(49)	84.5		89	

*Gives accuracy on "questionnaire" not "questionnaire".

TABLE 6 (Contd)
8th 9th

	8th		9th		10th		12th	
	Ashbaugh	Ingersoll	Simmons	Simmons	Ingersoll	Ingersoll	Ingersoll	Ingersoll
204. receipts	60	57.5	70(183)	75(106)	85	92		
205. receiver	51	71	71(119)	90(49)	88	93		
206. reckon	35	46.5	36(117)	95(43)	80	87.5		
207. recognition	50	40.5	47(131)	90(49)	90.5	96.5		
208. recommend	54	64	26(117)	87(61)	79.5	88.5		
209. recommendation	56	47.5	62(163)	82(55)	71	81		
210. recommendations	53	41.5	43(119)	78(55)	80	90.5		
211. recommend	48	55	54(97)	86(49)	80	85.5		
212. recommending	58	55.5	63(119)	84(49)	77.5	88.5		
213. referred	53	60.5	59(195)	49(106)	83.5	91		
214. referring	51	57.5	58(183)	53(106)	74.5	82		
215. refrigerator	57	40	47(122)	71(49)	65	81.5		
216. regretted	49	67	66(95)	80(49)	89.5	92		
217. remembrance	49	52	65(183)	87(106)	76.5	93		
218. representatives	60	58.5	63(133)	90(165)	79.5	92		
219. requisition	28	23.5	43(200)	74(95)	65	92		
220. restaurant	28	28.5	36(180)	81(140)	57	67.5		
221. rheumatism	43	48.5	47(181)	64(154)	62	77.5		
222. ridiculous	20	22	20(161)	56(95)	56.5	66.5		
223. role	58	.5	53(148)	85(80)	6	18.5		
224. romantic	57	69.5	91(170)	87(109)	98	97		
225. satisfactorily	52	49.5	58(62)	86(43)	63.5	82.5		
226. scandal	40	64	44(63)	92(40)	85	97		
227. schedule	38	48	45(84)	81(43)	73	95.5		
228. scheduled	35	43.5			67	81		
229. seized	40	38.5			74.5	79		
230. so-called	58	42.5	62(249)	71(129)	69.5	87.5		
231. solemn	45	34.5	33(52)	68(69)	75.5	91		
232. sorority	30	32	36(254)	62(127)	71	84		
233. specific	50	60	27(52)	92(59)	96.5	99		
234. specifically	40	23.5	12(52)	60(82)	79.5	91		
235. specimen	53	60	55(117)	72(72)	79	84.5		
236. specimens	50	62	64(201)	87(112)	78.5	91.5		
237. spittual	50	65.5	48(82)	89(72)	91	99		
238. statistics	55	55	49(124)	87(68)	78	98		
239. strenuous	40	46	26(81)	81(68)	64	85.5		
240. sufficiently	60	46	73(149)	95(96)	88.5	95		
241. supplement	45	29	49(151)	82(96)	73.5	89.5		
242. suspicion	50	50.5	58(72)	83(75)	85.5	94		
243. sympathetic	40	42.5	83(136)	75(75)	75	96.5		
244. technical	44	29	59(79)	56(66)	67	92		

TABLE 6 (Contd)
8th 9th

	8th		9th	10th	12th	
	Ashbaugh	Ingersoll	Simmons	Simmons	Ingersoll	Ingersoll
245. temporarily	42	35	48(79)	62(80)	66.5	82.5
246. temporary	48	61	50(127)	73(74)	75.5	90
247. through	58	56.5	65(127)	88(74)	80.5	92
248. thoroughly	57	50	65(127)	93(74)	84	87.5
249. today's	45	17	38(79)	34(67)	15	22.5
250. tonnage	19	24	29(62)	69(80)	61.5	78
251. tournament	31	40.5	62(82)	90(79)	77	96
252. tragedy	43	33	52(149)	56(50)	74	87
253. transformed	45	40.5	46(149)	42(36)	69	82.5
254. triumph	55	64.5	62(127)	82(39)	81	96.5
255. unanimous	25	24.5	21(63)	51(43)	59	77
256. undoubtedly	35	45	50(60)	67(42)	73	83
257. unfortunate	55	83.5	34(60)	90(42)	93	98
258. unfortunately	50	59.5	58(60)	89(35)	79	94
259. unusually	59	70	72(60)	86(42)	68.5	89.5
260. vacancies	55	48.5	60(149)	66(50)	89.5	94.5
261. vacancy	58	62.5	57(149)	70(50)	82	93.5
262. violence	40	68	76(82)	99(74)	85.5	94.5
263. virtue	60	57.5	66(149)	84(50)	92.5	99
264. virtues	58	54	79(149)	80(50)	91.5	97
265. visible	51	56.5	83(149)	82(50)	70.5	88.5
266. voucher	57	39.5	51(149)	84(50)	84.5	90
267. vulgar	48	55.5	60(149)	86(50)	92.5	97
268. week's	60	37.5	66(122)	83(66)	56.6	67.5

The blanks occurring in the above table indicate that the word was not included in Simmons' study.

Table 7 gives the means, ranges, and standard deviations of the accuracies of the 269 words as determined by Ashbaugh for the eighth grade level and as determined for eighth, tenth, and twelfth grade levels in this study.

TABLE 7

Means, Ranges, and Standard Deviations for
the 268 Words at the Different Grade Levels

Grade Level	Mean	Range	S. D.
Eighth Grade (Ashbaugh)	48.00 = .46	5 - 60	11.20
Eighth Grade (Ingersoll)	49.67 = .70	.5 - 95.5	16.94
Tenth Grade (Ingersoll)	76.75 = .58	4.5 - 100	15.20
Twelfth Grade (Ingersoll)	86.53 = .55	18.5 - 100	13.21

In this table, it will be noticed that the increase in accuracy of the tenth grade over eighth grade is two and one-half times that of the increase of the twelfth over the tenth grade. The average accuracies for the 268 words at the eighth grade level as given by Ashbaugh and as determined in this study are not significantly different, but large difference will be found in the ranges and standard deviations.

In order to discover to what extent these words have the same relative ranking in difficulty at the three different levels as computed from this investigation, correlations were computed. The correlations found between the accuracies of the list of words at the various levels are:

Eighth Grade vs.	Tenth Grade	$r = .595 = .026$
Tenth Grade vs.	Twelfth Grade	$r = .820 = .014$
Eighth Grade vs.	Twelfth Grade	$r = .552 = .042$

These correlations indicate several tendencies which might be expected. The correlation between the accuracies at the eighth grade level and the twelfth grade level is the lowest. The number of years separating these two levels is twice the number of years separating the levels at which the accuracies were compared in the other two correlations. Words which were easy for the twelfth grade to spell when they were in the eighth grade did not become more difficult for them as they progressed through school, but the words which were difficult when they were in the eighth grade are now spelled with greater accuracy. This is probably due to the enlargement of their writing vocabularies. This enlargement occasions the more frequent use of the correct spelling of the poorer students which in itself would tend to make a considerable increase in the accuracies at the higher levels.

2. Testing of Persistence of the Most Frequent Misspellings Through the Three Grade Levels

In order to determine to what extent the most frequent misspelling of a given word at one grade level tended to be the most frequent form of misspelling at the other two levels, the data were studied from several points of view.

Table 8 gives the words which have one form of misspelling that makes up 50 per cent or more of the total misspellings at one or more of the grade levels. An "a" indicates that in the grade level in which column it appears, the form of misspelling given accounts for at least 50 per cent of the total misspellings of the word at the given grade level. A "#/10" indicates that, at the grade level in which column it appears, the word had a total of ten or less misspellings. A "Y" indicates that, though this form does not make 50 per cent of the total misspellings at the grade in which it appears, it is the most frequent form of misspelling. An "N" indicates that this form is not even the most frequent at this grade level. Starred words indicate that the form of misspelling is correct in itself but is not the correct spelling of the word which was to have been spelled.

The table should be read, "The word 'accommodate' is spelled accomodate by 50 per cent or more of all those misspelling it at each of the three levels. The word accommodation is spelled accomodation by 50 per cent or more of those misspelling it at the tenth and twelfth levels, and

this same form of misspelling is the most frequent form occurring in the eighth grade, but it is less than 50 per cent of the total misspellings of the word at this level. The word adjourned is spelled 'adjorned' by 50 per cent or more of those misspelling it at the tenth and twelfth grade level, but this form is not even the most frequent form of misspelling at either of the other levels." The remainder of the table should be interpreted in a similar manner.

TABLE 8

Words Having One Form of Misspelling Which
is Accountable for 50 per cent or More of
the Grade Levels.

	Grade Level				Grade Level		
	8	10	12		8	10	12
accommodate				completing			
accomodate	a	a	a	completeing	a	a	#
accommodation				conceive			
accomodation	Y	a	a	concieve	Y	a	a
accompanying				conception			
accompaning	a	a	a	conception	a	#	#
acknowledgment				confirmation			
acknowledgement	a	a	a	conformation	a	Y	a
adjourned				Congress			
adjorned	N	N	a	Congress	a	a	a
all right				consistent			
alright	Y	a	a	conconsistent	a	a	a
alumni				conveniently			
alumnae	N	Y	a	convently	Y	a	a
apology				cooperate			
appology	Y	a	a	cooperate	Y	a	a
appetite				correspondence			
appitite	Y	Y	a	correspondence	N	Y	a
arrangements				counsel			
arrangements	Y	a	#	*council	a	a	a
attorneys				coupe'			
attornies	Y	Y	a	coupe	a	a	a
bankruptcy				curiosity			
bankrupey	Y	a	a	curiosity	Y	Y	a
basketball				customer's			
basket-ball	a	a	a	*customers	a	a	a

TABLE 8 (Contd)

	Grade Level				Grade Level		
	8	10	12		8	10	12
beneficial				damaged			
beneficial	Y	N	a	*damage	a	#	a
bored				decidedly			
*board	Y	a	#	decidely	Y	a	a
bungalow				deem			
bungalo	N	Y	a	deam	a	a	a
buried				delegates			
burried	Y	Y	a	delogates	a	a	N
canceled				despair			
*cancel	Y	a	#	dispair	Y	a	a
cancellation				determined			
cancelation	a	a	a	*determines	Y	Y	a
canvass				dining			
*canvas	a	a	a	dinning	a	a	a
Chautauqua				disappoint			
chatauqua	Y	a	a	disapoint	N	a	#
chemistry				disappoint			
chemestry	Y	Y	a	disappointment	N	a	
collateral				dissappointment	N		a
calateral	Y	a	a	divine			
committed				devine	a	a	a
commited	a	a	Y	dormitory			
communicate				dormatory	Y	Y	a
communicate	Y	a		dropped			
*community			a	droped	a	N	a
comparatively				duly			
comparitively	Y	a	a	duely	Y	Y	a
dying				ordinarily			
*dieing	a	a	a	ordinarilly	N	Y	a
edition				perceive			
*addition	a	a	a	percieve	Y	a	a
efficiency				possess			
effeciency	Y	Y	a	posess	Y	a	a
equipped				preferred			
equiped	Y	a	Y	prefered	a	a	a
existence				principles			
existance	Y	a	a	*principals	a	a	a
exists				procedure			
*exist	Y	Y	a	proceedure	Y	a	a
exquisite				psychology			
exquisit	Y	a	N	Psychology	N	N	a
fascinating				questionnaire			
facinating	Y	a	a	questionaire	Y	a	a
fundamental				rating			
fundemental	Y	Y	a	rateing	Y	a	a
galvanized				receiver			
*galvanize	N	Y	a	reciever	a	a	a
genius				reckon			
genious	Y	a	a	recon	Y	Y	a

TABLE 8 (Contd)

	Grade Level				Grade Level		
	8	10	12		8	10	12
geometry				recommend			
Geometry	N	#	a	reccommend	Y	Y	a
grateful				recommendation			
greatful	a	a	a	recomendation	Y	a	Y
grippe				referred			
*grip	a	a	N	referred	a	a	a
imitation				referring			
immitation	Y	a	a	referring	a	a	a
incidentally				regretted			
incidently	Y	Y	a	regreted	a	a	a
inconvenience				remembrance			
inconvienece	Y	Y	a	rememberance	Y	a	a
inconvenienced				ridiculous			
inconvienced	Y	Y	a	rediculous	Y	a	a
indefinite				rôle			
indefinate	Y	a	a	role	a	a	a
infinite				romantic			
infinite	Y	Y	a	romatio	a	#	#
innocent				scheduled			
inocent	Y	a	#	*schedule	Y	Y	a
kindergarten				seized			
kindergarden	a	a	a	siezed	Y	a	a
laboratory				so-called			
labratory	Y	a	a	socalled	a	N	
materially				so called		Y	a
materialy	Y	a	#	specifically			
mortgage				specificly	Y	Y	a
morgage	a	a	a	specimen			
mustn't				speciman	Y	a	a
musn't	Y	a	a	specimens			
mysterious				specimans	Y	Y	a
misterious	a	a	#	spiritual			
mystery				spirtual	Y	a	#
mistry	Y	a	#	violence			
thorough				*violets	Y	a	Y
*through	Y	a	N	virtue			
to-day's				vertue	Y	a	#
today's	a	a	a	visible			
tonnage				visable	a	a	a
tonage	a	a	a	week's			
transferred				weeks	a	a	a
transfered	a	a	a	temporary			
undoubtedly				temporary	Y	a	a
undoubtly	Y	Y	a				

A total of 117 of the 268 words is listed in Table 8. Of these, each of the three words "communicate, disappointment, and so-called" has two forms of misspelling given, one of the two forms making 50 per cent or more of the total misspellings at one of the three levels and the other form making 50 per cent or more of the total misspellings at one or both of the other two levels. Of the other 114 words, thirty-one have one form of misspelling making up 50 per cent or more of all the misspellings at each of the three levels. Of these thirty-one, seven forms of misspelling are words which in themselves are correct but are not correct spellings of the word which was to have been spelled.

Table 9 is a summary of Table 8 and shows for each grade level the number of forms which (a) make up 50 per cent of all the misspellings, (b) do not make 50 per cent of all the misspellings but are the most frequent in occurrence at this grade level, (c) have some other forms of misspelling than the one listed which is the most frequent form of misspelling at this grade level, and (d) the number of cases in which the total misspellings at this grade level is ten or less. The three words for which two forms of misspelling are given have been omitted from this table. The column headings are to be interpreted as in Table 8. The figures in parentheses indicate the number of forms of spelling out of the total for the given grade in the given column which are correct in themselves but are not correct spellings of the word which was to have been spelled.

The table reads, "At the eighth grade level, forty-one of the 114 words have one form of misspelling which makes up 50 per cent or more of the total misspellings of the word at this level. Nine of these forty-one forms of misspelling are words which are correct in themselves, but are not correct spellings of the word which was to have been spelled. There are an additional sixty-four of these 114 words, whose most frequently occurring misspelling at the eighth grade level makes up 60 per cent or more of all the misspellings at one or both of the other levels. Seven of these sixty-four forms of misspelling are words which are correct in themselves, but are not the correct spellings of the word which was to have been spelled. There are nine words whose most frequent misspelling at one or both of the other levels makes up 50 per cent or more of the total misspellings but this form is not the most frequent at the eighth grade level. One of these nine forms of misspelling is a word which is correct in itself but is not the correct spelling of the word which was to have been spelled. There was none of the 114 words which was not misspelled by more than ten pupils at the eighth grade level." The data for each of the other grade levels should be interpreted in a similar manner.

TABLE 9

	Summary of Contents of Table 8				
	a	Y	N	#	
Eighth Grade	41(9)	64(7)	9(1)	0	114
Tenth Grade	79(12)	27(4)	4	4(1)	114
Twelfth Grade	<u>93(12)</u>	<u>4(1)</u>	<u>4(2)</u>	<u>13(2)</u>	<u>114</u>
Total	213	95	17	17	342

From this table it can readily be seen that there is an increase in the percentage from the eighth grade to the tenth grade and the tenth grade to the twelfth grade of the pupils who misspell a word in the same way that others misspell it. The total number of misspellings of these words decrease from the eighth to the tenth and from the tenth to the twelfth levels.

In table 10 are listed the words which required two forms of misspelling to make up 50 per cent or more of the misspellings at some one or more of the grade levels. The two forms of misspelling which account for 50 per cent of all the misspellings at the different grade levels are given under the proper correct forms. The number of different forms listed under any one word may be two or more, depending upon whether the same forms are the most frequent at more than one grade level.

Opposite the correct form of the word in each grade level column appears a number indicating the number of forms required to account for 50 per cent of all the misspellings of the word at the given grade level in which column the number appears. For explanation of the symbols which are sometimes given with, or in place of, the number referred to above, see explanation of Table 8. The letters following the forms of misspellings listed under any given word indicate their order of frequency of occurrence at the grade level in the column after which it is placed is the most frequent form of misspelling at the grade level in the column where

it appears. A "b" indicates that the form of misspelling after which it is found is the second most frequent form of misspelling at the grade level in the column where it appears.

When an "a" appears in a given column following a form of misspelling and no "b" appears in the same column opposite any other form of misspelling of a given word, the form after which the "a" appears will alone account for 50 per cent of all the misspellings of the given word at the given grade level. In such cases, the "a's" should be interpreted as the "a's" of Rule 8.

The starred words are forms of misspelling which are correct in themselves but are not the correct spelling of the word which was to have been spelled. A total of 126 words comprise the list given in Table 10, forty-nine of which are also contained in Table 8. Of the 268 words used in the study, 199, or all but sixty-nine, occur in one or both of Tables 8 and 10.

Table 10 reads: To account for 50 per cent of the misspellings of the word "accommodation" at the eighth grade level, the sum of the frequencies of the two most frequently occurring forms of misspelling is required. These two forms are accomodation and accomidation, of which the former is the more frequent. At the tenth and twelfth grade levels, the one most frequent form of misspelling, accomidation, will account for at least 50 per cent of all the misspellings.

TABLE 10

Words in Which Two Forms of Misspellings are Required to Account for 50 per cent or More of the Total Misspellings at Some One or More of the Grade Levels.

	Grade Level				Grade Level		
	8	10	12		8	10	12
accommodation	2	1	1	*accustom		a	
accomodation	a	a	a	acustomed		b	
acomidation	b			acquaintance	8	2	#
accrued	3	2	2	acquaintence		a	
accrude		a	a	acquaintance		b	
acrude		b		adjourned	3	2	1
acrud			b	*adjourn		a	
accustomed	6	2	3	adjourned		b	
all right	2	1	1	beneficial	a	b	a
alright	a	a	a	bored	2	1	#
all-right	b			*board	a	a	
amiable	7	3	2	bord	b		
aimiable			a	buried	2	2	1
aimeable			b	burried	a	a	a
anniversary	7	3	2	barried	a	a	a
aniversary			a	*varied		b	
anniversary			b	catalogues	5	2	2
annoyance	6	2	2	*catalogue		a	
anoyance		a	a	catalogue		b	
annoiance		b	b	catologues			a
anticipate	2	2	#	Catalogues			b
antisipate	a	a		cease	9	2	#
antisapate	b			*seize		a	
antisparte		b		sease		b	

TABLE 10 (Contd)

	Grade Level				Grade Level		
	8	10	12		8	10	12
anticipating	3	2	1	chemistry	3	2	1
antisipating		a		chemestry		a	a
anticipating		b		Chemistry		b	
anticipation	2	4	#	committed	1	1	2
antisipation	a			commited	a	a	a
antisapation	b			*committee			b
apparent	5	2	#	committees	3	2	#
apparent		a		commities		a	
aparent		b		committes		b	
apparently	4	2	1	competent	5	2	2
apparently		a		compitent		a	a
apperently		b		competant		b	b
appetite	2	2	1	conceive	2	1	1
appitite	a	a	a	concieve	a	a	a
appatite	b			conseve	b		
apetite		b		confirmation	1	2	1
appropriate	4	3	2	conformation		a	
appropriate			a	confermation a		b	a
apropriate			b	conscience	5	3	2
approximately	10*	7	2	*conscience			a
approximatly			a	conciencie			b
aproximately			b	conscious	3	2	1*
arrangements	2	1	#	conciuous		a	
arrangments	a	a		consious		b	
arangements	b			continuous	4	2	2
ascertain	2	2	2	continous		a	a
assertain	a	a	b	continious		b	b
asertain	b			controversy	5*	4*	2
accertain		b		controversey			a
acertain			a	controvercy			b
attaching	6	2	#	cooperate	2	1	1
attatching		a		cooperate	a	a	a
attacting		b		co-operate	b		
attorneys	4	2	1	correspondence	6	2	1
attornies		a	a	correspondance		a	a
*attorney's		b		*correspondents		b	
bankruptcy	2	1	1	curious	6	2	#
bankrupey	a	a	a	curious		a	
bankrupsy	b			qurious		b	
beneficial	2	2	1	debit	5	2	2*
benficial	b	a		*debt		a	
debet	b			*err			b
definitely	4	3	2	esteemed	4	3	2
definatly			a	esteem			a
definatly			b	estimed			b
delegates	1	1	2	exists	3	2	1
deligates	a	a	b	*exist		a	a
Delegates			a	exist		b	

TABLE 10 (Contd)

	Grade Level				Grade Level		
	8	10	12		8	10	12
delinquent	10*	3	2	exquisite	5	1	2
delinquent			a	exquisite			a
deliguent			b	exquiset			b
deny	3	2	#	exquisit		a	
denie		a		fascinating	a	a	a
denigh		b		facinating	a	a	a
despair	2	1	1	fasinating		b	
dispar	a	a	a	folly	3	2	#
dispare	b			fally		a	
determined	7	2	1	folley		b	
*determine		a	a	fundamental	4	2	1
detirmined		b		fundemental		a	a
disappoint	2	1	2	fundimental		b	
disapoint	a			galvanized	5	2	1
disapoint	b			*galvanize	a	a	a
dessapoint		a	a	galvinized		b	
disappoint			b	genius	2	1	1
discretion	8	2	3	genious	a	a	a
discreSSION		a		geneous	b		
disgression		b		gorgeous	9	2	3
dormitory	3	2	1	ge orgeous		a	
dormatory		a	a	gorgas		b	
dormotory		b		guaranteed	10*	4	2
dropped	1	2	1	*guarantee			a
dropt		a		guarenteed			b
droped	a	b	a	guardian	3	2	2
duly	3	2	1	gaurdian		a	a
duely		a	a	guardien			b
*dully		b		gardian		b	
elementary	7	2	#	imitation	2	1	1
elimentary		a		immitation	a	a	a
elementry		b		imatation	b		
eliminate	5	5	2	immensely	7	2	2
illiminate			a	immensly		a	a
elliminate			b	imensely		b	
employees	2	2	2*	immencely			b
employies	a			inconvenienced	10*	2	1
employes	b	b		inconvenienced		a	a
*employee's		a		*inconvenience		b	
enemies	2	1	1	itemized	6	3	2
enimies	a			*itemize			a
enemys	b			itimized			b
entrance	4	2	#	literally	3	2	3
enterance		a		literaly		a	
enterence		b		litterally		b	
equipped	2	1	2	magnificient	6	2	2
equiped	a	a	a	magnificant		a	a
equipt	b		b	magnigicient		b	b
ere	6	3	2	mathematics	3	2	2
e'er			a	mathamatics		a	a

TABLE 10 (Contd)

	Grade Level				Grade Level		
	8	10	12		8	10	12
mathematics		b	b	raiting	b		
melancholy	6	2	3	receipts	2	2	2
melconcholy		a		reciepts	a	a	a
meloncaly		b		receits	a		
mustn't	2	1	1	recipts		b	
musen't	a	a	a	reckon	4	2	1
musn't	b			recon		a	a
mystery	2	1	#	reccon		b	
mistry	a	a		recommend	2	2	1
mystry	b			reccommend	a	a	a
necessarily	6	6	2	recomend	b	b	
necessarilly			a	recommendation	2	1	2
necessariially			b	recomendation	a	a	a
occasionally	6	2	2	reccommendation	b		b
ocassionally		a	a	recommmendations	4	2	2
ocassionally	b			reccommendations		a	a
ocasionly			b	recomendations		b	
opportunities	5	5	2	reccommendations			b
*opportunity			a	recommended	3	2	2
oppurtunities			b	reccommended		a	a
originally	8*	3	2	recomended		b	
origionally			a	recommend			b
orfinally			b	recommending	2	2	2
pamphlet	10	2	2	recommending	a	a	a
phamphlet		a		recomending	b	b	
pamplet		b	a	reccomending			b
pamphelet			b	remebrance	2	1	1
pamphlets	10	3	2	rememerance	a	a	a
phamplets			a	rememberence	b		
pamplets			b	representatives	5	2	2
partial	2	2	#	representatives		a	a
parcial		a		representives		b	
*pared		b		representitives			b
phase	2	3	2	restaurant	4	2	2
faze	a		a	rsturant		a	
fase	b		b	restaraunt		b	
physician	10*	2	2	satisfactorily	4	2	5
physican		a	a	satisfactorly		a	
position		b		satisfactorally		b	
physcian			b	scandel	2	2	#
possess	2	1	1	scandle	a	a	
posess	a	a	a	scandel	b	b	
posses	b			seized	2	1	1
prejudice	10*	5*	2	siezed	a	a	a
prejudice			a	*ceased	b		
predudice			b	so-called	1	2	1
president's	2	2	2	so called		a	a
*presidents	a	a	a	socalled	a	b	
President's	b	b	b	solemn	4	5	2
prior	2	3	#	solmn			b
				solomn			a

TABLE 10 (Contd)

	Grade Level				Grade Level		
	8	10	12		8	10	12
pryor	b			sorority	10*	7	2
privilege	4	2	2	sororiety			a
priviledge		a	b	sarrority			b
privelege		b	a	specifically	10*	2	1
rating	2	1	1	specificly		a	a
rateing	a	a	a	spacifically		b	
strenuous	7	2	2	undoubtly		a	a
streneous		a	a	undoubtably		b	
strenous		b	b	unfortunately	4	2	2
sufficiently	10	2	#	unfortunately		a	a
sufficently		a		unfortionately		b	
sufficiently		b		Unfortunately			b
supplement	2	2	2	unusually	4	2	2
suplement	a	a	a	*unusual		a	
supliment	b	b	b	unusally		b	
temporary	2	1	1	*usually			a
temperary	a	a	a	usualy			b
tempory	b			vacancy	9	5	2
through	7	1	2	vacency			a
*thorough		a	a	vancancy			b
thourough			b	violence	5	1	2
thoroughly	2	2	2	*violets		a	a
throughly		a	b	violance			b
thourghly		b		virtue	2	1	#
thouroughly			a	vertue	a	a	
tragedy	7	2	2	virture	b		
tradegy		a	b	voucher	6	*5	2
tradgady		b	a	*vulture			a
undoubtedly	9	2	1	vouture			b

Number of words at each grade level
 requiring but two forms of misspelling
 to account for 50 per cent of the total
 misspellings, 38 73 58

3. DETERMINING OF EXTENT OF THE CONCENTRATION OF THE MISPELLING UPON THE MOST FREQUENTLY OCCURRING FORMS

It was thought desirable to give some measure of the extent to which the frequencies of misspellings pile up for certain forms. In order to do so it is necessary to determine the number of forms of misspellings, taken in order of decreasing frequency, which are required to account for 50 per cent of all the misspellings of a word at a given grade level. It is then easy to note how many forms of misspelling are required to account for 75 per cent of all the misspellings of this same word at the same grade level.

For the purpose of securing an answer to the problem stated above, the forms of misspelling for each word at each grade level were arranged in order of decreasing frequency of occurrence. Beginning at the first of this list, with the form having the most common occurrence, the frequencies were totaled until a sum was reached which would account for at least 50 per cent of the total number of misspellings of the given word at the given grade level. To this total the frequency of additional forms was added until at least 75 per cent of the total misspellings were accounted for. The number of forms whose total frequencies were required to make the respective percentages of the total misspellings of the given word at the given grade level was then recorded opposite the word.

Table 11 gives results obtained by this procedure. A "#" indicates that at the grade level in the column where it appears, the word which it follows had ten or less misspellings. In such cases the percentages were not computed. Forms of misspellings occurring but once were not used in computing the percentages as they are not reliable or significant for practical purposes. If misspellings with a frequency of only one were accounted, before reaching the total required to make a given percentage, no more frequencies were added and the number of forms occurring up to this point is indicated in the table by an asterisk. The sum of the frequencies of the number of forms by which the asterisk appears does not make the percentage of the total misspellings which is given at the top of the column.

The table is to be interpreted as follows: The sum of the frequencies of the five most frequent forms of misspellings of the word "absurd" is required to make at least 50 per cent of the total misspellings of the word at the eighth grade level. The sum of the frequencies of the nine most frequent forms is required to make at least 75 per cent of the total misspellings of the same word at the same grade level. At the tenth grade, the sum of the three most frequent forms is required to make 50 per cent of all the misspellings and the sum of the five most frequent forms to make 75 per cent of all the misspellings. Less than ten misspellings of the word occurred at the twelfth grade level. The sum of the frequencies of the five most frequent forms

of misspellings of the word acceptable is required to make at least 50 per cent of the total misspellings of the word at the eighth grade level. The five most frequent forms of misspelling of the word acceptable include all forms of misspellings having a frequency greater than one at this grade level but their sum does not make 75 per cent of the total misspellings of the word at the eighth grade level." The remainder of the table should be interpreted in the same fashion.

TABLE 11

NUMBER OF FORMS REQUIRED AT THE DIFFERENT GRADE LEVELS TO ACCOUNT FOR 50 PER CENT OF THE TOTAL MISSPELLINGS FOR EACH OF THE 268 WORDS.

	Grade Level					
	8th		10th		12th	
	50%	75%	50%	75%	50%	75%
1. absurd	5	9	3	5	#	#
2. acceptable	5	5*	3	4*	#	#
3. accommodate	1	3	1	2	1	1
4. accommodation	2	5	1	1	1	1
5. accompanying	1	8*	1	4	1	2
6. accrued	3	10*	2	6	2	5*
7. accustomed	6	9*	2	5*	3	4*
8. acknowledging	7	7*	3	3*	#	#
9. acknowledgment	1	9	1	1	1	1
10. acquaintance	8	10*	2	4*	#	#
11. adequate	10*	10*	3	5*	#	#
12. adjourned	3	8*	2	3*	1	1
13. affectionate	6*	6*	3*	3*	#	#
14. affectionately	8	10*	3	6	#	#
15. affidavit	10*	10*	4	8*	3	6*
16. agencies	4	10*	3*	3*	#	#
17. all right	2	3	1	1	1	1
18. alumni	9	10*	3	4*	1	2
19. amiable	7	10*	3	9	2	4
20. analysis	10*	10*	4	6*	#	#
21. anniversary	7	10*	3	9	2	5*
22. annoyance	6	10*	2	3*	2	2*
23. annum	6	10*	5	9*	3	4*
24. anticipate	2	4*	2	3*	#	#
25. anticipating	3	10*	2	5	1*	1*
26. anticipation	2	4	4	6*	#	#

Table 11 gives results obtained by this procedure. A "#" indicates that at the grade level in the column where it appears, the word which it follows had ten or less misspellings. In such cases the percentages were not computed. Forms of misspellings occurring but once were not used in computing the percentages as they are not reliable or significant for practical purposes. If misspellings with a frequency of only one were encountered, before reaching the total required to make a given percentage, no more frequencies were added and the number of forms occurring up to this point is indicated in the table by an asterisk. The sum of the frequencies of the number of forms by which the asterisk appears does not make the per cent of the total misspellings which is given at the top of the column.

TABLE 11 (Contd)

		Grade Level					
		8th		10th		12th	
		50%	75%	50%	75%	50%	75%
27.	anxiety	10*	10*	5	9*	#	#
28.	apology	5	10	1	5	1	1
29.	apparent	3	6	2	2	#	#
30.	apparently	4	10*	2	5*	1*	1*
31.	appetite	2	7	2	4*	1	3
32.	appropriate	4	9*	3	6*	2	3*
33.	approximate	7*	7*	2*	2*	#	#
34.	approximately	10*	10*	7	7*	2	2*
35.	arrangements	2	4*	1	2	#	#
36.	ascertain	2	5	2	4*	2	4
37.	attaching	6	7*	2	2*	#	#
38.	attorneys	4	10*	2	4	1	3
39.	auditorium	8*	8*	3*	3*	#	#
40.	bankruptcy	2	6*	1	3	1	2
41.	basketball	1	1	1	1	1	1
42.	beneficial	3	8*	2	3	1	1
43.	bored	2	5	1	2*	#	#
44.	bulletin	6	10*	4	6*	3	4*
45.	bungalow	3	8	3	5*	1	2
46.	buried	2	7	2	2*	1	1
47.	canceled	5	9*	1	3	#	#
48.	canceling	8	8*	#	#	#	#
49.	cancellation	1	4	1	1	1	1
50.	canvass	1	2	1	1	1	1

TABLE 11 (Contd)

		Grade Level					
		8th		10th		12th	
		50%	75%	50%	75%	50%	75%
51.	catalogues	5	10*	2	2*	2	4
52.	cease	9	10*	2	3*	#	#
53.	ceased	10*	10*	2*	2*	#	#
54.	Chautauqua	10*	10*	1	1	1	2
55.	chemistry	3	9*	2	3*	1	2
56.	collateral	5	10*	1	6	1	2
57.	committed	1	3	1	2	2	2*
58.	committees	3	7	2	2	#	#
59.	communicate	7	7*	1	2*	1	2
60.	comparatively	3	10*	1	4	1	4
61.	competent	5	10*	2	6	2	4
62.	completing	1	2	1	1	#	#
63.	completion	8	10*	2*	2*	#	#
64.	conceive	2	7	1	1	1	1
65.	conception	1	4	#	#	#	#
66.	confirmation	1	2	2	2	1	2
67.	congratulations	7	9*	1	3	#	#
68.	congress	1	1	1	1	1	1
69.	conscience	5	10*	3	5*	2	2*
70.	conscientious	10*	10*	9	10*	3	6
71.	conscious	3	10*	2	4	1*	1*
72.	consistent	1	1	1	1	1	1
72.	continent	6	10*	3	3*	3	4*
74.	continuous	4	7	2	5	2	3
75.	controversy	5*	5*	4*	4*	2	2*
76.	conveniently	8	10*	1	5*	1	3
77.	coöperate	2	10*	1	2	1	2
78.	correspondence	6	7*	2	5	1	3
79.	counsel	1	4	1	2	1	2
80.	countenance	10*	10*	5	10*	4	6*
81.	coupe'	1	3	1	1	1	1
82.	courtesies	10*	10*	4	10*	5	7*
83.	courtesy	10*	10*	4	8	6	7*
84.	criticism	10*	10*	5	10*	#	#
85.	curiosity	6	10*	3	7*	1	3
86.	curious	6	8*	2	3*	#	#
87.	customer's	1	2	1	1	1	1
88.	damage	#	#	#	#	#	#
89.	damaged	1	4	#	#	1	1
90.	debit	5	10	2	4	2*	2*
91.	decidedly	3	10*	1	4*	1	2
92.	deem	1	3	1	1	1	1
93.	definitely	4	10*	3	8	2	3*
94.	delegates	1	2	1	2*	2	3*
95.	delinquent	10*	10*	3	7*	2	3*
96.	deny	3	7	2	2*	#	#
97.	despair	2	3	1	2	1	1
98.	determined	7	9*	2	4	1	1
99.	dining	1	1	1	1	1	2
100.	disappoint	2	3	1	2	2	2

TABLE 11 (Contd)

		Grade Level					
		8th		10th		12th	
		50%	75%	50%	75%	50%	75%
101.	disappointment	3	6	1	2	1	2
102.	discretion	8	10*	2	4	3	5*
103.	divine	1	1	1	1	1	1
104.	documents	5	6*	2*	2*	#	#
105.	dormitory	3	9*	2	5*	1	1
106.	dropped	1	2	2	3	1	2
107.	duly	3	7	2	6	1	2
108.	dying	1	1	1	1	1	1
109.	economic	10*	10*	3	3*	#	#
110.	economical	6*	6*	3*	3*	#	#
111.	economics	7*	7*	3*	3*	#	#
112.	edition	1	2	1	2	1	1
113.	efficiency	10*	10*	4	5*	1	3
114.	elementary	7	10*	2	6	#	#
115.	eliminate	5	10*	5	6*	2	3*
116.	employees	2	5	2	4	2*	2*
117.	enemies	2	5	1*	1*	#	#
118.	enemy	7	9*	#	#	#	#
119.	enthusiasm	10*	10*	5	6*	#	#
120.	enthusiastic	8*	8*	8	8*	3	4*
121.	entrance	4	5*	2	3	#	#
122.	epistle	10*	10*	9*	9*	2*	2*
123.	equipped	2	6	1	2	2	2
124.	ere	6	10*	3	6	2	4
125.	esteemed	4	10	3	6	2	4
126.	eventually	5	9*	2*	2*	#	#
127.	existence	3	10*	1	1	1	1
128.	exist	3	10*	2	4	1	4
129.	expenditure	6	10*	3	3*	#	#
130.	exquisite	5	10*	1	5	2	3*
131.	extraordinary	9*	9*	3	7*	3	6
132.	facilities	10*	10*	5*	5*	#	#
133.	fascinating	2	10*	1	3	1	1
134.	financially	10*	10*	4*	4*	#	#
135.	folk	2*	2*	#	#	#	#
136.	folks	3	4*	#	#	#	#
137.	folly	3	6*	2	2*	#	#
138.	fundamentals	4	10*	2	3	1	2
139.	galvanized	5	8*	2	5	1	2
140.	genius	2	8	1	1	1	2*
141.	geometry	10*	10*	#	#	1	2
142.	gorgeous	9	10*	2	4*	3	5
143.	grateful	1	1	1	1	1	1
144.	grippe	1	2	1	2	3	4
145.	guarantee	8	10*	6	10*	3	6
146.	guaranteed	10*	10*	4	10*	2	5*
147.	guardian	3	10*	2	2*	2	3*
148.	imitation	2	6	1	4	1	1
149.	immediately	9	10*	3	3*	#	#
150.	immensely	7	10*	2	7	2	5
151.	incidentally	4	10*	4	10*	1	3
152.	inconvenience	6	10*	3	5*	1	3
153.	inconvenienced	10*	10*	2	2	1	4

TABLE 11 (Contd)

		Grade Level					
		8th		10th		12th	
		50%	75%	50%	75%	50%	75%
154.	indefinite	5	10*	1	3*	1	3
155.	indefinitely	4	10*	3	10*	3	7
156.	infinite	6	10*	3	5*	1	1
157.	initiation	10*	10*	5	9*	3	5*
158.	innocent	3	6*	1	1*	#	#
159.	intellectual	7	9*	5	5*	#	#
160.	itemized	6	10*	3	7	2	3
161.	judgment	#	#	#	#	#	#
162.	kindergarten	1	7*	1	2*	1	1
163.	laboratory	4	10	1	3	1	2
164.	literally	3	5*	2	2*	3	3*
165.	magnificent	6	9*	2	2	2	2
166.	materially	6	7*	1	1*	#	#
167.	mathematics	3	10*	2	3	2	4
168.	melancholy	6	10*	2	8	3	6
169.	memorandum	7	8*	4	4*	#	#
170.	minimum	10*	10*	8*	8*	2*	2*
171.	miscellaneous	10*	10*	7	8*	3	5*
172.	mortgage	1	2	1	2	1	2
173.	mustn't	2	10	1	3	1	1
174.	mutual	6*	6*	#	#	#	#
175.	mysterious	1	6*	1	3	#	#
176.	mystery	2	6*	1	2*	#	#
177.	necessarily	6	10*	6	9*	2	2*
178.	negotiations	10*	10*	4	5*	3	4*
179.	occasionally	6	10*	2	3*	2	4
180.	opportunities	5	10*	3	4*	2	3*
181.	ordinarily	2	3	3	8*	1	2*
182.	originally	8*	8*	5	6*	2	2*
183.	pamphlet	10	10*	2	3*	2	3*
184.	pamphlets	10	10*	3	6	2	5
185.	partial	3	8	2	2*	#	#
186.	perceive	3	10*	1	2	1	1
187.	permanently	7	10*	9	10*	2	2*
188.	phase	2	6	3	5	2	2*
189.	philosophy	10*	10*	5	9*	#	#
190.	physician	10*	10*	2	6	2	3
191.	picturesque	10*	10*	4	4*	#	#
192.	pneumonia	10*	10*	10	10*	6	7*
193.	possess	2	4	1	2	1	2
194.	preferred	1	2	1	1	1	1
195.	prejudice	10*	10*	5*	5*	2	6*
196.	president's	2	6	2	3	2	3
197.	principles	1	2	1	1	1	2
198.	prior	2	7*	3	4*	#	#
199.	privilege	4	10*	2	3	2	4
200.	procedure	4	10*	2	2	2	2
201.	psychology	10*	10*	10*	10*	1	1
202.	questionnaire	3	7	1	2	1	1
203.	rating	2	4	1	3	1	2
204.	receipts	2	9	2	4	2	2*
205.	receiver	1	2	1	1	1	2

TABLE 11 (Contd)

		Grade Level					
		8th		10th		12th	
		50%	75%	50%	75%	50%	75%
206.	reckon	4	10*	2	5*	1	3
207.	recognition	10*	10*	4	4*	#	#
208.	recommend	2	3	2	4	1	2
209.	recommendation	2	4	1	3	2	2
210.	recommendations	4	10*	2	3	2	4
211.	recommended	3	9*	2	3	2	4
212.	recommending	2	5	2	3	2	3
213.	referred	1	2	1	1	1	1
214.	referring	1	2	1	1	1	1
215.	refrigerator	10*	10*	6	10*	4	6*
216.	regreted	1	2	1	1	1	2
217.	remembrance	2	6	1	2	1	1
218.	representatives	3	8*	2	4	2	2
219.	requisition	10*	10*	6	9*	2*	2*
220.	restaurant	4	10*	2	6	3	8
221.	rheumatism	10*	10*	6	8*	3	7*
222.	ridiculous	7	10*	1	7	1	1
223.	role	1	2	1	1	1	1
224.	romantic	1	5	#	#	#	#
225.	satisfactorily	4	10*	2	5	5	5*
226.	scandal	2	3	2	2	#	#
227.	schedule	6	10*	5	8*	#	#
228.	scheduled	9	10*	4	6*	1	3
229.	seized	2	8	1	2	1	1
230.	so-called	1	2	2	2	1	2
231.	solemn	4	10*	5	8*	2	3*
232.	sorority	10*	10*	7	10*	2	3*
233.	specific	7	8*	#	#	#	#
234.	specifically	10*	10*	2	5	1	1
236.	specimen	5	6*	1	2*	1	1
236.	specimens	4	8*	7	7*	1	1
237.	spiritual	10*	10*	1	2*	#	#
238.	statistics	7*	7*	5*	5*	#	#
239.	strenuous	7	10*	2	5*	2	3
240.	sufficiently	10	10*	2	2*	#	#
241.	supplement	2	3	2	3	2	2
242.	suspicion	9	10*	3	4*	3	4
243.	sympathetic	10*	10*	3	7*	#	#
244.	technical	10*	10*	7	8*	4	4*
245.	temporarily	10	10*	4	7*	5	9*
246.	temporarily	2	5*	1	5*	1	2
247.	thorough	7	10*	1	2*	2	2*
248.	thoroughly	3	10*	2	4	2	5
249.	today's	1	2	1	1	1	1
250.	tonnage	1	2	1	1	1	1
251.	tournament	8	10*	3	6*	#	#
252.	tragedy	7	10*	2	7	2	4

TABLE 11 (Contd)

		Grade Level					
		8th		10th		12th	
		50%	75%	50%	75%	50%	75%
253.	transferred	1	2	1	1	1	2
254.	triumph	10*	10*	5	7*	#	#
255.	unanimous	10*	10*	4	7*	6	8*
256.	undoubtedly	9	10*	2	7*	1	3
257.	unfortunate	5*	5*	1*	1*	#	#
258.	unfortunately	4	5*	2	5	2	3*
259.	unusually	4	6*	2	3*	2	3
260.	vacancies	10*	10*	3*	3*	2*	2*
261.	vacancy	9	10*	5	5*	2	2*
262.	violence	5	10*	1	2	2	3
263.	virtue	2	5*	1	2	#	#
264.	virtues	5	7*	1*	1*	#	#
265.	visible	1	2	1	2	1	2
266.	voucher	6	10*	5*	5*	2	3
267.	vulgar	6	10*	2*	2*	#	#
268.	week's	1	1	1	1	1	1

A summary of Table 11 is given in Table 12, which reads: "Of the total 268 words at the eighth grade level, the misspellings of fifty-seven of them were so distributed that the sum of the misspellings of the forms occurring with a frequency of two or more did not make 50 per cent of the total misspellings of the word or that the sum of the frequencies of the ten most frequent forms of misspelling was less than half of the total misspellings. In the case of two words, less than ten misspellings occurred. For the remaining 209 words, the total frequencies of the number of forms of misspellings, as indicated in Table 11 opposite each of the 209 words, accounted for at least 50 per cent of all the misspellings of the word at the eighth grade level." The figures occurring in the other columns of the table should be similarly interpreted.

TABLE 12

Summary of Table 11

	Eighth Grade		Tenth Grade		Twelfth Grade	
	50%	75%	50%	75%	50%	75%
Number of words marked *	57	185	24	131	9	59
Number of words marked #	2	2	12	12	76	76
Number of words meeting conditions	209	81	232	124	185	133

For meaning of * and # see explanation of Table 8.

Table 13 gives the average number of forms of misspelling of which the sum of the frequencies is required to make 50 per cent and 75 per cent, respectively, of the total misspellings of the words which satisfy the conditions of Table 11.

TABLE 13

Average Number of Forms Required to
Make 50 Per Cent and 75 Per Cent of
Total Misspellings

	50 Per Cent			75 Per Cent		
	A	B	C	A'	B'	C'
Eighth Grade Level	819	209	3.92	347	81	4.28
Tenth Grade Level	562	232	2.42	401	124	3.23
Twelfth Grade Level	217	183	1.73	321	133	2.41

Columns B and B' give the number of words at each grade level which meets the requirements of Table 11. These were the words considered in computing the respective per cents. Columns A and A' give the total number of forms of misspelling of the words represented by the figures in columns B and B', respectively, that are necessary to make the per cents indicated. Columns C and C' give the average number of forms of misspelling required by the words represented in the figures given in columns B and B' to make the respective percentages at the different grade levels.

S U M M A R Y

3. The most frequent forms of misspelling of one grade level tend to be the most frequent forms at the other grade levels. As the grade advances, the misspellings become more concentrated upon the most frequently occurring forms. Forty-one of the words at the eighth grade level, seventy-nine at the tenth grade level, and ninety-three at the twelfth grade level have one form of misspelling which accounts for at least 50 per cent of all the misspellings.

DETERMINING OF THE HARD SPOTS IN THE
MOST DIFFICULT OF THE COMMON DIFFICULT
WORDS

The results of the experimentation in regard to the value of emphasizing the hard spots of difficult words are not yet conclusive. Tidyman (2, p. 57) and others advocate the emphasizing of hard spots in difficult words. Horn (5, p. 68) is doubtful of the advantage of any such treatment but is anxious that further experimenting be done.

It is very probable that one reason for the inconclusive results of previous experiments on this point lies in the fact that the hard spots of the common difficult words have not been determined by the use of objective data. One use to which the tabulated misspellings of the words used in this experiment can well be put is that of discovering the hard spots and typical errors which do occur in these common difficult words.

Until we have more evidence that that which has been available up to the present time, the decision as to which of the common difficult words used in this study should be included in a list which would be analyzed for hard spots must be largely arbitrary.

The list of words analyzed for hard spots in this study is made up of all words missed by 60 per cent or more of the pupils at the eighth grade level, based upon

the results of this study. There were sixty-seven words which satisfied this criticism. The exact misspellings of each of these sixty-seven words were studied to determine the parts giving the greatest difficulty. The method employed in determining the hard spots can best be described by quoting from Tireman (21), whose procedure was followed.

"The words were analyzed by taking each correct letter in turn and going thru the list of misspelled forms to determine the presence or absence of the correct letter by actual word and letter count," (21 p. 11). Table 14, taken from Tireman (21, p. 12) illustrates this method.

"Running down the column a total of thirty errors is found for s, eight for p, forty-seven for e, etc. Each letter of the correct spelling was counted as extending from the correct letter adjacent on the left to the correct letter adjacent on the right. In the case of inserted letters, as the "e" of "specifically," or the "k" of "specifikly," inserted vowels were counted with correct adjacent vowels, and inserted consonants with correct adjacent consonants. If a vowel was inserted between two consonants as the "a" in "criticism," it was counted separately. "In the absence of means of indicating a space as a hard spot, the two letters adjacent on the right and left were marked but counted as one hard spot). If one or two doubled letters was omitted, as in "specificaly" both letters were marked (but again counted as one hard spot) as it was impossible to tell which was omitted. If letters

were included but not in the proper order as "recieves" an error was credited to each.

The total number of errors credited to each letter was divided by the total number of misspelled words analyzed which gave the per cent of occurrence of letter error. After all the words had been analyzed, 40 per cent as a basis for selecting hard spots was arbitrarily chosen. Had the limit been placed too high, the list of eligible words would have been reduced beyond use; had the limit been placed too low, there would have been so many marked places in some words that the whole word would be marked, consequently 40 per cent seemed a reasonable compromise. In all the cases mentioned above, where the per cent was 40 or more, they were designated and marked "hard spots." For this investigation a hard spot is defined in terms of special dimensions as any part of, or place in, the word which is misspelled by 40 per cent or more of those who misspelled the word, " (21, pp. 14-15).

"Running down the column a total of thirty errors is found for s, eight for p, forty-seven for e, etc. Each letter of the correct spelling was counted as extending from the correct letter adjacent on the left to the correct letter adjacent on the right. In the case of inserted letters, as the "e" of "specifically," or the "k" of "specifickly," inserted vowels were counted with correct adjacent vowels, and inserted consonants with correct adjacent consonants. If a vowel was inserted between two consonants as the "a" in "criticism," it was counted separately. "In the absence of means of indicating a space as a hard spot, the two letters adjacent on the right and left were marked but counted as one hard spot). If one or two doubled letters was omitted, as in "specifically" both letters were marked (but again counted as one hard spot) as it was impossible to tell which was omitted. If letters were included but not in the proper order as "recieves" an error was credited to each.

TABLE 14

Method of Analyses (from Tireman).

pacifically	1	sipaficaly	1
pacifaclly	1	spacically	1
paciffically	1	spaciffically	1
pacifficly	1	specifically	4
pacifical	1	specificaly	2
pacifically	3	specifically	1
pacificaly	1	specificly	5
pacifictly	2	spacifilly	1
paficaly	1	spacilly	1
pascicialy	2	spacivicaly	1
pecificual	1	spciciately	1
pecificuls	1	spcyphicially	1
persevaclly	1	specefically	1
pesifically	1	spesifically	2
phECIALy	1	spesificaly	2
phacifically	2	specificals	1
phificall	1	sphecificly	1

TABLE 14 (Contd)

physically	1	sphificly	1
physifically	1	speceficalsee	1
picfically	1	specephicly	1
picificly	1	specifically	1
picpisy	1	speci	1
possivically	1	specifacly	1
pussificulty	1	specifacly	1
pysifily	1	specifacully	1
sepecifically	1	specificals	1
specifically	1	specifucally	1
specifecely	1	specifucly	1
specifecly	1	specify	1
specifecully	1	specip	1
speciffcally	3	speciphicly	1
specifi	1	specie	1
specific	3	speciocially	1
specificaley	1	speclovel	1
specifically	5	spectfically	1
specificately	2	specticly	1
specificely	3	specyically	1
specifickly	1	speecifically	1
specifically	3	speficially	1
specificy	20	speficiet	1
specificually	1	sphisisly	1
specificulty	1	spicificily	1
specufuecally	1	spicificly	1
		supacificly	1

	s	p	e	c	i	f	i	c	a	ll	y
Total errors	30	8	47	20	22	28	32	14	83	89	15
Percentages	22	6	35	15	17	21	24	10	62	66	11

5. DETERMINING OF PERSISTENCE OF DIFFICULTY IN CERTAIN WORDS AFTER STUDY

The permanent effects of the teaching of spelling have been investigated by Woody (25), who found the loss shown between tests given at intervals of one month and three months or more after teaching the words, was quite small. Each teacher had been directed to teach a given list of words "until she felt that the children had mastered them well enough to warrant asking for new words" (25, p. 6). Since no limit was placed upon the amount of time which could be devoted to the teaching of these words, the experiment does not show the situation as it actually exists in the average schoolroom where time limits are quite definitely established.

A study of the permanent effects of the teaching of spelling as evidenced by actual school practice was made in connection with this study. For this purpose it was necessary to secure some data additional to those originally sought for use in this investigation. The superintendents of the schools which cooperated in this study were asked to fill in a blank giving the names of the spelling tests and the grades in which they were used over the last five years.

A tabulation of the replies from the superintendents showed that more than 60 per cent of all the eighth grade pupils from whom papers had been received were using the same text. This most frequently used speller will hereafter be called Speller A. An additional 15 per cent or more of the

(25) Woody, Clifford, Bureau of Educational References and Research Bulletin, University of Michigan, Ann Arbor, 1924, No. 71.

eighth grade pupils who took part in the test were using a certain other text. The remaining 25 per cent or less of the pupils were in schools using various other texts.

A list was made of the words which were common to the list of words used in this study and to the first twenty lessons of the eighth grade list of Speller A. Sixty-three words were common to the two lists. Words in the eighth grade list beyond the twentieth lesson were not included for it was not certain that all these words had been studied by all the eighth grade pupils using this text.

Each of the five sets of 200 papers scored at the eighth grade level were then sorted into two groups, one group containing those papers from schools in which Speller A was in use in the eighth grade at the time the testing was done, and the other group containing papers from all the other schools.

A new set of accuracies for the sixty-three words which were common to the eighth grade list in Speller A and the list made for use in this study was determined by using only the papers of those pupils who had used Speller A in the eighth grade the same school year in which the test was given in May. The accuracies determined on this basis will show to what extent these words which were in the eighth grade course of study in Speller A can be accurately spelled at the end of the school year.

Tables 17, 18, and 19 give the list of words common to the first twenty lessons of the eighth grade list of Speller A and the list of 268 words used in this study, together with their lesson placement in the speller, their accuracy as determined from the entire 200 papers from eighth grade pupils, and their accuracy as based upon the papers out of the entire 200 which were from eighth grade pupils who had used Speller A during the year. The figures in parenthesis following the accuracies as determined from the papers of pupils using Speller A indicate the number of papers used in computing the accuracy. This table should be read: "The accuracy of the word anticipate as determined from the 145 papers from eighth grade pupils who had used Speller A in which anticipate occurred in the eleventh lesson in the eighth grade list is ninety-three. The accuracy of anticipate, based upon the entire 200 papers scored at the eighth grade level is seventy-one."

Table 17 gives these words arranged in order of decreasing accuracy as determined by using the papers of eighth grade pupils using Speller A.

Tables 17, 18, and 19 give the list of words common to the first twenty lessons of the eighth grade list of Speller A and the list of 268 words used in this study, together with their lesson placement in the Speller, their accuracy as determined from the entire 200 papers from eighth grade pupils, and their accuracy as based upon the papers out of the entire 200 which were from eighth grade pupils who had used Speller A during the year. The figures in parenthesis following the accuracies as determined from the papers of pupils using Speller A indicate the number of papers used in computing the accuracy. This table reads: "The accuracy of the word 'anticipate' as determined from the 145 papers from eighth grade pupils who had used Speller A in which anticipate occurred in the eleventh lesson in the eighth grade list is ninety-three. The accuracy of anticipate based upon the entire 200 papers scored at the eighth grade level is seventy-one."

TABLE 17

Words Common to Eighth Grade List of Speller A
and List of 268 Words used in this Study Arranged
in Order of Decreasing Accuracy as Determined by
Papers from Pupils Using Speller A

	Accuracy Based on Papers from Pupils Using Speller A	Lesson Placement in Speller A	Accuracy Based on Entire 200 Papers
anticipate	92(145)	11	71
unfortunate	87(131)	18	83.5
disappoint	81(138)	11	70.5
unusually	80(128)	13	70
catalogue	79(138)	16	57
materially	72(151)	15	67.5
disappointment	71(145)	13	67
anticipate	70(131)	19	66

TABLE 17 (Contd)

	Accuracy Based on Papers from Pupils Using Speller A	Lesson Placement in Speller A	Accuracy Based on Entire 200 Papers
communicate	70(131)	18	66.5
triumph	70(131)	4	64.5
acknowledging	69(151)	19	68
memorandum	69(145)	17	64
unfortunately	69(138)	19	50.5
prior	68(145)	12	62.5
geometry	67(138)	12	60
kindergarten	67(131)	19	50
referring	67(121)	8	57.5
anticipating	66(121)	13	58
bulletin	66(121)	8	58.5
edition	66(121)	6	57.5
specimens	66(145)	17	63
referred	64(131)	8	60.5
financially	63(145)	19	50.5
remembrance	63(131)	11	52
affectionately	62(138)	12	55.5
possess	62(131)	6	60.5
acquaintance	60(151)	15	57.5
alumni	60(121)	7	51.5
grateful	60(131)	12	53.5
minimum	60(145)	16	56.5
enthusiastic	59(131)	15	54
immediately	57(138)	8	51.5
satisfactorily	57(145)	11	49.5
all right	56(138)	8	48
enthusiastic	56(138)	13	49
facilities	56(145)	17	48.5
esteemed	55(131)	10	51
occasionally	55(121)	15	50
strenuous	55(145)	14	46
canvass	54(145)	13	52
inconvenience	54(145)	15	51.5
recommendation	54(121)	15	47.5
appetite	53(145)	14	50
conveniently	53(131)	18	48.5
undoubtedly	53(121)	19	45
accompanying	52(145)	13	51.5
equipped	52(151)	12	45
anniversary	51(121)	12	42
duly	50(145)	9	49
physician	50(151)	6	44.5
accommodation	48(138)	19	35
acknowledgment	47(131)	19	42.5
analysis	46(151)	8	44
affidavit	44(151)	15	38.5
courtesies	44(151)	14	41
confirmation	41(138)	15	38
cooperate	41(131)	20	29
pneumonia	41(151)	5	37
immensely	40(121)	17	33
accommodate	35(121)	15	32
restaurant	33(138)	6	28.5
incidentally	32(131)	19	28.5

TABLE 17 (Contd)

definitely	31(151)	15	28
Average	58.3		52.61

From the material contained in Table 17, it is readily seen that the mere occurrence of a word within a given grade list does not insure mastery of the word when pupils are called upon to spell it at the end of the school year. The range in accuracy of these words as determined from the papers of pupils who have studied them in ninety-three to fifty-seven. In other words, on the average only about 60 per cent of the pupils can spell these words after having had them in their regular assignments. Such figures are quite definite proof that these words have not been mastered.

When the accuracies based upon the papers from pupils using Speller A are compared with those based upon the 200 papers, including those from pupils using some other speller in which these words may or may not occur, the accuracies determined from the papers of pupils using Speller A are found to be higher in every case. The means of the two sets of accuracies differs by 5.69. These facts would indicate that the occurrence of a word in the spelling text does have an effect upon the accuracy with which these words are spelled, but that the words are still missed by a large number of pupils.

A more valuable comparison than the one just made would be to compare the accuracies made by pupils known not to have studied these words with those who have studied them. The information necessary for this comparison was not available. The data given in Table 17 are of value, however, in that they do reveal the need for more drill on such words and more thorough work, week by week.

It is possible that several factors such as the lesson placement of the word or the length of the word might have some direct relation to the difficulty which these words present when given in a test at the close of the same school year in which they have been studied. In an attempt to secure some light as to the influence of these factors, the same words have been grouped on different bases.

Table 18 gives the same list of sixty-three words grouped in order of lesson placement. Within each lesson group the words are arranged alphabetically. The lessons in Speller A are weekly lessons of twenty words each. The table should be read: "The word triumph occurs in the fourth weekly lesson in the eighth grade list of Speller A. When eighth grade pupils who have used Speller A throughout the school year are asked in May to spell this word, only 70 per cent of them spell it correctly. When to the 131 papers from pupils in schools using Speller A, papers of other eighth grade pupils who may or may not have studied the word triumph are added to make a total of 200 papers, the accuracy is then changed to 64.5."

TABLE 18

Words Common to the Eighth Grade List of
Speller A and the List of 268 Words Used in
This Study Grouped According to Lesson Place-
ment

	Accuracy Based on Papers from Pupils Using Speller A	Accuracy Based on Entire 200 Papers
4th lesson		
triumph	70(111)	64.5
5th lesson		
pneumonia	41(151)	37
6th lesson		
edition	66(121)	57.5
physician	50(151)	44.5
possess	62(131)	60.5
restaurant	33(138)	28.5
7th lesson		
alumni	60(121)	51.5
8th lesson		
all right	56(138)	48
analysis	46(150)	44
bulletin	66(120)	58.5
immediately	57(138)	51.5
referred	64(131)	60.5
referring	67(121)	57.5
9th lesson		
duly	50(145)	49
10th lesson		
esteemed	55(131)	51
11th lesson		
anticipate	93(145)	71
disappoint	81(138)	70.5
remembrance	63(131)	52
satisfactorily	57(145)	49.5
12th lesson		
affectionately	62(138)	55.5
equipped	52(151)	45
geometry	67(138)	60
grateful	60(131)	53.5
prior	68(145)	62.5
13th lesson		
accompanying	52(145)	51.5
anniversary	51(121)	42
anticipating	66(121)	58
canvass	54(145)	52
disappointment	71(145)	67
enthusiasm	56(138)	49
usually	80(138)	70
14th lesson		
appetite	53(145)	50
courtesies	44(151)	41
strenuous	55(145)	46

TABLE 18 (Contd)

15th lesson		
accommodate	35(121)	32
acquaintance	60(151)	57.5
affidavit	44(151)	38.5
confirmation	41(138)	38
definitely	31(151)	28
enthusiastic	59(131)	54
inconvenience	54(145)	51.5
materially	72(151)	67.5
occasionally	55(121)	50
recommendation	54(121)	47.5
16th lesson		
catalogues	79(138)	57
minimum	60(145)	56.5
17th lesson		
facilities	56(145)	48.5
immensely	40(121)	33
memorandum	69(145)	64
specimens	66(145)	63
18th lesson		
communicate	70(151)	65.5
conveniently	53(131)	48.5
unfortunate	87(131)	83.5
19th lesson		
accommodation	48(138)	35
acknowledging	69(151)	
acknowledgment	47(131)	42.5
anticipation	70(131)	66
financially	63(145)	59.5
incidentally	32(151)	28.5
kindergarten	67(121)	59
undoubtedly	53(121)	45
unfortunately	69(138)	59.5
20th lesson		
cooperate	41(131)	29

A little study of Table 18 will show that the relation between the accuracy with which a word is spelled and the recency of its occurrence in the year's work is not large. The correlation between the lesson placement of the words and their accuracy is .0205. The number of cases upon which the correlation is not sufficiently large to allow too much stress to be placed upon this figure. It is quite

safe to believe, however, that since the correlation in this case is practically zero, a much larger sampling would not give a significant positive correlation.

Let us now turn our attention to another factor which might influence the accuracy of these words. In Table 19 these same sixty-three words are listed in groups according to the number of letters in the words. Each word is followed by the same data which are given in the preceding tables in this section of the study.

Word	Mean	Standard Deviation	Correlation
all	1.00	0.00	0.00
and	1.00	0.00	0.00
are	1.00	0.00	0.00
at	1.00	0.00	0.00
be	1.00	0.00	0.00
but	1.00	0.00	0.00
by	1.00	0.00	0.00
can	1.00	0.00	0.00
do	1.00	0.00	0.00
for	1.00	0.00	0.00
from	1.00	0.00	0.00
has	1.00	0.00	0.00
he	1.00	0.00	0.00
his	1.00	0.00	0.00
in	1.00	0.00	0.00
is	1.00	0.00	0.00
it	1.00	0.00	0.00
me	1.00	0.00	0.00
of	1.00	0.00	0.00
on	1.00	0.00	0.00
or	1.00	0.00	0.00
so	1.00	0.00	0.00
the	1.00	0.00	0.00
to	1.00	0.00	0.00
us	1.00	0.00	0.00
was	1.00	0.00	0.00
we	1.00	0.00	0.00
with	1.00	0.00	0.00
you	1.00	0.00	0.00
Average	1.00	0.00	0.00
Two-letter words			
ab	1.00	0.00	0.00
ac	1.00	0.00	0.00
ad	1.00	0.00	0.00
ae	1.00	0.00	0.00
af	1.00	0.00	0.00
ag	1.00	0.00	0.00
ah	1.00	0.00	0.00
ai	1.00	0.00	0.00
aj	1.00	0.00	0.00
ak	1.00	0.00	0.00
al	1.00	0.00	0.00
am	1.00	0.00	0.00
an	1.00	0.00	0.00
ao	1.00	0.00	0.00
ap	1.00	0.00	0.00
aq	1.00	0.00	0.00
ar	1.00	0.00	0.00
as	1.00	0.00	0.00
at	1.00	0.00	0.00
au	1.00	0.00	0.00
av	1.00	0.00	0.00
aw	1.00	0.00	0.00
ax	1.00	0.00	0.00
ay	1.00	0.00	0.00
az	1.00	0.00	0.00
Average	1.00	0.00	0.00
Three-letter words			
abc	1.00	0.00	0.00
abd	1.00	0.00	0.00
abe	1.00	0.00	0.00
abf	1.00	0.00	0.00
abg	1.00	0.00	0.00
abh	1.00	0.00	0.00
abi	1.00	0.00	0.00
abj	1.00	0.00	0.00
abk	1.00	0.00	0.00
abl	1.00	0.00	0.00
abm	1.00	0.00	0.00
abn	1.00	0.00	0.00
abo	1.00	0.00	0.00
abp	1.00	0.00	0.00
abq	1.00	0.00	0.00
abr	1.00	0.00	0.00
abs	1.00	0.00	0.00
abt	1.00	0.00	0.00
abu	1.00	0.00	0.00
abv	1.00	0.00	0.00
abw	1.00	0.00	0.00
abx	1.00	0.00	0.00
aby	1.00	0.00	0.00
abz	1.00	0.00	0.00
Average	1.00	0.00	0.00

TABLE 19

Words Common to the Eighth Grade List of
Speller A and the List of 268 Words Used
in this Study Grouped According to Length

	Accuracy Based on Papers from Pupils Using Speller A	Lesson Placement in Speller A	Accuracy Based on Entire 200 Papers
Four-letter Words			
duly	50(145)	9	49
Five-letter Words			
prior	68(145)	12	62.5
Six-letter Words			
alumni	60(121)	7	51.5
Seven-letter Words			
canvass	54(145)	12	62
edition	66(121)	6	57.5
minimum	60(145)	16	56.5
possess	62(131)	6	60.5
triumph	<u>70(131)</u>	4	<u>64.5</u>
Average	62.4		58.2
Eight-letter Words			
all right	56(151)	8	48
analysis	46(151)	8	44
appetite	53(145)	14	50
bulletin	66(121)	8	58.5
equipped	52(151)	12	45
esteemed	55(131)	10	51
geometry	67(138)	12	60
grateful	60(131)	12	53.5
referred	<u>64(131)</u>	8	<u>60.5</u>
Average	57.66		52.28
Nine-letter Words			
affidavit	44(151)	15	38.5
cooperate	41(131)	20	29
immensely	40(121)	17	33
physician	50(151)	6	44.5
pneumonia	41(151)	5	37
referring	67(121)	8	57.5
specimens	66(145)	17	63
strenuous	55(145)	14	46
unusually	<u>80(138)</u>	13	<u>70</u>
Average	53.77		46.5

TABLE 19 (Contd)

Ten-letter Words

anticipate	93(145)	11	71
catalogues	79(138)	16	57
courtesies	44(151)	14	41
definitely	31(151)	15	28
disappoint	81(138)	11	70.5
enthusiasm	56(138)	13	49
facilities	56(145)	17	48.5
materially	72(151)	15	67.5
memorandum	69(145)	17	64
restaurant	<u>33(138)</u>	6	<u>28.5</u>
Average	61.5		52.5

Eleven-letter Words

accommodate	35(121)	15	32
anniversary	51(121)	13	42
communicate	70(151)	18	65.5
financially	63(145)	19	59.5
immediately	57(138)	8	51.5
remembrance	63(131)	11	52
undoubtedly	53(121)	19	45
unfortunate	<u>87(131)</u>	18	<u>33.5</u>
Average	59.87		53.88

Twelve-letter Words

accompanying	52(145)	13	51.5
acquaintance	60(151)	15	57.5
anticipating	66(121)	13	58
anticipation	70(131)	19	66
confirmation	41(138)	15	38
conveniently	53(131)	18	48.5
enthusiastic	59(131)	15	54
incidentally	32(151)	19	28.5
kindergarten	67(131)	19	59
occasionally	<u>55(121)</u>	15	<u>50</u>
Average	55.5		51.10

Thirteen-letter Words

accommodation	48(138)	19	35
acknowledging	69(151)	19	68
inconvenience	54(145)	15	51.5
unfortunately	<u>69(138)</u>	19	<u>59.5</u>
Average	60		53.50

Fourteen-letter Words

acknowledgment	47(131)	19	42.5
affectionately	62(138)	12	55.5
disappointment	71(145)	13	67
recommendation	54(121)	15	47.5
satisfactorily	<u>57(145)</u>	11	<u>49.5</u>
Average	58.2		52.40

The range of the means of the accuracies as determined from the papers of pupils using Speller A for the various groups of words which contain more than one word is 53.77 to 62.4. The group containing the longest words, those of fourteen letters, has an average accuracy just equal to that of the entire list of sixty-three words. The nine-letter words have the lowest average accuracy and the seven-letter words the highest average accuracy. It is quite evident that for this list of words the length of the word has little, if any, direct effect upon their difficulty.

The entire 268 words were grouped according to length and the average accuracy for each group was determined. The results of this procedure are given in Table 20.

The average accuracies for the groups of words do not vary greatly. The group having the lowest average accuracy, the thirteen-letter words, have two of the eleven in the extremely low groups.

TABLE 20

Average Accuracies of the 268 Words When
Grouped According to Letters

No. of Letters in Word	No. of Words	Average Accuracy
15	3	56.33
14	7	50.79
13	11	37.86
12	20	47.85
11	26	47.50
10	52	48.06
9	49	50.48
8	38	50.91
7	25	50.20
6	19	51.00
5	12	55.80
4	5	50.70
3	1	45.00

There are a number of factors which may effect the accuracy with which a word is spelled, such as the frequency with which it has been met in reading and the frequency with which it has previously been used in writing.

Several other factors which may effect the accuracy with which a word is spelled, such as the frequency with which it has been met in reading and the frequency with which it has previously been used in writing.

Several other factors which may effect the accuracy with which a word is spelled, such as the frequency with which it has been met in reading and the frequency with which it has previously been used in writing.

6. RELATION OF FOUR SPELLING RULES TO ERRORS MADE AT THE THREE GRADE LEVELS

The value of rules in the teaching of spelling has been a subject upon which opinion has differed among educational writers and experimenters. Some experiments have been conducted with the hope of settling the problem but most of these studies are not conclusive in their findings.

Turner's study (23) in which he attempted to determine the value of rules in the teaching of spelling gives no conclusive results for two reasons: (1) the mean of the scores of the "rule group" was seventy-four and that of the "drill group" was seventy-six, the difference not being significant, and (2) only thirty-two eighth grade pupils were used in the experiment.

Cook (3) also made a study in which he gave fifty words to seventy university freshmen and sixty-nine academic seniors and freshmen. His findings are likewise not conclusive.

Rowland (16) reports that tests made before and after teaching the 'ie and ei' rule and the rule concerning the dropping of final 'e' and doubling of the final consonant showed a decrease of over 50 per cent in the number of words misspelled.

Wilcox, who experimented upon the effect of teaching the 'ie-ei' rule, says that "the general conclusion . . . must therefore be unfavorable to the use of this rule as

(23) Turner, A. E. Rules versus Drill, *Journal of Educational Psychology* III (October 1912) pp. 460-461.

compared with the drill in the teaching of spelling" (24, pp. 83-84).

Tone (22) studied the value of rules for teaching derived forms. Table 1 of these given below is the only one which is also included in Tone's study. He says that this rule has "a slight value as a supplement to direct study in improving spelling ability" (22, p. 50).

Most of these investigators state that their results are not conclusive, that what little favor or disfavor is given the use of rules vary possibly due to the method used, and that a different procedure might reverse the conclusions.

Since the question of the value of rules is not yet settled, it is very difficult to infer what effect the previous teaching of rules would have had upon the data secured in this study. A study of the misspelling with reference to a few of the more commonly accepted rules will, however, be of interest.

The rules which are here quoted were taken from the appendix of the 1926 edition of the Horn-Ashbaugh Speller (12). These rules are considered by the authors of this spelling text to be those having the fewest exceptions and being of greatest value for general use.

The words to which each of these four rules may be applied together with the misspelling in which the only error is covered by the rule under which the word is listed, are given in the following tables. Following each form of

(22) Tone, B. L. The Value of Rules for Teaching Derived Forms in Spelling, Teachers College, New York.

misspelling is given a common fraction, the numerator of which indicates the number of times this form of misspelling was found in the 200 attempted spellings at the given grade level and the denominator indicates the total number of misspellings of the word which were found in the 200 papers at the given grade level.

Following each group of words is given for each grade level, the fractional part which the forms of misspelling that are listed make of the total misspellings of these words. This ratio is expressed in both common and decimal fractions.

The tables read: "The word 'committee' is spelled committed by forty-one of the eighty-one who misspell it at the eighth grade level, by ten of the twelve who misspelled it at the tenth grade level, and by five of the fourteen who misspelled it at the twelfth grade level." The data for each of the other words should be similarly interpreted. The summary material at the bottom of the table should be read, "At the eighth grade level, 502 of the total 805 misspellings, or 62.59 per cent of the above words were forms of misspellings in which the only errors are covered by the first rule." The summary material for each grade level should be read in like manner.

The totals of the frequencies of occurrence of the forms of misspelling of the nine words given in the above table in which the only errors are covered by the rule, make 62.59 per cent, 75.83 per cent, 72.13 per cent, respectively,

of the total misspellings of the words on the papers scored at the eighth grade, tenth grade, and twelfth grade levels,

Two words, canceled and canceling, are equally correct when spelled with two l's. For this reason they are not included.

TABLE 21

Rule Number One

Words with a last syllable consisting of a single short accented word followed by a single consonant, double the consonant when adding a suffix beginning with a vowel.

	Grade Level		
	8th	10th	12th
committed			
committed	41/81	10/16	5/14
dropped			
dropped	25/41	6/20	7/11
equipped			
equiped	34/100	25/48	25/51
preferred			
prefered	53/80	25/32	15/19
referred			
referred	57/79	26/33	16/18
referring			
referring	55/95	41/51	33/36
regretted			
regreted	45/66	19/21	11/16
tonnage			
tonage	103/152	68/77	40/44
transferred			
transferred	89/119	53/62	24/35
Totals for words which the first rule covers,	502/805	273/360	176/244
Per cent for words which the first rule covers,	62.59%	75.83%	72.13%

preceding table. The form using the single l is preferable, however.

The word "cancellation," which was also in the list of 268 words, is an exception. The frequency with which the misspelling cancelation at the eighth grade, tenth grade, and twelfth grade levels, was eighty out of 141, sixty-one out of 74, and thirty-six out of 42, respectively.

There was one word in the original list, the word dining, in which there appeared a tendency to double the last consonant of the base form when it should not have been doubled. The form dinning has a frequency of eighty-seven out of a total of ninety-seven misspellings at the eighth grade level, forty-five out of forty-nine at the tenth grade level. The rule as stated does not cover the addition of the suffix -ing to the word dine, but the implication would be not to double the n.

TABLE 22

Rule Number Two

Words ending in a final silent -e, drop -e before a suffix beginning with a vowel.

	Words ending in -ing		
	Grade Level		
	8th	10th	12th
acknowledging			
acknowledgeing	1/64	0/17	0/10
anticipating			
anticipateing	1/84	0/25	0/11
completing			
completeing	21/36	10/13	7/9
fascinating			
fascinateing	0/157	1/91	0/56
rating			
rateing	22/56	20/31	2/22
Totals for words ending in -ing			
covered by the second rule	45/397	31/117	9/108
Per cents for words ending in -ing			
covered by the second rule	11.34%	17.51%	8.33%

Words ending in -ion or -ions

accommodation			
accommodateion	0/130	0/107	0/94
anticipation			
anticipateion	0/67	0/25	0/9
congratulations			
congratulateions	0/62	0/30	0/7
completion			
completeion	0/50	0/12	0/6

Totals for words ending in -ion or
-ions covered by the second rule 0/318 0/175 0/116

Per cents for words ending in -ion
or -ions covered by the second rule 0 0 0

Words ending in -ous

continucous			
continueous	12/103	1/55	1/22

Words ending in -ed

accrued			
accrued	0/177	0/127	0/66
bored			
boreed	0/51	0/15	0/7
ceased			
ceaseed	0/69	0/14	0/4
damaged			
damaged	0/37	0/4	0/11
determined			
determineed	0/76	0/26	0/42
galvanized			
galvanizeed	0/66	0/28	0/34

Totals for words ending in -ed
covered by the second rule 0/476 0/214 0/164

Per cent for words ending in -ed
covered by the second rule 0 0 0

Totals for all words to which
the rule, as stated, applies 57/1294 32/621 10/410

Per cent for all words to which
the rule, as stated applies 4.40% 5/15% 2.44%

The words given in Table 22 are grouped according to the suffix which is added to the base forms. Those words ending in *ion, -ions, and -ed did not present a single case at any of the three levels, which the application of the rule would have entirely corrected. Since only one word appears which ends in -ous, no conclusions can be made regarding the per cent of misspellings which might be eliminated if the rule were applied to words involving this suffix.

In the case of words ending in -ing, the rule has a greater possibility of usefulness. It is interesting to note that three of the words in this group which present practically no misspellings which the application of the rule would entirely correct are four or more syllables in length. The other two words, one being a two syllable word and the other a three syllable word, account for practically all the misspellings which the application of the rule would entirely correct. The number of words given here is too small to allow any general conclusions but the data does raise the problem of whether or not their attention to the final -e might not be to some extent correlated with the length of the word or the number of syllables comprising it.

As stated, this second rule covers only those suffixes beginning with vowels; one would rather infer, however, that when a suffix beginning with a consonant was to be added to a word ending in a final silent -e, the -e should be retained. The words which such an inferred application of the rule would cover together with the forms of misspellings in

which the only errors are covered by the rule when it is thus interpreted, are:

Words ending in -ly

	Grade Level		
	8th	10th	12th
affectionately			
affectionatly	17/80	6/33	1/10
approximately			
approximatly	5/123	9/55	9/14
comparatively			
comparativly	7/136	4/84	2/41
definitely			
definitly	12/144	10/70	3/24
immediately			
immediatly	25/97	0/14	2/7
immensely			
immensly	23/134	26/64	20/48
indefinitely			
indefinitly	13/131	11/18	4/34
unfortunately			
unfortunatly	33/81	18/42	4/12
Totals for the words ending in -ly covered by inferred application of the second rule			
	135/935	84/380	40/190
Per cents for words ending in -ly covered by inferred application of the second rule			
	14.44%	22.11%	21.05%
Words ending in -ments			
arrangements			
arrangments	21/59	10/17	2/6
Totals for all words which the inferred application of the second rule covers			
	156/994	94/397	42/196
Percents for all words which the inferred application of the second rule covers			
	15.69%	23.67%	21.43%
Totals for all words which the stated and inferred application of the second rule covers			
	213/2285	126/1018	52/606
Per cents for all words which the stated and inferred application of the second rule covers			
	9.31%	12.38%	8.58%

In addition to the above words, the two words acknowledgment and judgment which were in the original list, should be considered.

The first of these, the word acknowledgment, is an exception to the inference made concerning the application of the rule. The other word, judgment, which is the preferred form, is considered equally correct when spelled judgment.

The percentage of the total misspellings at the three grade levels, which the implied application of the rule would entirely correct, are more than triple the number which the application of the rule as stated would entirely correct.

The data given above raise an interesting problem. A count should be made of the cases falling under the direct application of the rule and those falling under the inferred application. It is possible that to make this rule most effective it should be related so as to cover directly the suffixes beginning with consonants.

TABLE 23

Rule Number Three

Words ending in a consonant and -y, change -y to -i before all suffixes except those beginning with -i.

	Grade Level		
	8th	10th	12th
agencies			
agencys	18/85	4/19	2/7
buried			
buried	3/83	6/35	0/22
courtesies			
courtesys	9/118	18/23	5/42
enemies			
enemys	19/75	0/11	0/2
facilities			
facilitys	1/103	0/42	0/9
mysterious			
mysterious	0/88	0/27	0/9
necessarily			
necessarily	5/113	0/53	0/15
opportunities			
opportunitys	5/89	0/25	0/15
satisfactorily			
satisfactorily	2/101	1/73	0/35
temporarily			
temporarily	0/130	0/67	0/35
ordinarily			
ordinarily	5/124	0/68	0/29
vacancies			
vacancys	4/103	1/21	0/11
Totals for words which the third rule covers	71/1212	24/524	7/231
Per cents for words which the third rule covers	5.86%	4.58%	3.03%

TABLE 24

Rule Number Four

When i and e occur together in one syllable, and are pronounced as ē or é, it is always i before e except after c (see). When sounded like "a," it is always e before i.

	Grade Level		
	8th	10th	12th
conceive			
concieve	42/100	30/40	22/31
receipts			
reciepts	26/85	9/30	6/14
perceive			
percieve	42/116	37/56	24/32
receiver			
reciever	40/58	21/24	9/14
seized			
siezed	43/123	35/51	38/42
Totals for the words which the fourth rule covers	193/482	132/201	99/133
Per cents for words which the fourth rule covers	40.04%	65.67%	74.44%

The four spelling rules which have been stated may be applied to fifty-one of the total of 268 words in this investigation. The second rule claims twenty-five of these fifty-one words though the total number of misspellings which its application could entirely correct in these twenty-five words is approximately equal to the number which the fourth rule could entirely correct by applying it to only the five words which it covers. The first rule, though claiming but nine of the fifty-one words, would, if applied, entirely correct more than twice the misspellings that the next most valuable rule would correct.

TABLE 25

Summary of the Relation of Four Spelling Rules to the Forms of Misspelling which the Application of the Rules Would Entirely Correct

Rule Number One Rule Number Two	No. of Words	Total Misspellings					8th	Per Cent of Errors Covered by the Rule	10th	12th
		8th	10th	12th	8th	12th				
9	805	360	244	502	62.59	273	75.83	175	72.13	
(a) Application as stated	5	397	177	108	11.34	31	17.51	9	8.33	
Words ending in -ing	4	318	175	116	0	0	0	0	0	
-ion or -ions	1	103	55	22	11.65	1	.18	1	4.54	
-ous	6	476	214	164	0	0	0	0	0	
-ed	16	1294	621	410	4.40	32	5.15	10	2.44	
Total for a)										
(b) Inferred application of	8	935	380	190	14.44	84	22.11	40	21.05	
Rule Number Two	1	59	17	6	35.59	10	58.82	2	33.33	
Words ending in -ly	9	994	397	196	15.69	94	23.67	42	26.92	
Total for b)										
Total for Rule Number Two (both a) and b)	35	2288	1018	606	9.31	126	12.38	52	8.58	
Rule Number Three	12	1212	524	231	5.86	24	4.58	7	3.03	
Rule Number Four	5	482	201	133	40.04	132	65.57	99	74.44	
Total for the Four Rules	51	4787	2103	1214	20.45	555	26.39	334	27.51	

CHAPTER III
CLASSIFICATION OF THE TYPES OF ERRORS
OCCURRING AT THE EIGHTH GRADE LEVEL

Various classifications of spelling errors have been made. Foster bases his upon the "apparent causes of error" (6, p. 213). Murray has two general classes, one of which deals with errors due to the "unphonetic character of our mother tongue" and the other to "'psychological' or individual and remedial causes" (15, pp. 368-370). Hollingsworth lists such items as doubling, omission, substitution, etc. (9, pp. 38-39). Other investigations have used various other classifications.

The errors occurring in the misspellings of the eighth grade pupils were the only ones classified in this study. The fact that these are the errors made at the close of the educational period in which spelling is taught, makes their classification of more value to the first eighth grades and also to the high school than those which occur at other levels. The group of pupils making these errors represent a less select group, one which is more nearly equivalent to the level of the general public in its achievements, than either of the higher levels sampled in this study.

Only those forms of spelling occurring with a frequency of five or more are included among those forms of which the errors were classified. Those forms of misspelling occurring less than five times are of doubtful value in pointing out general tendencies. The errors have been classified as follows:

1. Omission of letters other than failures to double
 - a. Vowels
 - b. Consonants
2. Insertion of letters other than doubling
 - a. Vowels
 - b. Consonants
3. Inversions
 - a. Adjacent letters
 - b. Letters adjacent but one
4. Doubling
 - a. Double for single
 - 1) Vowels
 - 2) Consonants
 - b. Single for double
 - 1) Vowels
 - 2) Consonants
5. Confusions and substitutions
 - a. Vowels
 - b. Consonants
6. Spelling of wrong word
7. Compounds and hyphenates
8. Capitalization
9. Punctuation (apostrophe)
10. Miscellaneous, including all forms of misspelling for words having one or more forms in which an error occurred which was not classifiable under any of the above headings.

The above classification is based entirely upon letter placement and in no way attempts to use a phonetic basis. One phase of the phonetic problem is treated in another section of the chapter. The general basis of procedure in the classification of the errors followed quite closely that used in determining the hard spots. The detailed process will be discussed separately for each division of the classification. The vowels and consonants are not treated separately in this description.

1. Omission of Letters

Examples: accompanying for accompanying, and
ajourned for adjourned

Any letter omitted from its proper place in the word, except when a single letter was used instead of a double or where the error could be classed as an inversion, was considered an error of this type.

2. Insertions

Examples: Alumini for alumni, and angencies for agencies.

Any letter appearing in a word where it should not appear other than a letter which made a double of a single or which was misplaced in the word so as to be classed as an inversion, was classified under this heading.

3. Inversions

a. Adjacent letters

Examples: concieve for conceive

Any two adjacent letters, each of which should be in the word but which appeared in inverse order were considered as making an error of this type.

b. Letters adjacent but one

Examples: econonic for economic, tradegy for tragedy, unaminous for unanimous

The examples given include the only errors classified in this group.

4. Doubling

a. Double for single

Examples: procecedure for procedure, and reccommend for recommend

Any case in which two identical letters appeared adjacent to each other when the correct spelling includes

ne of these letters at the given place in the word was
ted as an error of this type.

b. Single for double

Example: dem for deem and accomodate for accommo-
data

Any case in which only one letter appeared when
there should have been two of these letters adjacent to each
other was classified as an error under this heading.

5. Confusions and substitutions

Examples: acquaintance for acquaintance and affi-
david for affidavit

Any letter appearing in a place in a misspelling
which should have been occupied by a different letter was
classed in this group.

6. Spelling of wrong word

Example: accustom for accustomed

Any attempted spelling which was not the correct
spelling of the word which was to have been spelled, but
which in itself was correct, was classified under this type
of error, except such of these as involved an addition to,
but no change in, the form given, as such words were counted
correct.

7. Compounds and hypohenates

Example: all-right for all right

Any error in compounding or hypohenating was in-
cluded in this group.

8. Capitalization

Example: Congress for congress

Any case in which a word was begun with a capital
instead of a small letter or in which a small letter was used
instead of a capital was counted as an error of this type.

9. Punctuation (use of apostrophe)

Example: to-days for today's and attorney's for attorneys

The omission of an apostrophe from a word in which it should occur, the use of an apostrophe in a word in which it should not occur, or the wrong placement of the apostrophe in a word was classed as an error under this heading.

10. Miscellaneous

Example: cooperate for coöperate and rôle for rôle

Errors, such as these cited in the above example, could not be classed under any of the other types given. If any one of the forms of misspelling of a given word contained an error which was classified in the miscellaneous group, all the other misspellings of the word were also included in this group.

The forms of misspellings used as examples under the ten headings given above contain but one error each, this error being illustrative of the type under which it appears. These particular misspellings were purposely selected so as to avoid confusion. It must be remembered, however, that several errors of different forms or types often appeared in the same form of misspelling. For example, abserved, which appeared as a misspelling of absurd, has two types of errors, an e being confused with or substituted for the u and an e being inserted between the r and the d. This particular form of misspelling appears with a frequency of seven, but each of the errors also occurs seven times, making the total frequency of the errors fourteen.

In some cases, a given error which occurred could not be assigned entirely to one classification. In proportion to the total number of errors made, very few were of this nature. When such situations did arise, a distribution of the frequency between the possible classification was attempted. This process can be best described by citing the actual procedure in a given case.

Let us, for example, take accrewed, which occurs as a form of misspelling for accrued. The frequency of the occurrence of this form of misspelling is five. It is evident that the u does not appear in this form of misspelling while e and w take its place. But, is e substituted for the u and w inserted, or, is e inserted and w substituted for u? Whichever of these possibilities might be right, there are two types of error present since an extra letter occurs in the misspelled form and there is also the substitution of one of these two letters, e or w, for u. The total frequency of error is, then, twice the frequency of the occurrence of the form of misspelling of ten. This total of ten is then divided as follows: a inserted, 25; w inserted 25; e substituted for u, 25; and w substituted for u, 25. In every case, the total frequency of the errors occurring in any given form of misspelling is always a multiple of the frequency with which the form occurs.

Another possibility in classifying the errors in the words of which accrewed is an example, is to consider the ew as one phoenetic error, the substitution of ew for u.

If such a procedure had been followed, the total number of errors would have been decreased by 588. This reduction would cause a change in the percentages which the different types of errors make of the total errors. The percentage of errors due to omissions would be decreased from 23.37 to 21.20. A decrease from 8.94 to 8.45 would occur in the percentage of errors due to insertions. The percentages for the various other classes of errors would be raised slightly. The greatest increase would be in the percentage of errors due to confusions which would change from 33.25 to 34.36.

A summary classification of these errors is given to Table 26. A more detailed summary of the classification sheets immediately follows this table. The figures in parentheses indicate the number of forms of misspelling contributing the given number of errors.

TABLE 26

Summary of the Classified Errors

	Per cent.	Number of Errors.	Number of Forms Contributing Errors.
1. Omission of letters other than failures to double	23.47	4165.5	376
a. Vowels	13.93	2481.3	230
b. Consonants	9.45	1684.2	146
2. Insertion of letters other than doubling	8.94	1395.9	134
a. Vowels	6.21	1107.5	83
b. Consonants	2.73	487.5	51
3. Inversions	2.29	411	22
a. Adjacent letters	2.15	386	19
b. Letters adjacent but one	.14	25	3
4. Doubling	18.87	3363	196
a. Double for single	4.46	794	57
1) Vowels	.36	69	3
2) Consonants	4.07	275	54
b. Single for double	14.41	2569	138
1) Vowels	.36	62	6
2) Consonants	14.06	2507	132
5. Confusions and substitutions	33.23	5925.4	520
a. Vowels	25.46	4540.1	378
b. Consonants	7.77	1385.3	142
6. Spelling of wrong word	5.03	897	59
7. Compounds and hyphenates	2.14	381	9
8. Capitalization	.44	78	5
9. Punctuation (apostrophe)	2.22	395	10
10. Miscellaneous	3.47	619	28
Total	100.00	17830	1358

Summary of Classification Sheets

1. Omissions other than failures to double			2. Insertions other than doubling		
	a. Vowels			a. Vowels	
a	357.0	(30)	a	122.0	(14)
e	1078.2	(88)	e	676.5	(42)
i	515.3	(56)	i	157.0	(16)
o	229.8	(24)	o	96.0	(5)
u	224.0	(30)	u	56.0	(6)
y	57.0	(2)			
Total	2481.3	(230)	Total	1107.5	(83)

	b. Consonants	
c	168.0	(15)
d	108.0	(8)
g	18.0	(2)
h	351.0	(32)
k	48.0	(4)
l	10.0	(2)
n	283.0	(24)
p	183.0	(17)
q	8.7	(2)
r	121.0	(13)
s	221.5	(15)
t	153.0	(9)

Total 1684.2 (146)

	b. Consonants	
e	36.0	(3)
d	80.0	(5)
g	54.0	(3)
b	54.0	(5)
k	10.0	(2)
n	55.0	(8)
r	46.0	(5)
s	105.0	(9)
t	52.0	(7)
v	11.0	(1)
w	2.5	(1)
z	11.5	(2)

Total 487.5 (51)

3. Inversions

a. Adjacent letters

386 (19)

b. Letters adjacent but one

25 (3)

4. Doubling

a. Double for single		
1) Vowels		
e	64	(2)
	5	(1)
Total	69	(3)

b. Single for double		
1) Vowels		
e	62	(6)

2) Consonants		
c	192	(16)
d	12	(1)
f	25	(3)
l	147	(13)
m	51	(2)
n	111	(3)
p	33	(2)
r	69	(6)
s	62	(5)
t	23	(3)
Total	725	(54)

2) Consonants		
c	91	(7)
f	13	(2)
l	537	(32)
m	535	(32)
n	412	(18)
p	422	(22)
r	315	(11)
s	63	(3)
t	119	(5)
Total	2507	(132)

5. Confusions and substitutions

a. Vowels

1) for a		
e	380.5	(45)
i	161.5	(13)
o	99.0	(8)
u	27.0	(3)
Total	668.0	(69)

2) for e		
a	700.0	(48)
i	777.0	(57)
k	2.3	(1)
om	72.0	(7)
s	8.0	(1)
t	2.0	(1)
u	72.0	(7)
y	30.5	(5)
Total	1661.5	(127)

TABLE 26 (Contd)

3) for i			4) for o		
a	535.0	(37)	a	136.5	(12)
e	721.1	(50)	e	91.1	(8)
o	41.0	(6)	i	73.5	(8)
u	11.0	(2)	u	55.0	(6)
y	60.5	(9)			
Total	1368.6	(104)	Total	355.1	(34)
5) for u			6) for y		
a	48.5	(5)	i	254.0	(12)
e	79.6	(14)			
i	31.0	(3)			
k	2.3	(1)			
o	61.0	(6)			
r	6.0	(1)			
t	2.0	(1)			
w	2.5	(1)			
Total	232.9	(32)			
			b. Consonants		
1) for b			2) for c		
v	6.0	(1)	g	11.0	(1)
			r	8.5	(2)
3) for d			s	414.0	(31)
b	32.0	(3)	t	54.5	(7)
g	5.0	(1)	v	18.0	(1)
t	52.0	(4)	z	6.0	(1)
v	9.0	(1)			
Total	98.8	(9)	Total	512.0	(43)
5) for g			4) for f		
e	8.0	(1)	v	17.0	(2)
7) for j			6) for h		
d	24.0	(2)	f	67.5	(8)
9) for m			r	8.5	(2)
n	27.0	(5)	t	29.0	(4)
			Total	105.0	(14)
11) for p			8) for k		
f	67.5	(8)	e	20.0	(2)
t	12.0	(1)	10) for n		
Total	79.5	(9)	m	16.0	(3)
13) for s			12) for q		
e	99.0	(11)	e	11.0	(2)
e	9.0	(1)	k	2.3	(1)
r	13.0	(1)	t	2.0	(1)
t	9.0	(2)	Total	15.3	(4)
Total	225.5	(20)			

TABLE 26 (Contd)

15) for s			14) for t		
g	11.5	(2)	d	84.0	(7)
z	23.5	(4)	s	48.0	(4)
			c	44.0	(6)
			a	5.0	(1)
Total	<u>35.0</u>	(6)	Total	<u>181.0</u>	(18)
			16) for z		
			s	16.0	(3)
6. Spelling of wrong word			897	(59)	
7. Compounds and hyphenates			381	(9)	
8. Capitalization			78	(5)	
9. Punctuation			395	(10)	
10. Miscellaneous			619	(28)	

The material just presented gives us some very worth-while information. It is now possible to answer such questions as which vowel is most frequently omitted from these common difficult words, which consonant is most frequently doubled, which vowel is most frequently substituted for any other vowel, and many similar queries.

The mere discovery of this information will not in itself be of any value as an aid to the better teaching of spelling. The fact that one-fourth of all the errors classified are due to confusions of one vowel for another indicates that this type of error is in need of further investigation for light on the best method of first teaching which will tend toward the prevention of this error. The same might be said of each of the other types.

8. PHONETICALLY CORRECT MISPELLINGS

The unphonetic nature of our English language is well known to all its students. A given letter or group of letters may have one phonetic sound in one word and an entirely different phonetic sound in the very next one. The state of affairs naturally causes considerable trouble for the child when learning to read. It is also a very important element in his spelling.

The extent to which misspellings, though of course wrong from the standpoint of spelling, are correct in that it is possible to pronounce the form of misspelling exactly as the correct form should be pronounced, has been determined for the list of words used in this study. In addition, the number of errors made by an omission from substitution in or addition to the correct form of spelling, resulting in a form of misspelling which cannot be pronounced exactly as the correct form should be pronounced but is still within the limits of common errors made in the pronunciation of the word, was also determined.

The forms of misspelling which were listed on the classification sheets described in the preceding section were classified under one of the following heads:

1. Misspellings capable of being pronounced exactly as the correct form of the word should be pronounced.
2. Misspellings which, though they cannot be pronounced exactly like the correct form, are approximate phonetic spellings; which are possible phonetic spellings for common

mispronunciation of the words; or in which the necessary change in the pronunciation of this form is so slightly different from the exact pronunciation of the correct form that it is scarcely detectable by the uncritical ear.

3. Unphonetic misspellings, including all misspellings not placed in one of the other two classes.

The sum of the frequencies of the forms of misspellings at the eighth grade level which occur with a frequency of five or more is 13,183. The total of the frequencies of the forms of misspelling which are phonetic spellings is 8,528 or 64.69 per cent. The total of the frequencies of the forms of misspelling which are approximate phonetic spellings is 1,842 or 13.97 per cent. The remaining 2,813 misspellings, or 21.34 per cent, are unphonetic. It is quite evident from those data that the majority of those pupils who do not spell the words correctly do make an attempt to spell them as they sound.

It must be kept in mind that the forms of misspelling, upon which the above figures are based are limited to those forms of misspelling which occur with a frequency of five or more out of a total of 200 attempts to spell the word by eighth grade pupils. That the percentages would remain almost identical if all the forms of misspelling had been included is not likely. The less frequently occurring forms include the "freak" misspellings which are largely unphonetic. A comparison of the most frequently occurring forms of misspelling of a word with the least frequently occurring forms will readily reveal this fact.

S U M M A R Y

CHAPTER III

5. A classification was made of the errors in the misspellings occurring with a frequency of five or more at the eighth grade level. One-third of all the errors made in these words at this grade level are due to the confusion and substitution of letters. Nearly one-fourth of the errors are due to the omission of letters. Errors in doubling make up almost one-fifth of the total errors. The remaining one-fourth of the errors were classified as insertions, inversions, spelling of the wrong word, wrong compounding and hyphenating, errors in the use of capitals, and errors in the use of the apostrophe.

6. A phonetic analysis of these misspellings shows that 64.69 per cent of them are possible spellings from a phonetic point of view, 13.97 per cent are approximate phonetic spellings, and 21.34 per cent are not even approximate phonetic spellings.

CHAPTER V

SUMMARY OF PROCEDURE AND RESULTS

This study will have made a contribution if through its method and organization, it encourages the undertaking of further studies involving more facts and cases which may confirm or reject the tendencies found in this study.

1. Eighth grade pupils, tenth grade pupils, and twelfth grade pupils in fifty-two public school systems of the state of Indiana, were asked to spell the 268 most difficult words occurring in the 5,000 words most frequently used in writing. At these grade levels 200 papers were selected at random and for each of the 268 words the various forms of misspelling with their frequencies were recorded.
2. The average accuracy for these words at the three grade levels is 49.67 per cent, 76.75 per cent, and 86.53 per cent. The rank order of the words, when arranged in order of decreasing accuracy, changes more between the eighth grade and tenth grade levels than between the tenth grade and the twelfth grade levels.
3. The most frequent forms of misspelling at one grade level tend to be the most frequent forms at the other grade levels. As the grade advances, the misspellings become more concentrated upon the most frequently occurring forms. Forty-one of the words at the eighth grade level, seventy-nine at the tenth grade level, and

ninety-three at the twelfth grade level have one form of misspelling which accounts for at least 50 per cent of all the misspellings.

4. Four spelling rules were found to cover fifty-one of the words. Only the misspellings of these fifty-one words in which the only error could have been entirely corrected by the correct application of one of the rules were considered. By applying these rules to these particular misspellings, 20.45 per cent of the misspellings at the eighth grade level, 26.39 per cent of the misspellings at the tenth grade level, and 27.51 per cent of the misspellings at the twelfth grade level could have been eliminated in these fifty-one words. These four rules vary as to usefulness. One of the rules if applied, would eliminate over 60 per cent of the misspellings in the nine words which it covers. It was found that in the case of one rule, its inferred application would eliminate more misspellings than its direct application.
5. A classification was made of the errors in the misspellings occurring with a frequency of five or more at the eighth grade level. One-third of all the errors made in these words at this grade level are due to the confusion and substitution of letters. Nearly one-fourth of the errors are due to the omission of letters. Errors in doubling make up almost one-fifth of the total errors. The remaining one-fourth of the errors were classified as insertions, inversions, spelling of the wrong word,

wrong compounding and hyphenating, errors in the use of capitals, and errors in the use of the apostrophe.

6. A phonetic analysis of these misspellings shows that 64.69 per cent of them are possible spellings from a phonetic point of view, 13.97 per cent are approximate phonetic spellings, and 21.34 per cent are not even approximate phonetic spellings.

1. *Highways Through the Twentieth Century for the Study of American Spelling*, 2d ed., Taylor & Francis Company, Washington, D.C., 1948.
2. *Spelling*, William G., *The Spelling of College Students*, *Journal of Educational Psychology* 33 (April 1941) pp. 212-222.
3. Public Schools, Department of Experimentation, National Education Association, Washington, D. C., 1934.
4. *Spelling*, Martin G., *An analysis of misspelled words in New York State School Examinations*, prepared by the State Education Department, Albany, New York, 1931.
5. *Spelling*, Martin G., *Psychology of spelling*, *Journal of Educational Psychology*, 24 (1931), pp. 27-37.
6. *Spelling*, Martin G., *A Study of Spelling*, 10th ed., 1931, 1932, 1933, 1934, 1935.
7. *Spelling*, Martin G., *The New York State Spelling Book*, 10th ed., 1931, 1932, 1933, 1934, 1935.
8. *Spelling*, Martin G., *Spelling in the Schools*, 10th ed., 1931, 1932, 1933, 1934, 1935.
9. *Spelling*, Martin G., *Spelling in the Schools*, 10th ed., 1931, 1932, 1933, 1934, 1935.
10. *Spelling*, Martin G., *Spelling in the Schools*, 10th ed., 1931, 1932, 1933, 1934, 1935.
11. *Spelling*, Martin G., *Spelling in the Schools*, 10th ed., 1931, 1932, 1933, 1934, 1935.
12. *Spelling*, Martin G., *Spelling in the Schools*, 10th ed., 1931, 1932, 1933, 1934, 1935.
13. *Spelling*, Martin G., *Spelling in the Schools*, 10th ed., 1931, 1932, 1933, 1934, 1935.
14. *Spelling*, Martin G., *Spelling in the Schools*, 10th ed., 1931, 1932, 1933, 1934, 1935.
15. *Spelling*, Martin G., *Spelling in the Schools*, 10th ed., 1931, 1932, 1933, 1934, 1935.

B I B L I O G R A P H Y

1. Ashbaugh, Ernest J., Spelling Scales; Their Derivation, Use, and Limitations, Teachers' College, New York.
2. Conklin, George W., Words As They Look, Educational Service Bureau, Boston, 1924.
3. Cook, W. A., "Shall We Teach Spelling by Rule?" Journal of Educational Psychology III (June 1912) pp.316-323.
4. Cook, W. A., and O'Shea, M. V., The Child and His Spelling, The Bobbs(Merrill Company, Indianapolis, 1914.
5. Eighteenth Yearbook of the National Society for the Study of Education, Part II, Public School Publishing Company, Bloomington, Illinois, 1922.
6. Foster, William T., "The Spelling of College Students", Journal of Educational Psycgology II (April 1911) pp. 211-215.
7. Fourth Yearbook, Department of Superintendence, National Education Association, Washington, D. C., 1926.
8. Hayes, Marion C., An Analysis of Responses Made in Four Narrow Mental Functions Involved in the Computation of Fractions, Teachers' College, New York.
9. Hollingsworth, Leta S., Psychology of Special Disability in Spelling, Teachers' College Contributions, Columbia University, New York, 1918, No. 88.
10. Horn, Ernest, A Basis Writing Vocabulary; 10,000 Words Most Commonly Used in Writing, Teachers' College, New York.
11. Horn, Ernest, "How Many Words Should Be Taught in Spelling." Proceedings of the Sixth Annual Session of the Ohio State Educational Conference, The Ohio State Univeristy Bulletin XXXI (August 15, 1926), pp. 175-179.
12. Horn, Ernest and Ashbaugh, Ernest J., Lippincott's New Horn-Ashbaugh Speller, J. B. Lippincott Company, Philadelphia, 1926.
13. Lester, John A., "Wjat is a Misspelling," School and Society IV (January, 1922) pp. 117-120.
14. McKee, Paul, Spelling Difficulty in Context Form, 1921, Teachers College, New York.
15. Murray, Elsie, "The Spelling Ability of College Students Journal of Educational Psychology X (October, 1919) pp. 357-376.

16. Rowland, V. H., "The Function of Rules in Spelling," Wyoming School Journal XIII, pp. 243-244.
17. Searle, Albert H., An Analysis of the Causes of Pupils' Errors in Common Fractions, Teachers College, New York.
18. Simmons, Ernest P., Which of the 5,000 Commonest Words Still Give Difficulty at the Beginning and the End of the High School Period? Teachers College, New York.
19. Smith, J. Frank, A List of 201 Spelling Demons, Teachers College, New York.
20. Tidyman, W. F., The Teaching of Spelling, World Book Company, Yonkers-on-Hudson, New York, 1919.
21. Tireman, Loyd S., The Value of Marking Hard Spots in Spelling, Teachers College, New York.
22. Tone, B. L., The Value of Rules for Teaching Derived Forms in Spelling, Teachers College, New York.
23. Turner, A. N., "Rules versus Drill, Journal of Educational Psychology III (October, 1913) pp. 460-461.
24. Wilcox, M. J., The Use of a Rule in Teaching Spelling, Teachers College, New York.
25. Woody, Clifford, The Permanent Effects of the Teaching of Spelling, Bureau of Educational Reference and Research Bulletin, University of Michigan, Ann Arbor, 1924, no. 71.

